REFERENCE CATALOG

VIDEO IMAGES

Milwaukee
Madison
Chicago
A Commitment to Your Success through Today's Visual Technology

• Video Production & Post-Production
• Boardroom & Environments
• Computer Graphics
• Projection & Display
• Visual Database
• Transmission & Teleconferencing
  • Rentals
• Preventive Maintenance
• Service

The Total Spectrum of Visual Communications

The only thing certain is change, especially in the Visual Communications field. Video Images is dedicated to providing communications solutions that combine the best of new technologies with the time tested concepts of quality, productivity and results.

Our VIDEO SYSTEMS expertise is well documented, from major digitally based production suites (some of the largest in the Midwest) to desktop sized non-linear editing systems.

Our BOARDROOM and Environmental presentation systems expertise ranges from sophisticated executive presentation centers to working media labs with sophisticated computer routing and video projection.

In COMPUTER and PRESENTATION GRAPHICS, we offer creation, graphic and video paint box tools, as well as computer-based presentation systems that make meeting preparation faster, easier and more exciting.

Our INTEGRATED VISUAL DATABASE SYSTEMS offer the ability to scan, store, display and print text with pictures. Photo and tape libraries, inventory managers, personnel directors and art directors find this an extraordinary tool.

Meetings and travel cost money. Our IMAGE TRANSMISSION, TELECONFERENCING and VIDEO CONFERENCING expertise can offer immediate bottom line impact. Have meetings with the people you need, with the visuals you need, when you need them. But without the travel, air fares and lodging costs.

Our expertise is the result of the experiences of our on-staff personnel: sales personnel, product experts, and engineering and installation professionals work with our manufacturers to offer you product knowledge, sales, service and installation unparalleled in the industry.

The result is that Video Images is often chosen for special leading edge opportunities by the manufacturers we represent. We are one of the largest Sony Broadcast representatives in the country, a Sony Premiere dealer and are the exclusive representative for a number of new technologies in presentation systems, non-linear editing, and broadcast production.

Our dedication to after-the-sale training, service and preventive maintenance are why. Our exclusive PREVENTIVE MAINTENANCE PLANS and training and support agreements keep you productive and your equipment producing.

And our growing rental inventory makes you even more productive by helping you increase your opportunities with the equipment you need, when you need it.

As we mix exciting new technologies with the tried and true, mature performers, we will continue our dedication to helping our customers be productive communicators. Achieving productivity and success on your behalf are our goals.

Video Images does not represent all products listed in this catalog.
We are a member of the Professional Systems Network, Inc. because we want to give you the best service and expertise the video industry can offer.

Professional Systems Network, Inc. was organized in 1986 to provide clients with professional visual communication products and services anywhere in the United States. Services include product counselling, individual design, installation and experienced maintenance.

Before becoming part of Professional Systems Network, Inc.:

- each Affiliate Member must demonstrate full service capability, professionalism and integrity in dealing with clients;
- each Affiliate Member must subscribe to the Professional Systems Network, Inc. Dealer Code of Ethics and to the Professional Systems Network, Inc. Customer Bill of Rights;
- each Affiliate Member is reviewed annually to assure that quality performance abilities are sustained.

The "network" relationship of Affiliate Members assures that you get quality products and dependable service for your visual communications systems wherever and whenever you need them.

PSNI Customer Bill of Rights

A customer has a right to:

1. expect objective appraisals of his/her video needs.
2. receive advice from sales people who have experience and training in professional video applications.
3. expect new sales people to have been briefed on an established customer's video needs before the sales call.
4. be given realistic delivery times for orders and to be notified when deliveries may be delayed.
5. know the equipment sold as new was not used for demos without the customer's prior approval.
6. be able to return equipment for a full refund if the equipment recommended by the dealer's sales staff fails to meet the customer's written specs.
7. order equipment from more than one vendor without losing sales/service support from other dealers in the area.
8. be able to purchase on-site training after the sale.
9. have equipment serviced in a timely fashion, regardless of whether the equipment's service is needed during or after the warranty period.
10. know, when possible, if manufacturers are experiencing equipment or material problems which may affect the customer's production or installation schedule.

PSNI Dealer Code of Ethics

1. I will respect the confidentiality of my client's requests and purchases.
2. I will respect the rights of other dealers to compete for business in my marketing area.
3. I will not publicly criticize a customer's choice of equipment or systems purchased from other dealers.
4. I will support the activities of regional professional organizations which are active in the video industry.
5. I agree to support Professional Systems Network, Inc. and abide by the guidelines in the license agreement for my marketing area.
6. I will cooperate with other video dealers to increase the awareness among customers that working with full service professional video dealers strengthens the video industry and insures good customer service after the sale.
7. I agree that customers have rights as expressed in Professional Systems Network, Inc.'s "Customer Bill of Rights."

PROFESSIONAL SYSTEMS NETWORK, INC.
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Milwaukee, WI 53202
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We published this catalog to give you a complete reference source for information on the newest products. We do not claim to represent all of the products in this catalog.
Adaptors, Audio/Video .................................................... 99, 101
Adaptors, Digital Video .................................................. 99, 101
Adaptors, Video Graphics .................................................. 99
Adaptors, Video Input ...................................................... 101
Amplifiers, Audio ........................................................... 101, 103, 110, 112, 184, 247, 286, 304, 346, 373, 374
Amplifiers, Video Equalizing ............................................. 306-308
Animation Controllers/Systems ........................................... 418, 419
Antennas, Microwave ..................................................... 223
Audio Cassette Recorders/Players ....................................... 338, 350, 355
Audio Delay Lines ......................................................... 197
Audio Recorders/Reproducers, Open Reel ............................ 232, 348
Audio Testers ................................................................. 215, 220
Batteries, Belts, Packs, Chargers and Power Supplies .............. 63, 64, 87
Boards, Video Graphics .................................................... 121, 123, 438, 439
Cameras, Monochrome CCD ............................................... 121, 123
Cameras, Color CCD ....................................................... 121, 123
Cameras, Color CCD Micro ............................................... 121, 123
Camcorders ........................................................................ 121, 123
Cameras, Color CCD ....................................................... 121, 123
Cameras, Color CCD Micro ............................................... 121, 123
Cables, Assembled Video/Camera ........................................ 121, 123
Cables, Assembled Computer ............................................. 121, 123
Cables, Assembled Audio ................................................. 121, 123
Cables, Assembled Video/Camera ........................................ 121, 123
Cabinets, Consoles, Racks and Accessories ......................... 121, 123
Cartes, Video ..................................................................... 268, 397, 398
Cases ................................................................................. 268, 397, 398
Cables, Digital Video .......................................................... 234-238, 257, 258, 312-314, 331, 450, 484
Clocks, Timers and Counters .............................................. 121, 123
Connectors, Audio/Video ................................................... 381, 385
Component Digital Disk Recorder ........................................ 121, 123
Consoles, Video ................................................................. 264, 326
Connectors, Audio/Video ................................................... 99, 101
Connectors, Video ............................................................. 264, 326
Converters, Audio/Video .................................................... 121, 123
Converters, Digital Video ................................................... 234-238, 257, 258, 312-314, 331, 450, 484
Converters, Audio/Video .................................................... 99, 101
Converters, Color ............................................................... 121, 123
Cables, Digital Video .......................................................... 234-238, 257, 258, 312-314, 331, 450, 484
Cables, Assembled Video/Camera ........................................ 121, 123
Cables, Assembled Computer ............................................. 121, 123
Cables, Assembled Audio ................................................. 121, 123
Cables, Assembled Video/Camera ........................................ 121, 123
Camcorders ........................................................................ 121, 123
Cameras, Color CCD ....................................................... 121, 123
Cameras, Color CCD Micro ............................................... 121, 123
Cameras, Color CCD ....................................................... 121, 123
Cameras, Color CCD Micro ............................................... 121, 123
Cables, Digital Video .......................................................... 234-238, 257, 258, 312-314, 331, 450, 484
Digital Video Tape Recorders ............................................... 121, 123
Digital Audio Tape Recorders ............................................... 121, 123
Digital Video Tape Recorders ............................................... 121, 123
Digital Audio Tape Recorders ............................................... 121, 123
Digital Video Tape Recorders ............................................... 121, 123
Digital Video Tape Recorders ............................................... 121, 123
Disc Cartridges, Blank Optical ............................................. 470
Distribution Amplifiers, Audio ............................................. 286, 304, 307-309, 381, 392
Distribution Amplifiers, Audio and Video ............................. 102, 251, 306, 309, 323, 353
Distribution Amplifiers, Computer Signal ............................. 426, 447, 448
Distribution Amplifiers, Pulse .............................................. 121, 306, 307, 309, 381, 392
Distribution Amplifiers, Subcarrier ..................................... 306, 308, 392
Distribution Amplifiers, Video ............................................. 213, 121, 138, 154, 161-163, 173, 191, 245
Drives, CD ROM ............................................................ 442, 451, 471
Drives, Optical Disc ......................................................... 474
Drivers, Video Floppy Disk ................................................ 423, 441
Duplicators/Copiers, Audio Tape ......................................... 368, 369
Duplicators/Dubbing Systems, Videotape ............................. 192, 251
Edit Controllers ............................................................... 191, 233, 241, 242, 249, 260, 323-325
Editing Systems, Video .................................................... 77, 78, 95, 96, 151, 336
Editor, Audio Insert .......................................................... 123
Effects Systems, Video ...................................................... 57, 58, 61, 83, 124, 137
Electrical Distribution Equipment ....................................... 147, 221, 222, 266, 267, 324
Electrical Distribution Equipment ....................................... 73
Encoder/Sync Generators ................................................... 452, 453
Encoders, Color ............................................................... 133, 138, 160, 173, 308, 496
Equalizers, Audio ............................................................ 72, 114, 183, 197, 346
Fiber Optic Transmission Systems ....................................... 164, 165
Film Footage Encoder ....................................................... 132
Film Recorders ................................................................. 405, 476
Filters, Video Effect ........................................................... 371, 372
Frame Store Synchronizers ................................................ 121, 123
Frame/Still Store Systems .................................................. 56, 83, 118, 120, 222, 272, 483
Generators, Blackburst ...................................................... 273, 307-309, 381, 390
Generators, Character/Graphics ........................................... 58, 88, 89, 119, 198, 199, 246, 263, 276-278
Generators, Countdown ..................................................... 274
Generators, Message .......................................................... 274
Generators, Safe Area ......................................................... 274, 308
Generators, Special Effects ................................................ 196, 246, 324
Generators, Sync ............................................................. 155, 156, 160, 173, 307, 308, 361, 381, 390
Generators, Test Signal ..................................................... 156, 160, 217, 273, 307-309, 359, 360, 381, 390
Graphics Systems ............................................................ 118, 266, 267
Graphics Tablets ............................................................... 486
Grid Hardware ................................................................. 73, 86
Grip Equipment .............................................................. 73, 173
Headphones/Headsets ...................................................... 69, 94, 292, 366
Heads, Cameras ............................................................... 71, 182, 224, 230, 231, 287, 289, 384-396
Housings/Enclosures/Domes and Accessories, Camera .......... 262
Identifiers, Video .............................................................. 273
Intercom Systems .............................................................. 92-94, 264, 284, 285, 367
Interface Unit, Machine Control ......................................... 245
Interfaces, Computer Video ............................................... 137, 426, 437, 438, 447, 449, 450
Interfaces, Level/Impedance .............................................. 103
Interfaces, Serial/Parallel .................................................. 245
Isolator, Video Line ........................................................... 381
Keyboards, Computer ....................................................... 466
Keys, Video ................................................................. 136, 146, 200, 305, 324
Ladders .......................................................................... 73
Lamps, Replacements ........................................................ 401, 402
Laser Barcode System ....................................................... 473
Learning Labs, Computer .................................................. 354
Lecterns ......................................................................... 492
Lens Controls ................................................................. 90
Lenses, Video Camera ...................................................... 81, 82, 144, 145, 315, 316
Light Control Media ........................................................ 207
Lighting Fixtures, KIts and Studio Systems ........................... 97, 98, 107, 207-212, 310, 311, 344
Lighting, Portable ........................................................... 97, 142
Line Doubler/Bandwidth Expander ....................................... 133
PRODUCT INDEX
# Reference Section

## Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glossary</td>
<td>7-10</td>
</tr>
<tr>
<td>Specifications—What They Mean</td>
<td>11, 12</td>
</tr>
<tr>
<td>Color Television Systems in Use or Planned</td>
<td>13</td>
</tr>
<tr>
<td>Videotape Format Comparisons—</td>
<td></td>
</tr>
<tr>
<td>Professional Market</td>
<td>14</td>
</tr>
<tr>
<td>Shedding Some Light on HDTV</td>
<td>15</td>
</tr>
<tr>
<td>D-2 Format</td>
<td>16, 17</td>
</tr>
<tr>
<td>The Technology of Betacam SP</td>
<td>18</td>
</tr>
<tr>
<td>The MII Format</td>
<td>19</td>
</tr>
<tr>
<td>SP U-Matic Explained</td>
<td>20-22</td>
</tr>
<tr>
<td>The Super VHS System</td>
<td>23</td>
</tr>
<tr>
<td>The Hi8 Video System (NTSC)</td>
<td>24</td>
</tr>
<tr>
<td>Video Editing—What’s the Problem?</td>
<td>25</td>
</tr>
<tr>
<td>Editing Techniques</td>
<td>26, 27</td>
</tr>
<tr>
<td>System Timing</td>
<td>28</td>
</tr>
<tr>
<td>Component Analog Waveform Monitoring</td>
<td>29, 30</td>
</tr>
<tr>
<td>Local Area Audio/Video Conferencing and Intercom System</td>
<td>31</td>
</tr>
<tr>
<td>Audio Teleconferencing</td>
<td>32</td>
</tr>
<tr>
<td>Fiber Optics in the Broadcast Industry</td>
<td>33-35</td>
</tr>
<tr>
<td>Digital Primer—An Informal Guide to Digital Tape and Compact Disc Technologies</td>
<td>36, 37</td>
</tr>
<tr>
<td>Microphone Types</td>
<td>38-41</td>
</tr>
<tr>
<td>Causes and Cures of Hum and Noise in Microphone Cable</td>
<td>42</td>
</tr>
<tr>
<td>Television and Computer Video</td>
<td>43-45</td>
</tr>
<tr>
<td>Computer Video Interfacing and Systems</td>
<td>46-51</td>
</tr>
<tr>
<td>Computer Systems</td>
<td>52, 53</td>
</tr>
<tr>
<td>Synchronizers/Computers</td>
<td>54</td>
</tr>
<tr>
<td>Stay True Component All The Way,</td>
<td></td>
</tr>
<tr>
<td>Projector Installation Guidebook,</td>
<td>26-30</td>
</tr>
<tr>
<td>The Fujinon Guide to Zoom Lenses for 1/2&quot; Format Cameras</td>
<td>13</td>
</tr>
</tbody>
</table>

## Directory of Reference Articles in Previous Editions

<table>
<thead>
<tr>
<th>Article</th>
<th>Catalog</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Lighting, 1989-90 Catalog</td>
<td>1989-90</td>
<td>21-23</td>
</tr>
<tr>
<td>Comparison Chart:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consumer Analog Video, 1989-90 Catalog</td>
<td>1989-90</td>
<td>14</td>
</tr>
<tr>
<td>Digital Data Recording, 1989-90 Catalog</td>
<td>1989-90</td>
<td>15</td>
</tr>
<tr>
<td>Professional Analog Video, 1989-90 Catalog</td>
<td>1989-90</td>
<td>14</td>
</tr>
<tr>
<td>Professional Digital Video, 1989-90 Catalog</td>
<td>1989-90</td>
<td>15</td>
</tr>
<tr>
<td>D-2 Format Design and Implementation</td>
<td>1989-90</td>
<td>16</td>
</tr>
<tr>
<td>1990-91 Catalog</td>
<td>1990-91</td>
<td>17</td>
</tr>
<tr>
<td>The Fujinon Guide to Zoom Lenses for 1/2&quot; Format Cameras</td>
<td>1989-90</td>
<td>13</td>
</tr>
<tr>
<td>The NTSC Color Video Signal</td>
<td></td>
<td>33, 34</td>
</tr>
<tr>
<td>1989-90 Catalog</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1990-91 Catalog</td>
<td></td>
<td>34, 35</td>
</tr>
<tr>
<td>Principles of Video Recording, 1990-91 Catalog</td>
<td>1990-91</td>
<td>14, 15</td>
</tr>
<tr>
<td>Professional Audio/Videotape Care and Handling,</td>
<td>1990-91</td>
<td>24</td>
</tr>
<tr>
<td>Projector Installation Guidebook,</td>
<td>1990-91</td>
<td>26-30</td>
</tr>
<tr>
<td>Stay True Component All The Way,</td>
<td></td>
<td>42</td>
</tr>
<tr>
<td>1989-90 Catalog</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1990-91 Catalog</td>
<td></td>
<td>36-42</td>
</tr>
<tr>
<td>Video Waveform Monitoring</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
GLOSSARY

A/B Roll Editing: This takes selected odd (A-roll) and even (B-roll) shots from two VCRs and puts them on a tape in a third VCR in the proper sequence.

A-B Split Screen: A useful means for comparing two sources simultaneously. Permits a fast visual check of the phase and sync timing between two inputs.

A To D Converter: ADC – a device used to convert analog signals to digital signals.

Aberrations: Certain aberrations degrade the image formed by a lens.

Aliasing: Undesirable “beating” effects caused by sampling frequencies being too low to faithfully reproduce image detail. Examples are:
  i. Temporal aliasing – e.g. wagon wheel spokes apparently reversing, also movement juudder seen in standards converters with insufficient temporal filtering.
  ii. Raster scan aliasing—twinkling effects on sharp horizontal lines.
  iii. Raster scan aliasing and its horizontal equivalent are often seen in older digital effects devices as detailed images are compressed, due to insufficient filtering. Aliasing is also often used to describe the unpleasant stepped images if unfiltered angled lines are presented upon the raster lines of a TV system.

Analog, Analog Components: Video signals in which a continuously variable voltage or current (rather than a set of numbers) represents the value of a pixel.

Aperture: The opening of a lens which controls the amount of light reaching the surface of the pickup device. The size of the aperture is controlled by the iris adjustment. By increasing the f stop number (f/1.4, f/1.8, f/2.8 etc.) less light is permitted to pass to the pickup device.

Assembly Editing: In assembly editing, you add new material to the end of a previously recorded portion.

Astigmatism: The uneven foreground and background blur that is in the previously recorded portion.

Auto Light Control (ALC): The process by which the illumination incident upon the face of the pickup device is automatically adjusted as a function of the brightness of the scene.

Backcoating: A special treatment applied to the backside of magnetic tape to enhance gripping action and improve tape transportation.

Backgound: Setting behind scene.

Backlight: A fixture that is often not properly applied or overlooked completely. The main function of the backlight is to separate the individual subjects from the background and give them depth and dimension.

Baking: The mylar or plastic tape on which the magnetic coating is applied.

Barn Doors: Movable black metal panel attached to the sides of a lighting fixture with which to control the light coverage.

Base and Fill Lights: Base and Fill Lights, commonly referred to as “scoops” provide a soft-edged field of light which is used to provide basic illumination of the subject, to fill in the areas not highlighted by the key light, to illuminate the background and to soften shadows caused by key lights.

Betacam, Betacam Format: Portable camera/recorder system and related equipment originally developed by Sony; the name may also be used for just the recorder or for the interconnect format; Betacam uses a version of the (Y, R-Y, B-Y) component set.

Betacam SP: A Superior Performance version of Betacam. SP uses metal particle tape and a wider bandwidth recording system. The interconnect standards are the same as Betacam; there is also limited tape interchangeability with standard Betacam.

Black also Color Black, Blackburst: A few (8 to 10) cycles of 3.58MHz color subcarrier which occur during the back porch interval. Color burst amplitude is 40 IEEE units and phase is 180°. The color oscillator of a color television receiver is phase locked to the color burst.

Color Correction: A process in which the coloring in a television image is altered or corrected by electronic means. Care must be taken to ensure that the modified video does not exceed the limits of subsequent processing or transmission systems.

Color Phase: The correct timing relationship within a color display — color is considered to be in-phase when the hue is reproduced correctly.

Color Subcarrier: The 3.58MHz signal which carries color information. This signal is superimposed on the luminance level. Amplitude of the color subcarrier represents saturation and phase angle represents hue.

Component: The normal interpretation of a component video signal is one in which the luminance and chrominance information have been combined using one of the coding standards: NTSC, PAL, SECAM, etc.

Composite: A composite video signal is one which the luminance and chrominance information have been combined using one of the coding standards: NTSC, PAL, SECAM, etc.

Composite Sync: A signal consisting of horizontal sync pulses, vertical sync pulses, and equalizing pulses only, with a no-signal reference level.

Composite Video: A mixed signal comprised of the luminance (black and white), chrominance (color), blanking pulses, sync pulses and color burst.

Contrast: The range of light and dark values in a picture or the ratio between the maximum and the minimum brightness values. Low contrast is shown mainly as shades of gray, while high contrast is shown as black and whites with very little gray. It is also a TV monitor adjustment which increases or decreases the level of contrast of a televised picture.

Control Track: The portion along the length of a video tape on which sync control information is placed and used to control the playing back of the video signal.

Cross Color: This defect manifests itself as spurious rainbow patterns on highly textured objects like the one found on a striped shirt or tweed jacket. Cross-color defect is attributed to the make-up of the NTSC signal which mixes the high luminance and chrominance information in the same composite baseband spectrum.

Cross Luminance: More generally referred to as “Dot Crawl”, this defect appears as a dot pattern crawling up or hanging on the edges of color areas. This is also a result of the NTSC signal structure where the color information is mixed into the luminance signal.

C-Mount: A C-Mount is generally the standard mounting means for attaching a lens to a camera. Normally, a C-Mount uses a 1”-32 thread. With a C-Mount, the dimension from the banking shoulder of the lens mounting thread to the image plane of the camera is 0.689 inch regardless of the kind of lens used.

Cylindrical: A process by which magnetic tape is squeezed between two special rollers under a controlled environment for producing a smooth and glossy tape surface.

Candlepower: The unit measure of an incident light.

Character Generator: Reproduces recognized font styles from a computer type keyboard—usually provides multiple screen storage and is capable of background colorization from video display.

Chroma: The color information contained in a video signal, consisting of hue (phase angle) and saturation (amplitude) of the color subcarrier.

Chromatic Keying: The process of overlaying one video signal over another, the areas of overlap being defined by a specific range of color, or chrominance, one of the signals. For this process to work, the chrominance must have sufficient resolution, or bandwidth. Coded (composite) video systems do not have sufficient bandwidth for acceptable quality chroma keying, hence analog chroma keyers typically use RGB sources.

Chrominance: The color part of a signal, relating to the hue and saturation but not to the brightness of the signal, e.g. black, gray and white, have no chrominance, but any colored signal has both chrominance and luminance. U.V, Cr,Cb I:Q, (R-V, B-Y) represent the chrominance information of a signal.

Clipping: The process of shearing off the peaks of either the white or the black excursions of the video signal.

Specifications Subject to Change Without Notice
Cyclorama Lights: Cyclorama lights are designed to create a smooth lighting effect on a backdrop or cyclorama.

D-to-A Converter: DAC — A device used to convert digital signals to analog signals.

Decoding: A device used to recover the component signals from a composite (encoded) source. Decoders are used in displays and in various processing hardware where component signals are required from a composite source, i.e., composite chroma keying of color correction equipment, etc.

Degauss: To demagnetize recording and playback heads, tape.

Delay Line: An artificial or real transmission line or equivalent device designed to delay a wave or signal for a specific length of time.

Demagnetize: To remove magnetism, to erase magnetic tape — also see Degauss.

Demodulator: TV demodulators strip the video and audio signals from the carrier frequency. The composite video and audio can then be used as any other video or audio feed for studio use.

Depth of Field: The front to back zone in a field of view which is in focus in the televised scene. With a greater depth of field, more of the scene, near to far, is in focus.

Digital: Representation of data by discrete characters which can be regenerated easily with a minimum of noise and distortion.

Digital Components: Component signals in which the values for each pixel are represented by a set of numbers.

Dolly: A wheeled platform upon with a tripod is set to move camera toward or away from scene.

Drop-Out: Missing information from magnetic tape caused by dust, lack of oxide, etc.

Dubbing: Transcribing from one recording medium to another.

EBU: European Broadcasting Union.

Edit: To alter originally recorded material to prepare for presentation.

Edit Code: A tape retrieved code added to original recorded material utilizing a time structure — such as SMPTE time code.

EGA: Enhanced Graphics Adaptor.

EIA: Electronic Industries Association (formerly RMA or RETMA). The organization which determines recommended audio and video standards in the U.S.

EIA Sync: RS-170 sync; the standard waveform for broadcast equipment in the United States.

Encoded: The encoded video signal is formed by starting with an RGB signal from the color television camera. This RGB signal is then processed through an I and Q encoder which converts the RGB into a composite NTSC signal. The encoded signal has all of the elements of the composite video signal: sync, burst, chroma, and luminance.

Encoder: A device that superimposes electronic signal information on other electronic signals.

ENG: Electronic News Gathering.

Equalizer: (A) Equipment designed to compensate for loss and delay frequency effects within a system. (B) A component, or circuit, which allows for the adjustment of a signal across a given band.

Field: One-half of a television picture. One complete vertical scan of the picture, containing 262.5 lines. Two fields make up a complete television picture (frame). The lines of Field 1 are vertically interlaced with Field 2 for 525 lines of resolution.

Fill Light: A fill light is used in studio lighting to mask the "mistakes" created by the individual doing the lighting. It is the lob of the fill light to cover up and reduce the effects of the key light.

Film: Projections, multiplexers and a camera, used to transfer film to video.

First Generation: The first time the signal is recorded on tape, that tape is called first generation.

F Number: In lenses with adjustable irises, the maximum iris opening is expressed as a ratio, (focal length of the lens)/(maximum diameter of aperture). This maximum iris will be engraved on the front ring of the lens.

Focal Length: The distance from the center of the lens to a plane at which a sharp image of an object viewed at an infinite distance from the camera is produced. The focal length determines the size of the image and the angle of the field of view seen by the camera through the lens. That is the distance from the center of the lens to the pickup device.

Format: In recording of video, C, U-Matic, Betacam, M, Betacam SP, M-II, D1, D2, Betamax, VHS, Hi8, BVM and S-VHS are all current formats.

Frame: (A) The total area of the picture which is scanned while the picture signal is not blanked. (B) A complete TV picture consisting of two fields; a total scanning of all 525 lines of the raster area; occurs every 1/60 of a second. (1625 lines, 30 sec. in Europe and many other countries).

Fresnel Lens: A specially constructed lens which produces a soft-edged concentration of light; used as a lens in a spotlight lamp housing.

GBR; GBR Format: The same signals as RGB. The sequence is rearranged to indicate the mechanical sequence of the connectors in the SMPTE standard.

Gamut: The range of voltages allowed for a video signal, or a component of a video signal. Signal voltages outside of the range (i.e., exceeding the gamut) may lead to clipping, crossstalk, or other distortions.

Generations: The number of times a video clip is copied or processed. In analog systems, extensive efforts are made to keep generations to a minimum, since each copy or process adds noise and other artifacts. In digital systems, however, this requirement is no longer necessary, since each copy can potentially be perfect. This enables digital systems to work in quite different ways from analogue systems.

Genlock: Genlock is a process of sync generator locking. This is usually performed by introducing a composite video signal from a master source to the subject sync generator. The generator to be locked has circuits to isolate vertical drive, horizontal drive and subcarrier. The process then involves locking the subject sync generator to the master subcarrier, horizontal, and vertical drives so that the result is that both sync generators are running at the same frequency and phase.

Ghost: A shadowy or weak image in the received picture, offset either to the right or to the left of the primary image. It is the result of transmission conditions where secondary signals are created and received earlier or later than the primary signal caused by a reflected RF signal.

Gray Scale: A series of tones which range from true black to true white, it is usually expressed in 10 steps.

Grid: A cross hatch of metal pipes for hanging lights in a studio.

Ground: An electrical connection to the earth, generally through a ground bus. Also a common return to a point of zero potential, such as the metal chassis, a terminal or a ground bus.

HDTV: High Definition Television. The SMPTE in the USA and BTA in Japan have proposed a high definition television product standard: 1125 lines at 60Hz field rate 2.1 interlace: 16:9 aspect ratio: 30MHz RGB and luminance bandwidth: Trilevel syncs

HGA: Hercules Graphics Adaptor.

H8: 8mm professional NTSC recording format.

Horizontal Blanking: The blanking signal that is produced at the end of each scanning line.

Horizontal Drive: or Horizontal Sync: This signal is derived by dividing subcarrier by 227.5 and then doing some pulse shaping. The signal is used by monitors and cameras to determine the start of each horizontal line.

Horizontal Resolution: Smallest increment of a television picture that can be discerned in the horizontal plane. This increment is dependent upon the video bandwidth and is measured in frequency.

Hue: (A) Distinction between colors. Red, blue, green, yellow, etc. are hues. White, black, and gray are not considered hues. (B) The dimension of color that is referred to a scale of perceptions ranging from red through yellow, green, blue back to red.

IEEE: Institute of Electrical and Electronic Engineers.

IEEE Scale: A waveform monitor scale with the IEEE standards and the recommendations of the TV Broadcasters and Manufacturers for coordination of Video Levels.

Iris: The amount of light transmitted through a lens is controlled by an adjustable diaphragm, or iris, located in the lens barrel. The opening is referred to as the aperture, and the size of the aperture is controlled by rotating the aperture control ring on the lens barrel. The graduations on the lens barrel are expressed in terms of the focal length of the lens divided by the diameter of the aperture at that setting. This ratio is called the f-number.

Interface: (A) To connect two or more components to each other so that the signal from one is supplied to the other(s). Feeding a signal between units that run on different standards. (B) The place where two systems or a major and a minor system meet and interact with each other.

Jitter: Small and rapid variations in a waveform due to mechanical disturbances, changes in the characteristics of components, supply voltages, imperfect synchronizing signals, circuits, etc.

Kelvin: Also expressed as Kelvin's or K, the unit of measurement of the temperature of light. In color recording, light temperature affects the color values of the lights and the scene that they illuminate.
GLOSSARY (cont’d)

Keying: The process of replacing part of one television image with video from another image, i.e., chroma keying and insert keying.

Key and Back Lights: Key and Back Lights provide the main source of illumination on the subject from the front, side and rear. The most important lighting fixtures in the studio, they must provide maximum variety in beam shape and size and be easily adjusted to meet different lighting requirements.

Legal Signal: A video signal in which each component remains within the limits specified for the video signal format (i.e., does not exceed the specified gamut for the current format).

Looping: A term indicating that a high impedance device has been permanently connected in parallel to a video source.

LTCD (Longitudinal Time Code): This is another expression for the SMPTE time code signal recorded onto the third audio track of a videocassette tape.

Lumen: A measurement of light quantity, taken at the source of light against a predetermined constant. Lumens per square foot equals footcandles.

Lumens per square foot equals footcandles.

Lux: A unit of measuring the intensity of light. (1 FC = 10.76 lux).

M, M Format: Portable camera/recorder system developed by Panasonic; also used for just the recorder or the interconnect format. “M” actually refers to the manner in which the video tape is wrapped around the head drum. M format systems employ the Y, I, Q component set.

M1 (M2), MII Format: Second generation camera/recorder system developed by Panasonic; also used for just the recorder or the interconnect format. MII uses a version of the Y, R-Y, B-Y component set.

MAC: Multiplexed Analog Components; a system in which the components are time multiplexed into one channel using time domain techniques, i.e., the components are kept separate by being sent at different times through the same channel. There are many different MAC formats and standards.

Matta: A film term sometimes used in video production work to denote a keyed effect, an insert of video signal information keyed from one source into a second video signal.

Metal Tape: Tape using iron in its pure metallic form, instead of as an oxide, and offering excellent frequency response and wide dynamic range.

Minicam: Describes lightweight often self-contained portable ENG type cameras. Also Microcam, camcorder.

Moire: (A) A wavy or satiny effect produced by the convergence of lines. It usually appears as a curving of the lines in the horizontal wedges of a test pattern. It is a natural optical effect when converging lines in a television picture are nearly parallel to the scanning lines. (B) Optical disturbance caused by interference of similar frequencies.

Monitor: (A) A television that receives its signal directly from a VCR, camera, or separate TV tuner for high quality picture reproduction. Does not contain a channel selector. (B) A special type of television receiver designed for use with closed circuit TV equipment.


Multispec: A large bowl-shaped unit-often made of aluminum-into which a scene. Usually it represents 5 to 95 percent of the incident light, and it is a factor of the pickup device or the TV CRT reproduction. It is a factor of the pickup device or the TV CRT reproduction. It is a factor of the pickup device or the TV CRT reproduction. It is a factor of the pickup device or the TV CRT reproduction.

Neutral Colors: The range of gray levels, from black to white, without color. For neutral areas in the image the RGB signals will all be equal, in color difference formats the color difference signals will be zero.

NTSC: National Television System Committee: The organization which formulated the “NTSC” system; usually taken to mean the NTSC color television system itself, or its interconnect standards.

NTSC Color Bars: A pattern generated by the NTSC Generator, consisting of eight equal width color bars. Colors are white (75%), black (7.5% set-up level), 75% saturated pure colors red, green, and blue, and 75% saturated hues of yellow, cyan, and magenta. (Mixtures of two colors in 1:1 ratio without third color).

Overflow: TV picture beyond area of normal screen size.

Paint Pots: Controls on a colorizer for mixing colors electronically without third color.

PAGA: Professional Graphics Adaptor.

Pixel: Picture Element or Pixel Element; related to a particular image address in digital systems or to the smallest reproducible element in analog systems.

Primary Colors: Colors, usually three, which are combined to produce the full range of other colors within the limits of a system. All non-primary colors are mixtures of two or more of the primary colors. In television, the primary colors are specific sets of red, green and blue.

Pulse: A current or voltage which changes abruptly from one value to another and back to the original value in a finite length of time. Used to describe one particular variation in a series of wave motions.

Pulse Distribution Amplifier: An amplifier designed to boost the strength of the sync as well as other control signals to the proper level for distribution to a number of cameras, special effects generators, and terminal equipment.

Raster: The rectangular pattern of scanning lines upon which the picture is produced. The illuminated face of the TV monitor without the video information present.

Readout: A visual display of stored information.

Reflected Light: The scene brightness or the light being reflected from a scene. Usually it represents 5 to 95 percent of the incident light, and it is expressed in footlamberts.

Registration: An adjustment associated with color sets and projection TV’s to ensure that the electron beams the three primary colors of the phosphor screen are hitting the proper color dots/strips; also, a similar adjustment of the tubes in color cameras.

Resolution: (A) A measure of the ability of a camera or television system to reproduce detail. That is the number of picture elements that can be reproduced with good definition, it is a factor of the pickup device or the TV CRT characteristics and the video signal bandwidth. (B) Generally called horizontal resolution. It can be evaluated by establishing the limit to which lines can be distinguished on a test pattern. A larger resolution value means a broader frequency band of the video signal. (C) A measure of the greatest amount of detail that can be seen, or resolved, in an image. Often incorrectly expressed as a number of pixels on a given line. More correct is the bandwidth.

RGB, RGB Format, RGB System: Red, Green, and Blue: The basic parallel component set, in which a signal is used for each primary color; or the related equipment or interconnect formats or standards. The same signals may also be called “GBR” as a reminder of the mechanical sequence of connections in the SMPTE interconnection standard.

Rise Time: The time taken for a signal to make a transition from one state to another; usually measured between the 10% and 90% completion points of the transition. Shorter, or “faster” rise times require more bandwidth in a transmission channel.

RS-170A: EIA technical standard NTSC color TV.

Safe Title Area: 80 percent of the TV screen, from the center of the screen; that area of the display screen (and therefore of the camera scanning area) which will reproduce legible title credits no matter how it is adjusted.

Scanning: The rapid movement of the electron beam in a pickup device of a camera or in the CRT of a television receiver. It is formatted in a line-by-line manner across the photo sensitive surface which produces or reproduces the video picture. When referred to a video surveillance field, it is the pan or the horizontal camera motion.

Screen: A large bowl-shaped unit—often made of aluminum—into which a lighting unit is placed so that it will reflect light over a wide area.

SEG (Special Effect Generator): The SEG is used in multi-camera production and editing to change from one camera (or VCR) signal to another. Many different changes or “wipes” are possible. For this to work properly, all connected equipment must be driven by the same sync signal (often provided by a sync generator built into the SEG itself).

Signal-to-Noise Ratio—S/N: An S/N ratio can be given for the luminance signal, chrominance signal, and audio signal. The S/N ratio is the ratio of noise to actual total signal, and it shows how much higher the signal level is than the level of noise. It is expressed in decibels (dB), and the bigger the value is, the more crisp and clear the picture and sound will be during playback.

S-MAC: A MAC standard proposed for studio intraconnection by the SMPTE working group on Component Analog Video Standards: The S-MAC system uses time compression and time domain multiplexing techniques to convey Y, U, V, video signals (a version of Y, R-Y, B-Y).

SMPT-E: Society of Motion Picture and Television Engineers.

SMPT-E Format, SMPT-E Standard: In component television these terms refer to the SMPT-E standards for parallel analog component video interconnection. The SMPT-E has standardized both RGB and Y, P, P, color difference systems (a version of Y, R-Y, B-Y).

Snow: (A) Random noise on the display screen, often resulting from dirty heads. (B) TV signal breakup caused by weak video reception.

Split Screen: A special effect utilizing two or more cameras so that two or more scenes are visible simultaneously on each part of the screen.

Staircase: A pattern generated by the NTSC generator, consisting of equal width steps of +20, +40, +60, +80, and +100 IEEE units and a constant amplitude chroma signal at color burst phase. Chroma amplitude is selectable at 20 IEEE units (low stairs) or 40 IEEE units (high stairs). The staircase pattern is useful for checking linearity of luminance and chroma gain, differential gain, and differential phase.
Standard, Interconnect Standard: The specific signal configuration, reference pulses, voltage levels, etc. which describe the input/output requirements for a particular type of equipment. Some standards have been established by professional groups or government bodies (such as SMPTE or EBU). Others are determined by equipment vendors and/or users.

Stripe Filter: A chrominance tube system in which the target area of the tube is divided into sequential stripes for RBG and Y, and can therefore derive a color signal by using only one pickup tube.

Subcarrier: Also SC, 3.58, 3.58CW—This is the basic signal in all NTSC sync signals. It is a continuous sine wave, usually generated and distributed at 2 volts in amplitude, and having a frequency of 3.579545 MHz. Subcarrier is usually divided down from a primary crystal running at 14.31818 MHz, and that divided by 4 is 3.579545. All other synchronizing signals are directly divided down from subcarrier.

Subcarrier Phase Shifter: Special circuitry designed to control the phase relationships of the two portions of the encoded color signal so that they maintain their correct relationship during recording, transmission and reproduction.

Sun Shade: A metal cylinder attached to the end of a lens to keep light from entering the lens from the periphery of the angle of view.

Switcher: Term often used to describe a special effects generator; a unit which allows the operator to switch between video camera signals. Switchers are often used in industrial applications to switch between video cameras monitoring certain areas for display on one monitor; these kinds of switchers do not have sync generators.

Sync: Also Composite Sync—This signal is derived from a composite or combination of horizontal and vertical drives, with some slightly narrowed and delayed pulses as well as the addition of equalizing pulses. It is one of the more popular signals used in video systems today, and when used, is usually accompanied by subcarrier.

Tape: A medium capable of storing an electronic signal and consisting of backing, binder, and iron oxide coating. The orientation of the iron oxide determines whether the tape can be used for helical scan video recording.

TBC (Time Base Corrector): This piece of equipment corrects the timing irregularities that occur due to VCR playback. Time base correction is not necessary for direct playback from a VCR to a TV set.

Teleprompter: The trade name of a prompting device used on TV.

Test Pattern: Optical guide for TV camera reference alignment.

Time Base Stability: The maintenance of the scanning process to very close tolerances.

Time Code Editing: By recording a sequential time code along with the video and audio material, you can obtain a more precise reference for editing. Each frame has its own number or code which tells the time in hours, minutes, and seconds, and includes a frame number. The world standard code is called SMPTE (Society of Motion Picture and Television Engineers) and has also been adopted by the IEC (International Electrotechnical Commission). Time codes permit very fast and accurate editing. Automatic editing is possible under computer control.

Title Generator: Commonly a black and white camera is used to shoot titles which are electronically superimposed on the video picture while shooting or during editing. Title color can be selected and changed independently. More sophisticated equipment generates characters directly.

Tracking: The angle and speed at which the tape passes the video heads.

Transcoder: A device used to convert from one component set to another, e.g., to convert (Y, R-Y, B-Y) signals to (RGB) signals.

Triaxial: This is a connector comprised of three concentric conductors, an inner conductor, intermediate conductor and outer conductor, separated by dielectrics.

Tripod: A three-legged stand on top of which a camera is mounted.

Twix: This is a connector which has two insulated inner contacts (male and female) surrounded by a common ground.

Underscan: Decreases raster size H and V so that all four edges of the picture are visible on the monitor. Allows viewing of skew and tracking which would not be visible in normal (overscanned) mode. Also helpful when aligning test charts to be certain they touch all four corners of the raster. Line scan, when checking the alignment of multiplexer images from a film chain, underscan allows proper framing of the projected image going into the video camera.

Valid Signal: A video signal which will remain legal when transcoded to any other format. A valid signal is always legal, but a legal signal is not necessarily valid. Signals which are not valid will be processed without problems in their current format, but problems may be encountered if the signal is trans-coded to a new format.

VCR: Video Cassette Recorder.

Vertical Retrace: The return of the electron beam to the top of a television picture tube screen or a camera pickup device target at the completion of the field scan.

Vertical Sync Pulse: A portion of the vertical blanking interval which is made up of blanking level and six pulses (92% duty cycle at ~40 IEEE units) at twice the horizontal sync pulse repetition rate. Synchronizes vertical scan of television receiver to composite video signal. Starts each frame at same vertical position (sequential fields are offset 1/2 line to achieve interlaced scan).

VGA: Video Graphics Array.

Video: Pertaining to picture signals in a television system.

Video Distribution Amplifier: A special amplifier for strengthening the video signal so that it can be supplied to a number of video monitors at the same time.

Video Tape Recorder: VTR; an electro-mechanical device capable of recording, storing, and reproducing an electronic signal which contains audio, video, and control information.

Video Waveform: The pictorial display on a special oscilloscope of the various components of the video signal, used to check the integrity of the signal and signal components.

Vectorscope: Round (green) oscilloscope to align amplitude and phase of the 3 TV color signals (RGB).

Video Cassette: A self-contained video module played on a specially designed video tape recorder; similar in design to an audio cassette; houses two reels—supply and take-up with the tape running between them but connected to both.

VITC: (Vertical Interval Time Code): This is the same information as the SMPTE time code. It is superimposed onto the vertical blanking interval, so that the correct time code can be read even when a helical scanning VCR is in the Pause or Slow mode.

VTR: Video Tape Recorder. The term "VTR" includes reel-to-reel and cassette type.

Waveform Monitor: Oscilloscope used to display the video waveform.

White Level Set: White set; a camera control which establishes the luminance level for a color camera.

Wipe: Term used to describe the SEG effect of replacing a portion of video signal A with video signal B; also to erase a tape.

X, C1, C2: A generalized set of CAV signals: Y is the luminance signal, C1 is the 1st color difference signal and C2 is the 2nd color difference signal.

Y, I, Q: The set of CAV signals specified for the NTSC system: Y is the luminance signal, I is the 1st color difference signal and Q is the 2nd color difference signal.


Y, R-Y, B-Y: The general set of CAV signals used in the PAL system as well as for some encoder and most decoder applications in NTSC systems. Y is the luminance signal, R-Y is the 1st color difference signal and B-Y is the 2nd color difference signal.

Y, U, V: Luminance and color difference components for PAL systems; Y, B-Y, R-Y with new names; the derivation from RGB is identical.

Zoom: A zoom lens is unique because its focal length can be changed while the object being viewed remains in focus. Thus, a zoom lens can bring distant objects into clear view as a telephoto lens, but can also view a scene as a wide angle lens.

Zoom Ratio: A mathematical expression of the two extremes of focal length available on a particular zoom lens.
Resolution

It is a measure that shows to what extent details can be distinguished on the TV screen and it is generally called horizontal resolution. It can be evaluated by establishing the limit to which lines can be distinguished on a test pattern. A larger resolution value means a broader frequency band of the video signal.

Signal-to-Noise Ratio—S/N

An S/N ratio can be given for the luminance signal, chrominance signal, and audio signal. The S/N ratio is the ratio of noise to actual total signal, and it shows how much higher the signal level is than the level of noise. It is expressed in decibels (dB), and the bigger the value is, the more crisp and clear the picture and sound will be during playback.

The chrominance signal-to-noise ratio can be divided further into Amplitude Modulation (AM) and Phase Modulation (PM). AM shows the S/N ratio for the color saturation and PM shows the S/N ratio for the hue. AM and PM can be measured using a vectorscope (see illustration). AM is shown by the distance of movement of an indicator dot/line between the center and circumference of the vectorscope screen. PM is shown by the movement of the dot/line parallel to the circumference. In general, the smaller and clearer the dot/line of the vector is, the better the chrominance signal-to-noise ratio.

Y/C Delay

TV pictures can be roughly divided into two signals: the luminance signal (Y) and the chrominance signal (C). When recording or playing back pictures, VCRs separate these two signals, process them in different circuits and then combine them again. When mixing these two signals, it is necessary to adjust the timing because the Y signal and the C signal are processed at different speeds. Lag of this timing is called Y/C Delay and expressed in n sec. The smaller the Y/C Delay value is, the smaller the timing lag is and the clearer a picture can be obtained.
Specifications

**Video Performance (measured by R/P heads)**

**Component**

**Band width:**

- **Luminance:**
  - 30 Hz - 4.5 MHz +0.5 / -3.0 dB
  - $P_{L} 30$ Hz - 1.5 MHz +0.5 / -3.0 dB
  - $P_{L} 30$ Hz -1.5 MHz +0.5 / -3.0 dB
  - **50% Amplitude at 50% APL

- **Chrominance:**
  - **50% Amplitude at 50% APL

**S/N Ratio:**

- **Luminance:** 49 dB
  - Peak -to- peak video to RMS noise, interchange, unweighted
  - (Video S/N ratio at 50% gray level, Rohde and Schwarz Noise Meter unweighted with bandpass filter, 200 kHz - 4.2 MHz)
  - **AM 50 dB**
  - **PM 50 dB**
  - **AM Noise dB (AM) 20 log**
  - **PM Noise dB (PM) 20 log**

- **Chrominance:**
  - AM 50 dB
  - PM 50 dB
  - **AM Noise dB (AM) 20 log**
  - **PM Noise dB (PM) 20 log**

**DG:**

- Less than 2%

**DP:**

- Less than 2°

**K Factor:**

- Less than 2%

**Y/C Delay:**

- Less than 20 ns

**LF Linearity:**

- Less than 2%

**Composite Band width:**

- **Luminance:** 30 Hz - 4.5 MHz +1.0 / -3.0 dB
  - $P_{L} 30$ Hz - 0.5 MHz +0.5 / -3.0 dB
  - $P_{L} 30$ Hz - 0.5 MHz +0.5 / -3.0 dB

**Differential Gain (DG) and Differential Phase (DP)**

Both DG and DP show characteristics of distortion of the chrominance signal. They show in a numerical value, to what degree the chrominance signal is distorted in the amplitude direction (DG) and in the phase direction (DP) between the beginning and end of one horizontal scanning line. DG is expressed as a percentage (%) and DP is expressed in degree (°). The smaller the value is, the smaller the distortion is.

**K Factor**

This shows the fidelity with which an original wave form can be reproduced, and it is expressed as a percentage (%). For example, in the case of the picture shown in Fig. ©, the signal is as shown in Fig. © and frequency is very high for the white part. In this case, if the K Factor is bad, only the lower frequency range can be reproduced as shown in Fig. © and as a result, the white that is reproduced tends toward black, i.e. it is grayish. The closer the K Factor is to 0%, the better the fidelity is.
COLOR TELEVISION SYSTEMS IN USE OR PLANNED

NTSC
Stands for National Television System Committee. This committee standardized the NTSC color broadcasting system which is used today in the USA, Japan and elsewhere. When color broadcasting first became a commercial possibility, the NTSC system was developed to ensure that such color broadcasts could still be picked up on the black and white TV sets in use at the time.

PAL
Stands for Phase Alternation by Line. By reversing the relative phase of the color signal components on alternate scanning lines, this system avoids the color distortion that appears in NTSC reception. Otherwise, PAL closely resembles NTSC. This system is used in West Germany, Holland, Great Britain, Switzerland and other European nations. PAL TV sets cost a bit more than NTSC because of the need for a 1H (one line period) delay line.

SECAM
Abbreviation for Séquentiel Couleur à Mémoire, the line-sequential color system used in France, some Middle Eastern countries and Eastern Europe, including the Soviet Union. Here, the color information is transmitted sequentially (R-Y followed by B-Y, etc.) for each line and conveyed by a frequency modulated subcarrier that avoids the distortion arising during NTSC transmission. However, SECAM is not fully black and white compatible and requires a 1H delay line as in PAL reception.

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>COLOR SYSTEM</th>
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<th>COLOR SYSTEM</th>
<th>COUNTRY</th>
<th>COLOR SYSTEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afghanistan</td>
<td>PAL</td>
<td>Gibraltar</td>
<td>PAL</td>
<td>Pakistan</td>
<td>PAL</td>
</tr>
<tr>
<td>Albania</td>
<td>SECAM</td>
<td>Greece</td>
<td>SECAM</td>
<td>Panama</td>
<td>NTSC</td>
</tr>
<tr>
<td>Algeria</td>
<td>PAL</td>
<td>Guatemala</td>
<td>NTSC</td>
<td>Paraguay</td>
<td>PAL</td>
</tr>
<tr>
<td>Angola</td>
<td>PAL</td>
<td>Guinea</td>
<td>PAL</td>
<td>Peru</td>
<td>PAL</td>
</tr>
<tr>
<td>Antigua</td>
<td>NTSC</td>
<td>Haiti</td>
<td>SECAM</td>
<td>Philippines</td>
<td>NTSC</td>
</tr>
<tr>
<td>Arab Republic of Egypt</td>
<td>SECAM</td>
<td>Honduras</td>
<td>NTSC</td>
<td>Poland</td>
<td>SECAM</td>
</tr>
<tr>
<td>Argentina</td>
<td>PAL</td>
<td>Hong Kong</td>
<td>PAL</td>
<td>Portugal</td>
<td>PAL</td>
</tr>
<tr>
<td>Australia</td>
<td>PAL</td>
<td>Hungary</td>
<td>SECAM</td>
<td>Qatar</td>
<td>PAL</td>
</tr>
<tr>
<td>Austria</td>
<td>PAL</td>
<td>Iceland</td>
<td>PAL</td>
<td>Reunion</td>
<td>SECAM</td>
</tr>
<tr>
<td>Bahamas</td>
<td>NTSC</td>
<td>Ireland</td>
<td>PAL</td>
<td>Romania</td>
<td>PAL</td>
</tr>
<tr>
<td>Bahrain</td>
<td>PAL</td>
<td>Iraq</td>
<td>PAL</td>
<td>St. Kitts</td>
<td>NTSC</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>PAL</td>
<td>Iran</td>
<td>SECAM</td>
<td>St. Pierre &amp; Miquelon</td>
<td>SECAM</td>
</tr>
<tr>
<td>Barbados</td>
<td>NTSC</td>
<td>Iraq</td>
<td>SECAM</td>
<td>St. Vincent &amp; The Grenadines</td>
<td>NTSC</td>
</tr>
<tr>
<td>Belgium</td>
<td>PAL</td>
<td>ivory Coast</td>
<td>SECAM</td>
<td>Samoa (American)</td>
<td>NTSC</td>
</tr>
<tr>
<td>Belize</td>
<td>N.A.</td>
<td>Jamaica</td>
<td>NTSC</td>
<td>Saudi Arabia</td>
<td>SECAM &amp; PAL</td>
</tr>
<tr>
<td>Benin</td>
<td>SECAM</td>
<td>Japan</td>
<td>PAL</td>
<td>Senegal</td>
<td>SECAM</td>
</tr>
<tr>
<td>Belize</td>
<td>SECAM</td>
<td>Jordan</td>
<td>SECAM</td>
<td>Seychelles</td>
<td>PAL</td>
</tr>
<tr>
<td>Benin</td>
<td>SECAM</td>
<td>Kampuchea</td>
<td>N.A.</td>
<td>Sierra Leone</td>
<td>PAL</td>
</tr>
<tr>
<td>Bolivia</td>
<td>NTSC</td>
<td>Kenya</td>
<td>PAL</td>
<td>Singapore</td>
<td>PAL</td>
</tr>
<tr>
<td>Bophuthatswana</td>
<td>PAL</td>
<td>Korea</td>
<td>NTSC</td>
<td>Somalia Democratic Republic</td>
<td>PAL</td>
</tr>
<tr>
<td>Brazil</td>
<td>PAL</td>
<td>People’s Democratic Republic of Korea</td>
<td>PAL</td>
<td>South Africa</td>
<td>PAL</td>
</tr>
<tr>
<td>British Virgin Islands</td>
<td>NTSC</td>
<td>Kuwait</td>
<td>PAL</td>
<td>South-West Africa</td>
<td>PAL</td>
</tr>
<tr>
<td>Brunei Darussalam</td>
<td>PAL</td>
<td>Lebanon</td>
<td>SECAM</td>
<td>Spain</td>
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The current HDTV production standard that has been approved by ANSI* was developed over a five year period by the SMPTE*, which is the standards making organization for film and television engineering in North America. This standard was reviewed and recommended by the ATSC*, an American private sector organization to the U.S. State Department. Over 267 U.S. and Canadian engineers participated in the process.

Many changes were made from the original research that was done by NHK in Japan. The original NHK proposal was called 1125/59.94. Such a standard would have been much more saleable to U.S. broadcasters. However, U.S. engineers recommend 1125/60 as a more attractive standard for possible worldwide acceptance.

There is a desire among world broadcasters for a single standard, and as long as that desire exists, so does the possibility for one standard. 1125/60 is still the best standard for the U.S. by virtue of the transcodability of this standard and its easy conversion to film. The 1125/60 system represents a major step forward beyond the capabilities of conventional television technology. It has more than twice the number of lines and carries five times the amount of pictorial information of existing broadcasting systems to provide images of amazing resolution and clarity. Wide-screen images are also available—about 16:9 instead of the conventional 4:3 ratio—adding up to a vision medium of incredible immediacy. To obtain a sense of realism when viewing a television screen, it is necessary to maintain a wide (30°) field of vision. This requires a close viewing distance equivalent to three times the height of the screen. HDTV can be viewed from this proximity without the viewer becoming aware of the grain of the image. With conventional television systems, the image begins to appear grainy at distances closer than seven times the height of the screen.

An article in American Film quotes the president of BASELINE, an online information service for the entertainment industries, "Although there are several competing standards, I’ve seen the Sony 1125-line HDTV image and I’m here to tell you that this is really something special. What Cinerama pretended to be, HDTV is. Although the resolution is more than twice the current American standard, the psychological effect is nothing less than breathtaking. If you’re farsighted, take your glasses off. That’s the American television standard today. Now put them on. That’s HDTV."

He goes on to describe the fact that detail now counts for more than atmosphere within a picture frame: "You realize that the reason for the classic close-up and the two-shots during the last 90 years of film history is that that’s all anyone could effectively show. Now you can see the forest as well as the trees. Indeed, you can see the leaves on the trees."

From the very beginning the world engineering community agreed that production, transmission and display were separate issues. Establishment of an HDTV production standard has very little to do with how signals are sent or how pictures are displayed.

In December 1989, the first national HDTV produced sporting event (Leonard vs. Duran) was broadcast from Las Vegas, via satellite. The transmission used two currently available HDTV broadcast formats, the MUSE* system developed by NHK and HDB-MAC* developed by Scientific Atlanta.

The signal was uplinked to a Hughes Communications Satellite and then downlinked to Southern Bell in Miami. After decoding to RGB and sync the signal was distributed via fiber optic cable to the screening location.

The MUSE transmission system is a sophisticated band-compression system based on human visual acuity. It enables broadcast of HDTV programs by either amplitude modulation (terrestrial/cable) or frequency modulation (DBS/cable).

The HDTV signal is time compressed (TCI) for luminance and color signal to 8.1MHz for transmission and expanded to original HDTV signal at the receiver. HDB-MAC was used to encrypt the transmission.

1125/60 HDTV is a technology not limited to broadcast. It can be used by the motion picture industry in a theater network, in computers for high definition graphics, increased visual quality of medical imaging, storage and retrieval of art, photographs and detailed plans, as well as for broadcast. It presents far more business opportunities for U.S. companies than any other proposed standards. And that means growth for the U.S. economy.

- ANSI—American National Standards
- ATSC—American Television Standards
- HDB-MAC—High Definition B-Multiplex Analog Component
- HDTV—High Definition Television
- MUSE—Multiple Sub-NYQUIST Sampling Encoding
- NTSC—National Television Standards
- PAL—Phase Alternation by Line
- SMPTE—Society of Motion Picture and Television Engineering
- TCI—Time Compressed Integration

Almost 90 percent of the digital VTRs delivered in the U.S. have been to post-production houses who need to stay "state-of-the-art" to be competitive in their businesses. Post houses have chosen to invest in digital because of the novelty as well as the return on investment, notwithstanding the quality and performance of the machines.

Many television stations which have begun the digital conversion have done so for very different reasons. Primarily, TV stations have invested in digital as a solution providing cassette-based automation for their operations. They are also stations seeking to replace one-inch Type C machines, and stations that do program production and also require an effective archiving system for the programs they produce.

Prior to the introduction of digital VTRs, the signal path of every VTR was analog. Analog VTRs can make playback recordings that are indistinguishable from a live camera shot. There are, however, many limitations inherent in the analog recording process. Most notably, all analog formats are subjective. That is, they require constant analysis and examination to determine acceptable performance. There are quality variations between machines that require operator and maintenance expertise to keep performance at acceptable levels. We learned to live with these limitations, since there was no practical way around them. But today, digital technology provides an alternative. The alternative is not a new "high quality" format. It is an entirely new recording process.

Analog VTRs require extensive operator setup for recording and playback. Tracking, head equalization, and audio and video signal levels all need checking for every tape. Reel-to-reel formats require a complex threading procedure. Operator expertise always varies, and complexity adds to costs. Finally, audio has been a "second thought" in the analog world. Audio quality never matched video quality.

Digital signal recording offers solutions to these problems by eliminating the subjectivity. Either the digital VTR performs acceptably, or not. Performance is consistent and not dependent upon operator or maintenance expertise. CD-quality audio can be recorded on the same cassette as video. And, for most practical purposes, digital is error free. It is totally different from analog technology.

**How Did We Get to Digital?**

The applications of digital technology to video and audio equipment have evolved as the packaging of digital circuits has changed. In the mid-'70's the digital time base corrector was the first device to process a video signal in the digital domain. These TBCs contained enough memory to hold several lines of digitized video sampled at three, and later, four times the frequency of the NTSC subcarrier.

Today's VLSI (very large scale integration) technology is what has made the implementation of digital signal processing practical. VLSI provides the following:

- Use of VLSI chips results in fewer chips used within a piece of equipment. Also, fewer separate boards are required so there's less interconnect harness wiring.
- VLSI circuits require less power than a large number of discreet components or low density ICs.
- Digital circuits have few, if any, adjustments. This makes boards truly interchangeable without any lengthy system alignments often required for analog circuits. This in turn significantly reduces the amount of required routine maintenance.

**The Benefits of Digital**

Digital is computer-based and therefore lends itself to an unlimited number of future applications. VTRs, monitors, camera controls, switchers, effects equipment, on-air playback systems, transmission, all video and audio equipment is now being designed to function in a digital world.

The subjective concerns of the analog world are greatly reduced. Digital VTRs contain a minimum of circuit adjustments. Digital circuits only need to distinguish between a logic "one" and "zero." The voltage or current levels representing the logic states are regenerated in each circuit. There are no gain, frequency response or distortion adjustments needed in these circuits. The performance level of a digital VTR does not change over time. There is no circuitry drift.

Digital error correction and data shuffling provide a level of protection against tape dropouts that exceeds anything available with analog VTRs. The quality of the signal path through the VTR becomes independent of the tape itself, as long as the off-tape data error rate does not exceed the range of the error correction scheme.

Digital VTRs are simpler to operate than analog VTRs. Being cassette based, they are easier to load than Type C reel-to-reel machines. There are also fewer setup adjustments for operators to make. Overall, VTR performance is less operator dependent.

A level of internal diagnostics not found on analog counterparts is also possible. In addition to microprocessor-driven control systems that can perform power-on system checks, monitor the loading and threading cycles and keep an eye on servos, digital VTRs can compare the input signals with the confidence playback signals during recording, and any discrepancies can generate a warning.

From the outset, digital recording also provides higher signal quality than analog since machine performance is primarily determined by the A/D and D/A conversion circuits. First generation video signal-to-noise (S/N) ratio is higher than Type C. Digital video band-
Width slightly exceeds that of NTSC, allowing more high frequency information (picture detail) to be recorded. This higher S/N ratio is maintained when replicated digitally, providing superior multigeneration performance.

**Exclusive Benefits**

Some benefits like analysis and correction of errors are unique to the digital world. Superior multigeneration performance means we’re making clones rather than dubs. Digital, however, offers a great deal more. It offers pre-read capability, a powerful feature allowing many new applications to be explored. It allows for CD quality audio performance to be recorded on the same tape and by the same machine that records the video signal. No longer is audio quality secondary to video quality. This audio quality is easily attained without the complex encode/decode noise reduction systems frequently used on analog machines. Frequency response is ruler-flat; dynamic range is over 90dB, and stereo channel phasing is scrupulously maintained. For program time compression/expansion, some digital VTRs offer the advantage of internal digital pitch correction, eliminating the need for any additional external boxes.

Sony digital VTRs offer a special editing mode called pre-read that allows a single VTR to act as a recorder and player at the same time. The video or audio playback signal is output from the machine, sent to an external device for processing and then returned to the input of the VTR for re-recording on the same place on the tape it originally came from. Operations requiring two VTRs can now be done with just one. Video applications include multi-layering, titling and color correction. Audio applications include functions such as sweetening and mixdown. The original lip sync is always maintained.

**Digital Signal Transmission**

Currently, most digital devices have analog inputs and outputs for interfacing with existing analog hardware. Keeping signals in the digital domain eliminates the distortion inherent in repeated A/D and D/A conversions. Digital transmission of signals between devices eliminates analog problems such as hum and noise pickup, gain variations and the need for equalization.

Most digital transmission today is accomplished with parallel interfaces which transmit each bit of a sample plus a clock on separate pairs of wires. This requires a thick cable and large connector to accommodate the large number of signals. The biggest drawback, however, is distance limitation—about 100 feet. This may be acceptable for wiring digital islands within an analog system, but it is not good enough for total digital system implementation.

Serial transmission using a standard video coaxial cable and BVC connections presents a better way to accomplish digital transmission. In serial transmission, each bit of a signal sample is sent sequentially, so only a single pair of wires is required. Its big advantage, though, is long distance transmission—up to about 1500 feet. Transmission of video and four channels of audio on the same cable is possible. Existing television coaxial (Belden 8281) can be used without the need for rewiring. Serial digital signals can even be patched around a facility using standard video jackfields and patchcords.

**System Considerations**

Digital Library Management Systems for automated playback of programs and spots at broadcast facilities permit, for the first time, a totally transparent path from the production of an edited master to post-production facility to on-air broadcast of a digitally recorded tape. Master tapes can be digitally cloned for distribution with no quality loss. They can then be aired on digital VTRs that are part of the Library Management System.

Digitally recorded signals can also be easily and reliably transcoded to other digital formats. The conversion boxes are completely digital; there are no A/D, D/A conversions. There are also no circuit adjustments. Transcoding between two digital signal formats such as D-1 and D-2 is transparent. Transcoding between either of these signal formats and any others that may be developed in the future will also be transparent. Therefore, using digital for archiving is highly desirable. Since there are only ‘‘ones’’ and ‘‘zeros’’ on the tape, accurate signal recovery is enhanced. Error correction algorithms ensure that within limits, unrecoverable data is regenerated perfectly. This allows more faithful replication and replay.

Digital technology also offers the potential to permit external computers to monitor and detect data errors. Acquisition and analysis of this data will provide a powerful quality control tool and aid in machine maintenance.

**The Digital Conclusion**

Digital VTRs have many of the same operational capabilities and features as their analog counterparts. They, however, require less equipment, less expertise, less time and less patience to perform the same functions. If they save time, expertise and equipment, then in the long term they can also save money. They offer consistent quality and provide equally high audio and video performance on one machine, one cassette, often eliminating the need for separating their post-production requirements.

According to current users, digital VTRs are easier to operate, provide for an easier editing process and require less maintenance. This, in turn, enhances creativity. Being computer based, digital VTRs can be deployed for many future applications. Best of all, the digital VTRs of today operate in either analog or digital environments. They are the means by which television stations and production facilities can begin to build a foundation today in the digital world of tomorrow.

**Specifications Subject to Change Without Notice**
Metal Particle Tape
The performance advantages of Betacam SP can largely be attributed to the latest advances in metal particle tape technology. Betacam SP uses metal particle tape, which boasts a finer particle structure, to enable the use of higher carrier frequencies, affording a greater reproducible bandwidth. In addition, its magnetic properties offer a substantial improvement in the signal-to-noise ratio. Sony's years of practical experience in broadcast videocassette systems helped influence the choice of the 86μm luminance track width for Betacam. Its high reliability and durability, even in the harsh environment of ENG/EFP, has repeatedly proven to be superior to other small formats. And, thanks to the adoption of a large cassette, the maximum playing time has been extended to more than 90 minutes.

Betacam Format
Compressed Time Division Multiplex (CTDM)
After an extensive examination of several possible systems, Sony has adopted the Compressed Time Division Multiplex (CTDM) System, which provides outstanding picture quality and can fully meet the severe requirements of users current and future. The input video signal is separated into luminance (Y) and chrominance components (R-Y, B-Y). The luminance and chrominance components are recorded with separate video heads on separate tracks. (Monochrome signals are automatically recorded only on the Y track.)

The bandwidth is wide enough to record the luminance signal on 1 track. The chrominance components (R-Y, B-Y) each require 1.5MHz of bandwidth in order to fulfill the worldwide requirement. To record both R-Y and B-Y signals on 1chrominance track with no crosstalk, Sony incorporated the Compressed Time Division Multiplex System into the Betacam recording format. Time compression enables both R-Y and B-Y to be recorded on 1 track with twice the frequency bandwidth of a single FM carrier.

Recording Process
Compressed R-Y and B-Y signals are multiplexed alternately. The R-Y and B-Y signals are delayed 1H compared to the Y signal through the time compression process.

Playback Process
In the playback process, R-Y and B-Y signals are restored to their original forms. As a result, R-Y and B-Y signals are delayed a total of 2H. This 2H time difference is compensated for through the delay line built into the Betacam VTR. The Y/C phase difference is also corrected based on the information of Y/C timing pulse edge. (The time difference is guaranteed to be less than ± 10 nsec.)

FM Carrier Frequency Allocation
The input video signal in the Betacam format is separated into luminance (Y) and chrominance (R-Y, B-Y) signals, and each is recorded on separate tracks. The FM carrier frequency for each channel is high enough to reproduce a 4.5MHz video bandwidth in the luminance channel and 1.5MHz in each of the chrominance channels. Thus, the FM carrier frequency for the luminance channel is 5.7-7.7MHz and 4.8-6.35MHz for the chrominance channels. 2 subcarrier signals, at 310kHz and 540kHz, which are used for the 2 AFM audio channels, are multiplexed with the chrominance signals.

Longer Playing Time
The Betacam SP studio VTR can accommodate 2 cassette sizes. These cassettes are available with a choice of standard oxide or metal particle tape. The small size cassette is the same size as the conventional Betacam cassette, and offers more than 30 minutes of running time. The large size cassette provides more than 30 minutes of running time for studio based applications. The transport mechanism automatically detects the size of the cassette loaded and aligns the reel centers accordingly.

4 Audio Channels
Betacam SP provides 4 audio channels. The 2 longitudinal tracks recorded on the upper edge of the tape provide the greatest degree of editing flexibility and offer the Dolby* C-Type NR (Noise Reduction) system. The 2 additional AFM channels, which are simultaneously recorded with the video chrominance information by the rotary video head, offer superior characteristics. Due to the wide dynamic range, they are particularly suitable for field acquisition. Many transmission applications also benefit from these audio tracks, particularly those involving stereo, due to the superior phasing qualities and vastly reduced wow and flutter.

Compatibility
Because Betacam SP is an extension of Betacam, users can naturally and gradually expand their applications without making existing Betacam equipment and recorded material obsolete. In addition, the tape speed, track width, and FM deviation of Betacam SP are the same as those of Betacam, meaning that there are no key characteristics that may interfere with format compatibility. In short, Betacam SP VTRs, while designed to provide maximum performance using metal particle tape, are also capable of recording and playing back standard Betacam (oxide) tapes. Additionally, all existing Betacam VTRs can also play back metal particle tape recorded by the Betacam SP format without any problem.
THE MII FORMAT
Courtesy of: JVC Professional Products Company

Higher picture quality. Longer recording time. Superior systems flexibility. Greater space saving. These features and more make MII the industry's most cost-effective choice.

MII is a new 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 (Chroma Time-Compressed Multiplexing) component video recording method, and high-density metal particle tape in a cassette approximately the size of a VHS tape all while maintaining superior quality.

CTCM Component Recording
The MII format maintains the original quality over several generations through the CTCM (Chroma Time-Compressed Multiplex) component recording system. The luminance (Y) and chrominance (C) components of the video signal are recorded on separate tracks so they are completely independent, with the luminance signal frequency-modulated before recording.

To record the chrominance information, first, the R-Y and B-Y color difference signals for each horizontal line are obtained, then compressed to half their lengths on their time axes. After frequency modulation, these components are recorded one after the other on the C track.

Then, after being compressed to half their lengths, the R-Y and B-Y signals are delayed by 1H and 1.5H before they are recorded, so that the Y and C signals are recorded on successive tracks. The video signal processing system and the principles of recording behind MII are shown in Fig. 1 and 2.

By combining the CTCM recording system with new high-density metal particle tape, a greatly increased recording capacity has been achieved, with a recording time of 90 minutes using a single cassette. Imagine what that could mean to ENG/EFP applications!

Tape pattern
Fig. 4 shows the pattern of tracks recorded in the MII format. The luminance (Y) and chrominance (C) components of the video signal are recorded by separate heads on individual tracks. This provides a guard band between the Y and C tracks, preventing crosstalk and interference. In addition to the independent Y and C tracks, there are two longitudinal audio tracks for stereo sound, and separate tracks for the recording of time codes and control signals.

Metal Particle Tape
The tape used in the MII format is a metal particle tape with magnetic characteristics that are superior to those of cobalt ferric oxide tapes used in other video recording systems. This type of tape delivers a much higher recording density.

The magnetic material used to coat the tape consists of extremely small particles of a pure metal material, in addition to higher coercivity, the C/N (carrier-to-noise) ratio is 10 dB higher than that of cobalt ferric oxide tapes, as can be seen from Figs. 5 and 6.

Specifications Subject to Change Without Notice
A multi-generation dubbing capability and a time code editing capability have always been required in program origination applications since the beginning of video production. The new U-matics provide SP technology (SP format, innovative video circuits, sendust audio head, and type-C Dolby NR), which offers superior video/audio quality and multi-generation dubbing capability, and a time code editing capability to answer these requirements.

1. Superior Video

Program information for distribution or transmission is created in a process which includes shooting, editing, and distribution. Even with minimal editing, the process requires three or four generations. Therefore, an editing VTR is required to have multi-generation recording capabilities to maintain a high quality picture throughout the program origination process. Picture quality of the SP U-matic offers improvement over conventional U-matic not only because of the improvement in the recording format, but also due to the improvement of the video circuits for playback and editing. All of this was done while maintaining compatibility with the conventional U-matic (NTSC)/High Band U-matic (PAL).

SP Format

The luminance FM carrier frequency of the SP format was shifted up 1.2MHz (NTSC)/0.8MHz (PAL) from the conventional format (NTSC)/High Band format (PAL) to realize 330 TV lines (NTSC)/300 TV lines (PAL) of horizontal resolution. The downconverted subcarrier frequency and the luminance FM carrier deviation were not changed. Therefore, SP U-matic is completely compatible with the conventional U-matic (NTSC)/High Band U-matic (PAL). SP U-matic videocassettes are required to guarantee high frequency bandwidth on SP recordings. The detection holes on the SP U-matic videocassette allow the VTR to change to the SP recording mode automatically.

In the PAL system, three U-matic formats, SP, High Band, and Low Band, are offered to meet different user demands. Since SP and High Band formats were developed to improve total picture quality to meet ENG applications for TV stations, the compatibility between SP/High Band and Low Band U-matics can not be obtained. The newly released economical SP U-matics, the VO-9800P and VO-9850P, which can playback in the SP, High Band, and Low Band formats, and record in the SP or High Band format, can offer superior picture performance and, therefore, are convenient for Low Band U-matic users.
New Y/C Separator
The new Y/C separator of the SP U-matic reduces the
cross color leakage of luminance signals into
chrominance signals and vice-versa via the 3-line comb
filter (NTSC) and the horizontal correlator (NTSC/PAL).

Therefore, chrominance ringing due to cross color can
be greatly reduced. Furthermore, the luminance signals
are sent through a phase equalizer, which reduces signal
degradation and luminance ringing caused by dubbing.

**Fig. 3** Block Diagram of Y/C Separator (NTSC)

**Fig. 4** Block Diagram of Y/C Separator (PAL)

New Noise Canceller System (VO-9850/9800)
The SP U-matic uses a non-linear pre-emphasis circuit
and a non-linear de-emphasis circuit. The de-emphasis
circuit uses a negative feedback loop using the same
pre-emphasis circuit that is employed in the record
mode. The de-emphasis circuit can therefore completely
reverse the characteristics of pre-emphasis. The
reproduction characteristics of the demodulated wave
form are greatly improved. Therefore, the SP U-matic can
reduce correlated noise components which appear in
recording and improve the S/N ratio.

**Fig. 5** Basic block diagram of negative feedback
non-linear de-emphasis

Specifications Subject to Change Without Notice
CCD Based Dropout Compensator
Dropout of video signals is compensated for by a CCD based 1H delay line circuit to improve picture quality. The result is a greatly simplified circuit with high reliability.

The improvements of the SP U-matic are not only found in the increase of the horizontal resolution, which has also been done for home use VTRs, but also in the improvement of the demodulation registration characteristics and the reduced cross color, luminance and chrominance ringing, and signal degradation. Therefore, the SP U-matic improves dubbing quality to offer high quality pictures for program origination and production.

2. Superior Audio

New Sendust Audio Head
The new sendust audio head is compact and improved to reduce the contour effect and channel to channel cross talk. Also, the form of the PB/REC heads and erase head is improved and the wrap angle is increased so that the SP U-matic offers improved signal pick up characteristics, frequency response up to 15kHz ± 3dB, and an S/N ratio of more than 52dB (SP mode). Furthermore, SP U-matic can offer stable audio characteristics during rigorous, long-term operation.

Type-C Dolby Noise Reduction System
The type-C Dolby Noise Reduction System greatly improves the S/N ratio. Dolby Noise Reduction ON/OFF can be selected only during SP mode recording. In the playback mode, the SP U-matic detects a pilot signal from the recorded tape and automatically switches to the Dolby ON mode.
The Super VHS format follows in the VHS tradition, but offers dramatically improved picture quality, including greater horizontal resolution and improved S/N ratio. Further improvement in picture quality is achieved by employing separate Y (luminance) and C (chrominance) terminals for both input and output. The S-VHS picture quality is high enough for professional video production. And there are numerous other advantages for the professional, too. S-VHS cassettes are identical in size to the standard VHS cassettes and, therefore, much lighter and more compact than those of other formats, running costs are lower, and the picture quality is comparable in most respects.

**Horizontal Resolution of More Than 400 Lines**
The conventional VHS format offers only about 240 lines of horizontal resolution, far short of the 330 or so that current color TVs are capable of. But S-VHS increases this to well over 400 lines by raising the FM carrier frequency of the luminance signal from the 3.4-4.4MHz band for standard VHS to 5.4-7.0MHz for S-VHS. The result is breathtaking detail and clarity.

A 210% increase in the peak white level enhances the picture quality even more, with excellent delineation of image borders and highly faithful reproduction of detail.

**Improved S/N Ratio**
When resolution increases, so does noise. S-VHS solves this problem by broadening the luminance signal bandwidth (frequency deviation) from 1MHz to 1.6MHz, thus improving the S/N ratio proportionally. And, the nonlinear sub-emphasis system further increases the noise-reduction effect by varying its emphasis according to the amplitude of the incoming signal and making it possible to apply the optimum amount of emphasis to signals of finely divided levels.

**Separate Y/C Input and Output**
Cross-color (rainbow-colored noise in images containing checkered or striped patterns) and dot interference (dots aligning the borders of colors) were inevitable in composite signal input and output because of mutual interference between Y (luminance) and C (chrominance) signals. To prevent this, the S-VHS system separates the Y and C signals and applies them to the TV set in separate form. This advance paves the way for high-resolution monitors, cameras, and editing equipment with separate Y/C terminals that minimize picture degradation to make possible edited results with excellent picture quality. Together, they offer great potential for the future.

**High Performance S-VHS Tape**
The S-VHS format utilizes cobalt-coated ferric-oxide tapes similar to those used in conventional VHS cassettes, but incorporates finer magnetic particles and a high-density charge for increased (900-Oe) coercivity and greater high-frequency output. This combination satisfies the technical requirements for S-VHS recording while maintaining VHS compatibility by the use of the same tape and cassette format as the standard VHS system. The super-smooth surface of the magnetic coating and special back coating for improved runnability also boost tape travel stability to reduce jitter and enhance durability.

**S-VHS/VHS Compatibility**
S-VHS video tapes can be recorded and played back on conventional VHS recorders in the standard VHS format with the best possible performance results. S-VHS VCRs can also record on and play back conventional VHS tapes. For recording, simply set the selector to S-VHS or VHS, depending on the type of cassette to be used. For playback, the correct system is selected automatically. S-VHS cassette shells are of standard VHS design, with a single hole added for identification.

### Recording

<table>
<thead>
<tr>
<th>TAPE</th>
<th>VCR</th>
<th>S-VHS VCR</th>
<th>VHS VCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>S-VHS tape</td>
<td>VHS mode</td>
<td>S-VHS mode</td>
<td>VHS mode</td>
</tr>
<tr>
<td>VHS tape</td>
<td>VHS mode</td>
<td>VHS mode</td>
<td>VHS mode</td>
</tr>
</tbody>
</table>

### Playback

<table>
<thead>
<tr>
<th>TAPE</th>
<th>VCR</th>
<th>S-VHS VCR</th>
<th>VHS VCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>S-VHS tape</td>
<td>S-VHS mode</td>
<td>not possible</td>
<td></td>
</tr>
<tr>
<td>S-VHS tape</td>
<td>VHS mode</td>
<td>VHS mode</td>
<td></td>
</tr>
<tr>
<td>VHS tape</td>
<td>VHS mode</td>
<td>VHS mode</td>
<td></td>
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</table>
THE Hi8™ VIDEO SYSTEM (NTSC)

Courtesy of: Sony Communications Products Company © Sony

The Hi8 video system offers improved picture quality. Since picture quality is determined by several factors, Hi8 combines various technologies to create an image which is better overall. This is important for lifelike original recordings, and is critical for more accurate edited versions of the original.

**Hi8 Metal-P Tape**

Hi8 Metal-P tape offers a density of magnetic material higher than that of standard 8mm video tape. The orientation of the metal particles is more uniformly vertical. This allows Hi8 Metal-P tape to provide the high output and high frequencies demanded by the Hi8 video system.

**More Than 400 Lines of Horizontal Resolution**

The luminance carrier frequency has been shifted from 5MHz in the standard 8mm system up to 7MHz in the Hi8 system. This means the Hi8 system is capable of recording more detailed visual information.

**Improved Signal-to-Noise Ratio**

When the frequency deviation is expanded from 1.2MHz to 2.0MHz, the same noise is reduced in percentage so that it becomes less conspicuous.

**More Accurate Reproduction**

By using a new pre-emphasis system together with an already high white clip level (220%), original pictures are reproduced more accurately and editing quality is improved.

**Compatibility**

Hi8 video ensures upward compatibility with the standard 8mm system. That is, Hi8 equipment automatically switches to record in the standard 8mm system on standard 8mm tape. It will switch Hi8 recording and playback only on Hi8 tapes. Standard 8mm equipment will not play back Hi8 recordings.

### Recording

<table>
<thead>
<tr>
<th>Blank Tape</th>
<th>Equipment</th>
<th>Recording System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hi8 Tape</td>
<td>Hi8 Equipment</td>
<td>Automatically switches to Hi8 video system.</td>
</tr>
<tr>
<td>Standard 8mm Tape</td>
<td>Standard 8mm Equipment</td>
<td>Automatically switches to standard 8mm video system.</td>
</tr>
<tr>
<td>Hi8 Tape</td>
<td>Standard 8mm Equipment</td>
<td>Records in standard 8mm video system.</td>
</tr>
<tr>
<td>Standard 8mm Tape</td>
<td>Standard 8mm Equipment</td>
<td>Records in standard 8mm video system (not recommended).</td>
</tr>
</tbody>
</table>

### Playback

<table>
<thead>
<tr>
<th>Recorded Mode on Tape</th>
<th>Equipment</th>
<th>Playback Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hi8 Video System</td>
<td>Hi8 Equipment</td>
<td>Automatically switches to Hi8 video system.</td>
</tr>
<tr>
<td>Standard 8mm Video System</td>
<td>Standard 8mm Equipment</td>
<td>Automatically switches to standard 8mm video system.</td>
</tr>
<tr>
<td>Hi8 Video System</td>
<td>Standard 8mm Equipment</td>
<td>Plays back in standard 8mm video system.</td>
</tr>
<tr>
<td>Standard 8mm Video System</td>
<td>Standard 8mm Equipment</td>
<td>Cannot be played back correctly.</td>
</tr>
</tbody>
</table>

### Specifications

<table>
<thead>
<tr>
<th>Hi8 Video System</th>
<th>Standard 8mm Video System</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Video Signal Recording System</strong></td>
<td><strong>2. Tape</strong></td>
</tr>
<tr>
<td>Luminance Carrier Frequency in Hz</td>
<td>Hi8 Metal Evaporated or Hi8 Metal Particle</td>
</tr>
<tr>
<td>White Peak Frequency in Hz</td>
<td>Hi8 Metal Particle</td>
</tr>
<tr>
<td>Sync Tip Frequency in Hz</td>
<td>Hi8 Metal Particle</td>
</tr>
<tr>
<td>Frequency Deviation in Hz</td>
<td>Hi8 Metal Particle</td>
</tr>
<tr>
<td>Pre-Emphasis Time Constant in sec</td>
<td>Hi8 Metal Particle</td>
</tr>
<tr>
<td>White Clip in %</td>
<td>Hi8 Metal Particle</td>
</tr>
<tr>
<td>Chroma Signal</td>
<td>Hi8 Metal Particle</td>
</tr>
<tr>
<td>Video Input/Output</td>
<td>Hi8 Metal Particle</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>3. Audio Signal Recording System</strong></th>
<th><strong>4. Recording/Playback Time</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>AFM Recording (PCM Stereo Optional)</td>
<td>Max. SP 2 hours</td>
</tr>
<tr>
<td>AFM Recording (PCM Stereo Optional)</td>
<td>Max. SP 2 hours</td>
</tr>
</tbody>
</table>

High performance Hi8 Metal-P (Metal-Particle) tape has been specially developed for the Hi8 video system.

Specifications Subject to Change Without Notice
VIDEO EDITING — WHAT'S THE PROBLEM?

by Steve Mayer
Founder and Chief Technology Officer, Digital F/X, Inc.

Video tape recorders—that's the problem. VTRs are great for studio and field recording and for distribution, but they are not optimal as editing devices. They're slow, expensive, prone to wearing out, and tend to wear out source tape.

What would an ideal edit recorder look like? It would have infinitely fast shuttle times, zero pre-roll time, and be able to reassemble an edit decision list instantaneously. Of course, it would also cost less than a traditional tape recorder. Am I dreaming? No—computer users have been enjoying this kind of speed and power for years. Now video professionals can have this dream edit recorder in the form of a non-linear editing system.

What is non-linear editing? Non-linear editing lets you trim edits without queuing and pre-roll, access any frame of video without search time, and trim a scene that has already been laid down without having to reassemble the edit list or lose a generation of video quality. It also saves you wear and tear on your expensive decks and videotape because you use them only for final assembly of a master tape, not for shuttling back and forth in search of exact edit points.

But, what exactly is non-linear editing? In practice, non-linear editing is editing done using video footage that has been pre-recorded onto a computer or video disk instead of videotape. Let's take as an example Digital F/X's desktop video production system, Video F/X, which includes non-linear editing capability as a standard feature. With Video F/X, video footage is digitized onto a computer disk. An editor then works with low resolution images on the Macintosh II screen to make edit decisions: trimming and arranging scenes, adding dissolves or wipe effects, and incorporating graphics, animation and audio.

All this takes advantage of the instant response time of the computer's random access memory. At any point in the process, the production can be previewed instantly, playing back from disk in real time. Editors are free to experiment without worrying about the wasted time involved in reassembling a recorded tape.

The end result of non-linear, or disk-based, editing is an edit decision list, which Video F/X uses to automatically assemble a final master tape. For the highest picture quality, the master tape is assembled using tape recorders and the original source tape.

Try non-linear editing once and you'll be hooked. Going back to linear editing would be like giving up your compact disc player and listening only to your cassette deck. Just try finding the right selection on a cassette tape after you've been able to randomly access selections on a CD almost instantaneously, playing them back in any order you choose! Non-linear editing is an idea whose time has come.

About the Author: Steve Mayer is the founder and chief technology officer of Digital F/X, Inc. Digital F/X has been at the forefront of the revolutionary merging of video and computer technology. In 1990, Digital F/X received an Emmy from the National Academy of Television Arts and Sciences for its video workstation technology, embodied in its Composium integrated digital production suite. In July 1990, Digital F/X introduced Video F/X, the first complete video production system for the Macintosh II. In April 1991, non-linear editing was added to Video F/X as a standard feature.
EDITION TECHNIQUES
Courtesy of: Panasonic Communications & Systems Co.

Assemble Editing
In assembly editing, you add new material to the end of a previously recorded portion. When creating an entire program with assembly editing you build it from beginning to end. New video, audio ch. 1 and ch. 2, and a control track are added at the same time. Assembly editing can be used when recording live from a camera or recording from a source tape. As shown in the illustration, program material A has been recorded. To that you would like to add program material B. At the end of A you assemble edit the beginning of B. The result upon playback will be program AB.

Insert Editing
With insert editing you can add new material into a previously recorded segment. This insert of program material should cut in and out with no picture break-up upon playback. This new material can come from a camera, source deck, or from broadcast TV. As shown in the illustration, the new material B is added between two points in the already recorded material A. New video, audio ch. 1 or audio ch. 2 can be inserted individually or in combination. Note that during insert editing, the original control track (from A in our example) is preserved. A new control track is not recorded along with the inserted video or audio material. Therefore, it is essential that the inserted B portion does not extend beyond the end of A. Of course, you can avoid this problem by recording continuously, from the beginning of the tape to the end.

A/B Roll Editing
This takes selected odd (A-roll) and even (B-roll) shots from two VCRs and puts them on a tape in a third VCR in the proper sequence. (See diagram below.) With computer control and prearranged shooting sequences, this method can speed up the editing process. With the use of time base correctors, special effects such as wipes and dissolves are also possible.
Time Code
(SMPTE Time and Control Code)
SMPTE Time Code, or simply "Time Code", is a line of electronic data incorporated directly onto cassette tapes to provide tape-position information and control information for editing. A "bi-phase mark signal" of 80-bits-per-frame reveals precise tape position. 32 of the 80 bits, commonly referred to as "User Bits", are available for use as control information during videotape editing. The SMPTE time code signal is recorded onto the third audio track of a tape, in the video vertical blanking interval, so that it can be read even when a helical scanning VCR is in the slow-motion or still playback mode. The position-information frame count corresponds with the frame number of the color synchronization (00-29).

LTC
(Longitudinal Time Code)
This is another expression for the SMPTE time code signal recorded onto the third audio track of a video cassette tape.

User Bits
Of the 80 bits containing the SMPTE time code, 32 bits (excluding the position information) are available to the user—and are commonly called "User Bits". For example, the user can insert roll numbers, control commands (necessary for playing back video tapes with commercials), character information, etc.

VITC
(Vertical Interval Time)
This is the same information as the SMPTE time code. It is superimposed onto the vertical blanking interval, so that the correct time code can be read even when a helical scanning VCR is in the Pause or Slow mode.

Time Code Editing
By recording a sequential time code along with the video and audio material, you can obtain a more precise reference for editing. Each frame has its own number or code which tells the time in hours, minutes, and seconds, and includes a frame number. The world standard code is called SMPTE (Society of Motion Picture & Television Engineers) and has also been adopted by the IEC (International Electrotechnical Commission). Time codes permit very fast and accurate editing. Automatic editing is possible under computer control.

Split Editing
Refers to a timing difference between changes in the audio track and the video track from scene to scene. This is sometimes employed for dramatic effect. Since video tape is edited electronically, the video and audio head position differences have nothing to do with this, unlike film.

Off-Line Editing
Off-Line Editing is the process for producing videotape workprints that are not intended for air use. The workprint information is then fed into the on-line system for automated production of the release master tape.
Television production systems require vertical synchronization, horizontal synchronization, color phase synchronization, and color subcarrier to horizontal phase synchronization. Let's look at what this means and how to deal with real world situations of system synchronization or timing. If we can imagine a television picture which is split in half by a vertical line (half way thru a horizontal wipe), most of the timing needs are shown in this imaginary picture. First we must assume that the production switcher is working up to specs, and that the two different pictures associated with this split screen picture are well adjusted color camera feeds.

The first obvious thing we would notice if the two cameras are not even close to synchronous is that the left side of the split screen picture is clear and stable, while the right side might be rolling vertically, tearing horizontally and even changing colors. Any or all of these undesirable things can happen. Each of these three different problems point to three different portions of synchronizing problems. The vertical rolling indicates the lack of vertical synchronizing, the horizontal tearing indicates the lack of horizontal synchronizing and the color changing indicates the lack of color or burst synchronization.

Next, if the left half of the picture is not moving as described above, but the picture is out of position or simply the wrong color, the indications are then that the two cameras are both locked to the same synchronizing source, but not phased together. Phasing, or timing, is the adjustment of electronics or cable length to assure that the two signals get to the switcher at the same time relative to vertical sync, horizontal sync and burst. Mis-adjusted vertical phase will cause the right half of the picture to be vertically offset or moved up or down relative to the left half. Incorrect horizontal phase will cause the right half of the picture to be offset to the left or right relative to the left half, and incorrect burst or color phase will cause the right half to appear as the wrong color.

So, now that we know how to see what's wrong, how do we fix it? Well, system timing is somewhere between a science and an art form and the good news is that science is winning the race. The most traditional way to time a system is by using one sync generator, a lot of distribution amplifiers, a whole lot of cable and more time than you can believe. How we accomplished system timing was to calculate which source would be the last to arrive and then assure that all other sources would arrive just as late. We usually were close, but not quite right, so then we used a waveform monitor and a vectorscope to measure the timing differences. We did this by looking at the horizontal sync pulses of both our reference and the source in question on two channels of the same waveform monitor and measuring the horizontal time difference. Color phase difference is measured by viewing those same two signals on two channels of a vectorscope and measuring the phase difference of the burst reference of the two signals. We then calculated the correction length, re-cut cables and measured the signals again on the waveform monitor and vectorscope. The whole process consumed a lot of time, usually days not hours.
COMPONENT ANALOG WAVEFORM MONITORING

Courtesy of: Videotek, Inc.

By: Mark Everett,
Product Manager

Component analog video, or CAV, has brought the video user an entire new set of measurement requirements, views and problems. This article will attempt to clarify some of the basic requirements, and help the user of CAV equipment in the selection and use of measurement equipment.

First, CAV. The industry today is loaded with all types of "component analog video" signals. Betacam and MII are the two most common CAV formats in use in America. GBR (or RGB) is a special case and is not a common format used in recording. S-VHS and Hi8 are other and very different formats, and are not addressed by most measurement instruments. Formats like SMPTE and EBU are very similar to Betacam and MII. The variations are only in some specific signal amplitudes. So how do you know where you stand? One way to look at the problems is to consider another type of signal definition. The term, color difference, is quite handy to group these signals in a much more manageable style.

GBR (or RGB) are primary colors, all wide band, and are not known as a video tape format. GBR signals are used to make any and all color difference signals. (Figure 1)

Betacam, MII, SMPTE, and EBU are all color difference signals. Their waveforms look almost identical to each other, and the variations are only in setup, luminance amplitude, and color difference amplitudes. All have a Y (luminance), R-Y (red - luminance), and B-Y (blue - luminance) signal. The R-Y and B-Y signals are called the color difference signals. (Figure 2)

Luminance is defined, in all cases, as 59% Green, plus 30% Red, plus 11% Blue. Luminance is made from all three primary colors, but is not color information by itself. The luminance portion of color bars looks just like NTSC color bars passed through a low pass filter. The color difference signals, R-Y and B-Y, may both have very negative portions, and some have described the R-Y or B-Y portions of NTSC color bars as a crank shaft. Descriptive, but not quite accurate.

Y-C signals (S-VHS, Hi8, etc.) have a luminance, or Y very similar to the Y in the color difference signals. Actually, it is a filtered (or low pass) portion of the encoded signal, and the C is all chroma as relates to encoded not component signals. The C is similar to the results of a chroma filter as applied to composite video. (Figure 3)

Now that we know all of the different signals we could be viewing, the remaining question is how to do it, and what to expect for results. Viewing each type of component analog video signals has its own problems.

So, if viewing is a problem, what other concerns await the user? Timing, level drift and DC shift between channels are all potential problems in any component system. The chances are that the signal
leaves the originator in proper time relationship, relative level settings and proper signal balance, relative to a DC reference. Cables, distribution amplifiers, switchers, routers and who knows what each can contribute to a degradation of the relationship between the video components. Probably the most attention I've seen in the world of CAV test signals are ones intended to test and align timing. Remarkably enough, most every scheme uses what would be considered as a "standard" waveform view to judge timing between CAV channels. "Bow tie", the "shark fin" and the "Multi pulse" test signals all have their usefulness, and all have their operational problems, and some are more suited to one form or another of CAV systems.

Y-C signals are most often viewed on traditional composite waveform monitors and vectorscopes. One key point to remember is that the Y has no chroma information, so viewing it on a vectorscope is useless. The C portion is chroma only, so viewing this portion is done primarily on a vectorscope. It may be viewed on a waveform monitor, but then only if the waveform monitor is referenced to the sync of the Y channel. The C has no sync, so a waveform monitor can not lock to a C signal without some extra assistance. What does one look at? What do you recognize? Color bars is a standard test signal, and most folks know what to expect on a vectorscope, but the waveform view of the Y channel is something not quite familiar to all. Often, users will view the composite output of a Y-C machine simply because they are familiar with that display.

Color difference signal systems are adapted to many current combination waveform monitor/vectorscope systems. The CAV combination displays usually provide for a input translator to accept the particular format of the input signal and prepare that signal set for display. Various formats have varied levels for the Y, R-Y and B-Y signals. Waveform displays must reflect the actual level of the signals. Vector displays, however, have boxes where the user expects to find bright display dots when all is well. The input translator must accurately adjust the level of the color difference signals to cause the results to match the one set of vector graticule markings. Not only must the instrument work correctly, but the user must also properly identify the input signal.

There are some newer display formats, based on the vector display, to help the user make more accurate level judgements in color difference systems. The special "lightning" display shows the relationship between the amplitudes of luminance and the R-Y component in one half of the view and an inverted view of luminance and B-Y in the second half. The primary reason for this display is to indicate the nearly composite results of the component inputs, if the user would wish to view the combined output. The problem truly results from the operator not having much familiarity with the various waveforms presented earlier, and those displays, when fully understood, not being sufficient to indicate the true results of an encoded output.

Legal and valid, that's another problem. Color difference systems which generate video (Matte Generators, Paint Systems, etc.) could well generate color difference signals which "look" O.K. on the color difference waveforms. The problem arises when they are encoded. This could result in a signal which exceeds the maximum allowed vector saturation for a given hue, or it could exceed the luminance value for that given hue and saturation. Neither case is obvious in the views afforded by a waveform monitor alone.

The best of all worlds is the 3-D vector display. Any signal which exceeds the saturation limits for a given hue is quite obvious to even a casual operator. When the 3-D vector display is rotated to reveal the Y, R-Y and B-Y axes all at once any signal which exceeds the luminance, or saturation for any given hue, will be apparent to the operator. (Figure 4)

The 3-D vector display can help the composite user just as well. The display is useful in encoder balancing where one control usually has some interaction with multiple aspects. It can be used in studio applications to truly color match cameras on chip charts in the studio and using the split screen through the switcher to view the results in luminance, color saturation and phase all at one time and in one screen.
There are two areas of video/audio conferencing—the Long Haul type is a satellite and common carrier combination and Local Area Conferencing involves rooms within a building or building to building conferencing within an area such as an air base. In Long Haul, satellite distribution video goes through a Codec and is converted to a T1 carrier, and if necessary for security reasons is encrypted for distribution to another base via satellite. The audio is distributed by way of a telephone system. The routing switcher is a connectivity point to the local requirements for conferencing. And the routing switcher interfaces to the Long Haul system, where a specific room within a location may be teleconferenced to other points in that location and also to the satellite distribution system.

Usages and Applications

The local area audio/video conferencing system consists of a two-way video/audio conferencing system for the transfer of information in a real time video/audio format from multiple locations to multiple locations. Also, the system serves as a point to point intercom system with video. Locations can view the same visual information and conduct discussions on the subject matter and, as required, change the visual information.

The connection method between multiple rooms is fiber optics. The fiber optics interface is required because of security reasons. Video and audio from multi-points can be connected by coaxial cable and twisted audio pairs, by way of a local area broadband network, or fiber optic cable.

There are many users of this system including training, operations, logistics, command and control, and public affairs. The information is transferred by the audio/video switching system in a multi-point to multi-point conferencing application.

The system supports multiple conferences with multiple participating rooms tied together. The system will support up to 16 simultaneous conferences and up to 20 participating rooms per conference. While the system is generally used as an audio/video intercom and conferencing system, it is not always necessary to have two-way video. The audio paths are bidirectional and provide two-way audio for “talkback” type applications. It should be noted that an audio/video conferencing system is installed on all Navy aircraft carriers and several smaller class ships.

Specifics (Unique Features)

Typically, the visual type of information used involves cameras viewing personnel, different types of maps, charts and illustrations. Also, information from PCs or of high resolution computer based workstations is distributed. Graphics devices by Sun Microsystems, ADP, HP, Tektronix, IBM and Apple are typical.

It should be emphasized here that the video matrix can switch both the RGB component video and the composite output video from these devices. Also, output of video tape recorders and video show projection systems are distributed.

The maximum number of conference rooms that the switching and control system can conference is 256. This limitation is not the number of inputs or outputs of a switcher, but essentially the number of remote control panels that a centralized control system can support. An example of a control head that can be used is the pushbutton remote control panel button representing each room for a total of 64 rooms. There also could be a central operating control point such as a CRT or a single master control panel.

What the System Consists of

The system consists of a conferencing/video matrix, an audio conferencing matrix, a central system controller and remote control head for each of the rooms (if required).

A CRT terminal is used for displaying the status of each conference as to what type of conference and what level of user is involved. The communications polling port allows interface to a printer and a chronolog date/time clock. The printer records each conference, including the number of people involved in a specific conference and what level of priority. The printer provides a record for discussions of the operations and correctness of the system.

The conferencing system, while it is a local area video/audio conference and intercom system, can be used as a part of or an extension to a Long Haul satellite teleconferencing system that links remote facilities such as Air Force bases or Army bases.

The control head also has the capability of initiating a conference or multiple conferences. A central master controller panel or CRT can be used to control all conferencing requirements and just one panel or CRT can be the major control point.

Each of the multi-point conferencing rooms can have an individual control head. The control head allows the system to monitor the video and audio from each of the rooms without establishing a conference.

Types of Teleconferencing Rooms

Teleconferencing capabilities consist of the following types: 1) Teletraining includes classrooms that use teleconferencing to bring the instructors or experts face to face with students by way of the communications link. 2) Roll About Systems that are transportable. This unit has cameras and all the necessary electronics needed to conduct video and audio teleconferencing, and can be moved from one location to another. 3) Video Teleconferencing Rooms that are permanent, built-in conference centers that appear similar to conferencing rooms but have cameras and other electronic devices that are not necessarily apparent to the participants in these rooms. 4) Desktop Video Conferencing involves the use of a personal computer workstation that allows individuals to video conference directly from their desk. Camera devices, microphones and electronics are also part of this desktop capability. 5) The Mobile Video Conference room or center is a self-contained mobile conference room that carries the necessary cameras, electronics and communication equipment for video teleconferencing from a remote location.

In the future, we will see more use of fiber optics as links between rooms within a building or between sites within a local area such as multiple buildings on an air base. Fiber provides improved security as compared to a LAN system or video and audio cabling between rooms.

We see the extended use of high resolution graphics or computer workstation devices for application of information transfer and simulation of different exercises. We see the video and audio switching systems evolving to high definition television systems. In the future, instead of providing video systems that have a bandwidth requirement of 25MHz, it will be necessary to provide a pass band of 200MHz or more. We see a continual extension of the Long Haul video/audio conferencing capability, and the use of local area multi-point visual information systems as a part of the Long Haul system.
General Considerations
A successful teleconferencing installation depends on more than just microphones. Additional factors must be resolved. Some questions to be asked are:

- What type of meeting(s) will occur?
- Is this a single or multiple use facility?
- Will voice communication be supplemented with video?
- Where will the conferees be positioned?
- Will presentation aids such as large drawings, white boards, electronic chalkboards, or simple documents be used?

Finally, what are the aesthetic requirements?

The answers to these questions, when considered with the acoustic factors of the room, determine the type, style and placement of the microphones.

The next task is to assess the suitability of the room. Ambient noise is the largest problem in most rooms. The masking effect of received speech by ambient noise causes the user to increase the receive level beyond what is normally required. Reducing ambient noise allows the system to operate at sound pressure levels present during ordinary conversation, promoting natural sounding conferences. The amount of noise each piece of equipment (projectors, graphics, codecs, HVAC) contributes must be considered and reduced if a problem is evident. Flutter echoes and long decay times also tend to degrade performance. Adding just enough acoustic treatment to reduce these problems without making the room too "dead" for face-to-face conferencing yields acceptable results.

Microphone Placement
The critical distance of the room is a good guide to microphone placement. Critical distance is the point at which sound arriving directly from the source equals the sound arriving by reflection off of room surfaces. An omnidirectional microphone placed at the critical distance will respond equally to the reflected and direct sounds. This 50/50 mixture of direct and reflected sound makes the speech difficult to understand and fatiguing to listen to.

A unidirectional microphone placed at the critical distance produces better results. When the primary axis (front) of the microphone faces the talker, the unidirectional property of the microphone reduces the proportion of reflected sound to direct sound, enhancing intelligibility. Microphones with higher degrees of off-axis rejection reduce the proportion of reflected to direct sound even further. Placing a unidirectional microphone at one half the critical distance from the talker produces excellent results.

Microphone Selection
Many organizations conduct meetings with conferees seated at a conference table. The traditional approach gives each talker their own stand mounted probe-style microphone. The stand helps to reduce "table noise" such as paper shuffling and pencil tapping at the expense of aesthetics. The bulky stands quickly reduce a handsome table to a jumbled forest of microphones and cables. A better approach is to use a very low profile surface mount microphone. A surface mount microphone combines the benefits of low profile, unobtrusive appearance, a cardioid response and boundary effect in one package.

To reduce the number of microphones on the table, one manufacturer has combined three cardioid microphones (spaced at 120 degree intervals) in one six inch diameter finished hardwood disk. This unit reduces the cabling and "intrusive" procedures (drilling) performed on a table. If open space is required for drawings, lunch, etc., it may be suspended above the table on a reflector disk, acoustic conditions permitting. Suspending a microphone in this fashion reduces spurious interruptions due to table noise.

A significant portion of a conference is often delivered from a podium. A probe style microphone is particularly suited to this situation. The probe’s output level must be matched to that of the other teleconferencing microphones to maintain consistent sound quality. A talker expects to find a probe microphone at the podium and is familiar with its use. The talker will know how to address the microphone without straying too far away from it. This helps to keep the microphone well within the critical distance.

The conferee at the white board needs mobility and evenness of level when facing the board or other conferees. A lavalier style microphone is the ideal choice. When not in use, the lavalier microphone should be turned off or placed in a position that will not allow pickup of unwanted noise, conversation, or sound from the loudspeaker. If the conferee will not wear a lavalier, surface mounts may be placed at the edge of the white board. The coverage will not be as uniform as the lavalier, but simplifies operation.
FIBER OPTICS IN THE BROADCAST INDUSTRY

By: Michael W. Pugh

A fiber optic communications system is composed of three fundamental elements: light source, fiber media and light detector. A brief description of these elements is necessary in order to better understand the capabilities and limitations of fiber-optic systems.

Light sources

The majority of light sources used in fiber-optics emit light at one of three different wavelengths: 850nm, 1,300nm and 1,550nm. These are considered to be low-loss "windows," where glass fibers carry light with minimal attenuation. All of these wavelengths are in the infrared portion of the spectrum. For reference, the human eye can see from 400nm (violet) to 700nm (deep red).

Early fiber systems operated at 850nm, but more recently, developments in fiber have driven the market to 1,300nm and 1,550nm, in order to take advantage of lower losses at these wavelengths.

The two major types of light sources used in current fiber-optic systems are LEDs and lasers. LEDs are manufactured in two forms, edge-emitting and surface-emitting. These refer to the location on the chip from which the light is emitted. Surface-emitters have essentially the same construction as LED panel indicators; they radiate a large amount of light in multiple directions. Edge-emitters have a smaller but more focused beam. Because of the geometry of the junctions, the edge-emitters have lower capacitance and allow higher modulation rates.

Semiconductor lasers are constructed in a similar manner to edge-emitting LEDs. The two basic types of lasers are Fabry-Perot (FP) and distributed feedback (DFB). Both types channel the emitted light into a high-Q cavity, thereby correlating the light waves into a coherent beam. The DFB type also includes a grating filter that ensures a pure output. The purity of the output is inversely proportional to the spectral width. LEDs have spectral widths on the order of 100nm, FP lasers are on the order of 10nm and DFB lasers can produce narrow spectral widths of less than 1nm containing a single line.

The narrower the spectral width, the higher the cost of producing the emitter. Prices for LEDs run in the tens of dollars, FP lasers run $200 to $800 and DFB lasers start at $5,000. Coherent reflections inside a laser's cavity can cause spurious outputs, often requiring opto-isolation, and increase the cost by several thousand dollars.

Because the velocity of light through glass varies with frequency, the broad spectral content emitted by an LED is dispersed during transmission through a fiber, causing different frequency components of light to be received at different times. This so-called "material dispersion" limits the bandwidth (and, therefore, capacity) and distance capability of fiber links driven by LEDs. Current research is examining methods of physically compensating for the frequency-dependence of light transmission in glass media. The LED's high reliability, stability, low-drive voltages and low cost make them the appropriate choice for many applications.

Lasers' narrower spectral width makes their cost worthwhile for longer distances and wider bandwidths. They also possess faster rise times (10^-9 second) than LEDs (10^-12 second), making lasers more suitable for higher frequency operations. On the other hand, lasers have the disadvantage of being temperature sensitive; a slight temperature change can cause much as 20nm drift in center wavelength. LEDs exhibit no such sensitivity.

A recent addition to this marketplace is the superluminescent diode (SLD), which falls somewhere in between the LED and the laser in performance parameters and cost.

Optical power output characteristics also vary among devices. The LED is nearly linear, the SLD is non-linear (output rising vs. input) and the laser is collimated (linear until saturation, then rising asymptotically). Emission angles are also important, because they determine coupling efficiency with small-core fibers. Lasers again show about one order of magnitude advantage over LEDs, allowing about 10 times more coupling efficiency with the smallest fibers, owing to their narrower dispersion angle.

Fiber media

Optical fiber is a light guide made of fused silica (glass). Some plastic fibers are in use, but they exhibit high losses and limited bandwidth, and are typically used only in special applications. The actual glass path in a fiber-optic line is only about as thick as a human hair, and weighs approximately one ounce per kilometer.

As mentioned earlier, the process of light transmission through glass is based on the phenomenon of total internal reflection. To understand this process, consider first the "refractive index" (n), which states the ratio of the speed of light through a medium (c) relative to the speed of light through a vacuum (c) in an inverse relationship.

The speed of light through air is just a bit slower than through a vacuum, so its refractive index is 1.0003, but generally considered 1. Light's speed through glass, on the other hand, is about two thirds that of a vacuum, so its refractive index is 1.5. Whenever light passes from one medium to another, rays are bent to an angle determined by the relationship of the two materials' refractive indices.

First, consider the boundary between two media, then visualize a line perpendicular to that boundary. The light ray's angles of incidence, reflection and refraction are all measured in degrees from this normal line. If a ray passes from one medium with a refractive index of n1 to another medium with a refractive index of n2, and n1 is larger than n2 (light slows down in the second medium), the refracted wave in the second medium will be bent toward the normal. If n1 is less than n2, (light speeds up in the second medium), the wave will be bent away from the normal, and thus bent toward the boundary. So for any two materials, a fixed amount of bending will occur when any light ray hits the surface. The actual angle of the refracted wave still depends, of course, on the angle of incidence of the light ray. In the latter case (n1 < n2), as the angle of incidence increases, some incident angle will cause the refracted wave to be placed along the surface of the boundary, and it will not enter the second material. This is referred to as the critical angle of this media interface. As the angle of incidence becomes even more oblique, the refracted ray is actually turned back into the first medium, and total internal reflection is achieved.

Fiber optic media uses a pure glass as a core (the more uniform and dense the medium, the slower light travels through it), with a less pure glass as its cladding. The refractive index of the core is higher, and light is fed into the core (only) with an angular dispersion so that as much as possible of the light strikes the core-to-cladding interface at an angle of incidence greater than the critical angle for that junction. Thus the bulk of the light stays inside the core and propagates along its axis.

Fibers with an abrupt change in refractive index between core and cladding are called step index fibers. When light travels through a multimode step index fiber, some of its paths are straight down the core of the fiber, while others deviate from the fiber core and are re-
flected back toward the center through the principles discussed previously. This reflected light takes a longer path and arrives at the destination later. The difference in arrival time is called modal dispersion. Its spreading of signals out in time upon reception creates problems similar to those of the LED’s low-Q emissions mentioned earlier, and thus limits the applications of these fibers accordingly.

One solution to this problem is the multimode graded index fiber, which gradually bends the light back into the fiber by using a material with a continuously decreasing refractive index relative to distance from the center. This allows the light to travel faster when further from the core, thus compensating for the longer distances that reflections follow relative to direct paths. The curved internal reflection paths that result create less dispersion.

Another approach uses a step index fiber with a narrow core, which can be made to propagate only one transverse electric wave (TE) or electromagnetic propagation path mode. Simply put, a mode here is a “possible path” for light to follow through a fiber, as determined by Maxwell’s electromagnetic equations. (You can only stick to the pure “ray model” of light so far in this examination.) This kind of fiber is referred to as a single-mode type. Its single-mode nature creates no modal dispersion, resulting in much wider bandwidth and lower loss. These are preferred for telephone company installations where high capacity and long distances between repeater amplification is required.

Single-mode fibers generally operate at 1.300nm wavelengths, carrying bandwidths up to several gigahertz with 0.5dB or less loss per kilometer. Multimode fibers operate at 850nm, with step index types offering bandwidth typically in the 10MHz-20MHz region and losses of 6dB/km. Graded index fibers provide bandwidths up to a few hundred megahertz and 3dB/km losses. The most common fibers in use today are 62.5 and 50µm (core diameters) graded index multimode and 8µm single mode.

Bandwidth of a fiber is usually quoted in megahertz/kilometers, indicating the direct relationship of capacity to path length between repeaters.

Connectors

In many applications, fiber optic connectors (FOCs) present the greatest loss in an optical path. Typical real world connectors cause 1dB of loss each, and with fiber attenuation often less than 1dB/km, connectors can easily dominate the loss budget. The most popular connectors are biconic and ST types, with the former preferred for telco uses and the latter for production applications, where frequent connects and disconnects may be required.

Users should be aware that installation of these connectors to a fiber is a critical and often time-consuming process.

Other losses also can occur in fiber as a result of splices (0.01dB-0.5dB), which are made either mechanically, chemically or by heating processes (welding or fusion). Microbend losses are caused by small anomalies (bumps) in the core-cladding interface. The fiber itself creates losses through scattering and absorption and, finally, coupling loss occurs between the fiber and its emitters/receptors. Total loss is referred to as fiber optic transmission loss (POTL), expressed in decibels/kilometers.

Light detectors

Photodetectors are made of photoemissive material, which emits electrons when illuminated by light of sufficiently short wavelength. Two basic semiconductor structures are used for the detection of light: positive intrinsic negative (PIN) and avalanche photo detector (APD). For this discussion, a switch to the particle model of light theory is required.

In an ideal PIN diode, a single electron is emitted for each photon impacting the active region. In practice, some recombination results in efficiencies on the order of 0.8 for 1,300nm systems, such that a PIN diode with an efficiency rating of 0.8 will produce 0.8a of current from an optical signal of 1W. The APD diode also acts as a current source, but is operated near the diode’s reverse breakdown voltage. This results in an avalanche effect when a photon releases an electron, effectively translating a single photon into multiple electrons and dramatically increasing the output current. Multiplication factors range from 10 to 100, depending on the material and the reverse bias. This high-conversion efficiency provides increased sensitivity and, therefore, requires less external amplification, resulting in lower noise floors and high gain factors. However, APDs require higher power supply voltages (100V-300V), and can suffer from output level variation with temperature.

Modulation

LEDs and lasers can be directly modulated by changing the current through the device. Because both devices are a form of diode, strong non-linearities exist when the modulation depth is substantial. Both analog and digital modulation techniques can be applied.

Analog modulation

A straightforward approach involves direct intensity modulation of a linear waveform on a lightwave carrier (for example, amplitude modulation). The most bandwidth-efficient system at present for fiber is multichannel VSB AM video modulation. This approach requires the best DFB lasers to meet CATV linearity and signal-to-noise ratio (S/N) requirements. As many as 80 channels over a single fiber have been transmitted in this manner, but these systems are expensive, and are limited to approximately 57dB carrier-to-noise ratio (C/N).

For broadcast-quality and super-trunking systems, frequency modulation (FM) often is employed. FM provides extremely good linearity, adjacent channel immunity and better S/N. Current single-channel systems exceed RS-250B short-haul specifications over tens of kilometers. In CATV, super-trunking 16 channels per fiber is common. Although not as straightforward as the AM process, use of FM solves the inherent problem in AM of linearity; no light source exhibits a truly linear transfer characteristic between the electrical and optical domains. As such, AM systems must be operated over relatively narrow intensity ranges, or with complex compensation circuits, as well as concern for temperature-sensitive conversion-efficiency changes, none of which are factors with FM.

Digital modulation

Almost all digital fiber systems use direct modulation of the light source. In other words, the light is intensity-modulated from a low (nearly off) level to a high level. The non-linearities that hurt analog performance have little effect on the digital signal. Furthermore, the S/N requirement is much less demanding. For a bit error rate (BER) of one in one billion (10^-9), the S/N need only be 12dB. Better yet is the rate of improvement in BER with S/N. A 1dB improvement in S/N provides nearly three orders of magnitude improvement in BER. For these reasons, digital techniques are well matched to fiber optic systems.

The limiting factors for a digital fiber system are bandwidth and noise. For surface-emitting LED light sources the practical limit is 250Mbs, while edge emitters extend the range by several hundred megabits/second. Laser-based systems are operating in excess of 2Gbs. The optimum setup at present seems
to be the use of DFB lasers on single-mode fiber. This combination can provide 2+ Gb/s over 30km of fiber with low BER.

The noise generated by the laser or LED usually sets the BER limit for a given bandwidth. The receiver shot noise combined with thermal noise limit the sensitivity that can be achieved. Because all three primary noise sources are functions of bandwidth, the wider the bandwidth, the lower the maximum sensitivity for a given BER. For example, a particular PIN-based receiver operating at 500Mb/s can achieve a sensitivity of -19dBm at a BER of 1 in 10^-10. This same receiver could only achieve a sensitivity of -16dBm at 1Gb/s because of the doubling of bandwidth.

**Practical system configurations**

Systems today are generally split between LED systems operating on multimode fiber below 200Mb/s and laser systems operating on single-mode fiber at data rates above 150Mb/s.

LED systems are used primarily for lower-bit-rate systems. The use of multimode fiber allows lower-cost connectors and launches more light. The local area network standard, fiber-distributed data interface (FDDI), is representative with a fiber rate of 125 megabaud, 1,300nm LED sources and 62.5µm fiber. These links are good to 2km between nodes.

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Systems requiring longer distances or higher data rates require laser light sources. Most high data rate systems use 1,300nm lasers with single-mode fiber. Almost all long distance telecommunications links fall into this category. The bandwidth advantages of this combination of fiber and light sources suggest this will be the configuration of the future.

**Fiber and video today**

Fiber offers almost unlimited bandwidth, low weight and complete freedom from EMI (nor does it generate EMI). However, as mentioned earlier, limitations exist in terms of linearity and S/N that have dictated how analog video is transmitted by fiber.

Most studio-quality video carried over fiber today is analog composite video carried by pulse frequency modulation (PFM) systems. These digital transmission systems are used for entrance links over fiber owned by telephone companies. Digital pulses do not require a linear channel to be transmitted, thus even the non-linear effects of lasers used for long distance applications have little effect on signal quality.

**Digital video and fiber**

Composite digital video, such as D-2, requires a serial data rate of 143Mb/s for NTSC and 177Mb/s for PAL. In the fiber world these are relatively low data rate signals that can use either LED or laser systems. Even component D-1's 270Mb/s is not challenging to digital fiber links. Component HDTV will require nearly 1,200Mb/s, which can be carried with current laser systems.

Cost dictates which digital links will use fiber first. Long distance links require fiber for data integrity; they are the first candidates. The distance at which fiber becomes economical depends highly on the data rate and the environment. At digital HDTV rates of 1,200Mb/s, 100 feet is a long distance for coax. Current spikes on the coax can cause errors for periods of 100µs, which translates to 120,000 bit errors. Fiber will be essential to error-free communications. Component HDTV rates. Even at D-2 rates, the simplicity of fiber connections for grounding of equipment and interbuilding connections make the cost of fiber transmitters and receivers attractive.

Long-haul circuits using the telco DS3 protocol (44.736Mb/s) are now in use on fiber for compressed digital NTSC transmission. Recent and continuing advances in data compression will make even the lower-capacity fiber links extremely useful to broadcasters. Meanwhile, work continues in Japan on a 10Gb/s fiber link, which will run 100km between repeaters.

**Digital audio and fiber**

With these capacities, digital audio is certainly no problem for fiber. The AES/EBU standard interface only requires a 3Mb/s transmission rate (for a stereo signal). Fiber’s primary benefit here is in multichannel short-and long-haul paths. Again, telco circuits (DSI and DS2) via fiber are useful and flexible for a wide variety of audio bandwidths, plus data and control channels. They are useful and cost-effective wherever mono or bidirectional audio/data paths of any type are required between two facilities (STLs, remote sites and multiple studios). Recently, several audio “snake” systems (used for connecting multiple stage microphones to one or more audio mixing consoles) have been implemented with multiplexed digital audio on fiber. Remote-site setup and striking will be eased by the replacement of a large, heavy and electromagnetically vulnerable multipair copper cable (carrying many analog mic-level signals) with a light and robust single cable.

In the audio studio, the multichannel audio digital interface (MADI) format, a serial interface carrying up to 56 digital audio channels, uses fiber for paths greater than 50m for its 100Mb/s data.

**Current applications**

The use of fiber is widespread among telephone companies, and these paths are used routinely now for local and long-haul broadcast video and audio program circuits, often without the customer's awareness. Many private and state telecommunication networks have been established using fiber for all or part of these systems' paths. The term fiber has found its way into the broadcast industry, where a fiber optic switch using gallium arsenide technology has been developed, and shows some promise.

Fiber optic links provide the broadcast industry with a media ideally suited to requirements of digital signals, so there is little doubt we will see their usage increase. In addition to its other advantages, the inherent versatility of optical fiber with respect to changing formats and data rates will allow cable plants to remain in place through many generations of digital standards. This future staying power will offset initially higher costs and conversion expense.

With the advent of digital audio and component, high-definition and digital TV transmissions, along with growth in the number of offerings to consumers, continually wider bandwidths will be required.
DIGITAL PRIMER—AN INFORMAL GUIDE TO DIGITAL TAPE AND COMPACT DISC TECHNOLOGIES

By: Mel Lambert

As Steve Woolley, National Sales & Marketing manager, Professional Audio, says: “The future direction of the music recording, broadcast and post-production industries lies in the all-digital studio. Our two new R-DAT digital tape recorders have been designed to allow high quality recordings of music performances, ENG and broadcast remotes, film and video shoots. At the other end of the production chain we are offering two, full-feature Compact Disc players for production studios, on-air applications, background music and automated broadcast facilities.”

Digital Audio Buzz Words

To help you better understand the features being offered by these four innovative new products — and, more importantly, their significance to your customers — the following technical briefing provides an explanation of some of the basic buzz words used to describe digital technology.

**Sampling Frequency:**
At the input to all digital recording systems is an Analog-to-Digital Converter which, as the name suggests, converts the incoming analog signal or voltage levels to a series of on/off pulses known as binary pulses or bits, using a process referred to as Linear Pulse Code Modulation. (Although other encoding techniques are also available to the digital designer, Linear PCM is used in the large majority of modern recording and processing systems.)

The number of times per second that the input signal is buffered into the A-to-D converter, measured and used to produce a 14- or 16-bit binary number is known as the Sampling Frequency. The higher the sampling frequency, the greater the signal bandwidth of the recorded signal. As explained below, the range of frequencies that can be recorded using, for example, a sampling frequency of “X” kHz, are zero Hz to X/2 kHz; in other words a bandwidth of “X/2” kHz.

In practical terms, an R-DAT recorder with a sampling frequency of 48kHz will record onto tape frequencies from zero Hz to just under 24kHz. By comparison, conventional analog recorders used in production studios are capable, at a tape speed of 7.5ips, of recording signals from around 40Hz to 15kHz; at 15ips the performance may extend from 25Hz to 19kHz.

One drawback with analog recorders, however, is that these performances are only achieved at low to medium recording levels. At high record levels, analog recorders cannot handle signals containing a great deal of high-frequency material. The resultant roll-off at the top end of the audio spectrum can be quite dramatic and, depending on the tape type in use, begin as low as 12-15kHz. Once again, digital technology shines through, because it can offer extended bandwidth at all record levels.

Of the currently available sampling frequencies, 44.1kHz is used in Compact Disc players; the majority of PCM systems that utilize companion videodecks; and for pre-recorded R-DAT cassettes. Many professional R-DAT recorders also offer a record sampling frequency of 44.1kHz, to provide compatibility with digital consoles, random-access editing systems and Compact Disc mastering systems.

The ability to connect digital signals directly from one system to another — and thus do away with the need for additional D-to-A and A-to-D stages — will maintain the high quality of digital through the multiple mixing and processing stages possible in the all-digital studio of the near future.

Although it is possible to convert a digital signal recorded at a sampling frequency of, for example, 48kHz, to one that is referenced to a sampling frequency of 44.1kHz, such sampling frequency converters are expensive. They also produce, some audio engineers feel, a small but unnecessary signal degradation because of the additional stage of signal processing involved. The ability to record an R-DAT cassette at the CD mastering frequency of 44.1kHz has obvious advantages to music producers, while broadcast and post-production facilities will be able to make use of a broad palate of digital recording, editing and processing hardware that operates at the same sampling frequency.

A sampling frequency of 32kHz is offered on most R-DAT recorders to provide compatibility with Japanese DBS (Direct Broadcast Satellite) systems, which transmit 16-bit digital audio into the home. This signal can then be connected directly to the digital port of an R-DAT recorder, and so avoid an additional A-to-D stage. Its potential broadcast application in the US is still under consideration. The majority of European broadcasters have adopted a “standard” sampling frequency of 32kHz for relaying signals between studios and transmitter sites, for example, although the future of direct broadcasting of digital signals has yet to be resolved.

**Quantization Rate:**
The “resolution” of a digital recording system is determined by its Quantization Rate, expressed in bits. During the A-to-D conversion process, the resultant number or digital word can be of any bit size, although current ICs usually limit this to 14, 16 or 18 bits. Mathematically, a 16-bit number of binary off/on sequences will provide a maximum of 65,536 discrete levels. Or, put another way, between the softest and loudest levels recorded on tape a 16-bit system will provide over 65,000 unique sound levels. A 14-bit system, on the other hand, provided only a quarter of the levels provide by a 16-bit system.
Expressed in terms of Dynamic Range — the difference in level between the softest and loudest sounds that a system can handle without causing distortion — a 16-bit system will produce a recording with a dynamic range of just under 96dB, while a 14-bit system offers a dynamic range of around 84dB; analog systems, in contrast, are limited to dynamic ranges of between 55dB and 80dB, depending upon tape speed, track format and the use of noise reduction.

Dynamic range parameters are often used interchangeably with Signal-to-Noise Ratios. Strictly speaking, dynamic range is the difference between the softest and loudest signals that can be recorded and played back without producing a specified amount of signal distortion, while signal-to-noise ratio (SNR) is a measure of the signal you want, compared to the unwanted signal (usually hum, hiss and other high-frequency sounds). SNR must be referenced to the particular weighting curve used to measure the extraneous signals; A-weighted, DIN-spec or 20Hz to 20kHz, unweighted, are just three of the many possible curves used to specify signal-to-noise ratios.

**Anti-Aliasing Filters:**

As mentioned above, the bandwidth of a recording system based on a sampling frequency of, let's say, 48kHz, will offer a bandwidth of just under 24kHz. The reason for this 2:1 relationship results from the well-known Nyquist Sampling Theorem. The theorem states that to unambiguously represent an audio waveform in digital form, the incoming audio signal must be filtered to remove every frequency above half the chosen sampling frequency.

To prevent unwanted frequencies from upsetting the digital sampling process, Anti-Aliasing Filters are used in conjunction with a system's A-to-D and D-to-A converters. These lowpass filters (so-called because they only allow low-frequency signals to pass through) are difficult to design. All filters produce a certain amount of audio and phase degradation; those found in digital systems have to be engineered to pass as much of the upper frequencies as possible, but without adding distortion.

Compact Disc players also contain anti-aliasing filters; again, the reconstructed analog signal produced by the D-to-A converter has to be lowpass filtered to remove unwanted signal components.

The use of Digital Filters offers many advantages over analog designs, mainly because they can be fabricated to tighter tolerances and their operation in more linear and controlled. The phenomenon of Oversampling is related to filtering, in that the digitized signal from an R-DAT or CD player is processed at many times the original 48kHz or 44.1kHz sampling frequency. (This action, in itself, cannot produce audio of higher quality; the audio fidelity of a recording is determined solely by the sampling frequency, quantization rate, error detection schemes and encoding/recording techniques.)

The MASH (Multi-Stage Noise Shaping) analog-to-digital converters and 64-times oversampling digital filtering utilized in the SV-250 portable R-DAT recorder dramatically reduce both the amount of signal distortion caused by conventional filters and the amount of zero-cross distortion, thereby producing a cleaner, clearer audio signal at low as well as high recording levels.

**Error Correction and Concealment:**

Once the audio signals have been digitized, there are various ways they can be recorded onto tape, or coded onto a Compact Disc. Because of the possibilities of dropouts caused by dirt on an R-DAT tape or CD surface, Error Correction Bits are added to the data being recorded or encoded. Upon playback, these additional bits are used to reconstruct any lost data.

The way in which the error-detection bits are calculated, and how they are incorporated into the data stream, has been standardized for both R-DAT and Compact Disc, so that a tape recorded on one machine will play back on another, and that CDs from any record label will replay on any player.

To demonstrate to the user how hard the error correction circuits are having to work — and possibly how damaged the tape has become — most R-DAT machines feature Error-Detection Lights that illuminate according to the amount of correction that is taking place.

The difference between error "correction" and Error Concealment is a subtle but important one. Correction implies that the damaged data has been detected and that all of the lost or missing data has been recovered from the additional error correction bits; in other words the playback would be indistinguishable from the original, undamaged recording. Concealment, on the other hand, implies that massive data loss has been sustained (possibly from a flaw on the CD surface, or a bad crease in the R-DAT tape), and that the error correction bits were insufficient to recover the lost data. Instead, the R-DAT recorder or CD player has been forced to interpolate what the data might have been, given recent trends in the signal's level and frequency content, and intelligent guess work. There is a good chance that the user won't be able to hear the difference, although subjective results will depend on the amount of data that has been lost, and the kind of audio material in which the loss has occurred.
MICROPHONE TYPES

MICROPHONE TYPES AND OPERATION
All microphones have two basic components: the diaphragm, and the generating element. The diaphragm is a membrane which vibrates in accordance with the pressure variations of sound. The generating element converts the diaphragm vibrations into electrical voltage. This generating element is one of four factors which determine the type of microphone. The kinds of generating elements vary greatly in expense, fidelity, complexity, ruggedness, and longevity.

Ceramic and Crystal Generating Elements. The diaphragm of a crystal or ceramic microphone is attached to a special material which produces an electric output voltage when it is moved. Such materials are termed “piezoelectric.” A typical ceramic microphone is diagrammed in Figure 1. Such microphones generally provide insufficient fidelity and ruggedness, even for the most modest requirements of the professional and serious amateur.

Dynamic Generating Elements. The diaphragm of a dynamic microphone is attached directly to a coil of wire (voice coil) located close to a magnet. When the voice coil vibrates, a voltage is produced. A dynamic microphone is shown in Figure 2.

Ribbon (or “Velocity”) Generating Elements. Ribbon microphones are similar to dynamics, except that a very thin metal-foil ribbon serves as both diaphragm and voice coil. In order to obtain adequate frequency response and output level, the thin ribbon must be exceedingly light. Older ribbon microphones could easily be destroyed by mechanical shock or a sudden blast of air which would stretch and destroy the fragile ribbon. However, the best current designs have been improved for satisfactory durability.

Condenser Generating Elements. The diaphragm of a condenser microphone is a movable plate of a condenser (capacitor), a common component in electrical circuits (Figure 2A). When polarized by applying a direct current voltage, motion of a diaphragm in relation to a fixed backplate produces an output voltage. The extremely high impedance of the condenser generating element is matched to typical inputs by an impedance converter in the microphone. Condenser microphones, many of which are capable of very wide frequency response, have been widely used in recording studios for years. For the performer, due to their relatively high output level, condensers may produce input overload distortion (distortion caused by too great an input signal to a mixer) unless appropriate precautions are taken. Modern day electret type condenser microphones can offer ruggedness comparable to dynamic microphones. The electret microphone can often yield superior performance at the frequency extremes (high and low) when compared to dynamic types. Because electrets utilize an impedance converter to match the diaphragm signal to the mixer input, they require either a battery or phantom power for operation. Phantom power is a means by which power is supplied to the microphone from either a mixer or power supply by way of the microphone cable. Phantom power eliminates the need for batteries and the problem of replacing dead batteries. Even though electret microphones are more complex in construction, their performance advantages are making them an increasingly attractive choice for exacting applications.

MICROPHONE PICKUP PATTERNS
A microphone’s pickup pattern is three dimensional in character and shows how the microphone responds to sound from different directions. Omnidirectional microphones pick up sound from all directions. Unidirectional microphones reject or reduce sound from their sides or rear. The pickup pattern is the second of four factors which determine the type of microphone.

Omnidirectional Pickup Pattern. The pickup pattern of an omnidirectional microphone may be represented as an inflated balloon with the microphone at the center, as shown in Figure 3. Usually a polar pattern is used to represent the pickup pattern, illustrated in Figure 4. The polar pattern shows the loss in output (in dB) experienced as a constant-output sound source moves 360° around a fixed microphone at a fixed distance from the microphone.

How does an Omnidirectional Microphone Work? The case of the microphone shown in Figure 5 is totally sealed, so that sound pressure can strike only the front of the diaphragm.

Specifications Subject to Change Without Notice
Pressure variations passing over the diaphragm move it no matter how the unit is oriented with respect to the sound source! This phenomenon is shown in Figure 6. Thus, microphone output is constant regardless of orientation.

**Why an Omnidirectional Microphone?** In systems where extremely close working distances are employed, say touching the lips to six inches, the omnidirectional microphone, if it can be used, has several advantages in its favor:

1. For a given price, an omnidirectional microphone generally has a smoother frequency response than its cardioid counterpart. Such smoothness of response is important because any roughness invites feedback.
2. An omnidirectional microphone is significantly less susceptible to breath pops than its cardioid counterpart.
3. An omnidirectional microphone is significantly less sensitive to mechanical shock than its cardioid counterpart.
4. An omnidirectional microphone is often more rugged than its cardioid counterpart.

**Unidirectional Pickup Pattern.** The most common unidirectional microphone is called a cardioid. Cardioid is a mathematically descriptive term that denotes the geometric form of the pickup pattern. The pattern happens to be crudely heart-shaped (hence the term “cardioid”). Side pickup is moderately reduced in a cardioid microphone and rear pickup is dramatically reduced. The polar pattern of a cardioid microphone is shown in Figure 7. The apple shown in Figure 8 would be a good three-dimensional model of the cardioid pattern with the stem representing the microphone.

**How does a Unidirectional Microphone Work?** In a cardioid unidirectional microphone, the case is not sealed. The sound pressure is permitted to contact the diaphragm from the rear as well as the front. The rear contact occurs through a port which is precisely located in the microphone case.

A simple cardioid microphone is shown in Figure 9 with the sound source at its rear. With sound originating from the rear of the microphone, diaphragm motion is neutralized by equal, in phase sound pressures arriving at each side of the diaphragm, resulting in zero net force acting on the diaphragm. (Note the “plus” sound pressures on both sides of the diaphragm.) However, with sound originating from the front as shown in Figure 10, a delay in the sound pressure reaching the rear of the diaphragm due to the increased distance (that is, distance to the rear opening plus the distance back to the diaphragm) permits motion of the diaphragm. Microphone output results. (Note the “plus” sound pressure on the diaphragm’s front, and the “minus” pressure at the rear.)

**Why a Cardioid Microphone?** The pickup pattern of a cardioid microphone – relatively dead at the sides and rear – tends to increase the working distance (the distance between the sound source and the microphone). The limiting factor is when the distance becomes so great that amplifier gain must be increased until:
1. The sound becomes over-reverberant due to room reflections.
2. The pickup of random background noise becomes excessive.
3. Sound system feedback results from P.A. or monitor speakers.

This increase in working distance is theoretically 1.7 to 1, as shown in Figure 11. For instance, if the maximum effective working distance of an omnidirectional microphone is ten inches, then theoretically a cardioid mic can be used at seventeen inches with the same effectiveness!

The feedback-reducing characteristics of cardioid microphones would seem to make a clear-cut case for the use of a cardioid microphone by professional performers. In marginal feedback situations, the cardioid will produce a higher level in the room before feedback occurs. This situation is often encountered in portable P.A. systems and other systems employing high-level stage monitors, where high levels of direct speaker sound reaches the microphone from the sides or rear. Usually in such instances, the loudspeakers are closer to the microphones than would be desirable from a sound system design standpoint, and care must be taken to maintain proper gain without feedback.

**Two vastly Different Types of Cardioid Microphones.** A "Single-D" cardioid gives big bass. The simple cardioid microphone described previously (the one with a single port located in the case) has a frequency response which varies strongly with working distance! As shown in Figure 12, at one-quarter inch, the bass response is boosted fifteen dB over the response at 24 inches and beyond! In engineering terms, this type of cardioid is called a "Single-D", named for the single distance between the rear sound entrance and the diaphragm.
The close-up emphasis of bass tones of the Single-D cardioid, called "proximity effect", provides a big, no-mistake-about-it bass sound — and for certain vocal applications, this is a popular sound. The Single-D sound, however, may not provide the super-clarity often desired by today's performer.

In addition to reduction of the Single-D's proximity effect, Variable-D and Continuously Variable-D cardioids have reduced breath popping and shock sensitivity. Thus, the popularity of the Variable-D microphone is due to its combining of the omnidirectional's clarity and inherent pop and shock resistance with the cardioid's feedback reduction and working-distance advantages.

Variable-D and Continuously Variable-D (CV-D) are registered trademarks of Electro-Voice, Inc.

**MICROPHONE FREQUENCY RESPONSE**

The third factor which determines microphone type is frequency response. Response information for each microphone will help you select for special results. For instance, a microphone with "rising" response will emphasize the brightness of a trumpet or other brass instrument; one with proximity effect (single "D" cardioid) will add bass boost to a close working "thin voiced" singer. Communications microphones almost always have rising response or a "presence peak" to add intelligibility to voice transmission. A flat response, for most accurate sound reproduction as shown in Figure 16, would be typical for studio recording under ideal room and low noise conditions.

Choose an appropriately shaped response (an example is shown in Figure 17) for special requirements: rolling-off frequencies of unwanted background noise (such as in a vehicle or plant machinery) and room reverberation; boosting bass; brightening high frequencies or increasing intelligibility.

When choosing a microphone, be certain its frequency response is wide enough to reproduce the sounds you need to reproduce with no perceptible change in quality. It should be pointed out that the response curves shown in Figures 16 and 17 (as well as curves shown on data sheets) were produced with the microphone at a sufficient distance so as to be in the "free field." When microphones are measured at very close distances, changes in the response curve can occur from microphone characteristics, such as proximity effect, which we described earlier. The chart shown in Figure 18 shows the frequency ranges of various instruments as well as the human voice, and it should be of some help when selecting an appropriate microphone with respect to frequency response.
MICROPHONE IMPEDANCE

Choosing Between Low-Z and High-Z Microphones. Microphone impedance is the fourth factor that determines microphone type. High impedance microphones have higher output than low impedance types (about 20 dB). However, low-Z microphones permit the use of longer cables without high-frequency rolloff. Therefore, if microphone cables will be longer than fifteen or twenty feet, only low-Z microphones should be used if the maximum clarity of extended high-frequency response is desired! Low impedance microphones have become the industry standard due to their versatility and the availability of equipment which accept low impedance inputs.

Impedance Matching for Dynamic Microphones. In usual practice, high-Z microphones operate properly when connected to high-Z mixer inputs only. Connection to a low-Z input results in drastic low-frequency attenuation. Low-Z microphones are designed to operate through low-Z inputs. However, they will usually operate in high-Z inputs when the sound system has sufficient gain, and the microphone output level is large. This technique, incidently, is often used to control input overload since a voltage drop of approximately 20 dB usually results when a low-Z microphone is moved from the mixer's low-Z input to its high-Z input.

Avoiding Multiple-Microphone Interference. Voids which can occur in frequency response when the outputs of two microphones are combined can be avoided if the microphones are at least three times as far apart as either is from the user. The 3-to-1 ratio is illustrated in Figure 22. The ratio is frequently violated in stage microphone placement and is often the culprit for strangely inadequate sound-system performance. Some illustration of "good" and "bad" multiple-microphone placements are shown in Figures 24, 25, and 26. The "bad" placements can ruin the performance of an otherwise excellent sound system!

When two microphones must be used close together, multiple interference can be avoided by placing the heads directly together. (See Figure 26)

When cardioid microphones are used, the 3-to-1 ratio can be reduced somewhat by angling the microphones away from each other as shown in Figure 23.
CAUSES AND CURES OF HUM AND NOISE IN MICROPHONE CABLE

The signal generated by a microphone during quiet periods can be very low in level, only ~70dB to ~120dB (0.3 millivolts to 1 microvolt). This makes the cable that carries the signal to the mixer very sensitive to electromagnetic interference (EMI), electrostatic coupling of hum, and noise caused by capacitance changes in the cable. Capacitance changes can, in turn, be caused by mechanical vibration and flexing (handling noise) or by temperature changes. Canare cables are carefully designed and are manufactured to very close tolerances using the highest quality materials available, so that low level microphone circuits will not be affected by these outside sources. The difference is clearly measurable and audible.

SCR NOISE

Magnetic fields are radiated from power cables, motors and power transformers. Often power line frequency can become contaminated by a rich harmonic spectrum which is generated by saturated transformers, the reactive ballasts of fluorescent lights, and, most drastically, by the “clipped” waveforms emitted by SCR (Silicon Controlled Rectifiers) dimmers. The magnetic fields radiated by these sources cut across the conductors of a mic cable and induce a voltage that is heard as hum (or buzz at higher frequencies). The higher the frequency, the greater the induced voltage, which is why the upper harmonics of SCRs are so objectionable. Twisting the inner conductors of a cable minimizes susceptibility to this electromagnetic-induced noise.

ELECTROSTATIC HUM

The power line and mic cable act as two plates of a capacitor, causing the AC voltage to be electrostatically coupled into the cable, which is heard as hum. This capacitive reactance more readily admits high frequencies, and the higher the impedance of the mic circuit, the greater the induced noise voltage. A grounded, electrically conductive screen around the cable (the shield) offers a low-resistance path to ground and can thus shunt electrostatic hum. However, the effectiveness depends upon the percent of coverage afforded by the shield. Fully wrapped, aluminum tape offers 100% coverage, but is not durable or highly flexible for hand-held or often moved cable. Canare does not use surround (spiral or serve) wrap shields because they can open up with use. Our braided shields are more difficult to manufacture, but they offer good flexibility in a tight braid that uses many thin strands. This yields the highest possible shield density, between 90% and 97%, depending on the specific cable.

GROUND LOOPS

If the shield on a cable that connects two pieces of equipment is connected to ground at both ends, additional ground paths are created in parallel with the hard-wired AC power line grounds. Electrical potential differences (called ground loops) are thus created, causing the problem which is sometimes known as “common mode noise.” It may be heard as hum or buzz and in extreme cases, it can also provide a path for internal equipment oscillation at very high frequencies, or radio interference. To avoid such problems, a “floating” line should be used, where none of the center conductors are grounded at either end of the cable (or a “balanced” line, where a transformer center tap is grounded). The shield should then be grounded at only one end of the cable. If common mode noise becomes a problem, try cutting the shield at the mixer end of the mic cable. Most Canare multi-channel cables include an overall “drain” wire so the ground can be returned from a remote junction box to the mixer to provide positive shielding for the box without causing ground loops.

CROSSTALK

Crosstalk (leakage) occurs when signals enter adjacent channels of a multichannel cable, either by capacitive coupling or electromagnetic induction. The static coupling is prevented in Canare cables by shielding each channel thoroughly. Magnetic induction however, is more difficult to deal with since more insulation and shielding do not help. In Canare L-PE 2-conductor multichannel cables we use a different twisting pitch for each adjacent channel, so the magnetic fields do not align and inductive coupling is minimized. The worst case occurs when line level signals (~20dB to +4dB nominal) are applied to some channels, and mic signals on other channels in the same cable. In such cases, Canare 4-conductor ‘STAR QUAD’ cable has inherently high rejection of magnetic induction, and offers the best method for avoiding crosstalk.

HANDLING NOISE

Handling noise is just one form of capacitively induced noise. Sharply bending a cable, vibrating it, or handling it, all can cause the spacing to change between conductors, and between the shield. This changes the capacitance coupling between conductors, and the effect is much like a condenser microphone in parallel with whatever mic you have connected to the end of the cable. In order to minimize such noise, a cable must be mechanically stable. Canare uses cotton, jute and/or exotic polyester filler fibers to pack cables, so they hold their dimensions. These fillers also prevent stretching, which can induce noise. Additionally, paper, mylar and or cloth tape, bind multichannel cables so they hold their shape. In the most susceptible of cables, such as high impedance guitar cord, Canare uses a conductive carbon-vinyl plastic jacket inside the shield to dissipate static noise and improve shield density, further reducing handling noise. (Canare GS-6).
by Imre A. Csaszar
Csaszar, a designer of video equipment, is president of Covid, Tempe, AZ.

Computer displays have a different visual function than the video displays for industrial or broadcast video. The video systems used throughout the world for entertainment, news and education were designed to broadcast moving pictures of familiar, real-life objects over the airwaves to the masses. The motion focuses visual attention and acuity in the center of the screen, and the corners and edges are treated peripherally.

All are primarily black-and-white systems with a low-resolution color channel overlaid on the medium-resolution black-and-white image. These systems rely on the viewer's visual experience to "fit" the colors to the highest-resolution monochrome image. Even proposed future high-resolution HDTV systems maintain this relationship.

The visual function of computer displays is different in that they are designed to provide a static image of detailed information, like a printed page. This image is made up of picture elements commonly called pixels or pels, the smallest bits of light that make up the picture. These bits, or dots, of light are grouped in patterns to form the characters and lines displayed on the screen of a computer monitor. (See Figure 1.) They often are visible upon close examination, particularly on older equipment.

Often, the graphics used in computer displays are of abstract items that don't exist in nature and are not familiar to the viewer. Also in contrast to video displays is the information in the corners of a computer display screen, which is typically as important as the information in the center. These distinctions in function are the reasons for the technical design differences that will be discussed here, and they must be kept in mind by designers of large-screen data display systems.

The four technical differences between TV video (NTSC/PAL/SECAM) and computer-generated video are:

1. Resolution or detail capability. The higher the resolution, the greater the detail. (See Figure 2.)

2. Scan rate. How fast (in microseconds or milliseconds) or how often (in hertz/second) the beam of electrons in the picture tube scans side to side and up and down to constantly "redraw" the picture that the human eye integrates into a steady image. (See Figure 3.)

3. Retrace and blanking. Retrace is the length of time it takes the beam of electrons to go from the end of one scan line to the beginning of the next. Blanking is the length of time the beam is turned off so that the retrace is not visible on the picture tube. (See Figure 3.)

4. Overscan/underscan. TV video is overscanned on the picture tube. This means that the electron beam "draws" a picture that is larg-
er than the viewable area of the picture tube. Computer video is underscanned. The electron video beam draws a picture smaller than the face of the picture tube.

**Resolution**

Resolution is determined by many factors, such as video bandwidth; rise and fall times of the electronic circuits; beam spot size; focus and high-voltage regulation of the picture tube(s); the optical characteristics of the faceplate, lenses or screens; and the environment in which the picture is viewed.

The detail capability of TV video is limited by two bandwidth restrictions: approximately 4.7MHz for the luminance (black and white) and 1.5MHz for the chrominance (color) portions of the picture. These figures apply to the RS-170A/NTSC video standard common in the United States and are only slightly better for the PAL and SECAM standards used throughout Europe. The figures were chosen because of the limited space available on the airwaves used for broadcasting and because of the limitations of the technology when television was developed. These design constraints apply, regardless of how well the equipment is designed or how expensive it is.

Computer video has a much wider bandwidth, typically from 20MHz to 100MHz. This is mandated by the greater detail displayed, and can be achieved because no real standards exist. Video from business computers and workstations always is displayed on a specially designed, dedicated monitor that is integral to, or attached to, the computer or terminal with a short low-loss cable. The only bandwidth limitations are technological and financial.

Color usually is fed in three separate signals: red, green and blue (commonly referred to as RGB), each with identical bandwidths. Picture tubes used in computer displays have a much smaller, highly focused electron beam spot size and a finer-pitch screen surface than most broadcast video monitors.

The difference in detail or resolution between TV video and computer-generated video can be compared to the difference in picture quality between a newspaper and a magazine.

**Scan rates**

Horizontal and vertical scan rates for TV video are specified in meticulous detail by the RS-170A standard. This standard is necessary to ensure compatibility among broadcast and reception equipment and to promote wide acceptance of TV broadcasting by the public. This broadcast standard mandates a horizontal scan frequency of 15,734.263Hz (commonly referred to as 15.75kHz). The vertical scan frequency is derived by dividing the horizontal scan by 262.5, yielding 59.94Hz (commonly referred to as 60Hz). These scan rates produce a picture, called a frame, that has 525 scan lines (262.5 x 2) displayed every 1/30th of a second.

Computer video has no scan rate standards to satisfy compatibility requirements. Computer displays have horizontal scan rates between 15kHz and 75kHz and vertical scan rates between 40Hz to 120Hz. The horizontal and vertical scan rates, together with the video bandwidth, determine the amount of detail that can be shown on the display. The higher the horizontal scan rate and video bandwidth, the higher the detail capability. The lower the vertical scan rate (for a given horizontal scan rate), the higher the detail capability.

Because vertical scan rates below 60Hz are not integrated fully by the human eye, the image appears to flicker. Computer monitors that use lower scan frequencies have phosphors in their picture tubes that keep glowing long after the electron beam has moved on. These are called long-persistence phosphors, and they can be identified easily by the ghost image that remains after the appearance of a moving object such as the cursor.

Current designs with vertical scan rates of 60Hz or higher do not rely on long-persistence phosphors. This forces computer-dis-

**Blanking**

The blanking time of TV video also is defined strictly in standards, but the retrace time is not. The relationship is this: Retrace is less than blanking, which is 10.5µs, and because a horizontal scan line takes 63.5µs, the blanking represents approximately one-sixth of each scan line, mostly on the picture's left edge. The vertical blanking is 21 horizontal scan lines (1,333µs), which is approximately 1/25th of the picture, and occurs mostly at the top of the raster.

The reason for blanking such a large portion of the TV picture is to "hide" certain non-picture-content signals such as colorburst references, vertical interval reference signals, vertical interval test signals, vertical interval time code, closed captioning, teletext and other signals contained in the vertical blanking interval. Computers do not have these constraints and seek to maximize the available picture area by using short blanking times. Typical values are 5µs or less for horizontal and 800µs or less for vertical.

**Overscan/underscan**

The picture displayed on a home TV set actually is larger than the picture tube by approximately 15%. This overscanning is intended to provide a more pleasing appearance by "filling in" the curves of the older picture tubes. Video producers are well aware of the so-called safe action area resulting from overscan, as defined by SMPTE standards. When a picture displayed on a screen is smaller than the face of the picture tube, it is underscanned. Underscanning reveals data on the extreme top and bottom lines as well as on each corner, maximizing the available picture area.
Special computer displays
These differences require the use of large-screen projectors and video monitors specifically designed to accommodate the stringent demands of computer-generated video. An easy way to identify these devices is by their capability to accommodate a large variety of horizontal and vertical scan rates. These devices also have wideband RGB video and separate sync inputs, usually on BNC connectors, and require shorter blanking times.

Although some TV projectors have RGB inputs, most are unsuitable for computer displays. One exception is the popular IBM Color Graphics Adapter (CGA). (See the related article below.) This "graphics card" operates at scan rates so close to RS-170A standards that many monitors and projectors with RGB inputs adequately can display its video output signals.

Recently introduced liquid crystal panels can be used with an overhead projector to work with the CGA and the Apple II line of computers. Many of these liquid crystal devices are fairly low-resolution, fixed-pixel displays that are relatively inflexible and seldom work with other computers, terminals or graphics cards. If you plan on buying one of these devices, carefully test the system for the specific application. Testing is particularly important if an IBM EGA card is used, because it can change scan rates during the execution of programs.

CGA, EGA, MDA, PGA, VGA, MCGA, and HGA. It may look like alphabet soup, but this is a list of acronyms for the various video cards used in the world of personal computers. These nicknames of various IBM display adapters also are used (and sometimes abused) by the makers of hundreds of clone or work-alike products. Buyer beware! Some of these clones are not fully compatible, or they may have additional mode and scan-rate capabilities. This is what these cards do:

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<td></td>
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</tr>
</tbody>
</table>

NOTES:
1. Not IBM, but a standard for monochrome graphics.
2. Changes modes by program control. "Clones" often support HGA standard.
3. A subset of the VGA standard for use with older PCs and the PS/2 model 30.
4. A full set of the VGA features for use with older PCs.

Making the connection
Most terminals and computers do not feed the video signals or have the connectors needed for interface with data projectors and monitors. The link between the two are special interfaces that perform several vital functions necessary to successfully implement a complete system. Five important functions must be performed by these computer video interfaces:

1. Allow the full use of the computer's display/monitor. This includes maintaining the picture quality, safety, EMI radiation and serviceability of the computer system or terminal. For reliability, accomplish the interface with a minimum of extra cables.

2. Convert and regenerate the myriad of sync signals used in computers to a standard polarity and amplitude composite-sync required by the projectors. Easy-to-use picture-centering controls often are vital.

3. Buffer and convert the video signals to an analog 75 format. The high-resolution video signals can be sent over hundreds of feet of standard RG-59 video cables without loading the computer's own display or loss of picture detail. Simply extending the unshielded multiconductor wire used by some computers' monitors can cause smearing and ghosting on the magnified projected image.

4. Accommodate the newer terminals and computers that have many operating modes. Current software often determines parameters such as horizontal and vertical scan rates, blanking times, pixel size, color scheme and aspect ratio. Automatic circuitry in the interface will make most of these changes transparent to the user and projector.

5. Be flexible enough to adapt to the inevitable changes in computer hardware. Terminals, video cards and graphic work stations constantly are being upgraded to take advantage of newer features. The video interface and projection system should allow these upgrades to be implemented with minimum effort.
The internal graphics or graphics card in a computer determines the resolution of the computer's display. If a computer's main function is to display text, such as is the case with banking terminals, then a lower resolution graphics or graphics card will be utilized. If the objective of the terminal or computer is to display graphics such as animation, charts, graphics and digitized pictures then a higher resolution graphics standard will be used. This is all determined by the computer manufacturer's market objective for their product. Of course, the higher the resolution the higher the cost of the display. Thus, in many cases, the market is customer driven by application demand but also in some cases it is market driven by manufacturers depending on chip and technology costs. For example, if more manufacturers are using higher resolution video drivers in their designs and demand and supply is adequate, a higher resolution graphics standard may be less expensive than a lower resolution format. A basic rule of production is the more you sell, the lower it costs to produce it. In the development of graphics and graphics card standards since 1982, both of these factors have been the case. While demand increased every time a higher graphics standard was introduced, eventually the new "standard" became the norm for all manufacturers in the industry and prices always eventually came down.

The following section describes the "stepping stones" of graphics and development as defined by the IBM PC and IBM PS/2 computers:

**EGA**

D) EGA "Enhanced Graphics Adapter" - Introduced as the standard graphics card in the IBM XT and IBM AT, the EGA card was the second major graphics standard to be mass produced within all the IBM clones. Providing not only a higher resolution than CGA, but also more colors, EGA, by the end of 1985 became the second "standard" graphics card.

**Specifications:**

<table>
<thead>
<tr>
<th>Pin Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>pin 1 - Ground</td>
</tr>
<tr>
<td>pin 2 - Red Intensity</td>
</tr>
<tr>
<td>pin 3 - Red</td>
</tr>
<tr>
<td>pin 4 - Green</td>
</tr>
<tr>
<td>pin 5 - Blue</td>
</tr>
<tr>
<td>pin 6 - Grn Intensity</td>
</tr>
<tr>
<td>pin 7 - Blu Intensity</td>
</tr>
<tr>
<td>pin 8 - H. Sync</td>
</tr>
<tr>
<td>pin 9 - V. Sync</td>
</tr>
</tbody>
</table>

Common characteristics: Two "unused" RCA type phono jacks located above the DB 9 pin. The EGA card utilized either the IBM 5153 (15.75 kHz) or 5154 (21.8 kHz) color monitors.
F) VGA "Video Graphics Array" - The VGA graphics standard was introduced as the standard output for an IBM PS/2 series computers. With the introduction of the PS/2 Models 30, 50, 60, 70 and 80 in 1987 utilizing VGA graphics permanently mounted in the mother board of the computer's CPU, a new standard resolution was born, and every graphics card manufacturer had VGA compatible cards on the market by 1988. Most VGA cards were/are retrofittable to all IBM PC and compatible computers using the standard IBM bus. These third-party VGA card manufacturers allowed current IBM PC, PC XT, PC AT or compatible users to utilize the same higher PS/2 graphics without having to buy a PS/2 computer. Specifications:

Common characteristics: All VGA compatible cards have three modes of operation:

Mode 1: 640 x 350 .......................................... 70Hz refresh (vertical)
Mode 2: 640 x 400 or 320 x 200 ...................... 70Hz refresh (vertical)
Mode 3: 640 x 480 ...................................... 60Hz refresh (vertical)

The mode utilized is determined, in most cases, by the software being used (software default). By providing EGA and PGA emulation modes, VGA cards can utilize software compatible only at those lower resolutions and display them "full-screen" on the computer's local monitor. Because VGA software really didn't fully saturate the market until 1989, these emulation modes were helpful for all current software applications. VGA utilizes either an IBM 8503 monochrome monitor or the 8512 or 8513 color monitors.

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**X Terminals**

courtesy of: Visual Technology, Inc.

WHAT IS X?

X or X.11 or X Window System is a portable software standard that was developed by the Massachusetts Institute of Technology's Project Athena. X, now under the auspices of the X Consortium, has become an industry-wide standard, being adopted as the standard Window System by a majority of minicomputer, mainframe and workstation vendors.

One of the most important features of X is its unique device-independent architecture which allows client programs to display windows containing text and graphics on any display hardware that supports the X protocol. Client programs and display servers can communicate transparently over a network.

WHAT IS AN X TERMINAL?

An X Terminal is simply the display hardware used to work within a windowing environment. You can think of an X Terminal as being a diskless workstation with its own processor and display device. The similarity stops there, however, because an X Terminal supports the X Protocol and utilizes superhigh resolution graphics needed for its windowing environment.
IBM 8514/A

G) IBM 8514/A Display Adapter Card - The IBM 8514/A display adapter card is a high resolution VGA card utilizing four modes of operation. Introduced also in 1987, 8514/A is an alternative high resolution graphics card to VGA for the IBM PS/2 Models 50, 55, 60, 65, 70, 75 and 80. Because the 8514/A was somewhat expensive, coupled with the fact that very little software was developed for it, it never became an IBM clone "standard" card. Specifications:

Common characteristics: The IBM 8514/A displayed the three VGA modes and a fourth mode of 1024 x 768 at a 43 Hz refresh rate. This 43 Hz fourth mode introduces a slight flicker to the display thus making it more applicable to graphics rather than text applications. The 8514/A display adapter utilizes an 8514 monitor.

SUPER VGA

H) Super VGA Cards - Every major third-party graphics card manufacturer has introduced what can be categorized as a Super VGA card since 1988. Super VGA cards are either higher resolution VGA cards or standard VGA cards with more color capability. In fact, the IBM 8514/A graphics card is categorized as a Super VGA card. Because the IBM "standard" VGA is a 640 x 480 maximum resolution card with a 64 color palette, a Super VGA card must be categorized as any VGA type card with a higher resolution than 640 x 480 or with more than a 64 color palette. Most specifications:

Common characteristics: The graphics resolution is either determined by software default or by manual pre-set dip switches. Utilizing a Super VGA card does not mean that all programs suddenly have better graphics. The software program must be able to display the higher resolution modes or the Super VGA card will default to the standard VGA modes. Super VGA cards utilize high resolution multi-scan monitors ranging in frequency from 31 to 48 kHz.
IBM XGA

I) IBM XGA "eXtended Graphics Array" - The XGA graphics standard was introduced by IBM in 1990 as the standard output of the IBM PS/2 Models 90 and 95. As with VGA in other models of the PS/2, XGA is built permanently on the mother-board of the CPU. Touted as a higher resolution VGA or enhanced VGA graphics mode, XGA is IBM's answer to industry Super VGA cards. Specifications:

<table>
<thead>
<tr>
<th>Pin Configuration</th>
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<tbody>
<tr>
<td>pin 1 - Red</td>
</tr>
<tr>
<td>pin 2 - Green</td>
</tr>
<tr>
<td>pin 3 - Blue</td>
</tr>
<tr>
<td>pin 4 - ID Bit</td>
</tr>
<tr>
<td>pin 5 - N/C</td>
</tr>
<tr>
<td>pin 6 - Red Return</td>
</tr>
<tr>
<td>pin 7 - Grn Return</td>
</tr>
<tr>
<td>pin 8 - Blu Return</td>
</tr>
<tr>
<td>pin 9 - No Pin</td>
</tr>
<tr>
<td>pin 10 - Ground</td>
</tr>
<tr>
<td>pin 11 - ID Bit</td>
</tr>
<tr>
<td>pin 12 - ID Bit</td>
</tr>
<tr>
<td>pin 13 - H. Sync</td>
</tr>
<tr>
<td>pin 14 - V. Sync</td>
</tr>
<tr>
<td>pin 15 - N/C</td>
</tr>
</tbody>
</table>

Common characteristics: Like 8514/A, XGA resolution is determined by either software default or manual settings. XGA utilizes the new 8515, a 13" high resolution color monitor.

IBM IMAGE ADAPTER/A

J) IBM Image Adapter/A - The IBM Image Adapter/A card is a graphics card utilized in the IBM PS/2 Models 50, 55SX, 60, 70 and 80. It allows the IBM PS/2 series to generate Workstation, CAD/CAM or high resolution desktop publishing level graphics. When utilizing the IBM PS/2 series of computers in a desktop publishing application, a two-page or full-page direct view monitor is attached to the graphics output of the Image Adapter/A card. On the other hand, utilizing the Image Adapter/A card will also allow the CAD/CAM level 6091 monitor normally utilized on the RISC 6000 Workstation to be connected to an IBM PS/2. Specifications:

<table>
<thead>
<tr>
<th>Pin Configuration</th>
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<tbody>
<tr>
<td>pin 1 - reserved</td>
</tr>
<tr>
<td>pin 2 - video</td>
</tr>
<tr>
<td>pin 3 - Reserved</td>
</tr>
<tr>
<td>pin 4 - ID Bit 02</td>
</tr>
<tr>
<td>pin 5 - Self-test</td>
</tr>
<tr>
<td>pin 6 - Reserved</td>
</tr>
<tr>
<td>pin 7 - Video Ret.</td>
</tr>
<tr>
<td>pin 8 - Reserved</td>
</tr>
<tr>
<td>pin 9 - No Pin</td>
</tr>
<tr>
<td>pin 10 - Ground</td>
</tr>
<tr>
<td>pin 11 - ID Bit 00</td>
</tr>
<tr>
<td>pin 12 - ID Bit 01</td>
</tr>
<tr>
<td>pin 13 - H. Sync</td>
</tr>
<tr>
<td>pin 14 - V. Sync</td>
</tr>
<tr>
<td>pin 15 - ID Bit 03</td>
</tr>
</tbody>
</table>

Common characteristics: IBM is the only manufacturer of the Image Adapter/A card. It utilizes the IBM 8506, 8507 and 8508 monochrome or 6091 color monitors.
C) Macintosh, Mac Plus, Mac SE - The Macintosh series of PCs have a built-in black and white video display CRT (cathode ray tube). Because the CRT is built in to the computer, there is no video output for connecting an external video monitor or projector. To add a video output for connection of an external data display monitor, projector or LCD panel, an ICWK (internal computer wiring kit) must be installed.

Using Extron's ICWK gives a 9 pin output

- H. frequency: 23 kHz
- V. frequency: 60 Hz
- Signal: TTL
- Max resolution: 512 x 342
- Colors: gray-scale

MACINTOSH IIx, IIcx, IIci, ILsi, IIfx

E) Macintosh IIx, IIcx, IIci, IIsi, IIfx - The introduction of the new series of Macintosh computers in 1989 and 1990 introduced an unusual output configuration. The new Mac II card now utilized in all Mac II computers when ordering a separate RGB monitor contains an RGB composite sync output and separate horizontal and vertical sync output. The monitor attached determines whether the composite or separate horizontal and vertical sync output is used. Specifications:

NOTE: Only the Mac IIsi or the Mac LC are capable of outputting 24 kHz (512 x 384) resolution. This occurs only when the 12" color monitor is connected to the 15 pin output. All other color monitors run at 35 kHz.

Common characteristics: The monitor that is connected determines the pin configuration utilized. Some monitors utilize the composite sync output and some utilize the separate horizontal and vertical sync outputs.
F) High Resolution Macintosh II Cards - As with IBM computers, there are third-party graphics card manufacturers for Macintosh II computers. These high resolution Mac II cards are either enhanced Mac II video output cards or even some are higher resolution than standard Mac II resolution. Specifications:

**Pin Configuration**

- pin 1 - Red Ground
- pin 2 - Red
- pin 3 - C. Sync
- pin 4 - Sync Ground
- pin 5 - Green
- pin 6 - Gm Ground
- pin 7 - N/C
- pin 8 - N/C
- pin 9 - Blue
- pin 10 - N/C
- pin 11 - N/C
- pin 12 - N/C (Green-SuperMac only)
- pin 13 - Blue Ground
- pin 14 - N/C
- pin 15 - N/C

**Specifications:***

- H. frequency: 35-53 kHz
- V. frequency: 60-70 Hz
- Signal: analog
- Max. resolution: 1024 x 768
- Colors: 1.6 million palette
- 256,000 displayable
- Manufacturers: SuperMac, RasterOps and Radius

Common characteristics: Although most high resolution Mac II cards have a 15 pin "D" output for RGB, and some have a 9 pin "D" gray scale (ECL) output. All of these cards are either 100% compatible with the Apple high resolution RGB card or have higher resolution enhanced modes.

**VIDEO**

- Horizontal frequency range: 15.75 kHz
- Vertical frequency range: 60 Hz
- Inputs: NTSC, PAL, S-Video or some times even low resolution RGB Sync.
- Primary Application: Presentation of low resolution computer sources or large-screen video monitoring.

**DATA/GRAPHIC**

- Horizontal frequency range: 15-55 kHz
- Vertical frequency range: 40-120 Hz
- Inputs: NTSC, PAL, S-Video and all PC level graphics and low resolution workstations.
- Primary Application: Presentation of any PC graphics output or low resolution workstation graphics for presentations, training, mapping or even medical imaging.

**DATA**

- Horizontal frequency range: 15-36 (42) kHz
- Vertical frequency range: 50-100 Hz
- Inputs: NTSC, PAL, S-Video as well as low and medium resolution computer sources.
- Primary Application: Presentation of IBM PS/2, VGA, Mac II or medium resolution graphic sources for training or educational purposes.

**GRAPHIC**

- Horizontal frequency range: 15-72 (80) kHz
- Vertical frequency range: 40-150 Hz
- Inputs: All video and all RGB analog computer sources.
- Primary Application: High resolution three-dimensional imaging and computer animation and design.
III. BANDWIDTH

The bandwidth specification of video signals, interfaces, switchers, distribution amplifiers and cables is one of the performance measurements that helps engineers and system designers in selecting video signal processing equipment that will faithfully reproduce and process video signals for display on monitors and large screen projection systems.

Each piece of electronic equipment has a limited band or range of frequencies in which it can successfully operate. The width of this range or band is called bandwidth. This range is limited by what are called critical frequencies. The upper and lower critical frequencies, calculated as the half power points (-3dB points) of the point of maximum amplitude, are used as the cut off points of the usable frequency band. These points are generally denoted as F1 and F2 as seen in figure 8. The half power points can be calculated as 70% of the maximum amplitude.

Video equipment has a wide range of frequencies which it must be able to pass. Video signals include vertical and horizontal synchronization in addition to the video information itself. The vertical sync signal is in the Hz range, horizontal sync signal is in the KHz range and video information is always in the MHz range. Low frequencies are as important as high frequencies most video equipment on the market is found to specify only the upper critical frequency limit. The lower critical frequency is DC or 0Hz. When a 100 MHz bandwidth specification is listed for a piece of video equipment, it is intended to imply that the bandwidth is from DC to 100 MHz. This is shown in figure 9.

The main objective in evaluating and selecting video processing products is the selection of products that do not alter or limit the frequencies of the original video signal. The "bandwidth rule of thumb" is to use processing equipment that has no less than 3 times the bandwidth of the frequency being processed. For example: the bandwidth of a VGA signal can range from approximately 30-48 MHz thus, you must use equipment with no less than 90 MHz bandwidth.

The loss of video bandwidth can be seen in the image being displayed. Limited bandwidth will cause a reduction in the horizontal resolution. This will be perceived as a lack of sharpness of the leading and trailing
BANDWIDTH CONT.

edges of the characters and graphics images being displayed. This “softness” is usually found in projection systems with limited bandwidth trying to display high resolution, wide bandwidth computer data and graphics images. A good test for reduced bandwidth is to view black text on a white background. If there are black horizontal lines after the graph or character being displayed, it can be assumed that this is caused by a loss of high frequency information.

When a video signal passes thru a system with multiple products cascaded, it is important that the entire system is capable of passing the signal successfully. Ideally each unit of signal processing equipment should have 3 times the bandwidth of the original signal. This will reduce the chance of signal degration. If any one piece of equipment limits bandwidth, the lost information can never be recovered. A chain is only as strong as its weakest link.

Few computers and graphic cards specify the frequencies of their video information. There are many different ways to calculate or estimate a signals bandwidth. This simple formula can be used to approximate bandwidth within 10%:

WHERE:

\[ N = \text{Number of horizontal lines} \]
\[ T = \text{Time of horizontal trace} \]
\[ BW = \text{Bandwidth} \]

NOTE:

\[ T = \frac{1}{\text{Horizontal scanning rate in Hz}} \]

EXAMPLES:

VGA:

\[ T = \frac{1}{31500\text{Hz}} = .0000285 \text{ sec.} \]
\[ BW \text{ of signal} = \frac{768 \text{ lines}}{.0000285 \text{ sec.}} = 26947368\text{Hz} \]
\[ BW \text{ for equipment} = 27\text{MHz} \times 3 = 81\text{MHz} \]

HIGH RES CAD CAM WORKSTATION:

\[ T = \frac{1}{64000\text{Hz}} = .0000156 \text{ sec.} \]
\[ BW \text{ of signal} = \frac{1024 \text{ lines}}{.0000156 \text{ sec.}} = 65641025\text{Hz} \]
\[ BW \text{ for equipment} = 66\text{MHz} \times 3 = 198\text{MHz} \]
Synchronizers were developed to lock remote feeds to local sync, making possible clean switches, fades, splits and other effects between local and remote non-synchronous picture sources. This is accomplished by removing large, slow timing errors from cable, microwave and satellite feeds. Synchronizers can also be used to connect non-synchronous VCRs, such as consumer type VCRs that do not accept advanced sync, to A/B roll edit systems.

Prime Image synchronizers all have full frame memories, are also time base correctors and have full eight-bit systems. Large, slow timing errors are removed by the 525-line synchronizer digital memory; while the 16-line time base corrector digital memory removes the small, rapid timing errors.

The time base correction capability makes it possible to time base correct unwanted geometric picture distortion due to video tape related conditions. This can be done without any special switches to change from synchronizer mode to time base corrector mode; therefore, synchronizer quality bandwidth is maintained while time base correction takes place. Every Prime Image synchronizer features the very unique ability to completely synchronize and time base correct even non-time base corrected satellite or microwave feeds. Time base correction and synchronization are necessary to meet FCC broadcast requirements.

In today's market synchronizers are available in a wide range of prices for units that meet prosumer needs in the $3,000.00 range, to wide bandwidth down link cable applications in the $15,000.00 range. They are available with a wide range of features which offer digital effects, freeze frame and freeze field 1 or 2, variable rate strobe (in field or frame mode), variable noise reduction, switchable comb filter to remove undesirable comb anomalies, and all acceptable synchronizers have front panel accessible full proc amp controls. The current range in transcoding is from straight composite in and composite out for personal computer applications to RGB features for high end computer requirements. As a result of the flexibility and pricing in the current synchronizer market, more and more units are being sold into a wider range of nonbroadcast applications.

Some synchronizers are available with a field-only memory of 262 ½ lines, which creates the problem of having pictures that move up and down one line with reference to what the synchronizer is locked to. The field-only synchronizers are not infinite window units; however, all Prime Image units are infinite window full frame units.

![Diagram of video equipment connections](attachment:image.png)
A34 “Solo” Integrated Post Production System

The Solo Integrated Production System includes:
- 3 time base correctors
- 8-input audio/video switcher
- 2 channels of digital effects
- Full function videotape editor

Time Base Correctors
The output of Solo’s 3 switcher buses are each fed into a field store time base corrector. Not only will normal horizontal time base errors of every video input into the Solo be corrected, but the Solo will also synchronize any and all sources which are non-synchronous at the video input. These resynchronized sources may then be incorporated into any of Solo’s mix/wipe and digital effects transitions.

Solo’s time base correctors also accept control signals from VTRs equipped with Dynamic Tracking. This results in stable picture playback over the entire range of available slow motion from the VTR.

Switcher
The video switcher is organized to provide 2 foreground buses and 1 background bus. Each bus consists of 8 external video inputs, as well as internal color black and an independent color matte generator.

Within the switcher portion of solo there are 2 audio channels associated with each of the first 4 video inputs. The audio input control will normally follow the video buses; when a video mix or wipe takes place, it follows the audio bus.

Digital Video Effects
Standard within the Solo are 2 channels of full fledged 2-D digital effects. With these effects units, it’s possible to perform such dazzling video effects as compression and expansion, repositioning, flips and tumbles, variable color inside or outside borders, mosaics, strobing, solarization and posterization, picture splits and much more.

Editor
A full function insert and assemble editor is integrated directly into Solo, providing complete control of up to 6 VTR transports, an external audio mixer and an Abekas A53-D Digital Effects Machine. In addition, Solo’s editor directly controls the built-in audio/video switcher and 2 channels of digital effects. There are also 6 general purpose interface (GPI) output triggers to control external peripheral equipment.

A42 Digital Still Store
Advanced digital video processing yields high quality images, and a microprocessor-based control system ensures powerful and easy-to-use features. A built-in 5¼” Winchester disk drive provides the safest on-line picture storage available.

Utilizing a high speed digital streaming tape drive, it stores pictures on a compact 1/4” tape cartridge.

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.

3 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.

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.

In the dual channel system, pictures can be recalled to both channels independently. While 1 channel is displaying a picture, the other channel can be fully used to record, play back 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.

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 2 channels for easy graphics creation. Each layer, or the entire graphic, can be stored on the disk.

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.

An optional digital interface provides composite digital input and output ports. These ports make it possible to interface the A42 digitally to the A52 and A53-D Digital Special Effects systems.

Prices and Specifications Subject to Change Without Notice.
DIGITAL VIDEO EQUIPMENT

A51 Digital Special Effects System
- True 3-D perspective  
- 3-D location  
- Rotation about H, V, Z axes  
- Variable rotation axis  
- Global locate, rotate, axis  
- 3-D corner pinning  
- Smooth expansion and compression  
- Variable inside and 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  
- 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  
- Auto-keying of multi-faceted objects  
- Cube maker  
- Variable motion types  
- Serial editor/switcher interface  
- On-board solids generation  
- Engineering setup from control panel  
- Effects disks compatible with A53-D

The A51 Keyer/Combiner was designed with 2 things in mind—combine 2 channels of A51 and/or provide additional keying power to your existing switcher. The Keyer/Combiner incorporates 3 full bandwidth linear keyers to provide 4 levels of video mixing within the A51 system. The output of the A51 Keyer/Combiner can then be used as a switcher input where additional switcher features can be added. An optional light source package gives the A51 Keyer/Combiner the most comprehensive light sourcing available. Light effects include a wide range of spotlighting, diffuse lighting and reflective lighting (gleams).

Specifications
Video:
- Composite, NTSC or PAL television standard  
- Bandwidth: 5.5MHz  
- Differential Phase: 1°  
- Different Gain: 1%  
- K Factor: < 1%  
- S/N: 58dB  
- Component: 525/60 or 625/50 television standard  
- Luminance Bandwidth: 5.5MHz  
- R-Y Bandwidth: 2.75MHz  
- B-Y Bandwidth: 2.75MHz  
- K Factor: < 1%  
- S/N: 58dB

Digital Signal Processing:
- 13.5MHz video and key, 4:2:2:4

Inputs:
- Video Input: composite or component analog, synchronous ± 2 lines (2)  
- Key Input: composite or noncomposite analog (2)  
- Reference: 1V, composite analog blackburst, high impedance looping (genlock)

Outputs:
- Video Output: composite or component analog (2)  
- Key Output: composite or noncomposite analog (2)

Remote Interface Interconnects:
- RS-422: RS-422 slave, selectable protocol  
- Auxiliary: RS-422/RS-232 master/slave, selectable protocol  
- GPI: 4 input, 6 output

A51Keyer/Combiner:
- Inputs: 4 video, 4 key, 1 external priority, composite or component  
- Outputs: 2 video, 1 key, composite or component

A66 Component Digital Disk Recorder
The A66 is a low cost digital component disk recorder compatible with D1 and component analog tape recorder formats. The system is capable of real time recording and replay of over 50 seconds of CCIR 601 4:2:2 digital video on each signal system. Multiple signal systems may be networked together to provide a maximum record capacity of over 200 seconds.

The A66 provides random access editing capabilities with 4:2:2 component digital image quality. The system is capable of zero preroll, single field and single frame animation recording with real time playback of final animation sequences. Slow motion replay is also possible over a range of ± 25 times normal speed. A high quality interpolation circuit permits single field, interpolated frame or full frame resolution slow motion and still frame modes.

Due to its advanced features, high performance and low cost, the A66 is the ideal recording system for applications as diverse as pin registered telecine transfers, rotoscoping, graphics composition, D1 compatible editing and automated broadcasting of stills and graphics segments.

Specifications
Video:
- Video Standard: Switchable between 525:60 and 625/50 component television standards  
- Record Capacity: 50 seconds real time video plus 100 video frames (per signal system) in 525/60 television standard, 60 seconds plus 100 frames in 625/50. Multiple signal systems may be networked to a single control panel for long play, 4:2:2:4 and simultaneous play/record applications  
- Input Signals: CCIR 601 digital video (2 selectable inputs)  
- Output Signals: CCIR 601 digital video (2 outputs), analog preview (time code and system status superimposed over monochrome video)  
- Sampling: D1 compatible, 13.5MHz, 4:2:2 component digital  
- Y Bandwidth: 5.75MHz  
- R-Y Bandwidth: 2.5MHz  
- B-Y Bandwidth: 2.5MHz  
- K Factor: (2T pulse) < 1%  
- S/N: 56dB  
- Reference: analog composite sync or CCIR 601 video input

Communications:
- Control Panel: serial RS-485, 2000’ maximum (local power)  
- 150’ with panel powered from chassis  
- Signal System: serial RS-485, 2000’ maximum  
- LINC: serial RS-422, Abekas LINC protocol  
- Editor Port: serial RS-422, Sony, SMPTE protocols  
- Computer/GPI: serial RS-232, simple ASCII protocol

Not all PSNI Members are Abekas Representatives

Prices and Specifications Subject to Change Without Notice.
A72 Digital Character Generator

Any character can be sized from 8 to 511 scan lines high, on screen, instantly. Size changes are made interactively using the cursor up/down keys or the value can be entered directly at the keypad. Once selected, you can produce text in real time. The A72 completely eliminates the rendering time required to size characters off-line. Access to a library of over 1500 typefaces is available. Serif, sans-serif and cursive styles are included in the set of 15 standard typefaces. To achieve the finest character quality, the A72 begins with the highest quality outline information. This is combined with advanced digital signal processing techniques.

Composing your own fonts with the A72 is a simple definition process. Drop shadows, extrusions, outlines, italics, bevels or embossing can all be part of a font and can be created quickly and interactively. Combine the attributes you want for a unique font style and the A72 permits you to store it away for later use. You can squeeze or expand a character, word or line for added impact. You can do word wraps, mark and move blocks of text anywhere on the screen, or copy and paste between pages.

The A72 provides more than 16.7 million colors on-line to choose from. You simply select and work with either the hue, saturation, intensity or red, green and blue color definitions. Solid color, multiple bands of color or combinations of both are possible.

With the defocus function you can create interesting backgrounds with the appearance of depth and modeling. Or form smooth color blends between 2 color points in directions around the points of the compass. The A72’s Background Compose function eliminates the need for other graphics equipment to create the eye catching banners and backgrounds that clients want.

The speed of the effect can be preprogrammed or entered just prior to running it: the overall length may be specified in seconds and frames. An adjustable roll window is provided to restrict the effect to only a defined portion of the screen. While your effect is running you can vary its speed interactively. Animations are constructed in the familiar keyframe manner, similar to the A53-D standard. A convenient auto-read feature lets you play selected sequences of images.

The A72 has the ability to scan in full bandwidth R,G,B,K, color icons or selected sequences of images. Medical and other related images can be combined to suit the specific border requirement.

A82 Composite Digital Switcher

This D2 compatible digital switcher provides exceptional keying performance and compositing power with superb video integrity.

Each Mix Effects system of the A82 has 2 full function digital keyers. By virtue of an all-digital architecture, key priorities, as well as complete Mix Effects banks, may be freely exchanged and copied with perfect results.

A unique feature of the A82 is its modular design. You can start with a single Mix Effects module and control panel, then add more switcher modules for additional compositing power as your facility grows. The modular design also means you can use 1 Mix Effects module of the switcher in 1 edit suite while another module is being used in a second room. 6 full chassis and 18 control panels may be integrated on the Abekas network. Up to 4 Mix Effects modules can be controlled from a single control panel.

The A82 can handle up to 32 primary inputs. Since these inputs can be any combination of video and key there is no need for redundant key inputs. In addition, all primary sources may be given alphanumeric names, so storing events and configuration data is fast, easy and accurate.
VIDEO/AUDIO PATCHING

Pro-Patch Video Jackfield
PPV-24 MK II
* 2 x 24 array of ADC switching (self-normalizing) 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.

2 x 24 (48 jacks) ........................................ 2197.00
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.

PPV-24 MK II
24 x 2 array of ADC switching (self-normalizing) 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.

PPV-24 MK II
24 x 2 (48 jacks) ........................................ 2197.00
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.

PPI Panels
* SJ2000 is available in terminating, non-terminating, nickel or gold versions. SJ2000 coax jack is rated for 10,000 insertion/withdrawal cycles. PPI Panels are available in 1 3/4" and 3 1/2" heights with 12, 20, 24 or 26 circuits. PPI Panels with various hole and spacing configurations are sold separately or loaded with your choice of jacks. PPI Panel with SJ2000 switching (self-normal) coax jacks makes accessing and connecting video circuits easy.

PPI-2224RS-75N Loaded panels, terminated, 2 x 24 ................ 1020.00
PPI-2224RS Blank panels ........................................ 98.00

Standard Size Coaxial Patch Cords
CC1072G 12" (.305m) ........................................ 21.49
CC1072N 12" (.305m) ........................................ 16.30
CC1074G 24" (.609m) ........................................ 21.49
CC1074N 24" (.609m) ........................................ 16.30
CC1076G 36" (.914m) ........................................ 21.49
CC1076N 36" (.914m) ........................................ 16.30

Pro Patch Audio Jackfields
PPA3-14 MK II N.O. 3" x 14", normals brought out ................ 799.00
PPA3-18 MK II N.O. 3" x 18", normals brought out ................ 799.00
PPA3-14 MK II N.S. 3" x 14", normals strapped at panel ................ 652.00
PPA3-18 MK II N.S. 3" x 18", normals strapped at panel ................ 652.00
PPS3-14 MK II N.O. 3" x 14", stereo version, normals brought out ................ 859.00
PPS3-18 MK II N.O. 3" x 18", stereo version, normals brought out ................ 859.00
PPS3-14 MK II N.S. 3" x 14", stereo version, normals strapped at panel ................ 705.00
PPS3-18 MK II N.S. 3" x 18", stereo version, normals strapped at panel ................ 705.00

Longframe (1/4") Patch Cords
PJ81 1' length ........................................ 17.97
PJ82 2' length ........................................ 18.92
PJ83 3' length ........................................ 19.59
PJ84 4' length ........................................ 20.35
PJ86 6' length ........................................ 21.82

Bantam Patch Cords
PJ712 12" length ........................................ 10.26
PJ713 18" length ........................................ 10.47
PJ714 24" length ........................................ 10.71
PJ715 30" length ........................................ 10.92
PJ716 48" length ........................................ 11.52
PJ718 48" length ........................................ 11.96
PJ720 60" length ........................................ 12.37

V.A.M.P. — Video, Audio Modular Patchbay
* Chassis accepts 20 video and audio modules. * Audio module features unique QCP terminations. * Video module comes with the ADC SJ2000 self-normalizing 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.

VC-1 V.A.M.P. chassis ........................................ 110.00
VA-1 V.A.M.P. audio module ........................................ 39.00
VV-1 V.A.M.P. video module with SJ2000N-75 jacks .................. 41.00
VV-2 V.A.M.P. video module with SJ2000N jacks .................. 39.00
VV-3 V.A.M.P. video module with CJ2011N jacks .................. 39.00
VB-1 V.A.M.P. blank module ........................................ 1.00

Note: V.A.M.P. available through ADC Broadcast Distributors only.

Prices and Specifications Subject to Change Without Notice.
**DYNAMIC MICROPHONES**

**D-12E Cardioid Microphone**
Large-diaphragm 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: 30Hz-15kHz
Sensitivity at 1kHz: -53dBV

$439.00

**D-112 Cardioid Microphone**
Large-diaphragm microphone handles extreme (168dB) sound pressure levels. Excellent on all bass instruments. Rugged construction. Finished in non-reflective dark grey. Includes SA-40 stand adaptor and case.

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

$524.00

**D-125E Cardioid Microphone**
Anti-feedback microphone perfect for sound reinforcement. Wire-mesh windscreen and diecast housing assure reliability. Includes: SA-40 stand adaptor and case.

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

$199.00

**D-190E Cardioid Microphone**
Cardioid dynamic microphone with sintered bronze windscreen/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: 30Hz-15kHz
Sensitivity at 1kHz: -53dBV

$159.00

**D-1200E Cardioid Microphone**
Unique B-M-S switch allows for on-mic equalization to adjust sound of mic for almost any application without sacrificing performance. Includes: SA-41 adaptor and case.

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

$832.90

**D-310 Cardioid Microphone**
Ruggedized microphone for vocal-music coverage in the home or studio. Shock mounted transducer, diecast housing and dual windscreen/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: 80-18kHz
Sensitivity at 1kHz: -58dBV

$159.00

**D-321 Hypercardioid Microphone**
Patented magnet/diaphragm suspension system reduces handling noise. Diecast housing and dual windscreen/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: 40Hz-20kHz
Sensitivity at 1kHz: -57dBV

$239.00

Prices and Specifications Subject to Change Without Notice.
DIGITAL VIDEO SYSTEMS

Centaurus Digital Video Production System With Still Store

- Full 5.5MHz bandwidth
- Y/C 358 and composite input/output
- 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
- Stores 1000 frames or 2000 fields of video
- 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
- Dual infinite window TBCs/synchronizers
- A video/stereo-audio routing switcher and special effects generators
- Allows inputs and modifiers effects to be changed during split screen operation

Centaurus NTSC .............................................. $16,500.00
Centaurus Without disk drive .......................... $12,500.00
Centaurus Options
S/S Upgrade For users who already own a Centaurus without the still store option. (Requires $250.00 factory installation) ............................................ 40,000.00
E/S External storage drive system. Provides removable and additional fixed storage for Centaurus ................................. Call for Pricing
CCI Allows direct computer control of Centaurus via RS-232 serial interface and allows hook-up of additional keyboards when used with the CKE ........................................... 1,350.00
CKE Permits control of Centaurus from a remote location when used in conjunction with CCI .................................................. 1,000.00

Pictoris Digital Effects Unit
- Linear digital effects
- 2-D
- Full infinite video compression
- Adjustable H and V compression
- Variable picture positioning and H and V picture cropping
- Displays compressed image over background video
- Adjutable color border hue, position and width
- 5 preset transition rates
- 5 programmable panel presets for programming smooth and concise effects
- Y/C 3.58 and composite inputs and outputs
- 5.5MHz bandwidth
- 450 lines resolution
- 8-bit, Y/C component processing
- Special effects: mosaic, posterization, H and V picture invert, negative image and picture freeze (frame or field)
- Auto transitions: dissolves, zoom-in, zoom-out and smooth linear moves between the preset panel settings
- Fly picture on or off screen
- GPI input for triggering sequence of events stored
- GPI output when compressed video reaches zero size
- Key output for easy installation to production switches
- Genlock input
- Proc amp controls
Pictoris ........................................................ $9,900.00

Pictoris EDE Enhanced Digital Effects
- Includes Pictoris features plus an optional keyboard to perform the following:
  - Curvilinear motion—Move image along both straight and curved paths
  - Vary the curviness of a curved path
  - Paths can be defined by up to 50 keyframes: Effects can be run both forward and reverse
  - Flips and tumbles—Horizontal flips and vertical tumbles along any path
  - Datacard—External, portable storage for user-created effects
  - Freeze strobe on foreground image
  - Easy-to-read video menus and prompts
  - High bandwidth throughout
Pictoris EDE .................................................. $13,500.00

Option
EDE Upgrade Keyboard upgrade from the Pictoris to Pictoris EDE .............................................. 3,800.00

Pyxis Digital Video Production Systems
- 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
- Easy way to move up to professional A/B roll editing
- 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
- Includes postereization and selectable source switching
- Meets RS-170 broadcast specifications
Pyxis NTSC .................................................. $4,500.00

Prices and Specifications Subject to Change Without Notice.

ALTA GROUP, INC

Pyxis-E Digital Video Production Systems
- 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

For maximum interfacing flexibility, the system is designed with dual 8-bit infinite window TBC/synchronizers, and 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 .................................................. $6,500.00
PORTABLE SOUND SYSTEMS

Powered and Unpowered Sound Systems

AN-1000 Powered Monitor Speaker
- 50W RMS MOSFET amplifier * Line input 1/4" phone (unbalanced) * Black texture finish * Metal grille * Front volume control * Frequency response 70Hz to 15kHz ± 4dB with less than 0.15% THD * Can deliver SPL in excess of 100dB at 1 meter * 5 3/4" H x 8" W x 8 1/2" D ............... $324.00

AN-1000ES Powered Monitor With External Speaker Output
- Same features as AN-1000 with 8 ohm external speaker output jack .................. $342.00

AN-1000M Powered Monitor With Balanced Mic Level Input
- Same features as the AN-1000 with the addition of a balanced Lo-Z (150 ohm) mic input with phantom power (female XLR) * Mic input can be used simultaneously with the line input for a mixed program output ............. $386.00

AN-1000L Powered Monitor With Balanced Line Level Input
- Same as AN-1000 with a balanced line level input (10K, female XLR) ..................... $366.00

AN-1000AM Powered Monitor With All Options, Balanced Mic Level Input
- Features balanced mic input, line input, buffered line level output, and external speaker output (8 ohm) ............... $391.00

AN-1000AL Powered Monitor With All Options, Balanced Line Level Input
- Same as AN-1000AM except balanced input is line level .......... $391.00

AN-1001 Unpowered Monitor Speaker
- Same as AN-1000 without amplifier. ...................... $145.00

AN-1400 Powered Broadcast Monitor
- 50W RMS MOSFET amplifier * Mounts directly into Tektronix rack * Shielded speaker magnet * Tuned port equalization * Frequency response 70Hz to 14kHz ± 4dB ............... $543.00

AN-1400S 2-Channel Powered Broadcast Monitor Speaker
- 2 line level inputs (female XLR) * Front panel switchable "A" or "B" transformer balanced * All other features of AN-1400 .......... $598.00

AN-200M Complete Sound System
- Line level input 55W amplifier * Buffered line out, external speaker out, 2 4 1/2" high compliance speakers * H.F. dome tweeter * Black vinyl enclosure ................................................................. $440.00

AN-002 Unpowered Speaker System
- Same as the AN-200 without amplifier * Input: 1/4" phone jack * Impedance: 4 ohms * Power: 50W ............... $186.00

AN-256M Complete Audio System With Mixable Inputs
- The perfect integration of mixer, amplifier, and tri-radiant speaker * Reproduces high quality voice and outstanding music fidelity * Can easily handle crowds in excess of 500 * 75W amplifier, 2 microphone inputs (Bal. Lo-Z), line input, line output * Treble and bass equalization * External speaker output * Entire system housed in a durable "Roadie" enclosure and ported for optimum performance ............................................ $570.00

AN-256W Wireless Mic and Mixable Input Powered Sound System In "Roadie" Enclosure
- Same powered sound system as the AN-256M with the addition of a wireless mic receiver with telescopic antenna and separate volume control for wireless mic. Note: Need to order companion microphone/ transmitter .......................................................... $824.00

AN-025 Unpowered Companion Speaker for Use With AN-256M
- Unpowered full range speaker system, same as AN-256M in a Roadie enclosure * Input impedance: 8 ohms * Input jack: sealed 1/4" phone jack * Speaker cable not included .................. $252.00

AN-1000 Series Accessories

SM-001 Shielded Magnet Speaker * A special repulsion magnet speaker to confine the spurious magnetic flux to prevent interference with the CRT display when placed adjacent to waveform or other video monitor ....................... $18.00

RM-710 Rack Mounting Kit (single) * Adapts any of the "1000" series (except 1400 Series) to mount in standard equipment rack (5 3/4" H x 19" W). Satin black finish ........................................ $39.00

RM-720 Rack Mount Kit (dual) * Adapts any 2 of the "1000" series (except 1400 Series) to mount side by side in standard equipment rack (5 3/4" H x 19" W). Satin black finish ........................................ $39.00

AN-1400 Series Accessories

AN-1400 2-Channel Powered Broadcast Monitor
- 50W RMS MOSFET amplifier * Line input 1/4" phone (unbalanced) * Black texture finish * Metal grille * Front volume control * Frequency response 70Hz to 15kHz ± 4dB with less than 0.15% THD * Can deliver SPL in excess of 100dB at 1 meter * 5 3/4" H x 8" W x 8 1/2" D ............... $324.00

PC-730 Protective Transport/Storage Cover for AN-1000 or AN-1001
- Black plastic end covers with Velcro attachment and carrying handle ................ $48.00

200 Series Accessories

SB-720 Swivel Mount Bracket for "1000" Series * U-shaped metal bracket which supports the "1000" via hand fasteners screwed into sides of "1000" (1/4-20 tee nuts hidden under covering). Includes: Bracket, 1 1/4-20 hand fasteners and 2 nylon friction clutch washers. Black satin finish ....................... $43.00

SV-722 Selectable Operating Voltage * Slotted selector switch on rear panel permits operation on 110 or 220VAC ........................................ $69.00

SB-725 Swivel Mount Bracket for Roadie AN-256M/W and AN-025
- Same features and application as SB-720 above ........................................ $43.00

MIC-84 Microphone * Dynamic for handheld vocal use. Balanced Lo-Z with unidirectional pickup pattern. Also has on/off switch and includes 20' cable with XLR (male and female) connectors on each ready to use, padded stand clip. Mic and connectors finished in non-glare black ............... $83.00

MSB-201 Mic Stand and Boom * Collapsible 2-section mic stand, adjustable height from 36" to 83" (with screw-on swivel boom 33°). Mic stand can be used without boom. Stand and boom finished with durable non-glare black chrome ................ $82.00

EX-50M Microphone Cable 50' ........................................ $78.00

SV-722 Selectable Operating Voltage * Slotted selector switch on rear panel permits operation on 110 or 220VAC ........................................ $59.00

1000/200 Series Accessories

SS-750 Speaker Stand * Collapsible with slip-on adapter (SA-703). Made of aircraft aluminum for strength and light weight, with satin black anodized finish. Adjustable height from 42" to 70" with 26" between tripod leg tips. Weight capacity: 25 lbs ........................................ $88.00

SA-703 Speaker Stand Adapter * Adapts 1" diameter speaker stand post to platform surface 4" square. Mount to bottom of all speaker brackets: SB-720, SB-725 and SB-730 ................ $15.00

SC-50 Speaker Cable * Length 50' (15.4m) * Heavy-duty speaker cable (18 g.) with twine strain relief housed in a flexible vinyl jacket with weatherproof phone plug (male) on each end ............... $38.00
BATTERIES

LOGIC SERIES

MAGNUM® 13/14 High Capacity NiCad Batteries
- All MAGNUM batteries incorporate the Gold Mount interface, which is compatible with all the Anton/Bauer quick change battery mounts that are supplied as original equipment by every camera manufacturer.
- The Impac® case features an externally replaceable fuse, gold plated contacts and internal impact protection for the cells.
- The Hi-Res ACS®, cold temperature protection and the exclusive Microcode® Program Module assure safe, dependable, high performance power when used with Anton/Bauer chargers.
- All MAGNUM batteries utilize a new high energy cell technology that is capable of delivering 25% longer run times.
- A Microcode® program module and ACS sensor network built into each battery link with Anton/Bauer Logic Series chargers to create the special MAGNUM charge routine necessary to maximize the capacity and life of these new cells.
- The MAGNUM battery will exhibit excellent performance when charged with standard Lifesaver chargers (non-Logic Series). However, the MAGNUM product has been designed for optimum cycle life and capacity when charged with the Logic Series microprocessor chargers.

MAGNUM 14 Logic Series NiCad Battery 14.4V 72Wh • 5¾" x 4 1/2" x 3", 4¾ lbs. • Typical run times: 2 hrs. at 35W, 3 hours at 25W, 4 hours at 18W...
MAGNUM 13 Logic Series NiCad Battery 13.2V 66Wh • 5¾" x 4 1/2" x 3", 4¾ lbs • Typical run times: 2 hrs. at 33W, 3 hours at 22W, 4 hours at 16W...

PRO PAC 13/14 Professional NiCad Batteries
Hi-Res ACS, cold temperature protection and the exclusive Microcode program module to assure safe, dependable performance and warranty protection unparalleled in the video industry.

PRO PAC 14 Logic Series 14.4V 60Wh NiCad Battery • Fast or slow charge • 4¾ lbs. • Typical run times: 2 hours at 25W, 3 hours at 18W, 4 hours at 13W...
PRO PAC 13 Logic Series 13.2V 55Wh NiCad Battery • Fast or slow charge • 4¾ lbs. • Typical run times: 2 hours at 24W, 3 hours at 16W, 4 hours at 12W...

COMPAC MAGNUM® 13/14 High Capacity NiCad Batteries
- The COMPAC MAGNUM is extremely small and lightweight (almost half the size and weight of the Pro Pac and MAGNUM) yet it eliminates all the problems and complaints associated with NP-style slide-in batteries.
- The high energy MAGNUM cells and charging technique provide up to twice the run time of slide-in batteries, while the high voltage design eliminates all the problems that cripple a 12V battery.
- The higher capacity Pro Pacs and MAGNUMs are recommended for applications drawing more than 24W or involving lighting.

COMPAC MAGNUM 14 Logic Series NiCad Battery 14.4V, 43Wh • 2¾" x 3½" x 4½", 2¾ lbs. • Typical run times: 1½ hours at 28W, 2 hours at 22W, 3 hours at 14W...
COMPAC MAGNUM 13 Logic Series NiCad Battery 13.2V, 40Wh • 2¾" x 3½" x 4½", 2½ lbs. • Typical run times: 1½ hours at 26W, 2 hours at 20W, 3 hours at 13W...

Note: The MAGNUM 13, Pro Pac 13 and COMPAC MAGNUM 13 are universal batteries that will power virtually all ENG/EFP cameras, VCRs, monitors, etc., rated for 12VDC source. However, the MAGNUM 14, Pro Pac 14 and COMPAC MAGNUM 14 will yield superior performance and capacity when the equipment manufacturer specifies compatibility with a 14.4V NiCad battery.

MAGNUM 90 Professional VTR Battery
- Designed and built to the highest standards, employing special premium grade NiCad cells and a high impact molded case.
- Multiple sensor fast charge system (ACS) individually monitors every cell in this battery.
- Exclusive Triconn® connector mates with all Sony VTRs and chargers yet incorporates a third "Data-Link" contact that connects the all-cell sensing circuit of the battery to the Lifesaver chargers.
- The MAGNUM 90 features the high energy MAGNUM cells to provide up to 25% greater run time.

MAGNUM 90 Professional VTR Battery 12V 60Wh High Capacity NiCad VTR Battery • 3½ lbs. • Typical run time: More than 4 hours at 15W...

COMPAC MAGNUM 14

MAGNUM 14

PRO PAC 14

COMPAC MAGNUM 14

MAGNUM 90

PRO PAC 90

NP 13 PLUS High Energy Battery
- Professional slide-in type battery.
- High voltage design eliminates "memory," capacity loss and cold temperature problems that cripple 12V designs.
- ACS network along with the LSNP charger can yield up to 50% greater run time over conventional slide-in batteries.
- Automatic resetting circuit breakers, gold plated contacts and 100% computer testing.

NP 13 Plus High Voltage/High Capacity 13.2V 24Wh NiCad Slide-In Type • 1.4 lbs. • Typical run times: 3 hours at 8W, 2 hours at 12W, 1½ hours at 10W...

Prices and Specifications Subject to Change Without Notice.

63
UNIVERSAL NICAD BATTERY BELTS
30/13 Battery Belt • The ultimate battery belt • Powers virtually all portable equipment, including 30V lights, all 13V cameras and VTRs, and UltraLight Modular Lighting System • Construction features include leather belt, Lexan® battery modules, quick release military buckle and 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 100W maximum total light output (1 or 2 bulbs) • 10A circuit breaker • Waist size: 32" to 48" adjustable • $915.00

Power Strap® 13 Battery Strap • Delivers 2 to 3 times more run time than typical on-board VTR batteries • Designed for use with all portable video recorders and low voltage lighting equipment • Made from rugged, light-weight 1000-denier Cordura®, the Power Strap mounts directly to and becomes part of the existing VTR shoulder strap • Equipped with a U-12MC 12V overnight Micro Charger (18-18 hours), and an accessory webbed belt for conventional use • $425.00

PPSA-D Perpetual Power Belt — Automatic • Accepts 2 13V or 14V Snap-On batteries of any type • When the first battery is depleted, the belt automatically switches to the second battery when the first is depleted • The first battery may be replaced and the process repeated, providing uninterrupted power indefinitely • Features Anton/Bauer’s exclusive 3 charge termination modes and the patented Lifesaver routine, which maintains batteries fully charged until they are ready for use • 12V batteries • 100W max. • 30/13 belt to Lifesaver 1-Hour Fast Charger (1LSFC) • Also connects Power Strap to any Lifesaver Fast or Quick Charger • $335.00

DBH Dual Battery Holder • Slim 2-battery holder with handle which accepts 2 MAGNUM, Pro Pac or COMPAC MAGNUM batteries of the same voltage • A control module monitors battery capacity and switches automatically to the second battery when the first is depleted • The first battery may be replaced and the process repeated, providing uninterrupted power indefinitely • This unit features a low-battery warning LED, 7A circuit breaker and a universal 5-pin XLR output • 11½" x 3" x 6" • 1.5 lbs. • $295.00

CC-68 Power Strap/VTR Accessory • Coiled cable (1'-6") • 4-pin right angle XLR female DC input connector that mates with most popular brand recorders • $70.00

CA-30 Fast/Quick Charge Cable • 5-pin XLR to Triconn® adaptor cable • Connects 30/13 belt to Lifesaver 1-Hour Fast Charger (LSFC) • Also connects Power Strap to any Lifesaver Fast or Quick Charger • $70.00

LOGIC SERIES® MICROPROCESSOR FAST CHARGERS
The Logic Series Microprocessor Fast Chargers are the latest additions to the popular Lifesaver family of chargers. The microprocessor automatically identifies the size and voltage of the battery and selects the optimum charge current and rate for each position. 3 totally independent charge systems set a new standard for charge reliability and safety.

MP-8 Lifesaver Microprocessor 8-Position, 1-Hour Fast Charger • Accepts any combination of 12-14V batteries both Anton/Bauer mount and Pro Pac 90 (BP-90 VTR) type • Size with AC cord: 13" x 22½" x 4" • 21.5 lbs. • $2995.00

MP-4 Lifesaver Microprocessor 4-Position, 1-Hour Fast Charger • Accepts any combination of 12-14V batteries both Anton/Bauer mount and Pro Pac 90 (BP-90 VTR) type • Size with AC cord: 11" x 6½" x 4½" • 8.15 lbs. • $2370.00

PROBE Programmed Battery Evaluator • Microprocessor based accessory for the Lifesaver MP-4 and MP-8 Microprocessor Fast Chargers • Provides basic to complex testing that includes automatic calibration of both capacity and plateau voltage as well as identifying virtually any malfunction including excessive self discharge, "memory," separator failure, shrinking cells and reduced capacity • 9½" x 6½" x 3½" • 5.25 lbs. • $795.00

BATTERY SYSTEM/CHARGERS

CMQ2 Dual Position COMPAC MAGNUM Charger • Full featured compact, lightweight charger capable of charging 2 COMPAC MAGNUM batteries or 1 full size Logic Series battery in 8 hours • Small size makes it ideal for travel • Features Anton/Bauer’s exclusive 3 charge termination modes and the patented Lifesaver routine, which maintains batteries fully charged until they are ready for use • 6½" x 4½" x 3½" • 4 lbs. • 115/230V, 50/60Hz • $395.00

LIFESAVER® NICAD CHARGERS
The first 100% safe charging systems • Lifesaver circuit safely maintains fully charged battery indefinitely • 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 except COMPAC MAGNUM • Special Triconn 3-conductor connector accepts Pro Pac 90 and other BP-90 type VTR batteries • Not recommended for MAGNUM batteries

LSFC Lifesaver Fast Charger • Single position, 1-hour charger • Accepts all Anton/Bauer 4AH Snap-On, Pro Pac 90 Nicad batteries and all Anton/Bauer battery belts • 7½" x 6½" x 4" • 4.4 lbs. • 115/230V, 50/60Hz • $595.00

MFC Mobile Fast Charger • Single position universal 1-hour fast charger • Operates from most vehicles with or without engine running • Accepts all Anton/Bauer Snap-On Nicad 13-14V batteries and Pro Pac 90 batteries using TSO-90 adaptor • Protection circuit disconnects charger if vehicle voltage becomes too low • Operates on 10-15VDC input • 6" x 7½" x 3½" • 2.75 lbs. • $595.00

COMPAC MAGNUM FAST CHARGER
CMFC COMPAC MAGNUM Fast Charger • 4-position, 1-hour sequencer • Programmed for COMPAC MAGNUM 13/14 only. Cannot be used to charge other batteries • Automatic balance mode • Cold/hot protection • ACS • Lifesaver maintenance mode • 120/220V switchable • $795.00

LSNP NP PLUS Lifesaver Fast Charger • Programmed for NP PLUS and other brand slide-in type batteries • 4-position, 1-hour sequencer • 115/230V switchable • Size: 8½" x 7½" x 3½" • 4 lbs. • ACS • Hot/cold protection • Lifesaver maintenance pulse keeps batteries 100% topped with no detrimental heat or aging effects • $675.00

Prices and Specifications Subject to Change Without Notice.
CASES

Anvil Cases
From heavy-duty transit to lightweight carrying cases. Anvil has developed a comprehensive range of product lines to serve such diverse industries as video production, broadcast, computer sciences, aerospace, telecommunications, microwave technology, test evaluation, military, government and commercial.

Every case is made to order. Anvil does not have stock sizes requiring retrofitting equipment into existing sizes. Anvil designs each case to exact specifications for exact, uncompromising fit and quality. If your equipment is worth protecting, it's worth using an Anvil Case.

Case interiors are custom designed to provide maximum shock absorption and vibration resistance. Soft, resilient unicellular polyfoam is sculptured to fit around your equipment like a glove. Quality control is assured through numerous inspections during and at the conclusion of the manufacturing process.

Anvil Product Lines
A.T.A. - Cases conform to the Air Transport Association 300 category 1.
M.A.C.C. - Military Application Cases and Containers that meet or exceed Mil. Std. 810.
Lite-Line - Anvil's lightweight case.
Forge II - Ideal for local or short distance travel not involving air transport.
Reinforced Forge - Designed for exhibits and displays.
Anvilite II - Designed as a lightweight carrying case.
Fibre - Available in rugged vulcanized fibre or less expensive CH fibre.

A.T.A. Video and Audio-Visual Cases
We can build a strong case around any broadcast, industrial or educational video product, or motion/slide/strip and overhead projectors, as well as multi-image devices and dissolve units on the market. Just give us the model number of your camera, recorder, monitor or any other component or combination - and we'll give you a case that will make sure your components are ready to get the shot when you are, every time.

E.I.A. Rackmount Cases
Standard 19" rackmount components can be safely and easily moved to your location. Anvil offers several variations on the rackmount design: front and rear removable lids with or without shock isolation option, pull-over-lid design (case within a case design), or the popular mixer/rack arrangement providing rackmount space horizontally opposed to standard vertical rack space. Whichever way you go, Anvil has the rack case to make for the fastest setup and strike.

M.I.C.S. Modular Interlocking Case System
M.I.C.S. cases convert quickly and easily from shipping containers to work centers. Lid removes easily, hinged leg assemblies swing into position and all components lock securely in place. Work surfaces are then attached to the case side.

Prices and Specifications Subject to Change Without Notice.
TRIPOD STANDS

Ports-Series Standard and Telescoping Tripod Stands

PSC/PSCE. Lightweight folding stands provide the traveling performer and lecturer with a compact portable stand capable of instant set up and tear down. Single unit vertical tube and tripod base assembly features spring action legs with rubber tips, all-metal grip action clutch and U.S. standard microphone holder termination. Model PSC includes chrome plated tubing and ebony base. PSCE includes ebony finished tube and base.

PSC-3. Telescoping tripod stand, provides efficient set up and transportation convenience for seated and standing performers. Vertical chromed tube assembly is comprised of 3 sections and 2 all-metal clutches for optimum height adjustment. Spring action tripod stand base is finished in ebony with chromed tube legs and rubber tips.

<table>
<thead>
<tr>
<th>Model</th>
<th>Height Span</th>
<th>Base Spread</th>
<th>Transportation Length</th>
<th>Lbs.</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSC(PSCE)</td>
<td>35'-63'</td>
<td>25'</td>
<td>32'</td>
<td>4½</td>
<td>$82.00</td>
</tr>
<tr>
<td>PSC-3</td>
<td>25'-66'</td>
<td>25'</td>
<td>22'</td>
<td>4</td>
<td>74.33</td>
</tr>
</tbody>
</table>

MICROPHONE FLOOR STANDS


MS-10C/MS-10CE 'Leader' Stands

* Long-life stage and studio stands with extra height extension incorporate heavy-duty 11/8" diameter tube assembly with grip action clutch, top adaptor and low contour high stability cast iron base. * MS-20E includes chrome finished tube and circular cast iron base. * MS-10C is supplied with chromed tubing and ebony base. * MS-12C consists of chromed tube and ebony base. * MS-12CE features ebony finished tube and base.

MS-10C/MS-10CE General Purpose Stands With Grip Action Clutch

* Low profile stands feature grip action clutch for quick height adjustment and low silhouette cast base for high stability. * MS-11C is supplied with chromed tubing and chrome finished base. * MS-12C consists of chromed tube and ebony base. * MS-12CE features ebony finished tube and base.

<table>
<thead>
<tr>
<th>Model</th>
<th>Height Span</th>
<th>Base Spread</th>
<th>Transportation Length</th>
<th>Lbs.</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS-10C(10CE)</td>
<td>35'-63'</td>
<td>10' Dia. Round</td>
<td>10</td>
<td>$40.93</td>
<td></td>
</tr>
<tr>
<td>MS-11C</td>
<td>34'-62'</td>
<td>10' Dia. Round</td>
<td>11</td>
<td>55.83</td>
<td></td>
</tr>
<tr>
<td>MS-12C(12CE)</td>
<td>34'-62'</td>
<td>10' Dia. Round</td>
<td>12</td>
<td>41.68</td>
<td></td>
</tr>
<tr>
<td>MS-20(20E)</td>
<td>37'-66'</td>
<td>12' Dia. Round</td>
<td>14</td>
<td>83.23</td>
<td></td>
</tr>
</tbody>
</table>

STUDIO QUALITY MICROPHONE BOOM STANDS

SB-36/SB-36W Professional Studio Boom With Air Suspension System

* Heavy-duty stands for stage and studio application include integral platen type air suspension system for effortless height adjustment. * Models are equipped with 2-piece horizontal chromed tube assembly, 6 lb. adjustable/locking microphone counterweight, heavy-duty swivel, adjustable chrome plated vertical tube with grip action clutch and 1-piece cast iron triangular base with ebony finish and chrome cover. * Model SB-36 is without casters for stationary applications. * SB-36W includes premium quality rubber casters for silent mobility. * Both models are supplied with guide clips for microphone cable attachment.

<table>
<thead>
<tr>
<th>Model</th>
<th>Height Span</th>
<th>Boom Length</th>
<th>Base</th>
<th>Lbs.</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>SB-36</td>
<td>48'-72'</td>
<td>62'</td>
<td>17' Triangular</td>
<td>30</td>
<td>$308.40</td>
</tr>
<tr>
<td>SB-36W</td>
<td>49'-73'</td>
<td>62'</td>
<td>24'</td>
<td>40</td>
<td>355.65</td>
</tr>
<tr>
<td>SB-100W</td>
<td>61½'-92½'</td>
<td>110'</td>
<td>34'</td>
<td>47</td>
<td>974.85</td>
</tr>
</tbody>
</table>

PB-10/PB-10E Fixed Length Booms

Horizontal boom attachments are fixed length, screw fastening ports-booms with diecast swivel and integral tapered counterweight for stationary applications. Oversized hardware with individual high impact plastic knobs provides free or sliding motion control and fixed positioning. 31" length.

<table>
<thead>
<tr>
<th>Model</th>
<th>Height Span</th>
<th>Boom Length</th>
<th>Base</th>
<th>Lbs.</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>PB-10</td>
<td>Chrome finish tubing</td>
<td>48'</td>
<td>17' Triangular</td>
<td>30</td>
<td>$308.40</td>
</tr>
<tr>
<td>PB-10E</td>
<td>Finished in non-reflective ebony</td>
<td>48'</td>
<td>17' Triangular</td>
<td>30</td>
<td>$308.40</td>
</tr>
</tbody>
</table>

PB-20XE Extendable Length Boom

2-piece horizontal boom with ebony finish tubing is recommended for use in high intensity lighting environments. Includes swivel mount, integral counterweight and oversized knobs. 21'-37'.

Price and Specifications Subject to Change Without Notice.
MICROPHONE DESK STANDS/ACCESSORIES

DESK AND BANQUET STANDS
DS-1 Executive Stand. Attractively styled stand with polished white Carrera marble base and chrome finish tube complements any desk, conference table or dais. Includes protective desk pads and standard microphone thread termination.

DS-2 Vibration Isolating Stand. Low Silhouette stand features an integral tension variable mount to reduce conductivity of external mechanical vibrations. High stability diecast metal base with protective pads includes notched area for convenient placement of cards or pens. Fixed height tubing is chrome finished. Base is supplied in non-reflective ebony.

DS-5 General Purpose Stand. Fixed height stand includes traditional circular cast iron base and chrome finish tubing for application with any standard microphone.

DS-7/DS-7E Adjustable Stands. Versatile stands have a vertical height adjustment from 8" to 13" and include grip action clutch and ebony finish cast iron base. DS-7 features chrome tubing. DS-7E is supplied with ebony finished tubing.

DS-14 Contemporary Stand. Professionally styled stand includes diecast wishbone shaped base with ebony finish and fixed height chrome tubing.

TS-8 Banquet Stand. Adjustable stand provides quick height variation from 3½" to 26" to meet a variety of oratory needs. Includes grip action clutch, chrome tube assembly and 8" dia. low silhouette chrome base.

ACCESSORIES
VM-1. Shock mount accessory reduces external mechanical vibration pick-up of microphones. 4¾" H-unit is finished in chrome and fits all ¾" -27 thread microphones.

TB-58X/TS-7X Extension tubes provide 31" of additional height or length to any ¾" or ½" diameter tube, respectively.

TB-58X Requires AD-5B adaptor

TB-7X Requires AD-6B adaptor

US-2 Flange mounting microphone support includes 12½" L boom on spring loaded swivel with 180° vertical cable feedthrough. Accessory is ideal for attaching standard thread microphones to lecterns, consoles, control racks and desks in classroom and laboratory facilities.

MAC-1. Multi-use adaptor is designed for holding microphones, horizontal booms or accessories with standard ¾" -27 threads. Versatile unit clamp mounts to ¾" and ½" diameter tubing or to freestanding instruments, keyboards, synthesizers, drum and percussion instruments. Fabricated from high strength extruded aluminum and finished in ebony epoxy. Weight 1.5 lbs.

GN Series

GN-6/13/19 Flexible goosenecks in 6", 13" and 19" lengths, respectively, attach to any microphone stand or adaptor with standard ¾" -27 male and female threads. Inside diameter is .338". E models feature ebony finish.

GN-6 6" $11.13
GN-13 13" $14.70
GN-19 19" $11.13
GN-19E 19" $14.70

CO-18 Connect on swivel clamp provides for the addition of a second microphone with standard ¾" -27 threads to any floor or desk stand with ¾" or ½" diameter tubing.

CO-18 $19.88

SO-18/LO-2B. Snap-on and lock-on accessories, respectively, provide for instantaneous connection and disconnection of microphone holders and boom attachments with standard ¾" -27 threads.

SO-18 Snap-on $18.78
LO-2B Lock-on $19.63
LO-2BE Lock-on, ebony $19.63

CH-1B Cable hanger enables microphone cable to be neatly guided along microphone tubing for improved appearance, movement and storage. Single screw mounting assembly is finished in chrome and fits all tube assembly sizes.

CH-1B $15.75

BC-1 Bracket clamp with 6" H chrome tube attaches to tables, desks and countertops for mounting microphone and accessory items with standard ¾" threads.

BC-1 $36.00

TM-1. Twin microphone mount provides horizontal mounting of two or three microphones onto any stand or podium-top installation. Versatile accessory is 8¾" W, finished in chrome and fits all ¾" thread-on microphones.

TM-1 $22.05

SW-1B Gyromatic swivel permits microphone adjustment to any angle. Includes single knob locking mechanism and chrome finish.

SW-1B $31.80

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Prices and Specifications Subject to Change Without Notice.
CONDENSER MICROPHONES

AT801 Electret Condenser (Omni)
- Sensitivity: -48dBm
- Impedance: 600 ohms
- Frequency Response: 40-18,000Hz
- Max. Input SPL: 125dB, 1% THD
- S/N: 500dB/µbar
- Battery: 1.5V AA Type, 6 month life
- Switch: on/off
- Connector: XLRM
- Price: $130.00

AT801/XLR XLRF/XLRF

AT801b Sub-Miniature Clip-On Electret Condenser (Omni)
- Sensitivity: -48dBm
- Impedance: 600 ohms
- Frequency Response: 40-18,000Hz
- Max. Input SPL: 125dB, 1% THD
- S/N: 500dB/µbar
- Battery: 1.5V AA Type, 6 month life
- Switch: on/off
- Connector: XLRM
- Price: $145.00

AT801/XLR XLRF/XLRF

AT803c Miniature Omnidirectional Condenser (Omni)
- Sensitivity: -49dBm
- Impedance: 400 ohms
- Frequency Response: 30-20,000Hz
- Also operates on 9-52VDC phantom power
- Price: $140.00

AT803c Ultraminiature omnidirectional unterminated for wireless and other applications; bulk packed with tie clip and windscreen

AT805b Miniature Omnitioral Condenser (Omni)
- Sensitivity: -57dBm
- Impedance: 600 ohms
- Frequency Response: 50-15,000Hz
- Max. Input SPL: 130dB, 1% THD
- S/N: 50dB/µbar
- Battery: 1.4V Mercury cell, 600 hours life
- Switch: on/off
- Connector: XLRM
- Price: $88.00

AT811 Electret Condenser (Cardioid)
- Sensitivity: -57dBm
- Impedance: 600 ohms
- Frequency Response: 50-20,000Hz
- Max. Input SPL: 130dB, 1% THD
- S/N: 50dB/µbar
- Battery: 1.5V AA Type, 6 month life
- Switch: on/off
- Connector: XLRM
- Price: $158.00

AT811/XLR XLRF/XLRF

AT813 Electret Condenser (Cardioid)
- Sensitivity: -56dBm
- Impedance: 600 ohms
- Frequency Response: 50-15,000Hz
- Max. Input SPL: 125dB, 1% THD
- S/N: 50dB/µbar
- Battery: 1.5V AA Type, 6 month life
- Switch: on/off
- Connector: XLRM
- Price: $184.00

AT813/XLR XLRF/XLRF

AT815a Electret Condenser Line/Gradient (Uni-Directional)
- Sensitivity: -44.5dBm
- Impedance: 600 ohms
- Frequency Response: 30-20,000Hz
- Open Circuit Sensitivity: 4.5mV
- Channel Balance: <±1dB
- Max. Input SPL: 120dB, 1kHz
- S/N: >67dB
- Price: $297.00

AT815a/XLR XLRF/XLRF

AT831b Sub-Miniature Clip-On Electret Condenser (Cardioid)
- Sensitivity: -50dBm
- Impedance: 600 ohms
- Frequency Response: 50-15,000Hz
- Max. Input SPL: 125dB, 1% THD
- S/N: 50dB/µbar
- Battery: 1.5V AA Type, 4 month life
- Switch: on/off
- Connector: XLRM
- Price: $172.50

AT831c Miniature Cardioid
- Unterminated for wireless and other applications; bulk packed with tie clip and windscreen
- Price: $86.50

AT835 Electret Condenser Short Line/Gradient (Uni-Directional)
- Sensitivity: -44.5dBm
- Impedance: 600 ohms
- Frequency Response: 30-20,000Hz
- Open Circuit Sensitivity: 4.5mV
- Channel Balance: <2dB
- Max. Input SPL: 120dB, 1kHz
- S/N: >67dB
- Price: $130.00

AT802/XLR XLRF/XLRF

REMOTE POWER * CONDENSER MICROPHONES

AT813R Remote-Powered Electret Condenser (Cardioid)
- Sensitivity: -53dBm
- Impedance: 600 ohms
- Frequency Response: 50-15,000Hz
- Open Circuit Sensitivity: 3.5mV
- Battery: 1.5V AA Type, 6 month life
- Switch: flat/roll
- Connector: XLRM
- Price: $184.00

AT813a/XLR XLRF/XLRF

AT815R Electret Condenser Line/Gradient (Uni-Directional)
- Sensitivity: -43dBm
- Impedance: 600 ohms
- Frequency Response: 30-20,000Hz
- Open Circuit Sensitivity: 4.5mV
- Channel Balance: <2dB
- Max. Input SPL: 120dB, 1kHz
- S/N: >67dB
- Price: $379.00

AT825 One Point X/Y Stereo Field Recording
- Elements: Fixed-charge, back plate permanently polarized condenser
- Sensitivity: -45dBm
- Impedance: 200 ohms
- Frequency Response: 30-20,000Hz
- Open Circuit Sensitivity: 4.5mV
- Channel Balance: <±2dB
- Max. Input SPL: 120dB, 1kHz
- S/N: >67dB
- Price: $404.00

AT804 Moving Coll Dynamic (Uni)
- Sensitivity: -53dBm
- Impedance: 600 ohms
- Frequency Response: 50-15,000Hz
- Open Circuit Sensitivity: 3.5mV
- Battery: 1.5V AA Type, 6 month life
- Switch: flat/roll
- Connector: XLRM
- Price: $182.00

AT814a/XLR XLRF/XLRF

AT838G Moving Coil Dynamic (Cardioid)
- Sensitivity: -45dBm
- Impedance: 200 ohms
- Frequency Response: 50-16,000Hz
- Open Circuit Sensitivity: 3.5mV
- Battery: 1.5V AA Type, 6 month life
- Switch: flat/roll
- Connector: XLRM
- Price: $186.00

AT806 Moving Coll Dynamic (Cardioid)
- Sensitivity: -53dBm
- Impedance: 600 ohms
- Frequency Response: 50-16,000Hz
- Open Circuit Sensitivity: 3.5mV
- Battery: 1.5V AA Type, 6 month life
- Switch: flat/roll
- Connector: XLRM
- Price: $186.00

AT814a/XLR XLRF/XLRF

AT838G Moving Coll Dynamic (Cardioid)
- Sensitivity: -53dBm
- Impedance: 600 ohms
- Frequency Response: 50-16,000Hz
- Open Circuit Sensitivity: 3.5mV
- Battery: 1.5V AA Type, 6 month life
- Switch: flat/roll
- Connector: XLRM
- Price: $186.00

AT814a/XLR XLRF/XLRF

Prices and Specifications Subject to Change Without Notice.
HEADPHONES/HEADSETS

Video/Film ENG/EFP 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 ........................................... $349.95

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 ........ $329.95

DT 48WK* Same as the DT 48K supplied with 1.5m coiled (WK), non-detachable cable terminated in 1/4" connector ........ $339.95

*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 770 Pro Dynamic stereo headphone, closed circumaural design for background noise attenuation. Features include diffuse-field equalization, replaceable ear cushions and bass reflex. Spring-steel padded headband, heavy-gauge coiled cord and gold plated 1/4" stereo phone jack, 600 ohm impedance ........ $249.95

DT 96AK* Dynamic, multi-purpose headphone used in many language labs. 30-17kHz. Supplied with 3m straight, detachable, open ended cable (K96.00) .......... $169.95

*Note: When ordering specify straight (K) or coiled (WK) cable and 50 or 400 ohm impedance.

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 .... $42.95

DT 100 Dynamic studio headphone used in audio recording and monitoring applications. 30-20kHz ................................................. $189.95

DT 102 Dynamic, single-muff communication headphone designed for monitoring broadcast, TV, theater and discos. 30-20kHz .... $139.95

Stereo: 8, 50, 100, 200, 400, 600, 800 and 2000 ohms
Mono: 16, 100, 200, 400, 800, 1200, 1600 and 4000 ohms

Professional Broadcast and Intercom Headsets
DT 108 Dynamic single-muff headset with built-in dynamic boom mic (200 ohm). Designed for live remote broadcasting, studio, film and TV, 2-way communication. Standard headset for most intercom systems ............................................. $204.95

DT 108.4 Same as the DT 108 but supplied with built-in amplifier for carbon-level mic inputs found on many ENG cameras. 200 or 600 ohm balanced mic line. Available in 400, 600, 2000 or 8000 ohm headphone impedance. Straight, non-detachable, open ended cable ...................................................... $259.95

DT 109 Same as the DT 108 in a dual-muff configuration ........ $254.95

*Note: For ordering purposes please specify straight (K) or coiled (WK) cable and impedance. DT 108 and DT 109 are available in the following impedances: 8, 50, 100, 200, 400, 800 and 2000 ohms.

DT 108.4 Same as the DT 108.4 but in a dual-muff configuration .................................................. $309.95

DT 109.5 Same as the DT 108.5 but in a dual-muff configuration .................................................. $279.95

Cables for DT 100, DT 108, DT 108.4, DT 109, DT 109.4, DT 109.5, DT 158, DT 159 Headsets
K96.00 Straight 5' (1.5m) open ended cable ............... $18.95
WK96.00 Coiled 5' (1.5m) (relaxed) version of the K96.00 .. $26.95
K96.07 Straight 10' (3m) cable with 1/4" phone jack wired in stereo .................................................. $24.95
WK100.00 Coiled 10' (3m) cable open ended ............... $29.95
WK 100.05 Straight 10' (3m) cable with 1/4" phone jack wired mono ................................................. $29.95
K100.05 Straight 10' (3m) cable with 1/4" phone jack wired in stereo .................................................. $30.95
WK100.06 Coiled 5' (1.5m) (relaxed) version of the K100.05 .. $35.95
K100.07 Straight 10' (3m) cable with 1/4" phone jack wired in stereo .................................................. $29.95
WK100.07 Coiled 5' (1.5m) (relaxed) version of the K100.07 .. $37.95
K109.00 Straight 10' (3m) cable open ended ............... $32.95
K109.0 Straight 10' (3m) cable ................................ $29.95
WK108.00 Coiled 10' (3m) cable open ended ............... $32.95

Prices and Specifications Subject to Change Without Notice.
Studio, Instrumental and ENG/EFP Microphones

M68 Omnidirectional moving coil dynamic ENG/EFP mic. Internal Shockmount. 40-20,000Hz...........$179.95
M69 Dynamic unidirectional studio mic. Hypercardioid characteristic. 50-16,000Hz...........$249.95
M88 Dynamic unidirectional studio mic. Hypercardioid characteristic. 30-20,000Hz...........$299.95
M89 Cardioid handheld interview mic for ENG/EFP with Nextel non-reflective finish...........$389.95
M101 Dynamic studio mic. Omnidirectional characteristic. 40-20,000Hz...........$279.95
M130 Dynamic bi-directional studio mic. Figure-8 characteristic. 40-18,000Hz...........$299.95
M128 Dynamic directional studio mic. Hypercardioid characteristic. 50-18,000Hz...........$299.95
M280 Dynamic unidirectional mic. Hypercardioid characteristic. 50-18,000Hz...........$339.95
M290 Dynamic directional mic. Bi-directional characteristic. 15-20,000Hz. Figure-8 pickup pattern......$299.95
M420 Dynamic directional mic. Hypercardioid characteristic. 100-12,000Hz...........$279.95
M422 Dynamic directional mic. Hypercardioid characteristic. 100-24,000Hz...........$369.95
M201 Dynamic unidirectional studio mic. Hypercardioid characteristic. 40-18,000Hz...........$499.95

Vocal Microphones

M300 Dynamic unidirectional mic. Cardioid characteristic. 50-15,000Hz...........$199.95
M300S Same as M300 with lockable, noise-free on/off switch...........$219.95
M400 (Soundstar MKII) Dynamic unidirectional mic. Supercardioid pickup pattern. 40-18,000Hz...........$279.95
M400S Same as M400 with lockable noise-free on/off switch...........$299.95
M800 Dynamic unidirectional mic. Hypercardioid characteristic. 40-18,000Hz...........$379.95
M500S Same as M500 with lockable noise-free on/off switch...........$399.95
M500 (Soundstar MKII) Dynamic unidirectional mic. Hypercardioid characteristic. 40-16,000Hz...........$399.95
M600S Same as M600 with lockable noise-free on/off switch...........$399.95
M700 Dynamic unidirectional mic. Hypercardioid polar pattern...........$359.95
M700S Same as M700 with lockable noise-free on/off switch...........$349.95

Podium Microphones

M260.80 Dynamic unidirectional mic. Hypercardioid characteristic. Similar to the M260 with built-in bass rolloff for high reverberation applications. 100-18,000Hz...........$349.95
SHM 418 Dynamic unidirectional mic. Cardioid polar pattern. Permanently attached to 590mm long, 18mm dia. gooseneck...........$319.95
SHM 420-11-300 Dynamic unidirectional mic. Hypercardioid polar pattern. Permanently attached to 300mm long, 11mm dia. gooseneck...........$299.95
SHM 422-11-380 Dynamic unidirectional mic. Supercardioid polar pattern...........$179.95
SHM 422-11-220 Same as the SHM 422-11-360 with 220mm long gooseneck...........$169.95

Microphone/Gooseneck Combinations

SHM 20-130.14 Hypercardioid miniature condenser mic. Mounted permanently to 5 1/4" gooseneck with 9/16" female thread mount. Supplied with 3' cable terminated in miniature binder connector for use with TS 190 wireless pocket transmitter...........$179.95
SHM 20-130.14 Similar to the SHM 20-130.14 with 3' cable terminated in 3-pin male XLR connector with self-incorporated preamp requiring 12-48V phantom power source...........$339.95
SHM 20-200.15 Same as the SHM 20-130.15 with 7 1/8" gooseneck...........$359.95
SHM 20-200.14 Same as the SHM 20-130.14 with 7 1/8" gooseneck...........$189.95
SHM 20-300 N Hypercardioid miniature condenser mic mounted permanently to 11 3/4" gooseneck with 3-pin female XLR connector at bottom for direct plug-in connection...........$339.95
SHM 20-300 S Same as the SHM 20-300 N with on/off switch...........$349.95

SHM 20-300 (N/CMI) Similar to the SHM 20-300 N except supplied with 3-pin male XLR connector at bottom for direct plug-in connection...........$339.95
SHM 20-300 (N/CMS) Similar to the SHM 20-300 S except supplied with 3-pin male XLR connector for direct plug-in connection...........$349.95
SHM 20-300.14 Same as the SHM 20-130.14 except with 11 3/4" gooseneck...........$209.95
SHM 20-300.14/1 Same as the SHM 220-322.14 except the gooseneck is supported with a rigid center approximately 5" long...........$189.95
SHM 20-300.15/1 Same as the SHM 20-300.15 except the gooseneck is supported with a rigid center approximately 5" long...........$399.95
SHM 20-500 Same as the SHM 20-300 except with 19 3/4" gooseneck...........$339.95
SHM 20-500/14/1 Same as the SHM 20-300/14/1 except with 19 3/4" gooseneck...........$229.95
SHM 20-500/15/1 Same as the SHM 20-300/15/1 except with 19 3/4" gooseneck...........$419.95
HMS60 Head-worn ribbon vocal mic. Terminates with 3-pin male XLR, 20-20,000Hz. Bidirectional...........$379.95
HMS60 V.04 Same as HMS60 with preamp for higher output level...........$429.95
HEM 511.16 Head-worn electret condenser vocal mic, terminates with 3-pin male XLR, requires 48VDC...........$399.95

Microphone Clamps

MKV6 Clothspin type plastic clamp for cylindrical shafts with diameter from 19-32mm...........$14.95
MKV8 Swivel stand adapter clamp for cylindrical and conical mic shafts with diameter from 22-32mm...........$17.95
MKV9 Same as MKV8 but designed for 19-21mm shaft only...........$17.95

Windscreen/Les Cables

WS88 For M58/ENG/EFP mic...........$24.95
WS89 Open-cell polyurethane foam windscreen. Provides maximum wind noise suppression. Protects against mechanical shock for M69 and M88 mics. Gray color...........$19.95
WS89 Same as above. Available in red, blue, yellow and green...........$24.95
WS89 All-metal wire mesh windscreen. Built-in elastic suspension for M69 and M88...........$189.95
WS101 Same as WS89. For M101 and M201 mics. Gray color...........$14.95
WS101 Same as above. Available in red, blue, yellow and green...........$14.95
WS260 Same as WS89. For M130, M160 and M260 mics. Gray color...........$23.95
WS260 Same as above. Available in red, blue, yellow and green...........$23.95

Beyerdynamic

Prices and Specifications Subject to Change Without Notice.
TRIPODS/HEADS/ DOLLYS

Fluid Heads

3063 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 1/8". 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. $154.90

3128 Micro Fluid Head Only 2 lbs. including an adjustable handle. Perfect for lightweight (up to 6 lbs.) VCR cameras. It measures 4 1/4" x 5 1/4" 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. $157.95

3130 QR Micro Fluid Head Same as 3128 except features a quick release plate. $84.95

3066 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. $389.95

3160 XL Fluid Head Lightweight fluid head capable of handling cameras up to 8 lbs. Features a special "quick release plate" which lets you attach and detach the tripod head quickly and easily. The adjustable handle can be located on either the right or left side of the head. $99.95

3115 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. $42.95

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) that can hold up to 6 lbs. $164.90

3186 Tripod with 3160XL Fluid Head. $173.40

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 3124) that features real, fluid-effect action. $179.90

3122 As above but in black anodized finish. $188.90

3129 3011 Tripod with 3126 Micro Fluid Head and 3127 Dolly. $264.90

3148 Video Tripod Caddy. $38.95

3149 3126 Micro Fluid Head with 3211 Tripod with black anodized finish and 3127 Dolly. $273.90

3163 3160XL Fluid Head with 3011 Tripod. $198.90

3164 As above plus 3127 Dolly. $283.90

3048 Studio 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 for post, fits into a compact 32" for traveling. Legs are furnished with convertible cushion/spike tips. $776.95

3049 Studio 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 for post, fits into a compact 32" for traveling. Legs are furnished with convertible cushion/spike tips. $776.95

3066 Fluid Head. $500.00

3194 Cine/Video Tripod with Tandem Legs and 3066 Fluid Head. $889.95

3061 Heavy-Duty Cine/Video Tripod Ideal field tripod. Closed length is only 37 7/8", 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. $337.95

3062 Heavy-Duty Cine/Video Tripod with 3066 Fluid Head. $726.90

3064 Heavy-Duty Cine/Video Tripod with 3066 Fluid Head and 3067 Dolly. $963.90

3048 Cine/Video Tripod w/o head. $170.95

3140 Cine/Video Tripod with Mini Fluid head. $328.90

3142 Same as above in black anodized finish. $343.90

3068 Universal Cine/Video Tripod Weighs less than 12 lbs., extends to 96". 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". $349.95

3069 Universal Tripod with 3065 Fluid Head. $668.90

3118 Universal Tripod with 3063 Mini Fluid Head. $437.90

3191 Cine/Video Tripod with tandem legs * Retractable, spring-loaded spike tips * 100mm diameter claw-ball leveler * Variable leg angles within a 180° arc with two click stop positions * Quick-flip lever leg lock * Stainless steel fittings with enamel castings and built-in leg straps for transporting * 11 lbs. without head * Handles cameras up to 22 lbs. when used with 3066 fluid head (more with other heads) * 32" and extends to 54 1/4" without head $500.00

3194 Cine/Video Tripod with Tandem Legs and 3066 Fluid Head. $889.95

Prices and Specifications Subject to Change Without Notice.
802/802-W Series II
Articulated Array® Loudspeakers

Common Features
- Transducer Complement: Eight 4\(\frac{1}{2}\)" Bose D-11B full range drivers
- Nominal Impedance: 8 ohms
- Sensitivity — Single Speaker: 99dB SPL (1W, 1m, 300Hz-3kHz) 92dB SPL (1W, 1m, 50Hz-16kHz);
  Stacked Pair: 102dB SPL (1W, 1m, 300Hz-3kHz) 95dB SPL (1W, 1m, 50Hz-16kHz);
- Column of Four: 104dB SPL (1W, 1m, 300Hz-3kHz) 96dB SPL (1W, 1m, 50Hz-16kHz) Usable Frequency Range: 50Hz to 16kHz
- Power Handling Capacity: 240W continuous pink noise, 50Hz-16kHz
- Maximum Recommended Amplifier Power: 320W per speaker
- Horizontal Beamwidth: 120°
- Vertical Beamwidth: Single speaker: 100°
- Designed for high quality reinforcement of voices and music. The 802 speaker is ideal for applications requiring a rugged, portable enclosure, while the 802-W speaker is intended for use in permanent indoor sound system installations.

802-II Additional Features
- Input Connections: Two parallel-wired 1/4" phone jacks, two parallel-wired male XLR connectors
- Fusing: Built-in 4A quick-acting fuse (replaceable)

802-W-II Additional Features
- Input Connections: Screw-type barrier strip terminals
- Fusing: External 4A quick-acting fuse recommended in most applications

802-C System Controller
- Sophisticated signal processing device which combines the functions of three equalizers, an automatic switching circuit, and an electronic crossover
- Automatically selects the proper crossover function and equalization curve for a given system application through the use of a switching network operating in conjunction with the unit’s output jacks
- In addition to signal routing based on equalization requirements, the switching network indicates mode of operation on its front panel
- Fits standard 19" equipment rack

802-E Active Equalizer
- Input Connections: Two parallel-wired 1/4" phone jacks, two parallel-wired male XLR connectors
- Fusing: Built-in 4A quick-acting fuse (replaceable)

302-II Acoustimass® Bass System
- Incorporates innovative transducer loading system
- Cabinet is constructed of impregnated resin board with uniformity characteristics superior to those of particle board or plywood
- Corners are molded for stacking and recessed handles are built into the sides of the cabinet
- Woofers are protected by individual grilles inside the cabinet
- Stack grooves on the cabinet top accept the matching cabinet ridges which are molded into all 802 speakers

Professional Wave™ Systems
- Extended-bandwidth, high-performance, fixed-installation sound systems suitable for use in a number of applications
- Entirely modular and consist of three components: 1) Acoustic Wave® Cannon® System (AWCS); 2) 802™ Series II loudspeaker; 3) WSC-1 Wave System Controller
- Components are lightweight and modular
- 802-II speakers can be easily placed for optimum coverage and clarity
- AWCS can be locked together to form arbitrarily shaped and sized arrays, making it possible to custom fit them unobtrusively into each individual acoustical environment
- AWCS operates over a bandwidth of 25-125Hz

WSC-1 Wave System Controller
- Two-channel active equalizer and crossover device
- Specifically designed to control and monitor Bose 802-II loudspeakers and the Bose AWCS

WOE-1 Wave System Controller
- $990.00

402-W Additional Features
- Enclosure construction: acrylic-coated walnut-grain vinyl laminate on particle board
- Input connections: Fusing male XLR connectors

402-E Active Equalizer
- Input connections (per channel): one Hi-Z unbalanced 1/4" phone jack
- Input Impedance: > 1M ohm
- Output Connections (per channel): one 1/4" phone jack
- Output Level: 6V into 2K ohms or higher; 3V into 600 ohms
- Power Requirements: 110VAC, 50/60Hz, 3W
- Provides smooth, accurate spectral response across the entire operating range of the system
- Sharp subsonic and ultrasonic band-limiting filters reduce power waste, stage noise, high-frequency instability and interference
- Two independent signal channels are provided in a compact unit that fits into two spaces of a standard 19" equipment rack

402-E Active Equalizer
- Input connections: two parallel-wired 1/4" phone jacks
- Output Connections: Two parallel-wired 1/4" phone jacks
- Output Level: 6V into 2K ohms or higher; 3V into 600 ohms
- Power Requirements: 110VAC, 50/60Hz, 3W
- Provides smooth, accurate spectral response across the entire operating range of the system
- Sharp subsonic and ultrasonic band-limiting filters reduce power waste, stage noise, high-frequency instability and interference
- Two independent signal channels are provided in a compact unit that fits into two spaces of a standard 19" equipment rack

Prices and Specifications Subject to Change Without Notice.
DISTRIBUTION/GRID HARDWARE
GRIP EQUIPMENT/LADDERS

Studio Distribution
Rigid, 18 gauge, one-piece 3'/4" x 4'/4" steel construction of desired length, with internal wiring to meet all electrical codes. Available with mounting hardware for any possible situation, standard 18" or 24" pigtails with connector of your choice. A unique four circuit cyc box for powering your cyc lights. Unit available completely assembled including 1'/1" ID pipe (not included in price below) ready to hang...saving time and cost at installation. Comes primed and painted with 3" permanent delin setting assure circuit identification from the control console.

Grid Connector Strips
05015-WB
10' Strip, 4 20A Pigtails $482.50
05018-WB
12' Strip, 5 20A Pigtails 543.25
05021-WB
16' Strip, 6 20A Pigtails 672.00

Other Configurations Available
Price on Application

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./$2.66
The heart of good lighting is the grid system. It is very important to use 1'/4" ID light pipe.
05194-WB
Light Pipe Handling Charge ft./$.20
05195-WB
Grid Lock $.16.60
Used to fasten perpendicular 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.
05313-WB
Beam clamp 1'/4", attaches "Load Channel" to most types of angle iron, such as truss deck beams $ 8.25
05314-WB
Bolt Assembly 1'/4", attaches "Load Channel" (as above) when slots are provided by truss deck beams (money savings) 4.00
05316-WB
Sleeve Anchor 1'/4" (for low PSI density concrete ceiling and floors) .85
05317-WB
Wedge Anchor 1'/4" (for high PSI density concrete ceiling and floors) 2.25
05318-WB
Toggle bolt 1'/4" assembly for hollow wall 1.85
05119-WB
Load Channel, slotted sections, 20' x 1'/4" x 1'/4", 12 gauge 87.50
05112-WB
Load Channel Splicing Clamp 12.00

Prices and Specifications Subject to Change Without Notice.
Curtains—Cyc

Cyclorama curtains are seamless up to 125' in length and 25' in height. The cloth is inspected before fabrication to assure against weaving flaws and sewn to our rigid specifications. These cycloramas are available in three colors—white, CBS grey, powder blue/green.

Seamless Lino-Weave

This curtain has a 4' heavy-duty binding at the top with spring hanger snaps on one foot centers. The 2½' bottom hem has a 90° lead tape sewn 1' above the bottom edge in a separate muslin pocket. The side hems have a 2' heavy-duty binding with eyelets on 2' centers for tauting the curtain. Tow cord with handle is provided for easy transporting of the curtain. The curtain is flame-proofed and flawless (as per the standards of the mills and converters) and is fabricated to the highest quality workmanship. Tow cords are also furnished.

Sand Bag

07029-WB Sand Bag, 50 lb. size, non-spill saddle bag

07027-WB

07025-WB

07024-WB

07023-WB

07022-WB

07021-WB

07020-WB

07019-WB

07018-WB

07017-WB

07016-WB

07015-WB

07014-WB

07013-WB

07012-WB

07011-WB

07010-WB

07009-WB

07008-WB

07007-WB

Seamless Scrim

Seamless Scrim is flame-proofed and flawless (as per the standards of the mills and converters). The dual track method is recommended for studios where proper trim chain ready to attach the cyc or background curtains. The dual track method is recommended for studios where proper trim chain ready to attach the cyc or background curtains. The dual track method is recommended for studios where proper trim chain ready to attach the cyc or background curtains.

Curtains—Cyc

Curtains-Cyc liner and Velcro fasteners. Used to hold

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Phase Trak 90 Record/Playback

Front Panel Metering
The LED meters will indicate left and right channel input or output audio. The meter scale extends from +5 to -40dB 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.

4 Record Cue Circuits
The 4 standard cue circuits include 150Hz, 1kHz, 8kHz and an RS-232-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. 8 tones can be selected ranging from 50Hz up to 16kHz, along with a convenient “sweep mode” switch.

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 ±2dB, 40Hz to 16kHz, the excellent frequency response delivers audiophile quality in any application. Wow and flutter specifications are also outstanding at <0.12%.

Automatic High/Low Level Sensing
Provides automatic level switching for cartridges recorded at higher levels (typically 250mW/m) through the application of optical sensing tabs on the front of the cartridge.

4 Standard Cue Circuits
The Phase Trak 90 comes equipped with 4 standard digital cue sensor circuits including an FSK (3.5kHz) decoder which provides an RS-232 compatible data output for automatic logging.

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 ± 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, 2 spring loaded top guides apply downward pressure. The result is silky-smooth cartridge insertion and excellent positioning regardless of variations in cartridge size.

BROADCAST ELECTRONICS INC

Phase Trak 90 Record/Playback

Phase Trak 90 Playback

Options and Accessories

Rack shelf for 19" EIA rack, 7.0" H (recommended) ............................................. $200.00
900-9013
900-9113 Rack shelf for 19" EIA rack, requires 5.25" H ............................................. $200.00
900-9014 Rack shelf filler panel, 1/2 rack, for 900-9013 ............................................. $30.00
900-9015 Rack shelf filler panel, 1/2 rack, for 900-9013 ............................................. $40.00
900-9017 Rack shelf filler panel, 1/4 rack, for 900-9013 ............................................. $30.00
970-9000 Encode software for direct connection of PT 30RPS to IBM compatible PC. Requires computer with RS-232C port ............................................. $130.00
970-0099 Tape sensor foil tab kit (package of 100) ............................................. $15.00
950-0105 Extender card, 50-pin, PT 30RPS, PT 9ORPS (playback) ............................................. $130.00
950-0106 Extender card, 80-pin, PT 9ORPS (record) ............................................. $150.00
597-9000 Service manual for Phase Trak 90 (1 manual shipped with each unit) ............................................. $50.00

Prices and Specifications Subject to Change Without Notice.

75
Series 573 Mobile Multiplexer
The Series 573 Mobile Multiplexers accept input from 2 slide projectors and are equipped with a third input port which is usually used for 16mm input. It is not practical to use the third input for a slide projector. Buhl makes other multiplexers to handle 3 or more slide projectors. No projection lenses are needed for the 2 slide projectors because the optics are built into the multiplexer itself. The 16mm projector for the third input does require its own projection lens. The video camera uses its normal zoom lens. The camera can be mounted on a tripod but most users find the camera mount a convenient accessory.

- 573-200 3.0" or less (camera lens diameter) $1450.00
- 573-312 Camera mount for 573 Series multiplexers for semi-permanent mounting $340.00
- 575-132 Eiki 16mm telecine optical projector, SNT-OT 5-bladed shutter, synchronous motor, diffusion device, lens not included Price On Request
- 575-112 Buhl projection lens for Eiki 16mm $135.00
- 575-125 Buhl projection lens for ELMO 16mm $135.00

573-420 Modular Biplexer
Modular system for film or slide transfer to video.

- 573-420 Biplexer unit without projectors, accepts either of 2 inputs via a movable internal mirror $696.00
- 573-430 Adjustable height stand accepts either Kodak Ektographic Series II or Series III slide projector $150.00
- 574-066 Lens with extended barrel and ND filter holder for Kodak Ektographic slide projector, for slides to video via biplexer $159.00
- 573-450 Camera mount for modular biplexer eliminates need for a tripod or dolly $261.00

Tyrone Video Transfer System

- L-Shaped Configuration:
The L-shaped layout makes it easy for the operator to monitor both the projector and camera adjustments during the transfer process.

- Interchangeable Inputs:
The projector and shelf become a single unit that can be removed or replaced without losing basic adjustment.

- Aerial Image:
Aerial image means that there is no grainy screen to degrade image quality. The video camera sees the image formed "in air." The image is made visible to the camera by the carefully engineered field lenses which are part of the biplexer's optical system.

- Black Mirror:
The optically polished black mirror positions the image correctly for the video camera. It serves to reduce the light from the projector to levels that the video camera can handle, and is rotated by the external lever to select the input port.

- Removable Internal Screen:
A small screen can be inserted between the field lenses so that the aerial image is visible to the naked eye during setup. The screen is removed before recording.

Developed from Buhl's original modular biplexer, the Tyrone Video Transfer System is an integrated unit to handle 16mm, Super 8mm, 8mm or slides to video.
The concept is that the projector and shelf become a single unit which, once aligned, can be removed and replaced without losing the basic adjustments. This is accomplished by fitting each shelf with carefully machined locating slots, which in turn fit into precision points on the Tyrone shelf holder.

Tyrone Video Transfer System includes:
- Optical system
- Custom alignment shelf for film or slide projector. (User must specify make and model number of projector.)
- Custom camera mount. (User must specify make and model of video camera, lens centerline height and distance from the tripod socket to the tip of the lens.)

- 502-100 Tyrone $1200.00
- 502-000 Additional shelf and riser. (User must specify make and model of projector) $150.00
- 502-001 "T" configuration add-on shelf and riser for right side. (User must specify make and model of projector) $315.00
- 505-100 2 projector 35mm dissolve system to hold and align 2 Ektographic III slide projectors in dissolve mode. Objective lens included. Does not include projectors or dissolve control (accepts vertical or horizontal slide format) $990.00

*Price On Request

Prices and Specifications Subject to Change Without Notice.

76
EDITING SYSTEMS

CE-25/CE-75 Computerized Editing Systems

Common Features
- List Management
- Includes Seek or Scroll to any event, Recall any event, Insert, Delete, or Replace event with or without Ripple
- Full 999-line EDL can be saved to or loaded from: the standard 3.5" disk drive, an optional second 3.5" disk drive, an 8" RT11 drive, or 30 MG hard drive
- EDL may also be saved to a printer. EDL can be converted to a CMX or GVG compatible format, or a CMX/GVG formatted EDL can be read into either a CE-25 or CE-75 from a 3.5" disk with the optional CMX/GVG RT11 EDL conversion software

GPIs
- Offer 1 standard fixed point General Purpose Interface
- GPIs can be used to trigger a DVE, CG, DSK, or even a remote controllable ATR

Standard Hardware
- Delivered with a main CPU electronics frame, a Dedicated editing keyboard, an internal 3.5" disk drive, an edit status monitor, a preview switcher, and serial VTR interfaces, with a serial video switcher interface for the CE-75 as standard equipment
- Additional disk drives and programmable GPIs are available
- External keyboard can be connected to either system, further extending each system's power

Macros
- CE-25 has 24-keystroke macros, while the CE-75 features 424-keystroke macros
- Macros allow those cumbersome, repetitive, multi-keystroke sequences to be stored and recalled with 1 keystroke
- All macro commands are displayed as they appear on the keycaps
- Once a macro is created, it can be stored with the system setup configuration and be available for every edit session

Preview Switcher
- 2 x 1 composite video stereo audio preview switcher is included. Preview switchers provide an accurate glitch-free method of performing preview edits
- With a preview switcher, now only 1 video and audio monitoring system is required to review any source in the system, including the output from the video switcher, audio mixer, or record VTR
- Internal sync generator provides for stable edits when editing without TBCs in a cut-only session

VTR Interface
- Interface to most RS-422 Sony protocol serial VTRs
- Parallel control VTRs, such as the Sony V05850, Panasonic AG 7500A and JVC BRS811 U, VTRs
- Parallel control VTR interfaces -1 source and 1 destination time code reader
- Most RS-422 serial video switchers can be interfaced with the CE-75

VTR Interface
- RS-422 serial VTR control cable for CE-25 (25')
- RS-422 serial VTR control cable (25')
- Video switcher and audio mixer cable (25')
- Motion controller extension cable (50')
- Motion controller extension cable (50')
- Motion controller extension cable (50')

Rackmounts and Miscellaneous Hardware
- Rack slides
- Desktop CPU top panel

CE-75

Includes common features plus:
- 3 serial VTR interfaces - 2 source and 1 record
- Internal 3.5" disk drive standard
- 1 serial video switcher interface
- List management standard
- An Aux and Black input are provided for editing to non-VTR sources
- All video switcher crosspoints are assignable
- Record VTR is assignable, directly from the editing keyboard
- Edit can be previewed 8 different ways
- Switcher dissolves and wipes can be previewed, without rolling any VTRs

GPIs
- Optional Ampex 1" VTR protocol software
- Optional CMX/GVG EDL disk drive conversion software
- Optional Klean and Keen

Upgrade
- Have built-in upgrade path
- Upgrading a CE-25 to a 6 VTR CE-150 or even an 8 VTR CE-200 requires only a software and keyboard change, and an additional VTR interface card

Prices and Specifications Subject to Change Without Notice.
CE-210/CE-400
Computerized Editing Systems

Common features:
- Direct RS-422 Sony-type and Ampex VTR protocol
- Video and audio crosspoint selection
- NTSC 2/4-field color framing
- PAL 8-field color framing
- Edit video; audio 1, 2, 3 and 4
- Audio/video split edits
- Preview: VVV, BVB, VBV plus outpoints
- Preview of dissolve/wipe transition
- Sync roll with EDL listing
- 6-character alpha reel number
- Reassignable record/source VTRs
- Multiple record VTRs with assignable track selection
- Auto assemble A and B mode
- Enable/disable any/all events in EDL
- 8 constant registers
- Save/recall current marks
- Calaway, GVG I/II EDL formats
- CMX 3600, 340X and old EDL formats
- Conversion between EDL formats
- 3.5" DOS/RT-11 disk read/write
- Turbo Trace + EDL cleaning and tracing
- Save EDL to disk
- Print EDL
- EDL backup to disk/printer
- EDL disk directory
- Seek through EDL by event number
- Scroll through EDL
- Format a disk
- EDL display on or off
- Recall event from EDL
- Replace events/marks into EDL
- Insert or delete event in EDL
- Ripple
- Shift record times in EDL
- Renumber events in EDL
- Move events in EDL
- Copy events in EDL
- Single key match cut calculate
- Action Match
- Back time calculator
- Time code calculator
- Insert or delete notes in EDL
- Set current event number
- Re-sort EDL
- EDL “logging” mode
- GPI saved to EDL
- Multiple VTR DT speed triggers
- VTR speed fit calculator
- VTR speed match frame calculator
- V-EFX memory triggers, upload and download memory registers
- TBC memory triggers, upload and download memory registers
- Master/slave control of 3 sets
- M/S saved to EDL
- Macros saved to disk
- Macro delay
- Macro pause for keyboard entry
- English display of macros
- Film time code conversion

**CE-210**
Includes common features plus:
- 6-VTR control
- 8 serial VTR ports
- Direct RS-422 video switcher interface
- Direct RS-422 audio mixer interface
- 3000-line EDL
- 8 programmable GPIs
- 24 24-keystroke macros

$19,900.00

**CE-400**
Includes common features plus:
- 7-VTR control
- 16 RS-422 serial ports assignable for VTR, video switcher, audio mixer, TBC, DVE and pvw switcher control
- 9999-line EDL
- Multiple EDLs on-line (bins)
- 24 50-keystroke macros
- 16 programmable GPIs
- Multiple transition “cluster” edit events
- Look-ahead auto assemble

$34,800.00

**CE-110 4-VTR**
Computerized Editing System

- 4-VTR control
- ASCII or dedicated editing keyboard style
- Direct RS-422 Sony-type and Ampex VTR protocol
- 4 serial VTR ports
- Direct RS-422 video switcher interface
- Direct RS-422 audio mixer interface (ESAM I/II protocol)
- Video and audio crosspoint selection
- NTSC 2/4-field color framing
- PAL 8-field color framing
- Edit video; audio 1, 2, 3 and 4
- Audio/video split edits
- Preview: VVV, BVB, VBV plus outpoints
- Preview of dissolve/wipe transition
- Sync roll with EDL listing
- 6-character alpha reel number
- Reassignable record/source VTRs
- Auto assemble A and B mode
- Enable/disable any/all events in EDL
- 8 constant registers
- Save/recall current marks
- 1980-line EDL
- Calaway, GVG I/II EDL formats
- CMX 3600, 340X and old EDL formats
- Conversion between EDL formats
- Turbo Trace + EDL cleaning and tracing
- Save EDL to disk
- Print EDL
- EDL backup to disk/printer
- EDL disk directory
- Seek through EDL by event number
- Scroll through EDL
- Format a disk
- EDL display on or off
- Recall event from EDL
- Replace events/marks into EDL
- Insert or delete event in EDL
- Ripple
- Shift record times in EDL
- Renumber events in EDL
- Move events in EDL
- Copy events in EDL
- Single key match cut calculate
- Action Match
- Back time calculator
- Time code calculator
- Insert or delete notes into EDL
- Set current event number
- Re-sort EDL
- EDL “logging” mode
- 8 programmable GPIs
- GPIs saved to EDL
- VTR DT speed triggers
- VTR DT speed fit calculator
- V-EFX memory triggers
- TBC memory triggers
- Master/slave control of 3 sets
- Master/slave saved to EDL
- 12 24-keystroke macros
- Macro delay
- English display of macros

**CE-110 4-VTR editor with QWERTY keyboard**

$12,900.00

**CE-110 4-VTR editor with dedicated keyboard**

$12,900.00

Prices and Specifications Subject to Change Without Notice.
From initial design to finished product, every case we make is treated as an architectural structure. Some manufacturers build a simple wooden box, add some hardware to the exterior, and call it a "flight case." We build Calzone cases from the inside out. 1-of-a-kind Calzone design innovations, like our patented Interlocking Double Angle Construction, allow us to create an internal structural framework to provide exceptional durability, long life and unmatched protection for your valuable equipment.

In addition to our concept of an internal substructure, we also use the finest quality furniture-grade plywood, metal-to-wood-to-metal riveting, our patented Deep Grooved Aluminium Valance and heavy grade laminate external shells. Calzone's high density polyfoam interiors can be custom shaped to accommodate any type of equipment—from electric guitars and keyboards to computers, video cameras and specialized government testing equipment.

Escort®
• Shock dispersion ball corner • High density polyester foam • Flushmounted recessed spring-loaded handle for easy access and handling • Large spring-loaded catch to secure lid to mainframe, locking catches optional • Interlocking double angle 1/4" or 1/2" forms sub-frame structure • Corner structure brace, double or triple rivet • Extruded 0.93 gauge interlocking valance • Heavy gauge full length piano hinge

Pro Line II
• Full length piano hinge • Shock absorbent polyether foam lining • Form fit corner • Spring-loaded handle with rubber grip • Small recessed spring-loaded catch • Corner brace protects corner of valance • Custom extruded interlocking valance • Custom double angle, internally riveted • Poly tolene laminate on 1/4" plywood (gray or black)

Convoy®
• Double angle construction where applicable • Nickel plated butt hinge • Nickel plated flat stock corner with self-standing foot • Attache style catch with lock • Plastic molded, color coordinated, easy grip handle • 1/4" custom extruded valance • Foam lined protection • 1/8" ABS plastic molded and precision formed • Optional shoulder strap

Ultima Series
• Lightweight • Durable • 1/4" plywood top and bottom with an exterior gray tolex laminate • High density polyether foam lining • Full length piano hinge • Nickel plated hardware • Lockable latches • Metal reinforced handle for carrying ease

Video/Cinematography Cases
Whether you're shooting a live remote, music video, feature length film or making an audio/video presentation, you often have to travel with equipment worth thousands of dollars. Considering the delicate nature of cameras, projectors, recorders, editing and lighting gear, mics, etc., the relative cost of the Escort and Convoy cases is a small price to pay to ensure the complete protection and long life of your gear. We custom build cases designed around the way you work to save you time and money on location. We build a variety of standard cases along with special custom order models to handle any kind of equipment imaginable.

High quality Escort wardrobe, drawer and utility cases come in a wide selection of standard sizes and can be custom built to handle any kind of stage costumes, makeup, wigs, related clothing and accessories. Escort and Convoy audio visual cases come in all standard sizes and can be built to carry projectors, stands, screens, slides and accessories. Everything you need to take your multimedia show on the road without worrying about damage.

Expensive and fragile recorders, monitors, projectors, editing/processing equipment and communications gear deserves the kind of extra protection provided by durable and easy to handle Escort and Convoy cases. All cases are available in video sizes and formats, or can be custom built to your requirements.

Get your equipment to the location without any worries about road-shock. Our standard and custom cases for cameras, lenses, magazines, lights, stands and power packs represent the ultimate in protection and ease of handling. They can also help organize your equipment for complicated and remote location shoots.

The Ultima Series offers today's musicians an attractive, streamlined case to protect their keyboards, mixers, recorders and drum machines during local transport. Our custom aluminum shell makes it an extremely lightweight case providing maximum protection at nearly half the price of related A.T.A. type cases.
Multi-Channel "Modular" Cable Systems

Canare offers a large selection of pre-wired components and cable systems, available in standard 8, 12, 16, 24 and 32-channel arrangements. All systems are configured in a "modular" style design to ensure easy component interfacing, future expansion, simple set-up and tear-down, as well as readily serviceable parts. Cable systems utilize the finest Cannon J.A.E. multipin K and MS type connectors and Cannon XLR connectors, so that you can be assured of good contacts and maximum durability, no power-robbing nicks, broken leads, shorts or intermittent contacts. After exhaustive research and testing, we have determined that Cannon XLR and Multipin connectors offer the best choice in performance and features. They have strong silver pin contacts that won’t pull out or loosen and also have the lowest contact resistance not only initially, but after months of use, where cheaper connectors are subject to contact corrosion. The Multipin connectors use a bayonet type "screw-lock" sleeve for fast, positive connections. Connector dust caps on a short steel cable protect the connectors when the system is being stored or transported.

Technical Note:
In order to help avoid signal losses and prevent degradation of signal-to-noise ratio, it is important to keep contact resistance as low as possible, especially in large systems with many connectors between the microphone and the mixer. Quality contacts do make a difference.

Pigtails
"Fan-Outs" are typically used for terminating multi-channel snake mic lines to a mixing console. We use only Canare L-4E6S or L-4E5C Star Quad single channel mic cable for our "tails." All models are configured with either Cannon XLR Male or Cannon XLR Female to a Cannon K-type or MS-type multipin connector. Lengths are approximately 5' each. These pigtails are carefully wired in a common ground scheme and thoroughly tested by Q.C. before final release. Each individual channel has a large, durable, number ring collar, attached and floating over the cable for quick identification. A sturdy dust cap is included for multipin storage protection.

Microphone Cable
L-4E6S
The first choice for handheld microphones. Flexible, smooth to the touch, extra-strong standard diameter STAR QUAD cable that fits perfectly in all XLR-type connectors. With 40 separate strands in each conductor, breakage due to flexing is all but eliminated, especially at or close to the solder joint. Large color selection aids cable identification and decor coordination. Available colors: Black, Blue, Brown, Gray, Green, Orange, Purple, Red, Yellow and White.

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>L-4E6S</td>
<td>1</td>
<td>4</td>
<td>500'</td>
<td>1000'</td>
<td>.237</td>
<td>40/3.15</td>
<td>.79 &gt; 95</td>
<td>44</td>
<td>30</td>
<td>46</td>
<td>57</td>
<td>44</td>
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</table>

Audio Cables

For extra convenience, Canare offers pre-wired ECO mic cables in various lengths and colors.
EC005FB 5' cable
EC025FB 25' cable
EC015FB 15' cable
EC050FB 50' cable

Other assemblies available on special order. Please call for information.
## Broadcast Lenses

For 2/3" CCD and Tube Color TV Cameras

<table>
<thead>
<tr>
<th>Lens</th>
<th>Zoom Ratio</th>
<th>Range of Focal Length</th>
<th>With Extender</th>
<th>Maximum Relative Aperture</th>
<th>Angular Field of View</th>
<th>Minimum Object Distance (M.O.D.)</th>
<th>Object Dimensions at M.O.D.</th>
<th>Operation System</th>
<th>Built-In Extender</th>
</tr>
</thead>
<tbody>
<tr>
<td>J18X8.5B IRS ENG/EFP</td>
<td>18X</td>
<td>8.5-153mm</td>
<td>2X</td>
<td>1:1.7 at 8.5-113mm</td>
<td>54.7°X42.4° at 8.5mm</td>
<td>0.9m</td>
<td>86.2X64.9cm at 8.5mm</td>
<td>Semi-Servo</td>
<td>2X</td>
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<tr>
<td></td>
<td></td>
<td>17-306mm</td>
<td></td>
<td>1:1.7 at 8-91mm</td>
<td>57.6°X44.8° at 8mm</td>
<td>0.7m</td>
<td>87.8X65.9cm at 8mm</td>
<td>Semi-Servo</td>
<td>2X</td>
</tr>
<tr>
<td>J14X8B IRS ENG/EFP</td>
<td>14X</td>
<td>8-112mm</td>
<td>2X</td>
<td>1:1.7 at 8-112mm</td>
<td>54.7°X42.4° at 8mm</td>
<td>0.8m</td>
<td>75.3X56.9cm at 8mm</td>
<td>Semi-Servo</td>
<td>2X</td>
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<tr>
<td></td>
<td></td>
<td>16-224mm</td>
<td></td>
<td>1:1.7 at 8.5-119mm</td>
<td>54.7°X42.4° at 8.5mm</td>
<td>0.8m</td>
<td>38.6X29.0cm at 17mm</td>
<td>Semi-Servo</td>
<td>2X</td>
</tr>
<tr>
<td>J14aX8.5B IRS ENG/EFP</td>
<td>14X</td>
<td>8.5-119mm</td>
<td>2X</td>
<td>1:1.7 at 8.5-119mm</td>
<td>54.7°X42.4° at 8.5mm</td>
<td>0.8m</td>
<td>75.3X56.9cm at 8mm</td>
<td>Semi-Servo</td>
<td>2X</td>
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<tr>
<td></td>
<td></td>
<td>17-238mm</td>
<td></td>
<td>1:1.7 at 8-91mm</td>
<td>57.6°X44.8° at 8mm</td>
<td>0.7m</td>
<td>87.8X65.9cm at 8mm</td>
<td>Semi-Servo</td>
<td>2X</td>
</tr>
<tr>
<td>J8X6B IRS ENG/EFP</td>
<td>8X</td>
<td>6-48mm</td>
<td></td>
<td>1:1.7 at 6-33mm</td>
<td>72.5°X57.6° at 6mm</td>
<td>0.3m</td>
<td>51.3X38.5cm at 6mm</td>
<td>Semi-Servo</td>
<td>2X</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12-96mm</td>
<td>2X</td>
<td>1:1.7 at 6-33mm</td>
<td>72.5°X57.6° at 6mm</td>
<td>0.3m</td>
<td>51.3X38.5cm at 6mm</td>
<td>Semi-Servo</td>
<td>2X</td>
</tr>
<tr>
<td>J8X6B KRS A ENG/EFP</td>
<td>8X</td>
<td>6-48mm</td>
<td></td>
<td>1:1.7 at 6-33mm</td>
<td>72.5°X57.6° at 6mm</td>
<td>0.3m</td>
<td>51.3X38.5cm at 6mm</td>
<td>Semi-Servo</td>
<td>2X</td>
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<tr>
<td></td>
<td></td>
<td>12-96mm</td>
<td>2X</td>
<td>1:1.7 at 6-33mm</td>
<td>72.5°X57.6° at 6mm</td>
<td>0.3m</td>
<td>51.3X38.5cm at 6mm</td>
<td>Semi-Servo</td>
<td>2X</td>
</tr>
<tr>
<td>J15X9.5B KRSII Semi-Professional</td>
<td>15X</td>
<td>9.5-143mm</td>
<td></td>
<td>1:1.8 at 9.5-112mm</td>
<td>49.7°X38.3° at 9.5mm</td>
<td>0.95m</td>
<td>66.8X44.7cm at 9.5mm</td>
<td>Semi-Servo</td>
<td>2X</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12-186mm</td>
<td>2X</td>
<td>1:1.8 at 9.5-120mm</td>
<td>49.7°X38.3° at 9.5mm</td>
<td>0.95m</td>
<td>60X40.9cm at 9.5mm</td>
<td>Semi-Servo</td>
<td>2X</td>
</tr>
<tr>
<td>J15X9.5B IRS Semi-Professional</td>
<td>15X</td>
<td>9.5-143mm</td>
<td></td>
<td>1:1.8 at 9.5-121mm</td>
<td>49.7°X38.3° at 9.5mm</td>
<td>0.95m</td>
<td>60X40.9cm at 9.5mm</td>
<td>Semi-Servo</td>
<td>2X</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12-186mm</td>
<td>2X</td>
<td>1:1.8 at 9.5-121mm</td>
<td>49.7°X38.3° at 9.5mm</td>
<td>0.95m</td>
<td>60X40.9cm at 9.5mm</td>
<td>Semi-Servo</td>
<td>2X</td>
</tr>
<tr>
<td>J12X10B KRS Semi-Professional</td>
<td>12X</td>
<td>10-120mm</td>
<td></td>
<td>1:1.7 at 10-101mm</td>
<td>47.5°X36.5° at 10mm</td>
<td>1.1m</td>
<td>89.8X67.3cm at 10mm</td>
<td>Semi-Servo</td>
<td>2X</td>
</tr>
</tbody>
</table>

Prices and Specifications Subject to Change Without Notice.
## BROADCAST LENSES

**For 1/2" CCD Color TV Cameras**

**PH18X6.2B IRS**
- **Zoom Ratio:** 18X
- **Range of Focal Length:** 6.2-112mm
- **With Extender:** 2X
- **Maximum Relative Aperture:** f/1.4 at 6.2mm, f/1.7 at 10mm, f/2.5 at 112mm
- **Angular Field of View:** 54.6°X32.3° at 6.2mm, 1:1.4 at 112mm
- **Object Distance (M.O.D.):** 0.9m
- **Object Dimensions at M.O.D.:** 86X64.5cm at 6.2mm, 8X6.5cm at 112mm
- **Operation System:** Semi-Servo
- **Built-In Extender:** 2X

**PH20X6.2IE IRS II Type C**
- **Zoom Ratio:** 20X
- **Range of Focal Length:** 6.6-92.4mm
- **With Extender:** 1.5X, 2X
- **Maximum Relative Aperture:** f/1.4 at 6.6mm, f/1.55 at 92.4mm
- **Angular Field of View:** 51.7°X40° at 6.6mm, 2°X1.5° at 92.4mm
- **Object Distance (M.O.D.):** 0.8m
- **Object Dimensions at M.O.D.:** 81.3X61.0cm at 6.6mm, 4.0X3.0cm at 92.4mm
- **Operation System:** Semi-Servo
- **Built-In Extender:** 1.5X, 2X

**PH14aX6.66 IRS**
- **Zoom Ratio:** 14X
- **Range of Focal Length:** 6.6-92.4mm
- **With Extender:** 2X
- **Maximum Relative Aperture:** f/1.4 at 6.6mm, f/1.55 at 92.4mm
- **Angular Field of View:** 51.7°X40° at 6.6mm, 4°X2.6° at 92.4mm
- **Object Distance (M.O.D.):** 0.8m
- **Object Dimensions at M.O.D.:** 72.3X54.2cm at 6.6mm, 5.18X3.87cm at 92.4mm
- **Operation System:** Semi-Servo
- **Built-In Extender:** 2X

**PH1X6.68 IRS II Type A**
- **Zoom Ratio:** 12X
- **Range of Focal Length:** 7.5-90mm
- **With Extender:** 1.5X, 2X
- **Maximum Relative Aperture:** f/1.4 at 7.5mm, f/1.7 at 90mm
- **Angular Field of View:** 48.2°X35.3° at 7.5mm, 1.8°X1.3° at 90mm
- **Object Distance (M.O.D.):** 1.1m
- **Object Dimensions at M.O.D.:** 86.9X65.2cm at 7.5mm, 7.4X5.6cm at 90mm
- **Operation System:** Semi-Servo
- **Built-In Extender:** 2X

**PH8X4.4B IRS Wide Angle**
- **Zoom Ratio:** 8X
- **Range of Focal Length:** 8.8-70mm
- **With Extender:** 2X
- **Maximum Relative Aperture:** f/1.4 at 8.8mm, f/1.7 at 70mm
- **Angular Field of View:** 40.3°X30.8° at 8.8mm, 5.2X3.9° at 70mm
- **Object Distance (M.O.D.):** 0.3m
- **Object Dimensions at M.O.D.:** 25.7X19.2cm at 8.8mm, 3.2X2.4cm at 70mm
- **Operation System:** Semi-Servo
- **Built-In Extender:** 2X

**PH15X7B KRS II**
- **Zoom Ratio:** 15X
- **Range of Focal Length:** 7-105mm
- **With Extender:** 2X
- **Maximum Relative Aperture:** f/1.4 at 7mm, f/1.7 at 105mm
- **Angular Field of View:** 49.1°X37.5° at 7mm, 3.5°X2.6° at 105mm
- **Object Distance (M.O.D.):** 0.95m
- **Object Dimensions at M.O.D.:** 80.0X60.0cm at 7mm, 5.4X4.1cm at 105mm
- **Operation System:** Semi-Servo
- **Built-In Extender:** 2X

**PH15X7B KRS II Type B**
- **Zoom Ratio:** 15X
- **Range of Focal Length:** 7-105mm
- **With Extender:** 2X
- **Maximum Relative Aperture:** f/1.4 at 7mm, f/1.7 at 105mm
- **Angular Field of View:** 49.1°X37.5° at 7mm, 3.5°X2.6° at 105mm
- **Object Distance (M.O.D.):** 0.95m
- **Object Dimensions at M.O.D.:** 80.0X60.0cm at 7mm, 5.4X4.1cm at 105mm
- **Operation System:** Semi-Servo
- **Built-In Extender:** 2X

**PH12X7.5B KRS**
- **Zoom Ratio:** 12X
- **Range of Focal Length:** 7.5-90mm
- **With Extender:** 2X
- **Maximum Relative Aperture:** f/1.4 at 7.5mm, f/1.7 at 90mm
- **Angular Field of View:** 46.2°X35.5° at 7.5mm, 4.1X3.1° at 90mm
- **Object Distance (M.O.D.):** 1.1m
- **Object Dimensions at M.O.D.:** 86.9X65.2cm at 7.5mm, 7.4X5.6cm at 90mm
- **Operation System:** Semi-Servo
- **Built-In Extender:** --

**PH10X8B KRS Wide Angle**
- **Zoom Ratio:** 10X
- **Range of Focal Length:** 8-80mm
- **With Extender:** --
- **Maximum Relative Aperture:** f/1.4 at 8mm, f/1.7 at 80mm
- **Angular Field of View:** 43.6°X33.4° at 8mm, 4.6X3.4° at 80mm
- **Object Distance (M.O.D.):** 1.1m
- **Object Dimensions at M.O.D.:** 82.8X62.2cm at 8mm, 8.7X6.5cm at 80mm
- **Operation System:** Semi-Servo
- **Built-In Extender:** --

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Prices and Specifications Subject to Change Without Notice.
DIGITAL EFFECTS/ DIGITAL STILL STORE

MS800 Series 'Maurice' Digital Effects Systems
* Operates as TBC for any source and copes with wide tolerance of input timing levels * Infinite window TBC * Digital effects including zoom and pseudo-perspective * Simultaneous key processing * Still store optional * Component input/outputs + Y/C input/output for S-VHS * 4 composite inputs with internal switches * Remote control operation via serial input * Programmable 2-color borders * Built-in drop shadow generation * Background generation * False color imaging * Pixelation * Horizontal and vertical mirrors * Color correction capabilities * Test card generation * Broadcast standard digital decoder option * Spatial filter for smoother zooms and noise reduction * Y/C horizontal and vertical compensation * Picture encryption/de-encryption capable * Self-calibration and auto diagnostics * 4:2:2 digital input/output for all digital studio operations
* Transversal filter decoder

ANCILLARY EQUIPMENT

Slide Store Systems

Slide Store Products

Prices and Specifications Subject to Change Without Notice.
### STANDARDS CONVERTERS

#### 'Tetra Plus' Standards Converters

- **TS165 'Tetra Plus' Broadcast Standards Converter System**
  - Bi-directional
  - 4:2:2, 8-bit standards converter
  - Motion adaptive 4-field, 4-8 line interpolation
  - Hycomb comb filter decoder for PAL/NTSC 3.58/4.43 inputs
  - Hycomb sub-board decoder for SECAM/PAL-M/PAL-N inputs
  - DIO card for CCIR 601 digital input and output
  - ENC2 O/P card for PAL/NTSC 3.58/4.43 outputs
  - SECAM O/P card for SECAM output
  - P171-10 digital 4:2:2 multi-standard encoder (PAL/NTSC) + P180 stereo audio delay compensation unit
  - **Price:** $75,995.00

- **P165-50 'Tetra Plus' Broadcast Standards Converter**
  - Bi-directional
  - 4:2:2, 8-bit standards converter
  - Motion adaptive 4-field, 4-8 line interpolation
  - Hycomb comb filter decoder for PAL/NTSC 3.58/4.43 inputs
  - Hycomb sub-board decoder for SECAM/PAL-M/PAL-N inputs
  - DIO card for CCIR 601 digital input and output
  - ENC2 O/P card for PAL/NTSC 3.58/4.43 outputs
  - SECAM O/P card for SECAM output
  - P180 stereo audio delay compensation unit
  - **Price:** $64,995.00

- **P165-44 'Tetra Plus' Broadcast Standards Converter**
  - Bi-directional
  - 4:2:2, 8-bit standards converter
  - Motion adaptive 4-field, 4-8 line interpolation
  - ADC standard decoder for PAL/NTSC 3.58/4.43/SECAM inputs
  - ENC2 O/P card for PAL/NTSC 3.58/4.43 outputs
  - SECAM O/P card for SECAM output
  - P180 stereo audio delay compensation unit
  - **Price:** $39,995.00

#### 'Tetra' Standards Converters

- **P165-40 Bi-directional 4:2:2, 8-Bit Standards Converter**
  - With motion adaptive 4-field, 4-8 line interpolation
  - **Price:** $28,995.00

- **P165-40SEC Bi-directional 4:2:2, 8-Bit Standards Converter**
  - With motion adaptive 4-field, 4-8 line interpolation and SECAM output board installed
  - **Price:** $31,995.00

- **P165-40D10 Bi-directional 4:2:2, 8-Bit Standards Converter**
  - With motion adaptive 4-field, 4-8 line interpolation and D1 digital I/O board installed
  - **Price:** $31,995.00

- **P165-4OHY Bi-directional 4:2:2, 8-Bit Standards Converter**
  - With motion adaptive 4-field, 4-8 line interpolation and Hycomb decoder for PAL/NTSC 3.58/4.43 inputs only
  - **Price:** $33,995.00

- **P165-4OHYSEC Bi-directional 4:2:2, 8-Bit Standards Converter**
  - With motion adaptive 4-field, 4-8 line interpolation with Hycomb decoder for PAL/NTSC 3.58/4.43 inputs only and SECAM output board installed
  - **Price:** $33,995.00

#### 'Standi' Standards Converter

- **P165-22 'Standi' Bi-Directional Standards Converter**
  - 4-field converter for PAL/NTSC 3.58/4.43 and SECAM inputs. PAL and NTSC 3.58/4.43 outputs
  - **Price:** $18,995.00

#### Low Cost Standards Converters

- **P156/2 P-N Standards Converter**
  - PAL/SECAM inputs, NTSC output
  - **Price:** $8,995.00

- **P156/2 N-P Standards Converter**
  - NTSC input, PAL output
  - **Price:** $8,995.00

### Optional Equipment

- **165-SEC SECAM Output Board** For P165-22 and P165-40
  - **Price:** $3,000.00

- **165-HYCOMB Wideband Composite Comb Decoder** For P165-40, PAL/NTSC 3.58/4.43 inputs only
  - **Price:** $5,000.00

- **165-40 Remote Panel** For P165 (serial control)
  - **Price:** $3,000.00

- **165-UG-TEST Optional software** For P165-40 SN 01510 and above. Will add: Manual adaption control + Broadcast test patterns + P180 control giving extra frame of audio delay
  - **Price:** $1,000.00

- **164 Rackmount Slide Kit** For P164/P165
  - **Price:** $295.00

- **164-EXT Extender Card** For P164/P165
  - **Price:** $320.00

### Broadcast Audio Delay

- **P180 Stereo Audio Delay Compensation Unit** For P165 series. Serial control from 'Tetra' units
  - **Price:** $4,995.00

### Broadcast Encoders/Decoders

- **P170-10 Digital Adaptive PAL Comb Decoder** For P164/P165
  - **Price:** $13,995.00

- **P171-10 Digital 4:2:2 Multi-Standard Encoder**
  - **Price:** $10,995.00

### 'Tetra' Upgrades

- **165-UG-FAD Upgrade** for existing P165-40 models (SNs up to 01830). Will add: Improved vertical resolution, Manual adaption control, Broadcast test patterns, P180 control giving extra frame of audio delay
  - **Price:** $2,000.00

- **165-UG-SEC Upgrade kit** for PAL/SECAM output from P165-40 Tetra. Includes replacement IVI board. For SNs below 01377, call
  - **Price:** $4,500.00

- **165-UG-D10 Upgrade kit** for Digital D1 input/output on P165-40. Includes DIO board. Note: For SNs below 01509, call
  - **Price:** $3,500.00

- **165-UG-HY Upgrade kit** for installation of Hycomb wideband composite decoder in P165-40 Tetra. Includes replacement IVI board and SECAM output board. For SNs below 01377, call
  - **Price:** $6,500.00

- **165-UG-SEC Upgrade kit** for SECAM output and P180 control on P165-40 Tetra. Includes replacement ENC2 encoder board and SECAM board
  - **Price:** $6,500.00

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**Prices and Specifications Subject to Change Without Notice.**
AD INSERTION SYSTEMS/SWITCHERS

Full Random Access, Random Pod and Random Pod Sequential Ad Insertion Equipment

Adcart Random Access Ad Insertion System

The Adcart is an ad insertion system designed for random pod or full random access operation. Its primary components include a Channel Control Unit, Tape Encoding Unit and System Control Unit.

CCU-402A, Channel Control Unit

The basic CCU is housed in a 3 1/2” high rack enclosure and inserts ads into 2 CATV networks. CCUs 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 1, 2, 3 or 4 VCRs on 1 channel, 1 or 2 VCRs on each of 2 channels, or VCRs shared between 2 channels.

Its features include: front panel status display, all-channel CRT status display, full stereo audio, computer adjusted audio levels, flexible VCR channel assignments, preset PC’s, memory backup without batteries, latest audio/video IC multiplexing and switching circuitry and 2 auxiliary outputs .............................................. $7500.00

TEU-1A, Tape Encoding Unit

1 TEU is required in an Adcart system to encode advertiser information via a CRT terminal onto commercial spot reels, including company name, spot name, account executive, etc................................. $4500.00

SCU-1A, System Control Unit

An SCU is required in any system using 2 or more CCUs. The unit provides the central management functions that enable the system to share the CRT terminal or PC interface and printer. Also features automatic error reporting. Only 1 SCU is needed in a system, no matter how large ......................................................... $2500.00

Options and Accessories

APC-100A Adcart PC Software

Used when controlling an Adcart via an IBM PC or compatible computer. The software allows the operator to develop, control and edit schedules in advance and store weeks of verification data. Inter-faces with most traffic management systems on the market. The APC-100A is very user friendly and has full-color, easy-to-read menus, help screens and editing screens ...................................................... $1500.00

ASP-100A, Adcart PC Automatic Schedule Program Software

Now offered as a standard feature of Adcart PC Software, the ASP-100A was previously available only as a $1000.00 option. Designed specifically for interconnects, the ASP retrieves logs and sends schedules at selected times between selected headends. The ASP-100A runs in conjunction with an Adcart PC Software, versions 2.10 and higher, on IBM PC-AT or PC-AT compatible machines .............................................. $1500.00

AVS-10A, Patchmaster

The Patchmaster is a broadcaster-quality bridging audio-follow-video routing switcher. If it is desired to check signal levels or quality at different points in an ad insertion system, the Patchmaster can be used to switch these signals to a central monitoring point ...................................................... $1295.00

NSS-5A, Network Share Switcher

Used in conjunction with any full random access, random pod or sequential ad insertion equipment, the Network Share Switcher enables commercials to be inserted into as many as 4 networks from a single ad insertion source. Insertion is performed on a first-come, first-served basis, on selected channels, or on all channels.

Its features include: 4 digital DTMF cue tone decoders, full-screen terminal programming and status monitoring, full logging and verification of switching and cue tone receipt, all collision monitoring and logging, and power failure relay bypass ............................................. $3500.00

Sequential Ad Insertion Equipment

CIS-2A, Li’l Moneymaker

The Li’l Moneymaker is a single-channel, single-VCR, sequential ad insertion playback system.

Its features include: microprocessor control, portable tone pad programming, complete preview capability, vertical interval switching, digital DTMF tone decoding, programmable preroll times, selectable VCR or satellite priority, selectable VCR start delay, built-in Aux source fill switcher for blackouts, and is compatible with most 1/2” or 3/4” VCRs ............................................................... $995.00

CIS-1A, Spotmatic Jr

The Spotmatic Jr is a single-channel, single-VCR, sequential ad insertion playback system with built-in verification circuitry and printer.

Its features include: microprocessor control, portable tone pad programming, complete preview capability, vertical interval switching, digital DTMF tone decoding, programmable preroll times, selectable VCR or satellite priority, selectable VCR start delay, built-in Aux source fill switcher for blackouts, compatible with most 1/2” or 3/4” VCRs, and built-in logging and verification printout, program and status printouts ...................................................... $1595.00

Options and Accessories

ALS-5A, Logmatic

The Logmatic is a fully-automatic, 4-channel ad insertion logging system designed specifically to interface with an IBM PC or compatible computer and full size 80-column printer. Multiple Logmatics can be chained together to handle additional channels in groups of 4. The unit can send data directly to a printer or store the data until it is retrieved by a remote or local personal computer. Logmatic PC Software is required when interfacing with a personal computer.

Its features include: expandable to 400 channels, 4000-event memory storage, memory power backup, logs advertiser and spot IDs, logs event times, drives any full size 80-column printer ............................................. $995.00

LSW-100A Logmatic PC Software

The LSW-100A is a software product which is used to interface a personal computer to an ALS-5A, Logmatic. The software runs on the PC, gives a full screen user interface, and carries out the functions of retrieving, storage and sorting ...................................................... $1250.00

NSS-4B, Network Share Switcher

Used in conjunction with a single channel, sequential ad insertion system, the Network Share Switcher enables commercials to be inserted into as many as 4 networks from a single ad insertion source. Insertion is performed on a first-come, first-served basis.

Its features include: 4 digital DTMF cue tone decoders, 4 preroll delay timers, composite sync output, cue tone decoder disable switches and power failure relay bypass ............................................. $1595.00
Cyclorama Curtain Track

- Ease of installation
- Rigid alignment of splices
- Effortless, walk-along carriers may be pushed or pulled
- Pre-formed corner radii
- All components aluminum or plated steel
- One free set custom track layouts (additional sets available for fee)

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>70.110</td>
<td>Single track</td>
<td>per ft./$ 8.00</td>
</tr>
<tr>
<td>70.115</td>
<td>Single track with</td>
<td>per ft./$12.00</td>
</tr>
<tr>
<td></td>
<td>track brackets</td>
<td></td>
</tr>
<tr>
<td>70.120</td>
<td>Double track</td>
<td>per ft./$17.00</td>
</tr>
<tr>
<td>70.130</td>
<td>Triple track</td>
<td>per ft./$27.00</td>
</tr>
<tr>
<td>70.140</td>
<td>Quad track</td>
<td>per ft./$37.00</td>
</tr>
</tbody>
</table>

70.120 Double Track System

The double track system is recommended for the seamless Linoweave and background curtains. The track, corner track sections, track brackets, splicing clamps and all other necessary accessories required to install the double track system are included.

Track Features
- Extruded aluminum I-beam
- Minimum 14 gauge aluminum with interior horizontal web for additional stiffness and to prevent carriers riding up on the track
- Bottom flange has 10° topside slope
- Inside to outside automatically centering carriers on track

Carrier Features
- 1" wheeled, nylon ball-bearing carrier with bumper, 20° included angle between wheels for self centering on track
- One carrier per foot of curtain width, plus one

Splicing Clamp Features
- Extruded aluminum clamp slides over track and may be coincident with hanger bracket to facilitate system layout and installation
- Clamp rigidly aligns both spliced track ends resulting in smooth joint
- Splicing clamp may also be used as track clamp to minimize components

Track Clamp Features
- Extruded aluminum clamp slides over track firmly attaching track to hanging brackets
- Single screw attaches clamp to track and clamp to bracket providing quick, easy, one-handed, low maintenance installation

Wall Bracket Features
- Brackets made of 1/4" x 2" heavy duty steel slotted 8" apart, center to center in horizontal leg for mounting bracket clamps
- Three 7/16" holes on vertical leg for attaching to wall

Important Note
It is recommended that exact inside studio dimensions be sent to Channel One—carefully noting all obstacles. By so doing, we can often eliminate problems—and save money.

Cyclorama and Background Curtains

Linoweave Cyclorama Curtains
- Seamless—flameproofed, 100% woven cotton
- Top—heavy-duty 3½" wide interfacing with 5/8" brass eyelets on one foot centers and 1½" S-hook
- Side—2" interfacing sewn for stiffness and reinforcement with 5/8" brass eyelets on two foot centers for use with tauting poles
- Bottom—4" hem, with separate pocket or No. 8 jack chain weight, sewn ½" above bottom, preventing chain "wear-through"
- Total curtain fabricated to ± ½" tolerances

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>72.101</td>
<td>CBS Gray</td>
<td>Per sq. ft./$3.40</td>
</tr>
<tr>
<td>72.104</td>
<td>Black</td>
<td>Per sq. ft./ $4.40</td>
</tr>
</tbody>
</table>

Polyvue and Velour Background Curtains
- Purchased in pairs gives stage effect
- Pleated effect when hand gathered
- Inherently flame resistant
- 28 colors
- Fabricated to the same standards as Linoweave curtains

Polyvue, 72" vertical panel seams; Velour, 54" vertical panel seams

Tauting Pole
- Keeps cyclorama taut to eliminate texture in background which might result from sagging cloth
- Pole made of 2" x 2" x 3/16" aluminum teebar
- Base of 1½" square tubing
- Guy wire and turnbuckle provide proper tension

Tauting Pole Eyelet Claw
- Joins cyclorama curtain to tauting pole
- Claw hooks into curtain eyelet and is adjustable to insure proper horizontal curtain tension
- Two foot spacing required

Sand Bag
- Designed to hold fifty (50) pounds of sand and lay across the tauting pole base to hold base and pole in position

Grid Hardware
- All-thread, nuts, bolts, beam clamps, etc., to complete installation of connector strips or pipe grid to I-beams or truss deck based on no greater than 5' centers

Prices and Specifications Subject to Change Without Notice.
CASP®/1000 Universal Battery Support System

- Microprocessor-based for maintaining any rechargeable batteries
- Reflex battery reconditioning will rejuvenate NICad batteries, even when they have deteriorated to the point that they will no longer hold a charge. Different types of charging are built into the machine depending on the kind and condition of battery. This capability includes fast charge, slow charge, dual-rate charge and simultaneous trickle charge.

The CASP/1000 system has 6 input-output channels to which batteries may be connected. Corresponding to each channel are 6 process indicator lights, to display the process state of each channel.

Up to 6 batteries of varied types may be connected simultaneously to the system. A sequencer circuit automatically polls each connector in a predetermined sequence, providing inputs to the battery recognition circuit. This circuit identifies battery types and provides this information to the system microprocessor.

Depending on the function, or operating mode, which has been selected for the system, such as "Charge," "Analyze" or "Recondition," the microprocessor instructs the system circuitry to conduct the process. In the case of "Analyze," for example, the pre-programmed current/voltage source performs discharge and charge functions necessary to the correct and complete diagnosis of every battery connected to the system. The sequencer multiplexes the necessary inputs and outputs to the relevant channels and batteries. The process indicator lights inform the operator of the state of the process which is taking place in each channel.

All operations of the CASP/1000 are initiated and controlled by the 3 keys on the system keyboard: Charge (green), Analyze (yellow), and Stop (red). To perform various functions the keys are pressed 1 or more times. Indicator lights behind the keys glow or flash at different rates to signal the process which is taking place. Audible signals augment the visual indicators.

All functions which are being performed, as well as the condition of each battery connected to the system, can be printed out on an optional serial printer. An RS-232 port is provided for this requirement.

CASP/1000 With printer and software $1950.00

CASP/1200 Universal Battery Support System

Same as CASP/1000 plus:

- All operations of the CASP/1200 are initiated and controlled by the front keyboard. An LCD display provides readout of Battery Identification as well as Function, Task and Completion Codes. In addition, an internal speaker emits tones for input verification, errors and process termination. All functions which are being performed, as well as the condition of each battery connected to the system, can be printed out on an optional serial printer.

The CASP/1200 can be accessed through an RS-232 port for uploading or remote operation. Uploading may be accomplished by using a CASP/2000 or personal computer. Remote operation is also possible, allowing the CASP/1200 to be operated from a computer. Software for use with IBM compatible and Apple II personal computers is available.

CASP/1200 Universal Battery Support System

CASP/1000 Printer (C1200), software (TD-639) $1950.00
CASP/1200 Printer (C1200), software (TD-639) $2495.00
CASP/1200 Printer (C1200), discharge booster (CDC-65), software (TD-639) $2495.00
CASP/2000L Discharge booster (CDC-65) $3686.00
CASP/2000H, discharge booster (CDC-65), software (TD-639) $3686.00
CASP/2000L Printer (C1200) $4741.00
CASP/2000H Printer (C1200) $4741.00
CASP/2000L Discharge booster (CDC-65) $4931.00
CASP/2000H Discharge booster (CDC-65) $4931.00
CASP/2000L Printer (C1200) $5401.00
CASP/2000H Printer (C1200), discharge booster (CDC-65) $5401.00
CASP/2000H, CASP/1200 Printer (C1200), null modem plug (524600-039) $7135.00

CASP/2000L Pumping and remote operation $195.00

CASP/2000 Universal Programmable Battery Support System

Includes same basic features as CASP/1000 plus:
- Available in 0-42VDC/0-14ADC and 0-78VDC/0-10ADC
- Keyboard to reprogram other batteries or new batteries
- Integral LCD display provides broad array of information about the functions of the system (battery description, ampere-hour capacity, voltage and charge/discharge currents)
- Can be a reliable power supply
- Optional serial printer can produce reports as well and graph battery charge/discharge curves
- Also indicates on printout weak cells

CASP/2000 Universal Programmable Battery Support System

CASP/1000 Printer (C1200), software (TD-639) $1950.00
CASP/1200 Printer (C1200), software (TD-639) $2495.00
CASP/1200 Printer (C1200), discharge booster (CDC-65), software (TD-639) $2495.00
CASP/2000L Discharge booster (CDC-65) $3686.00
CASP/2000H, discharge booster (CDC-65), software (TD-639) $3686.00
CASP/2000L Printer (C1200) $4741.00
CASP/2000H Printer (C1200) $4741.00
CASP/2000L Discharge booster (CDC-65) $4931.00
CASP/2000H Discharge booster (CDC-65) $4931.00
CASP/2000L Printer (C1200) $5401.00
CASP/2000H Printer (C1200), discharge booster (CDC-65) $5401.00
CASP/2000H, CASP/1200 Printer (C1200), null modem plug (524600-039) $7135.00

CASP/2000H, pumping and remote operation $195.00

Prices and Specifications Subject to Change Without Notice.
Scribe/Superscribe Character and Graphics Generator

- Print quality resolution 1500 Master Bitstream™ typefaces library selection
- 5 master typefaces supplied
- Automatic character kerning
- Expandable font memory
- 8 full font-loading positions
- Automatic font load during message compose
- Automatic message playback with recorded fonts
- Unlimited overlap
- 16.7 billion color color character and channel display
- Background colors selectable on a scan line basis
- Automatic color ramping for shaded backgrounds
- Multiple character edges/variable size and color
- Multiple speeds of roll, crawl and slow reveal
- Multiple crawl rows
- Programmable timed roll
- Clock/event timer
- Programmable directory for operators
- Programmable function keys
- Adjustable safe title/margin area
- Automatic horizontal and vertical centering
- Insert and delete controls
- Selectable right, left and columnar justification
- Row exchange
- Squeeze and expand
- Instant color and font change
- Cut and paste
- 256 tab positions
- Remote event triggering (GPI)
- 1.2M byte floppy disk plus 20M byte fixed hard disk
- Color encoder and linear keyer/fader
- Built-in sync generator with genlock
- Extensive system diagnostics
- Custom operator environment

Scribe/Superscribe Options

- Advanced Font Utility I and II (See Advanced Font Create Utilities package below)
- Dynamic read effects
- Color video capture
- Logo compose
- Scribe toolbox fonts
- Chryon IV font converter
- I/O expander
- Intelligent interface
- Preview channel
- Networking
- Expanded remote event triggering (GPI)
- International keyboard
- Font memory expansion to 4M byte
- Expandable mass storage (up to 10 SCSI devices)
- 3.5" floppy disk drive
- Additional full-function keyboard
- RGB outputs with RGB linear keyer
- CCIR 601 outputs with key out
- Networking to Scribe Infinit or Scribe Jr.
- Software maintenance agreement (includes Fonts By Wire™)

Additional Superscribe Options

- Transform—real time, object-oriented animations
- Chartist—presentation graphics package
- Advanced font create utilities package
- Variable 3-D viewpoint control and light source shading
- Metallizing
- Neon effect
- Character shading
- Inner/outer glows
- Bevel effects
- Chisel effects
- 3-D texture mapping and more

Scribe to Superscribe Upgrade

- 8 master typefaces supplied with system
- On-line interactive font conversion and resizing
- On-line interactive font attribute manipulation
- Multi-tasking software capability
- Multi-user environment support
- Supercharger/high-speed processor
- 42M byte fixed hard disk
Scribe Basic system prices start at: $31,900.00
Superscribe Basic system prices start at: $37,900.00
Scribe to Superscribe Upgrade: $6,995.00

Scribe Jr. Character and Graphics Generator

- Compact version of the Scribe providing many of the powerful features and operations of the standard Scribe
- Maintains message compatibility and font interchangeability with the Scribe Infinit, Superscribe and Scribe systems
- Better than 10ns resolution
- 8 levels of anti-aliasing
- 5 1/4"H chassis/keyboard-contained 3.5" floppydisk
- Keyboard may be located up to 1000' from the chassis
- 2M byte disk storage capacity

Scribe Jr. Options

- Logo compose
- Preview channel
- Dynamic read effects
- Dual channel configuration
- Expandable mass storage (up to 10 SCSI devices)
- Intelligent interface
- Networking
- International keyboard
- Font memory expansion
- Additional keyboards
- RGB component outputs with RGB linear keyer
- Software maintenance agreement (includes Fonts By Wire)
Scribe Jr. Basic system prices start at: $19,000.00

Prices and Specifications Subject to Change Without Notice.

Scribe High Definition™ Character and Graphics Generator

- Contains all of the standard features of the Scribe and Superscribe with a special design for optimum video graphics performance in the HDTV standard
- Standard hard disk supplied with the system has a capacity of 42M bytes plus font memory of 4M bytes
- Both Advanced Font Utility I and Advanced Font Utility II packages included
- 1125 scanlines (1035 visible) ±60Hz field rate
- 16 levels of anti-aliasing ±0.84ns effective resolution
- Locks to all current high definition sync formats
- 2:1 interface 
- SMPTE 240M compatible
- 24 FPS available for film

Optional Features

- Additional mass storage
- Networking
- Logo compose
- Auxiliary entry and access to the entire Bitstream™ font library selection

Scribe Infinit Character and Graphics Generator

- Contains all of the standard features of the Superscribe with the additional benefits of:
  - Independent, full-function dual channels
  - Full 32 bits per channel
  - 256 levels of anti-aliasing and transparency
  - Freeform graphics mode
  - 2-D animation
  - 16 on-line fonts (8 per channel)
  - Mix and effects between channels
  - Wipes
  - Dissolves
  - Priority mix
  - Effects within channels
  - Wipes
  - Read effects
  - Push on/off
  - Infinitely variable roll speeds
  - Soft roll and crawl mask
  - 4:4:4:4 internal processing
  - Dual encoders on dual RGB outputs
  - 42M byte fixed hard disk
  - Keyboard-contained 2M byte, 3.5" floppy disk
  - 4M byte font memory
  - Built-in networking to other Scribe Infinit or Scribe Jr. systems
  - Icon-oriented prompt screen

Scribe Infinit Options

- Real time transformations of 2-D objects
- 3-D animation and modeling software
- Advanced paint software
- Third internal mix channel
- Utilized for paint, frame store or character generator
- Full-function capability for dual users (1 per channel)
- Full color, real time video capture
- Chryon IV font converter
- Advanced font create utility package
- Logo compose
- Mouse
- Intelligent interface
- Election reporting
- Sports
- CCIR 601 inputs and outputs
- Ethernet networking
- Expandable mass storage (up to 10 SCSI devices)
- Software maintenance agreement (includes Fonts By Wire)

Scribe Infinit Basic system prices start at: $60,000.00

*Price On Request
CHARACTER/GRAPHICS GENERATORS

CHYRON IV SERIES CHARACTER AND GRAPHICS GENERATORS

4200 and 4100 EXB Character/Graphics Generators
- 27ms 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 1° increments
- Diagonal typing
- Flash
- Clock/event timer
- Visible safe title area
- Off-line edit channel
- Flexible "Vididisc" floppy disk storage system
- RS-232 standard computer interface
- Software intensive/modular design

Chyron IV Series expandability has been the predecessor to Chyron's philosophy that systems need not be obsolete from 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).

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 disk
- Multiple "Vididisc" disk 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 (GPI)
- 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.

Multimode Graphics Module (MGM)

Option for Chyron IV
- Standard RS-170 input
- 512-color palette
- Full screen display capability
- Accepts drawing tablet input
- Realizing 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 full, color pickup, etc. Circles, rectangles 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 multi-color 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 1 or 2 and stored as a single message on Winchester disk.

* Data terminal and modem are required.

Prices and Specifications Subject to Change Without Notice.
Steadicam Camera Stabilizing Systems
(Universal Model 3A)
For Film and Video Cameras
All Steadicam (Universal Model 3A) Systems include:
- Operator’s vest
- Adjustable stabilizer support arm
- Camera mounting assembly featuring a 3½” high-intensity adjustable viewing monitor
- Telescoping/balance post
- Fore/aft rotating balance control
- Side-to-side rotating camera base plate assembly
- 2 NC-12 NiCad battery packs
- 2 NCC-12 chargers
- Docking bracket
- 3 cases accommodating the camera operator’s vest, stabilizer support arm, camera mounting assembly and related accessories

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3C015</td>
<td>Steadicam Universal Model 3A. For use with film and video cameras up to 40 lbs.</td>
<td>$42,000.00</td>
</tr>
<tr>
<td>1C007</td>
<td>Steadicam Universal Model 3A. For use with film and video cameras up to 30 lbs.</td>
<td>$41,500.00</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1L144</td>
<td>Adjustable standard-load stabilizer arm, as spare. May be adjusted in the field. For use with cameras up to 40 lbs.</td>
<td>$14,200.00</td>
</tr>
</tbody>
</table>

### Steadicam EFP

Steadicam EFP packages include the following standard accessories:
- Operator’s vest
- Adjustable stabilizer arm for cameras weighing 12 to 24 lbs.
- EFP chassis (camera mounting assembly)
- Soft case for arm
- Hard case for vest
- Hard case for camera mounting assembly
- Docking bracket
- J-7 zoom control

Batteries and monitor configurations vary with package chosen—see below.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>5C200</td>
<td>Steadicam EFP NTSC with black and white LCD monitor and Anton/Bauer Magnum 14 battery</td>
<td>$23,500.00</td>
</tr>
<tr>
<td>5C201</td>
<td>Steadicam EFP NTSC with black and white LCD monitor and Magnum 14 battery adaptor, without battery</td>
<td>$23,000.00</td>
</tr>
<tr>
<td>5C202</td>
<td>Steadicam EFP NTSC with black and white LCD monitor and MAGNUM 14 battery, without battery</td>
<td>$23,000.00</td>
</tr>
<tr>
<td>5C205</td>
<td>Steadicam EFP NTSC with color LCD monitor and Magnum 14 battery</td>
<td>$24,500.00</td>
</tr>
<tr>
<td>5C206</td>
<td>Steadicam EFP NTSC with color LCD monitor and MAGNUM 14 battery adaptor, without battery</td>
<td>$24,000.00</td>
</tr>
<tr>
<td>5C207</td>
<td>Steadicam EFP NTSC with color LCD monitor and PAG battery adaptor, without battery</td>
<td>$24,000.00</td>
</tr>
</tbody>
</table>

### Power Supplies for All Versions of Steadicam (Universal Model)

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1K216</td>
<td>Battery pack—NC-12</td>
<td>$525.00</td>
</tr>
<tr>
<td>1K217</td>
<td>Charger—NCC-12 for above. Overnight charge</td>
<td>$425.00</td>
</tr>
</tbody>
</table>

### Servo-Control Systems

WRC-4 Wireless Lens Control System
- Designed with 4 individual channels, the battery operated WRC-4 controls focus, iris and zoom for most popular film and video lenses and controls camera run/stop for 16 and 35mm motion picture cameras, via radio frequencies
- The handheld transmitter features: for focus, a "brake-away" large knob control; for iris, an integral slidepot control; for zoom, a "brake-away" thumb control
- Each channel features 2 trim pots to permit quick setup of customized parameters
- To use the WRC-4 with a camera in non-Steadicam applications, such as remote crane setup, simply add the JB-4 junction box to the system
- WRC-4 is designed to work with Cinema Products’ Z8 combined motor and bracket and will also operate with other popular lens control motors and appropriate motor mounting bracketry

Note that in video applications, the WRC-4 will interface directly with existing zoom lens motors

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3S407</td>
<td>ZB-4 zero backlash lens motor drive/bracket system</td>
<td>$4,600.00</td>
</tr>
<tr>
<td>3S401</td>
<td>ZB-4 zero backlash lens motor drive/bracket system</td>
<td>$2,100.00</td>
</tr>
<tr>
<td>3S401</td>
<td>CP motor amplifier. Wireless motor amp, 3-channel</td>
<td>$1,500.00</td>
</tr>
<tr>
<td>MOT-03916</td>
<td>Heden motor (requires 3S410 for WRC-4 operation)</td>
<td>$1,950.00</td>
</tr>
<tr>
<td>FGS-007601</td>
<td>Idler gear set. Allows use of Heden motor with most film and video lenses</td>
<td>$750.00</td>
</tr>
<tr>
<td>FGS-007350</td>
<td>Idler gear mounting bracket for Heden motor</td>
<td>$350.00</td>
</tr>
<tr>
<td>FGS-007600</td>
<td>RSB universal video gear system</td>
<td>$300.00</td>
</tr>
<tr>
<td>D78-2320</td>
<td>Junction box (JB-4). Permits WRC-4 wireless controls to be used with most film camera/lens combinations when Steadicam is not in use</td>
<td>$475.00</td>
</tr>
</tbody>
</table>

Steadicam Jr™
- Designed for 8mm, Hi8 and VHS-C camcorders
- Eliminates handheld shakes
- Allows camera to float on air
- Ergonomic intergimballed handle
- Platform features a mounting plate assembly for camera balance designed to facilitate 2-axis (front/rear and side-to-side) trimming with micrometer precision
- A flush mounted soft touch toggle switch is adaptable for connection to the pause circuits of many camcorders
- Steadicam "Obie" Light—low-intensity light operates off the Steadicam Jr’s internal batteries, providing 3200°K output
- Will not burn out a subject’s features
- Steady stand—to initially set up the camcorder or for use on a table as a “floating tripod,” the handle of the Steadicam Jr is placed in the stand so that trim can be adjusted front-to-rear and side-to-side
- Once adjusted it is always ready
- Steadicam Jr uses 4 “C” cells, 1.5VDC each

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>8C100</td>
<td>Steadicam Jr for 8mm and Hi8 camcorders</td>
<td>$595.00</td>
</tr>
<tr>
<td>8C102</td>
<td>Steadicam Jr for VHS-C and Super VHS-C camcorders</td>
<td>$595.00</td>
</tr>
<tr>
<td>8H100</td>
<td>Travel case for camcorder, Steadicam Jr and accessories</td>
<td>$75.00</td>
</tr>
</tbody>
</table>

Full Line of Steadicam Accessories Available—Please Inquire

Prices and Specifications Subject to Change Without Notice.
### BATTERY BELTS/PACKS/ BATTERY SYSTEM

**30V Battery Belts/Packs**

For Cine 60 Sun-Guns, Lowell, TLM, Colortran, Frezzi, Arri, Anton-Bauer, Mole-Richardson, Cinema Products, De Sisti, Kobold, Ianela, and other battery lights. 4Ah capacity operates 30V 250W lamp 28 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.

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Volts/Amps</th>
<th>Charge Rate</th>
<th>Fast Charge Rate</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>6304</td>
<td>30V, 4AH</td>
<td>Overnite</td>
<td>11 lbs.</td>
<td>$765.00</td>
</tr>
<tr>
<td>8304FC</td>
<td>30V, 4AH</td>
<td>Fast Charge</td>
<td>1 hr.</td>
<td>$814.00</td>
</tr>
<tr>
<td>7004</td>
<td>30V, 7AH</td>
<td>Overnite</td>
<td>15 lbs.</td>
<td>$224.00</td>
</tr>
<tr>
<td>7004FC</td>
<td>30V, 7AH</td>
<td>Fast Charge</td>
<td>2 hrs.</td>
<td>$285.00</td>
</tr>
</tbody>
</table>

Same as 30V Battery Belts but in a battery pack style.

- **9104** 30V, 4AH Overnite 11 lbs. $804.00
- **9104FC** 30V, 4AH Fast Charge 1 hr. $859.00
- **9704** 30V, 7AH Overnite 14 lbs. $1285.00
- **9704FC** 30V, 7AH Fast Charge 2 hrs. $1296.00

**Switchable 30V Belts/Packs**

Cine 60’s versatile power for most portable equipment and Sun-Guns.

- **30V/14.4V Switchable Battery Belts**
  - 3013 30V, 4AH/14.4V, 8AH Overnite 11 lbs. $845.00
  - 3013FC 30V, 4AH/14.2V, 8AH Fast Charge 1 hr. 903.00
  - 30137 30V, 7AH/12V, 14AH Overnite 14 lbs. 1292.00
  - 30137FC 30V, 7AH/12V, 14AH Fast Charge 2 hrs. 1353.00

**30V/13.2V Switchable Battery Belts**

- 9013 30V, 4AH/13.2V, 8AH Overnite 11 lbs. $845.00
- 9013FC 30V, 4AH/13.2V, 8AH Fast Charge 1 hr. 903.00
- 90137 30V, 7AH/13.2V, 14AH Overnite 14 lbs. 1292.00
- 90137FC 30V, 7AH/13.2V, 14AH Fast Charge 2 hrs. 1353.00

**30V/10A Switchable Battery Belts**

- 1330 30V, 10AH/14.4V, 20AH Overnite 26 lbs. 2198.00

**30V/14.4V Switchable Battery Belts**

- 6304 30V, 4AH Overnite 11 lbs. $765.00
- 7004 30V, 7AH Overnite 14 lbs. $1285.00
- 7004FC 30V, 7AH Fast Charge 2 hrs. $1296.00

**30V, 4AH Fast Charge**

- **9704** 30V, 4AH Overnite 14 lbs. $1285.00
- **9704FC** 30V, 4AH Fast Charge 2 hrs. $1296.00

**Batteries and 30V Batteries from a vehicle.**

- **9400-U. Model 94DC30 Mobile Fast Charger**
  - 12V, 13.2V and 14.4V 8A and 14A operates a 14.4V, 70W battery light, excellent battery utilization is assured.
  - **5 -pin male XLR input, two 5 -pin female XLR outputs.**
  - **With the VRX cameras, VTRs, Betacams. Maximum 48W.**
  - **5 -pin male XLR input, 5 -pin female XLR output**

**VRX Voltage Converter.**

Plugs in between battery and video cable. Converts 14.4V to 13.2V. Powers 13.2V cameras, YTRs, Betacams. Maximum 48W, 5-pin male XLR input, 5-pin female XLR output. ......... $45.00

**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. .............. $80.00

**Lifeguard “KFC” Battery Belts/Packs**

All Lifeguard “KFC” batteries feature a built-in two-rate Lifeguard Charger which, when connected to AC, keeps the battery fully charged and ready for use indefinitely without heat buildup or voltage depression. 4A and 8A batteries charge in four hours. 7A and 14A battery charge fully in four hours. Precision cell sensors in the battery terminate the charging when the battery is “full,” automatically switching to a “Lifeguard” rate which maintains the battery in “Ready” condition, fully charged indefinitely. Sensing circuits and visual indicators, white “Lifeguard” light, red for charging rate, provide continual monitoring of battery condition. All Lifeguard “KFC” batteries can also be fast charged with Cine 60 Universal Fast Chargers Models 9400, 9422, 9400-U, Model 94DC30 Mobile Fast Charger is used for fast charging 12V, 13.2V and 14.4V BA and 14A batteries and 30V batteries from a vehicle.

**Batteries and 30V Batteries from a vehicle.**

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Volts/Amps</th>
<th>Connectors</th>
<th>Charge Rate</th>
<th>Fast Charge</th>
<th>Weight</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>8304KFC</td>
<td>14.4V, 4AH</td>
<td>5-Pin XLR</td>
<td>4 hrs.</td>
<td>1 hr.*</td>
<td>6 lbs.</td>
<td>$726.00</td>
</tr>
<tr>
<td>8304FC</td>
<td>14.4V, 4AH</td>
<td>5-Pin XLR</td>
<td>4 hrs.</td>
<td>1 hr.*</td>
<td>13 lbs</td>
<td>$1397.00</td>
</tr>
<tr>
<td>7004KFC</td>
<td>14.4V, 7AH</td>
<td>5-Pin XLR</td>
<td>7 hrs.</td>
<td>2 hrs.*</td>
<td>15 lbs</td>
<td>$887.00</td>
</tr>
<tr>
<td>7004FC</td>
<td>14.4V, 7AH</td>
<td>5-Pin XLR</td>
<td>7 hrs.</td>
<td>2 hrs.*</td>
<td>15 lbs</td>
<td>$958.00</td>
</tr>
<tr>
<td>8128KFC</td>
<td>13.2V, 14AH</td>
<td>5-Pin XLR</td>
<td>7 hrs.</td>
<td>2 hrs.*</td>
<td>15 lbs</td>
<td>$1004.00</td>
</tr>
<tr>
<td>7026FC</td>
<td>14.4V, 14AH</td>
<td>5-Pin XLR</td>
<td>7 hrs.</td>
<td>2 hrs.*</td>
<td>15 lbs</td>
<td>$1408.00</td>
</tr>
<tr>
<td>9128KFC</td>
<td>14.4V, 14AH</td>
<td>5-Pin XLR</td>
<td>7 hrs.</td>
<td>2 hrs.*</td>
<td>15 lbs</td>
<td>$1034.00</td>
</tr>
<tr>
<td>9728KFC</td>
<td>14.4V, 14AH</td>
<td>5-Pin XLR</td>
<td>7 hrs.</td>
<td>2 hrs.*</td>
<td>15 lbs</td>
<td>$1415.00</td>
</tr>
</tbody>
</table>

**Prices and Specifications Subject to Change Without Notice.**
Main Stations
A Main Station is a combination intercom station and system power supply.
CS-210 Main Station 2-channel headset station, monitors 1 or both; selectable program input (mic or line-level), stage announce. Portable or rackmount. Applications include: theatre, concerts, rental firms ........................................... $675.00
820020 Rackmount Kit for CS-210 (3.5"H) ........................................... 55.00
MS-200C Main Station 2-channel speaker station, monitors 1 or both channels. Selectable talk/listen/program functions: stage/studio announce. Applications include: fixed installations, video/theatre directors ........................................... $785.00
MS-400A Main Station 4-channel rackmount headset/speaker operation, 2A power supply, mic/line program input, SA (stage/studio announce) output, user selectable program interrupt (IFB) and ISO function (3.5"H) ........................................... $1228.00
MS-400A-GM Same as above with gooseneck microphone ........................................... 1378.00
SB-412A Main Station 4-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 ........................................... $1891.00
SB-412A-GM Same as above with gooseneck microphone ........................................... 1927.00

MS-812 Master Station
- LCD display simplifies station programming • Up to 12 party-line intercom channels • Stores 4 complete programming configuration setups • Individual front panel channel 'listen' volume trim controls • 4 programmable preset buttons • Program signal assignable to all channels • Can operate up to 8 external IFB channels • Automatic headset detection • Dual action electronic latching 'light touch' control buttons • Variable button illumination
MS-812-8 8-channel master station ........................................... $2795.00
MS-812-12 12-channel master station ........................................... 3070.00
IFB-40 4-channel IFB/ISO option ........................................... 400.00
IFB-80 8-channel IFB/ISO option ........................................... 675.00
ISO-16 16-channel ISO only option ........................................... 125.00
710229 4-channel expansion card ........................................... 275.00
CP-56 Elco connector option ........................................... 125.00
CP-30 Tuchel connector option ........................................... 195.00
IP-1200 MS-812 interconnect panel ........................................... 1500.00

Rackmount Remote Stations
A remote station does not contain a power supply. It obtains DC power from a system power supply or main station.
MR-102A Headset Station 2-channel (A or B selectable) headset station mounts in console or standard 2-gang electrical box (headset operation only) ........................................... $198.00
MR-104A Same as above except 4-channel selectable ........................................... 284.00
RM-120A Remote Station Single Space Rackmount Speaker station, two-channels (monitor A, B, or both), Dynamic/carbon headsets; Stage Announce; selectable talk/listen/program functions. Applications include: video/theatre production ........................................... $577.00
RM-120A-GM Same as above with gooseneck microphone ........................................... 727.00
RM-400A Remote Station 4-channel headset/speaker station, rackmount mic/line level program input, SA (stage/studio announce) output, user selectable program interrupt (IFB) and ISO function (3.5"H) ........................................... $995.00
RM-400A-GM Same as above with gooseneck microphone ........................................... 1145.00

KB-111A Speaker Station 2-channel select speaker station, uses handset or push-to-talk mic. Mount in 6" x 8" electrical box or portable enclosure. Applications include: theatre/security ........................................... 283.00
KB-112 Speaker Station Speaker station with push-to-talk mic; talk/listen can be controlled remotely. All functions selectable. Applications include: dressing rooms/paging/security ........................................... 299.00

Enclosures for KB-111A and KB-112 Speaker Stations
P-Box Portable wedge shaped enclosure, metal and wood construction, for KB-111A (single channel only) and KB-112 ........................................... 141.00
M-Box Portable rectangular shaped enclosure, metal construction, for KB-111A (single channel only) and KB-112 ........................................... 117.00

1021M Amplified Monitor Speaker
- Magnetically shielded • Bi-amplified • 18W • 2-way speaker system with output levels of 95dB SPL • Only one rack space high • Full-range, high fidelity sound • Exceptional bass response • Discrete 2-channel monitoring • Completely self-contained and self-powered • Electronically balanced or unbalanced, line-level XLR inputs • Bar-type LED peak level meters • Stereo/mono switch
Monitor Applications
- Stereo/2-channel program audio • Video/audio tape machines
- "Off-air" receivers • Patch bay signals • Wireless microphone receivers • Cue/on audio console outputs
1021M ........................................... 595.00

Prices and Specifications Subject to Change Without Notice.
Station/Camera ISO System
The ISO-4000 Station/Camera ISO System is designed to easily and quickly establish private, 2-way communications between 2 or more intercom stations. The ISO-4000 uses a microprocessor to provide maximum user flexibility and minimum control/relay 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 16 ISO stations and 6 control stations. The system is comprised of the following components:

ISO-4003 4x3 ISO System Electronics Central electronics that supports up to 16 ISO stations and up to 3 control locations: Factory equipped for 4 ISO stations, expandable up to 16 using 3 additional IXM-46 expansion modules. Number of control locations is not expandable beyond 3 (5.25"H). $645.00
ISO-4006 4x6 ISO System Electronics Central electronics that supports up to 16 ISO stations and up to 6 control locations. Factory equipped for 4 ISO stations, expandable up to 16 using up to 3 additional IXM-46 expansion modules (5.25"H) $1785.00
IXM-43 4x3 ISO Expansion Module Adds 4 additional ISO station capability to an ISO-4003. $385.00
IXM-46 4x6 ISO Expansion Module Adds 4 additional ISO station capability to an ISO-4006. $445.00
ICP-4 ISO Control Module Provides select and tally of 4 ISO stations. For rackmount applications (with accessory 820022 rackmount) or custom console mounting $475.00
ISO-4 ISO Control Module Same as above but for installation in MS-808 main stations. This unit is designed for mounting in the MS-808 Master Station $475.00
ITM-1 ISO Transfer Module Required modification to multi-channel intercom systems. Module transfers station's 2-way intercom audio from normal operation to the private ISO channel. Factory installed only. $150.00

Accessories for ISO Series
ITC-1 Multi-pin Connector Assembly Installs in ISO-4003/6. Required to access individual ISO station intercom circuits (i.e., to enable individual station/channel assignment via MX-820/840 Matrix Switch) $165.00
EFS-1 Extended Function Software This is a non-volatile memory chip. Factory or field installable. Note: Requires at least 1 ICP-4 or ISO-4 to access the extended functions $500.00
YC-66 6-Pin Y Adaptor Enables paralleling of 2 6-pin ISO data cables $425.00
ISO-4000 Central Electronics
820022 Rackmount Kit To rackmount 1, 2 or 3 ICP-4 ISO control panels. $80.00

IFB (Program Interrupt) Systems
The IFB system is a modular system capable of operating as a standalone system, or being integrated with MS-808 Master Stations. It transmits an interruptable program signal to individual talent receivers via standard 2-conductor shielded microphone cable. It is a distributed amplifier system with the earphone amplifier located at the talent's position. It features unlimited expansion capabilities (up to 96 talent channels and 50 control locations).

PIC-4000B IFB Electronics This unit contains all of the audio and switching circuitry for selecting 1 of 2 program signals, routing the signals to 4 independent talent channels and interrupting, with variable program attenuation, the signals from 1 or more control points. It requires 24 VDC power from a Clear-Com Intercom System or power supply $794.00
MA-4 Talent Access Master Control Station This unit provides individual access to 4 talent channels and All Call access to all of the talent channels in the system. Designed for direct console mounting or rack-mounting in an optional rackmount adaptor. Includes a panel mounted gooseneck microphone and all required local electronics. $845.00
MA-4N Same as above without mic (for use with external mic or intercom station equipped with ITM-2) $595.00
AX-4 Talent Access Expansion Station This unit connects to the MA-4 Control Station, expanding the talent channel selection capabilities by 4 additional channels per AX-4. Multiple AX-4 units can be linked together to control a maximum of 96 talent channels. $480.00

IFB-4 Program Interrupt Module This unit is the equivalent of the AX-4, designed for mounting in the MS-808 Master Station $93.00
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 2-conductor shielded microphone cable. A miniature in-the-ear receiver is included with each TR-50 $123.00
TR-532 Stereo/Split Feed Talent Receiver This unit contains 2 discrete amplifiers to feed the "Interrupt" and "Non-interrupt" signals from the PIC-4000B on a standard mic cable to separate ears of a sportscaster-type headset or standard stereo earphones. It also provides a passive loopthrough output of the headset's microphone for on-air applications $295.00
ITM-2 IFB Transfer Module Required modification to multi-channel intercom stations. Module transfers station's 2-way intercom audio from "normal" operation to the private IFB channel. Factory installed only. For use with MA-4N $150.00

System Interfaces
IF-48 Modular System Interface Connects Clear-Com to TV cameras and other 4-wire devices. The 1 rack unit frame can accommodate from 1 to 4 interfaces to satisfy the end user's needs. There is also a printed circuit card version that comes with mounting hardware for custom installations. The major applications include cameras, telco lines, walkie-talkies and satellite links. The unit includes a built-in test jack for quick nulling of the transmit/receive hybrid. Other features include a transmit level indicator, and the transmit output is switchable between line and mic levels. $425.00
IF-4-B-1 $500.00
IF-4-B-2 $550.00
IF-4-B-3 $675.00
IF-4-B-4 $800.00

TW-128 System Interface Connects 2 separate Clear-Com and/or RTS Intercom Systems together, maintaining correct levels and impedances. Provides transformer coupled audio isolation and on/off-coupled signaling to eliminate ground loop induced hum, buzz and noise $789.00

Power Supplies
PS-20 Portable Power Supply Portable or rackmount; regulated. Selectable 1- or 2-channel. Supports up to 60 stations $390.00
820021 Rackmount kit for PS-20 $75.00
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 $738.00

Prices and Specifications Subject to Change Without Notice.
Clear-Com Intercom Systems

Beltpacks
RS-501 Beltpack • Single-channel, lightweight beltpack • All digital, noiseless, electronic switching • Remote mic kill function • Visual signalling • Carbon type headset jack optional • The RS-501 is the standard beltpack station for use in all applications • Accepts dynamic or electret mics • 4-pin male headset connectors, 3-pin male and female line connectors. $198.00
RS-501-CM Same as above with carbon headset jack. $223.00

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 • 4-pin headset connector, 6-pin female line connector (no loopthrough) (programmable options) $270.00
RS-502-CM Same as above with carbon headset jack. $295.00
Note: RS-502 and RS-502-CM require YC-36 adaptor to connect to a standard Clear-Com system.

RS-502-TW Two-channel, 4-pin headset, 3-pin male and female connectors, channel B call light only, programmable options. $295.00
RS-502-CM-TW Same as RS-502-TW with carbon headset jack. $320.00
Note: RS-502-TW and RS-502-CM-TW require TWC-10 adaptor to connect to a standard Clear-Com system.

RS-502-TWR Two channel, RTS compatible, no call lights, 4-pin headset connector, 3-pin male and female connectors, programmable options. $325.00
RS-502-CM-TWR Same as RS-502-TWR with carbon headset jack. $350.00
RS-522 Stereo Beltpack • Two-channel, dual listen, binaural beltpack • Allows completely selectable simultaneous listening and talking on two separate channels • Binaural split-feed headset output • Includes all features of the RS-501 and RS-502 • Applications include video/theatre production, industrial, lighting design. $298.00
RS-522TWR Stereo, two-channel, 3-pin cable. $323.00
RS-522-TWR Stereo, two-channel, RTS compatible. $353.00

Series 500 Rackmount Options
(1.75" HI) Not available on -CM versions
RM-A Rackmount for 501, 502 factory installed. $117.00
B20037 Same as above, kit only. $75.00
RM-A/2 Dual unit rackmount for 501, 502 factory installed. $138.00
B20038 Same as above, kit only. $94.00
RM-B Rackmount for 522 factory installed (1.75" HI). $145.00
B20039 Same as above, kit only. $103.00
RM-B/2 Dual unit rackmount for 522 factory installed. $259.00
B20040 Same as above, kit only. $214.00

Series 500 Accessories
RMK-1 Remote Mic Kill Control Unit
Shuts off series 500 beltpack microphone circuits. $191.00
TWC-10 2-Channel/3-Pin Cable Adaptor
Allows two Clear-Com channels to operate on a single 3-pin microphone cable. Requires "TW" option on stations. Up to 15 "TW" beltpacks can operate off of one TWC-10. $141.00
YC-36 3-Pin to 6-Pin "Y" Adaptor
Combines two 3-pin cables into one 6-pin cable to connect to standard 6-pin 2-channel beltpacks (RS-502 and RS-522). $60.00

Minicom Intercom Components
SM-1 Headset/Station • Single muff headset/beltpack station combination • Headset permanently attached to the miniature beltpack via a 4' straight cord • Beltpack terminates in a 3-pin female XLR type connector via a 4' straight cord • Listen volume control • Microphone on/off switch • No signaling. $216.00
DM-12-Headset/Station • 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. $184.00

Prices and Specifications Subject to Change Without Notice.
**CMX-300 Editing System**

- Easy picture-oriented operation
- Edit points, transitions and A/B roll can be viewed immediately
- A minimum of key operations is required, offering a wide selection of functions
- Audio or video delay (split-edit) can be established in Jog mode
- Precise editing in four-field and eight-field sequences in PAL mode
- Storage of 999 edits
- CMX edit decision lists can be displayed on the monitor, printed, and saved to the built-in disk drive
- Interface for three machines with optional fourth machine
- Various machine makes and types can be combined
- Control of external effect switchers, two-channel TBCs or optional built-in crosspoint switcher, thus no preview problems with different EE-timing of the VTRs
- GPI outputs
- Dynamic graphic representation of the edits and machine positions
- Video inserter for status information

**Concept**

For use as an offline editing system, edit decisions according to picture content have priority. Time code, the language of the technical system, is used to split up the edit decisions into reproducible events.

Doing creative jobs, the time code should always be present as additional information, but the priority of the time code should be left to the internal technology. The CMX-300 has a built-in disk drive and produces a CMX edit decision list.

For universal use, combining and connecting various makes and types of machines is possible. Six serial ports are available for direct machine control, optional connection of external interfaces, video effect switcher, sound fader, two-channel TBCs, etc. The configurations and control protocol can be selected from the control panel and remain stored even after switching off.

**Operation**

The left side of the control panel is allocated for all functions needed for the sources, while the right side is allocated for all functions needed for recording.

Both machine control panels are identical. For playback, there are selection keys for the playback source, type of transition (cut, fade, wipe). For recording, there are selection keys for video and audio tracks, split-edit, preview and record.

The interfaces of the CMX-300 each have synchronization functions and are not only intelligent “command transmitters.” With this, it is possible to synchronize all machines with each other during edit decisions and to shift each of them in relation to each other with the least amount of operating steps. The Jog mode also controls the preview switcher and effects switcher. Cuts transitions and fades can be determined according to the picture and sound without using time code information and can also be altered without a preview by use of preroll.

The Jog control has an electro-magnetic grid for switching from frame to frame. A complete revolution moves the tapes by one second.

A modification of the edit point with the conventional method (e.g., trim) is possible. In the engaged state, the machine immediately positions itself to the new correct value.

The AUTOMARK function allows edit decisions to be made exclusively with the use of the two machine remote controls and with one key.

With split-edit functions, i.e., video or audio delay edit, delay can be found by means of “seeing and hearing” and no longer has to be determined by the input of time values in a trial and error manner.

The recording function is also accessible without “automatic operation,” i.e., it is possible directly from Play.

**Status Information**

Depending on requirements and methods of operation various types of status displays are possible. The display of all selectable functions, time code values, etc., can be either displayed on a data monitor or switched at will onto the preview video monitor.

In preview, the edit points and the relative positions of the machines to each other can be inserted in the preview monitor by means of moving graphics.

Professional, well illuminated keys on the control panel give additional information about the present status.

Seldom used functions can be set by means of a display menu. Selection is performed by using the Job control.

**Specifications**

**Central Unit**

- CPU: MC 68000
- Memory: 512K byte
- Memory Buffering: Rechargeable battery
- Floppy Drive: 3.5" built-in
- Printer Output: Centronics
- Preview X-Point Switcher: 2x1 video, two channel audio
- Display: optional monitor or video insert
- VTR Interface: RS-422 serial
- Video/Audio Switcher Interface: RS-422 serial
- Interface to Ext. PC: RS-232
- Power Consumption: 120/220V, approx. 100W

**Operating Console**

- Type: Desktop
- Interface: Serial to central unit
- Operating Keys: Illuminated function keys and two Jogknobs (record and source)
- Dimensions: 18.8" x 10.4" x 1.72"

**Supplied Parts and Accessories**

- Central unit, operating console, console cable, power cable, three remote cables for serial controlled VTR, each 15', one disk with operating program, one disk for EDL, operating manual

**Options**

- Crosspoint switcher (plug-in): Sync-Pulse-Generator with five outputs
- Datamonitor with cable
- Matrixprinter with cable
- Interface for parallel controllable VTRs

**CMX-300**

Prices and Specifications Subject to Change Without Notice.
OMNI 1000 Editing System

The OMNI 1000 controls all the equipment of the editing suite: VTRs, audio and video switchers, ATRs, disc, CGN, DVE, TBC remotes and more. With its 88020 CPU and real-time operating system, the OMNI 1000 directly controls all interfaces without an I², stores CMX, SMPTE, expanded OMNI EDLs and other files on its 40M byte hard disk and 3.5" microfloppy. The OMNI display is designed with high resolution and bit mapped, user configurable X-windows. OMNI features include: sync group for improved multiple machine roll and slaving, learn keys that can be edited, EDL undo, device memory saved with edit or by file and hard disk file management. Optional features include a usage log for assigned devices, lookahead auto assembly/preview and super audio.

System Specifications

Modern Port
- Display Monitor Option: 14" high resolution, super VGA  Edit Accuracy: Frame accurate, auto/manual color frame, PAL-pair self correcting or manual 4 or 8 field correction  Time Code Standards: SMPTE drop/non-drop frame, EBU Tape Timer: machine dependent  Television Standards: NTSC, PAL, SECAM  Keyboard: expanded 133-key ASCII. Integrated search knob, trackball included  Electronics: 7" rack height. Includes internal hard disk and microfloppy  Preview Switcher: composite or component optional, 4-channel audio

Windows
- X-window  Setup, current event and EDL sections are windows  Pop key to cycle windows  Scroll bar for EDL and current event  Time code transfer between windows  User configurable display size and position

Dynamic Motion Memory
- Frame accurate  Sequences may be learned dynamically (on-the-fly) or programmed speed change triggers may be edited  Fit/fill mode  All information goes into EDL  Match frame possible to any point in motion sequences  Multiple VTRs, each with unique motion memory speeds, may be involved in edit  Dedicated entry speed key  VTRs, DVE or disk may be used with Dynamic Motion Memory  Mark files  Constant stores 9 time codes in a "scratch pad" area

Preview Functions
- Full edit  Output previews  Lookahead preview option  Composite/ component preview switcher options  E-E preview

List Management Functions
- Sort modes  Move event(s) in EDL  Re-edit event in EDL  Record start time  Delete events  Record on/off  Text editing  Undo: restore last version of list  Copy events  Autoclean

General Purpose Interface (GPI)
- Fast, direct access to GPIs  All information goes to EDL  1-page trigger screen  16 outputs standard  TTL open collector  Up to 99 GPI triggers per event  Triggers can be relative to source, master or absolute

Machine Control Functions
- Rewind  Fast forward  Scan/reverse play  Stop (individual devices)  Slow/reverse slow  Cue (individual devices) to head of preroll  Cue function keys  Go to  Still  Replay any recorded event  Jog forward  Jog reverse  Search up to 27 speeds  Eject  Jog with trackball  Allstop  Record  Ready (time out adjustable)

Edit Mode Selections
- Video  Audio  1 to 4  Audio follow video capabilities  Split edit: delay audio or video  Multiple tracks split in or out  Multiple split lines can be edited with mark, set and trim keys  Video and audio switchers enable/disable  Crosspoints, transition type, transition rate

Super Audio Option
- Chase Track overlap with ping pong  Audio mapping from source to record tracks  Different track selections on multiple recorders

Hardware Options
- 8" disk  Ethernet  Hardware diagnostics for VTRs  Preview swtich, component or composite  Printer  Display monitor

OMNI 1000  $39,000.00

Hardware Options
- 80-column printer  $395.00
- 14" monitor status display  $500.00
- Preview switcher, composite  $1,250.00
- Preview switcher, component  $1,500.00
- 8" floppy disk drive  $1,500.00
- Ethernet  $1,500.00
- TBA

Software Options
- Usage log  $750.00
- Lookahead assembly/preview  $1,250.00
- Super Audio  $1,250.00
- TBC interface  $450.00
- DVE interface  $450.00
- CGN interface  $450.00

*To Be Announced

Prices and Specifications Subject to Change Without Notice.
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

Kit includes:
310-003 Lamphead with motor-driven focusing (alternative to 310-002)
320-004 Kit I carry case

320-002 ................................................. $4700.00

270W Reporterlight Kit II
Kit includes: Same as Kit I with the following exceptions:
130-301 Special reflector with additional lens
320-004/B Kit II carry case

320-003 ................................................. $5285.00

270W Reporterlight Kit III A
Kit includes: Same as Kit I with the following exceptions:
310-003 Lamphead with motor-driven focusing (for remote control)
320-004/A Kit III A carry case

320-004 ................................................. $6190.00

270W Reporterlight Kit III B
Kit includes: Same as Kit II with the following exceptions:
310-003 Lamphead with motor-driven focusing (for remote control)
320-004/B Kit III B carry case

320-005 ................................................. $6500.00

270W Reporterlight Battery Kit
310-002 Lamphead, manually operated focusing
118-101 4-leaf barndoor
140-105 Electronic battery ballast
140-201 110/120V charger
140-101 NiCd battery 30V, 7AH
130-102 Diffusion filter in pouch
130-202 Conversion filter in pouch
138-015 Mounting bracket
476-655 HMI lamp 270W, single-ended socket
148-210 Carry case
156-101 Carrying strap

320-006 ................................................. $6190.00

270W Reporterlight Battery System Kit
Kit includes:
140-105 Electronic battery ballast
140-201 110/120V charger
140-101 NiCd battery 30V, 7AH
140-304 Car adapter to operate on 12VDC
156-101 Carrying strap
148-204 Carrying case

320-005 ................................................. $5400.00

Accessories
130-302 Lens in holder ................................ $ 230.00
130-303 Special reflector only ....................... 90.00
140-302 15' extension cable ........................ 100.00
140-101 NiCd battery 30V, 4AH ...................... 1520.00
140-105 Electronic ballast ......................... 2250.00
140-201 110/120V charger .......................... 590.00
140-304 Car adapter to operate on 12VDC ......... 2040.00
148-204 Carry case, Reporterlight battery system kit ... 380.00
156-101 Carry strap, Reporterlight battery kit .... 25.00
171-052 Electronic ballast to operate on mains, including mains cord .................................. 1900.00
130-305 Lens (only) without holder ................... 35.00
476-655 HMI lamp 270W, single-ended socket .... 450.00
152-051 Mini-stand with ½" stud .................... 95.00
152-052 Compact stand ................................ 125.00
152-053 Compact stand, castered ...................... 125.00

Prices and Specifications Subject to Change Without Notice.
Fill/Flood Toning Lights

Mini Soft-Lite and 1K/4KW Soft-Lite
- Ultra lightweight
- High light output with soft shadows
- Combo stud fits ½" studs or 1¼" female
- 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
- Single pin plugs
- 25 lbs.
- $860.00

120-021 Diffusion frame
- $40.00

138-059 Safety cable
- $9.00

152-053 Compact stand castered
- $170.00

104-181 1k/4KW Soft-Lite
Shares all the standard features plus:
- 4 individually switched lamps for intensity control
- Single pin plugs
- 25 lbs.
- $960.00

120-021 Diffusion frame
- $40.00

138-059 Safety cable
- $9.00

152-053 Compact stand castered
- $170.00

Colortran

98

Prices and Specifications Subject to Change Without Notice.
INTERFACE PRODUCTS

A staggering selection of cables, video and audio adapters, and connectors is shown in The Professional's Choice, Comprehensive Video's Complete Book of Professional Video Accessories.

Whatever your input or output, here's where you'll find all your interface needs...over 2,000 cables, connectors and adapters for every professional video application imaginable.

This full selection includes Video Cables, RGB Cable Assemblies, Super VHS, and EIAJ Multi-Pin Cable Assemblies. You'll see a range of Audio Cables, including XLR, Mini, RCA, Standard Phone and Adapter Cables. In addition, there are Video Adapters and Audio Connectors to suit every need.

FIELD INTERFACE REPAIR KITS

Comprehensive recognizes that on-location, field work often means emergency hook-ups or replacement of bent or broken adapters or misplaced cables. We've created these Field Interface Repair Kits which contain the most needed video and audio connector and cables, as well as the tools you'll need to get the job done accurately and fast!

The Ultimate Trouble Shooter

TK-160 Trouble Kit

Contents:
(19) of the most used tools, including a circuit tester, BNC crimp tool, miniature screwdrivers and soldering iron.
(8) cables, including 5 video, 2 audio, and one 8 ft. extension cord.
(72) Connectors, including BNC, "F" Plug, XLR and standard phone.
(57) of the most-often needed Adapters.

TK-160 (A $900 Value) $539.00

TK-Custom
If the TK-160 doesn't quite suit your needs, design your own trouble kit. Mix and match at least 160 total pieces of audio and/or video connectors and adapters we stock. We'll package them in a convenient case, ready to keep you out of trouble anywhere, anytime. For details, call your local dealer. Prices will vary, some restrictions apply.

VDAP-1 Video Adapter Kit

Adapt and interface with Video Connectors —includes 75 Ohm Terminators.

Contents:
3 BP-UJ BNC Plug to UHF Jack
3 BJ-UP BNC Jack to UHF Plug
2 BT BNC Jack, Plug, Jack (T)
2 B-BL BNC Jack to Jack (Barrel)
2 U-BL UHF Jack to Jack (Barrel)
2 F-BL "F" Jack to Jack (Barrel)
1 B-TM BNC 75 Ohm Terminator
1 BT-J BNC Jack, Jack, Jack (T)
1 BJ-BP-L BNC Jack to Plug (Right Angle)
1 PJ-BL Phono Jack to Jack (Barrel)
4 PP-BJ Phono Plug to BNC Jack
1 PP-UJ Phono Plug to UHF Jack
1 PP-FJ Phono Plug to "F" Jack
4 PJ-BP Phono Jack to BNC Plug
1 PJ-UP Phono Jack to UHF Plug
1 PJ-FP Phono Jack to "F" Plug
1 F-TM "F" 75 Ohm Terminator
1 BP-BL BNC Plug to Plug (Barrel)

VDAP-1 $79.95

BOX-3 Replacement Box $9.50

ADAP-1 Audio Adapter Kit

Adapt and interface with Audio Connectors.

Contents:
3 MP-PJ Mini Plug to Phono Jack
3 MP-SPJ Mini Plug to Standard Phone Jack
3 PP-MJ Phono Plug to Mini Jack
3 PJ-BL Phono Jack to Jack (Barrel)
2 PP-SPJ Phono Plug to Standard Phone Jack
1 PP-XLRJ Phono Plug to 3-Pin XLR Jack
1 SPP-SPJ Standard Phone Plug to 3-Pin XLR Jack
1 XLRP-PJ 3-Pin XLR Plug to Phono Jack
1 XLRP-SPJ 3-Pin XLR Plug to Standard Phone Jack
1 XLRP-BL 3-Pin XLR Plug to Plug (Barrel)
1 XLRJ-BL 3-Pin XLR Jack to Jack (Barrel)

ADAP-1 $79.95

BOX-1 Replacement Box $9.50

For additional information see the "Interface" section of Comprehensive's Complete Book of Professional Video Accessories.

Prices and Specifications Subject to Change Without Notice.
## VIDEO CABLES

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<thead>
<tr>
<th>BNC Plug to Plug</th>
<th>Price per Foot</th>
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<tbody>
<tr>
<td>BB-C1.5 1.5 ft</td>
<td>$9.99</td>
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<tr>
<td>BB-C3 3 ft</td>
<td>$9.99</td>
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<td>BB-C4 6 ft</td>
<td>$12.99</td>
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<td>BB-C10 10 ft</td>
<td>$13.99</td>
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<tr>
<td>BB-C25 25 ft</td>
<td>$15.99</td>
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<td>BB-C50 50 ft</td>
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<table>
<thead>
<tr>
<th>BNC Plug to Phone (RCA) Plug</th>
<th>Price per Foot</th>
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</thead>
<tbody>
<tr>
<td>B-PP-C1.5 1.5 ft</td>
<td>$3.99</td>
</tr>
<tr>
<td>B-PP-C3 3 ft</td>
<td>$6.99</td>
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<tr>
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<td>B-PP-C10 10 ft</td>
<td>$10.99</td>
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<tr>
<td>B-PP-C25 25 ft</td>
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<tr>
<th>&quot;P&quot; Plug to Plug Push-on</th>
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<tr>
<td>FT-C3 3 ft</td>
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<td>FT-C6 6 ft</td>
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<td>FT-C10 10 ft</td>
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<th>Phone (RCA) Plug to Plug - Video</th>
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<tr>
<td>PP-PP-CV-1.5 1.5 ft</td>
<td>$4.99</td>
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<tr>
<td>PP-PP-CV-4 4 ft</td>
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<tr>
<td>PP-PP-CV-10 10 ft</td>
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<td>PP-PP-CV-25 25 ft</td>
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## EIAJ MULTI-PIN CABLE ASSEMBLIES

<table>
<thead>
<tr>
<th>Professional EIAJ 8-Pin VTR &amp; Monitor Cables</th>
<th>Price per Foot</th>
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<tbody>
<tr>
<td>E8P-ERP-5 5 ft</td>
<td>$29.99</td>
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<td>E8P-ERP-10 10 ft</td>
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<td>E8P-ERP-17 17 ft</td>
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<td>E8P-ERP-25 25 ft</td>
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<td>E8P-ERP-50 50 ft</td>
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<td>E8P-ERP-62 62 ft</td>
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<td>E8P-ERP-164 164 ft</td>
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<table>
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<tr>
<th>Professional EIAJ 10-Pin Camera Extension</th>
<th>Price per Foot</th>
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<tr>
<td>E10P-E10-1* 1 ft</td>
<td>$3.99</td>
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<tr>
<td>E10P-E10-5 5 ft</td>
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<td>E10P-E10-10 10 ft</td>
<td>$15.99</td>
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<tr>
<td>E10P-E10-17* 17 ft</td>
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<td>E10P-E10-25 25 ft</td>
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<td>$91.99</td>
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<tr>
<td>E10P-E10-82* 82 ft</td>
<td>$124.99</td>
</tr>
<tr>
<td>E10P-E10-164* 164 ft</td>
<td>$235.99</td>
</tr>
</tbody>
</table>

*equivalent to SONY cable lengths.

<table>
<thead>
<tr>
<th>Professional 14-Pin Camera Cables</th>
<th>Price per Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>E14P-E14-J7* 7 ft</td>
<td>$93.99</td>
</tr>
<tr>
<td>E14P-E14-J10 10 ft</td>
<td>$99.99</td>
</tr>
<tr>
<td>E14P-E14-J17* 17 ft</td>
<td>$113.99</td>
</tr>
<tr>
<td>E14P-E14-J25 25 ft</td>
<td>$128.99</td>
</tr>
<tr>
<td>E14P-E14-J33* 33 ft</td>
<td>$159.99</td>
</tr>
<tr>
<td>E14P-E14-J50 50 ft</td>
<td>$199.99</td>
</tr>
<tr>
<td>E14P-E14-J75 75 ft</td>
<td>$249.99</td>
</tr>
<tr>
<td>E14P-E14-J82* 82 ft</td>
<td>$264.99</td>
</tr>
<tr>
<td>E14P-E14-J100 100 ft</td>
<td>(30 M) $299.99</td>
</tr>
<tr>
<td>E14P-E14-J164* 164 ft</td>
<td>(50 M) $372.99</td>
</tr>
</tbody>
</table>

*equivalent to SONY cable lengths.

## SUPER VHS CABLES

<table>
<thead>
<tr>
<th>4-Pin Plug to 4-Pin Plug</th>
<th>Price per Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>S4P-S4P-4 4 ft</td>
<td>$17.95</td>
</tr>
<tr>
<td>S4P-S4P-10 10 ft</td>
<td>$21.95</td>
</tr>
<tr>
<td>S4P-S4P-15 15 ft</td>
<td>$26.95</td>
</tr>
<tr>
<td>S4P-S4P-25 25 ft</td>
<td>$38.95</td>
</tr>
<tr>
<td>S4P-S4P-50 50 ft</td>
<td>$68.95</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4-Pin Plug to 6-Pin Jack</th>
<th>Price per Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>S4P-S4J-4 4 ft</td>
<td>$27.95</td>
</tr>
<tr>
<td>S4P-S4J-10 10 ft</td>
<td>$31.95</td>
</tr>
<tr>
<td>S4P-S4J-25 25 ft</td>
<td>$45.95</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4-Pin Plug to 7-Pin Jack</th>
<th>Price per Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>S4P-S7J-4 4 ft</td>
<td>$26.95</td>
</tr>
<tr>
<td>S4P-S7J-10 10 ft</td>
<td>$29.95</td>
</tr>
<tr>
<td>S4P-S7J-25 25 ft</td>
<td>$45.95</td>
</tr>
</tbody>
</table>

## AUDIO CABLES

<table>
<thead>
<tr>
<th>Mini (3.5mm), Phono and Standard Phone (1/4&quot;) Cables</th>
<th>Price per Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>MP-MP-10 10 ft</td>
<td>$3.99</td>
</tr>
<tr>
<td>MP-MP-25 25 ft</td>
<td>$5.95</td>
</tr>
<tr>
<td>MP-MP-50 50 ft</td>
<td>$7.99</td>
</tr>
<tr>
<td>MP-MP-100 100 ft</td>
<td>$9.99</td>
</tr>
<tr>
<td>MP-MP-250 250 ft</td>
<td>$11.99</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Audio Adapter Cables</th>
<th>Price per Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP-2-C 2 ft</td>
<td>$3.99</td>
</tr>
<tr>
<td>SP-4-C 4 ft</td>
<td>$4.99</td>
</tr>
<tr>
<td>SP-5-C 5 ft</td>
<td>$5.99</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>XLR Microphone Extension Cables</th>
<th>Price per Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>XLRP-XLRJ-3 3 ft</td>
<td>$15.99</td>
</tr>
<tr>
<td>XLRP-XLRJ-6 6 ft</td>
<td>$19.99</td>
</tr>
<tr>
<td>XLRP-XLRJ-10 10 ft</td>
<td>$23.99</td>
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<tr>
<td>XLRP-XLRJ-15 15 ft</td>
<td>$28.99</td>
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<tr>
<td>XLRP-XLRJ-25 25 ft</td>
<td>$35.95</td>
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<tr>
<td>XLRP-XLRJ-50 50 ft</td>
<td>$45.95</td>
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<tr>
<td>XLRP-XLRJ-75 75 ft</td>
<td>$55.45</td>
</tr>
<tr>
<td>XLRP-XLRJ-100 100 ft</td>
<td>$79.99</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>XLR to Mini, Phono and Standard Phone Cables (10 ft.)</th>
<th>Price per Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>XLRP-MP-10 10 ft</td>
<td>$13.99</td>
</tr>
<tr>
<td>XLRP-MP-25 25 ft</td>
<td>$17.99</td>
</tr>
<tr>
<td>XLRP-MP-50 50 ft</td>
<td>$21.99</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Two Phone (RCA) Cables, Stereo Both Ends</th>
<th>Price per Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>4PP-C-1.5 1.5 ft</td>
<td>$1.75</td>
</tr>
<tr>
<td>4PP-C-3 3 ft</td>
<td>$2.49</td>
</tr>
<tr>
<td>4PP-C-6 6 ft</td>
<td>$2.89</td>
</tr>
<tr>
<td>4PP-C-10 10 ft</td>
<td>$3.39</td>
</tr>
</tbody>
</table>

**For additional lengths see the "Interface" section of Comprehensive’s Complete Book of Professional Video Accessories.**

**Prices and Specifications Subject to Change Without Notice.**
# Video/Audio Adapters and Connectors

## Video Connectors

<table>
<thead>
<tr>
<th>BNC</th>
<th>BNC Jack to Plug to Jack (T)</th>
<th>$1.49</th>
<th>$1.49</th>
</tr>
</thead>
<tbody>
<tr>
<td>BT</td>
<td>BNC Jack to Jack to Jack (T)</td>
<td>$5.09</td>
<td>$5.09</td>
</tr>
<tr>
<td>BT-J</td>
<td>BNC Jack to Jack to Jack Type</td>
<td>$4.99</td>
<td>$4.99</td>
</tr>
<tr>
<td>B-BLN</td>
<td>BNC Jack to Jack to Jack (Barrel Type)</td>
<td>$3.99</td>
<td>$3.99</td>
</tr>
<tr>
<td>B-BLCM</td>
<td>BNC Jack to Jack (Barrel Type)</td>
<td>$5.99</td>
<td>$5.99</td>
</tr>
<tr>
<td>B-BP-L</td>
<td>BNC Jack to Plug (Right Angle)</td>
<td>$6.99</td>
<td>$5.99</td>
</tr>
<tr>
<td>F-J</td>
<td>F to F Jack to Jack (Barrel Type)</td>
<td>$6.99</td>
<td>$6.29</td>
</tr>
<tr>
<td>F-BLCM</td>
<td>F to F Jack to Jack (Barrel)</td>
<td>$1.69</td>
<td>$1.52</td>
</tr>
<tr>
<td>F-JP</td>
<td>F to F Jack to F Plug</td>
<td>$1.49</td>
<td>$1.49</td>
</tr>
<tr>
<td>F-JPJL</td>
<td>F to F Jack to F Plug Right Angle</td>
<td>$1.79</td>
<td>$1.49</td>
</tr>
</tbody>
</table>

**Phono (Video)**

| PT | Phono (RCA) Jack to Plug to Jack (T) | $3.49 | $2.94 |
| PT-J| Phono (RCA) Jack to Jack to Jack (T) | $2.94 | $2.33 |
| PT-JP| Phono (RCA) Jack to Jack (Barrel) | $1.99 | $1.16 |
| PP-BLCM| Phono (RCA) Jack to Jack (Barrel) | $2.99 | $2.49 |

**Between Series:** BNC, UHF, "F", & Phono (Video)

| BP | BNC Plug to UHF Plug | $2.99 | $2.60 |
| BJ-UP| BNC Jack to UHF Plug | $2.60 | $2.31 |
| BP-UF-P| F Plug to UHF Jack | $1.79 | $1.41 |
| FP-BP| F Plug to F Plug | $3.49 | $2.79 |
| FP-MP| F Plug to 3.5mm Mini Plug | $1.79 | $1.41 |
| FP-UP| F Plug to UHF Plug | $1.99 | $1.79 |
| PP-BJ| Phono (RCA) Plug to Jack | $2.99 | $2.39 |
| PP-FJ| Phono (RCA) Plug to F Jack | $1.99 | $1.79 |
| PP-UJ| Phono (RCA) Plug to UHF Plug | $1.99 | $1.79 |

## Video Connectors

| BNC | BNC Plug for RG-59/U Cable, soldier type | $2.99 | $2.33 |
| BP | BNC Plug for RG-59/U, Crimp type | $1.99 | $1.79 |
| BP-CA | BNC Crimp Plug for RG-59/U | $3.99 | $3.05 |
| BP-C | BNC Crimp Plug for RG-59/U | $3.99 | $3.05 |
| BP-E | BNC Plug Fast-Fit for RG-59/U | $2.99 | $2.31 |
| BP-C-8281 | BNC Plug for 8281 Crimp type | $3.99 | $3.11 |
| BP-E-8281 | BNC Plug Fast-Fit for 8281 Cable | $3.99 | $3.11 |
| BJ-CM | BNC Jack Chassis for RG-59/2U | $1.89 | $1.71 |
| B-TM | BNC Plug 75 Ohm Terminator | $2.99 | $2.39 |

### Canare 75 Ohm BNC

| BC-BP | Canare 75 Ohm BNC Crimp-Off Plug for RG-59/2U | $3.99 | $3.79 |
| BCJ-RU | Canare 75 Ohm BNC Female Recessed Panelmount to Solder Pin | $5.99 | $5.79 |
| BCJ-RU | Canare 75 Ohm BNC Female Recessed Panelmount | $8.99 | $8.79 |

### “F”

| FP | F Plug to 75 Ohm Connector | $2.59 | $2.20 |
| FP-E | F Plug to 75 Ohm Connector | $4.49 | $4.39 |
| FP-ES | F Plug to 75 Ohm Connector | $0.59 | $0.47 |
| F-TM | F Plug to 75 Ohm Connector | $0.49 | $0.49 |
| F-JM | F Jack Chassis Mount | $0.35 | $0.35 |

### Phono (Video)

| PP-C | Phono Plug with attached ferrule (Crimp) | $5.59 | $4.47 |
| PP-V | Phono Plug Solder Terne | $1.69 | $1.19 |
| PJ-CM | Phono Jack Chassis Mount | $0.59 | $0.47 |
| P-TM | Phono 75 Ohm Terminator | $1.99 | $1.59 |

## Audio Connectors

### Video Connectors

| MP | 3.5mm Mini Phono to Phono (RCA) Jack | $1.15 | $1.03 |
| MP-S | 3.5mm Mini Phono to 1/4" Standard Phono Jack | $1.25 | $1.11 |
| PJ-ML | 3.5mm Mini Jack to Jack (Barrel) | $1.99 | $1.79 |

### Cable Tester

- 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") phone, BNC, UHF, "F", Phono (RCA) and (3.5mm) Mini plugs**
- **Tests for shorts, broken conductors and continuity**
- **Built-in lights indicate test conditions**
- **9V battery included**

### Prices and Specifications Subject to Change Without Notice.
TCG-1000 SMPTE Time Code Generator

Comprehensive's own SMPTE Time Code Generator/Reader/Inserter packs all the features you'd expect to find in a unit far more expensive than our TCG-1000.

Measuring a trim 2" x 3" x 4", the TCG-1000 weighs only 8 oz. and is battery-operated for go-anywhere portability. It comes with its own AC power adapter for added flexibility.

This multi-featured machine indicates drop or non-drop frame time code for use with all 1/2", 3/4" and 1" formats, provides reshaped time code output, and displays time code or user bits. The TCG-1000 creates window dubs that can be adjusted for horizontal and vertical size position and reads time code at play speed.

Improved: Now our TCG-1000 comes with the ability to read and display SMPTE time code at search speeds at no extra cost to the user. the actual speed range of the TCG-1000 is from far less than ±10 time play speed.

Features:
- Sharp, easy-to-read characters.
- Dark or "see-through" mask surrounding display.
- Jam-sync mode that jams to time code input and outputs new time code.
- Simple on-screen preset of time code and user bits.

TCG-1000 $479.00

VIS-4x4 Matrix Switcher

Comprehensive's professional 4x4 Matrix Switcher is a precision device that allows the user to route stereo audio and video signals from 4 inputs to any or all of its outputs.

The 4x4 digital matrix design allows selection of either the audio or video signal, or both at the same time, from each of up to four sources. That information can then be sent out to any combination of one, two, three, or four machines, integrating different components and facilitating their use together.

- Professional matrix switcher combines audio console (stereo) and video components from custom system integration with no compromise in signal quality.
- Vertical interval switching to route any one of 4 inputs to any or all of the four outputs.
- Rack mountable switches can be piggybacked to increase input/output capabilities.
- Noise-free electronic switches operate smoothly and quietly.

VIS 4x4 $699.00

CVA1B-10RM Video Audio Distribution Amplifier (Rack Mount)

The CVA1B-10RM is a high performance video and stereo audio distribution amplifier, with studio specifications, for professional applications. It is an enhanced version of the CVA1B-10S distribution Amplifier.

The CVA1B-10RM performs as an interface allowing a single input source of composite video and stereo audio to be split into ten identical outputs. Specially designed low-noise video amplifying and impedance matching circuitry prevent loss of quality during signal distribution.

A highly reliable and "cool running" unit, the CVA1B-10RM is perfect for nonattended remote applications.

CVA1B-10RM $499.00

CVA1B-5 Video/Audio Distribution Amplifier

The CVA1B-5 is a top quality and compact "workhorse" which was designed for applications where a straightforward 5 output Video and Audio (mono) distributor is required. The heavy-duty design and excellent reliability of the CVA1B-5 has made it our most popular seller. This little sister to our CVA1B-10S just doesn't give up and we recommend it highly for various distribution applications, including multi-monitor feeding and multi-tape copying.

The main features of the CVA1B-5 are:
- High reliability and heavy duty design for long term operation
- Use of highest quality components and "BNC" type Video connectors
- Compatible with all existing TV and VIDEO standards including 3/4 inch, VHS, Beta, NTSC, PAL and SECAM
- Uses high isolation video amplifiers and impedance matching networks and high S/N ratio audio amplifiers to feed up to 5 separate outputs

CVA1B-5 $299.00
AV BLOCKS: POCKET-SIZED MARVELS FOR VIDEO AND AUDIO EFFECTS

When you need a special effect in the field and do not want to lug a full sized SEG with you, AV BLOCKS are what you need. You can "hot-switch" or dissolve between camera inputs, adjust video levels, and distribute video signals. Mix, switch, balance, monitor or distribute your audio as well. In the studio or editing suite, take advantage of features such as GPI triggers, black burst generator, level adjusts, and auto transitions.

Wherever more than one camera or microphone is in use, you'll find an application for the AV BLOCKS.

AV BLOCKS give the professional sound or television operator unsurpassed effects power in a pocket sized module. The AV BLOCKS family includes mini-versions of conventional audio and video equipment with dynamic features you would not expect in a product of this size. Perfect for creating a low-budget production suite or as add-ons to larger systems, AV BLOCKS are neat, sleek and attractively priced. Start your collection of AV BLOCKS now!

Features:
- Meets highest possible professional specifications
- Ruggedly constructed to be maintenance free
- Designed for studio or field use
- Externally powered by almost any external low voltage power pack
- Internally powered by a rechargeable battery pack

DGM-110 Video Mixer
- Precise digital video mix processor
- Programmable auto-transition rate
- GPI trigger
- A/B mixing or fade to/from black
- Internal black generator and sync processor
- Signal to noise ratio is >75 dB
- Bandwidth from 10 MHz - 0.5 dB

DGA-110 Video Distribution Amplifier
- 1 in 3 out
- DC video damping
- Gain control
- Equalization control
- Low power standby mode
- Signal to noise ratio is >75 dB
- Bandwidth from 10 MHz - 0.5 dB

DGS-110 Video Switcher
- 3 Inputs plus black to 1 output
- Precise vertical interval switching
- Internal black generator
- Clamping on all inputs
- Signal to noise ratio is >75 dB
- Bandwidth from 10 MHz - 0.5 dB

DVP-110 Video Processing Amplifier
- Sync, black and picture level controls
- DP, DC and Equalization control
- White dip level
- Output DC video offset control
- H timing indication
- GPI output for video loss
- GPI input for ultra fast switching
- Signal to noise ratio is >75 dB
- Bandwidth from 10 MHz - 0.5 dB

DSW-110 Audio Switcher
- Switchable as 3 ch balanced or stereo inputs
- Switchable 600 Ohms/47K Ohms input
- Mute channel
- Quiet switching
- Excellent hum rejection (high CMRR balanced mode)

For more information see the "Video Electronics" section of Comprehensive's Complete Book of Professional Video Accessories

Prices and Specifications Subject to Change Without Notice.
PC-2®

Generate Broadcast Quality Characters with an IBM Compatible Personal Computer

Use your IBM-PC or compatible as a full-featured character generator without sacrificing other computer applications.

The PC-2 offers 32 font styles plus graphic symbols and up to 64 colors. With italics, edging, background striping, drop shadows, and as many as eight colors per line, you can create credit rolls, titles, and crawls in an endless variety of styles. PC-2's powerful editor lets you insert or delete characters or whole lines with full cursor movement anywhere on the screen. Left and right justification, centering and proportional spacing ensure that your text always looks great. Two independent crawl lines at any of four speeds, continuous crawls or rolls, and an integrated keyer are additional features.

PC-2 Plug-in board for IBM-PC/XT/AT or compatible operating at 4.77 MHz to 8 MHz requires minimum 256KB and two computer slots. $1995.00

PC/SVHS PC-2 plug-in board with S/VHS (Y/C) Program in and Program out for IBM-PC/XT/AT or compatible operating at 4.77 MHz to 8 MHz requires minimum 256KB and two computer slots. $1995.00

FONTS PLUS™

Comprehensive's Fonts Plus with Font/Logo Compose Feature Adds a Whole New Cast of Characters to Your PC-2.

The FONTS PLUS board gives the PC-2 the capability to store and retrieve directly from disk an expanded selection of type styles, including 28 font styles. PC Paintbrush software is included so you can easily create custom fonts and generate company or product logos and symbols.

FPB requires an IBM-PC or compatible operating at 4.77 MHz to 8 MHz with 512KB and hard disk, one computer slot, mouse, CGA card and monitor. $950.00

SCRIPT MASTER™

A multi-column word processor designed specifically for commercial, corporate video and multi-media presentations. Automatically keeps up to 4 independent columns of text synchronized when changes are made in any column. You can also save the audio column for use with CUE MASTER

S-MST without spell checker. Requires IBM PC/XT/AT, PS/2 or compatible running DOS 2.11 or higher with 512KB RAM . $345.00

S-MST/SP with spell checker requires IBM PC/XT/AT, PS/2 or compatible running DOS 2.11 or higher with 512 KB. $395.00

Demo Disk is available; specify the size needed.

CUE MASTER™

CUE MASTER A PC based prompting system that allows your laptop or desktop computer to be used as a stand alone teleprompter. Includes a word processor, multiple fonts and a hand held controller. Text can be underlined and displayed in different colors. Optional camera mount available with either video or VGA displays.

CUE-MST for IBM PC/XT/AT, PS/2 or compatible computer running DOS 2.11 or higher with minimum 512KB RAM. CGA, EGA or VGA display required. Hand-held controller is included. $995.00

CP-1000 Camera Prompter with NTSC monochrome display $2449.00

CP-1200VGA Camera Prompter with VGA monochrome display $2449.00

Demo Disk is available; specify the size needed.

IBM-PC is a registered trademark of IBM Corporation

For more information see the "Computer Aided Video" section of Comprehensive's Complete Book of Professional Video Accessories

Prices and Specifications Subject to Change Without Notice.
VIDEOTAPE LOGGING, EDIT LIST MANAGEMENT AND EDIT LIST CONVERSION SOFTWARE

LOG MASTER™
A videotape logging and library management software product designed to record time code points and scene descriptions. After you have searched for specific scenes within your database of reellogs, you can create a CMX compatible edit decision list. Other features include tracking the tape by reel number, reel id, or reference number. Log Master Plus adds the capability to install Log Master onto a Local Area Network and uses a faster search routine. The optional CVNET interface gives you full VTR control from your computer keyboard and will read VITC or longitudinal time code.

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOG-MST</td>
<td>Log Master software only.</td>
<td>$795.00</td>
</tr>
<tr>
<td>LOG-MST-P</td>
<td>Log Master Plus software only.</td>
<td>$1295.00</td>
</tr>
<tr>
<td>LOG-TCR</td>
<td>Log Master software and time code reader board.</td>
<td>$1295.00</td>
</tr>
<tr>
<td>LOG-CVNET</td>
<td>Log Master software and VTR machine control.</td>
<td>$3195.00</td>
</tr>
</tbody>
</table>

Log Master runs on an IBM PC/XT/AT or PS/2 running DOS 2.11 or higher with 512KB RAM.
Demo Disk is available; specify size needed.

EDIT LISTER™
Edit list management software that will clean, compile, revise, store and transfer an edit list to or from virtually any edit controller equipped with an RS-232 serial port. Handles such high level list management functions as re-edit with ripple, clean for A or B mode (checker board) assembly, add and delete events, and much more.

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>EL-B-SS</td>
<td>for IBM PC/XT/AT, PS/2 or compatible running DOS 2.11 or higher with 256KB RAM.</td>
<td>$750.00</td>
</tr>
<tr>
<td>EL-TCR</td>
<td>Time Code Reader Board for Edit Lister requires one expansion slot.</td>
<td>$595.00</td>
</tr>
</tbody>
</table>

EDL TRANSLATOR™
A program that translates an edit list to or from most any disk or list format for virtually any editing system. Greatly expands the number of off-line and on-line systems that you can support, without adding costly hardware to your system. Compatible with EDIT LISTER.

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDL-TRANS</td>
<td>EDL TRANSLATOR software for IBM PC/XT/AT, PS/2 or compatible running DOS 2.11 or higher with 512KB RAM.</td>
<td>$695.00</td>
</tr>
</tbody>
</table>

EDIT TRACKER™
A multi-generation list tracing program. Lets you use off-line edited masters as source tapes, editing down a generation when changes are needed, rather than re-editing from scratch. Can trace back through up to 12 generations of edit lists, merging them together and incorporating all changes made along the way. Compatible with EDIT LISTER and EDL TRANSLATOR.

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>ET-B</td>
<td>for IBM PC/XT/AT, PS/2 or compatible running DOS 2.11 or higher with 256KB RAM.</td>
<td>$695.00</td>
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</table>

For more information see the "Computer Aided Video" section of Comprehensive's Complete Book of Professional Video Accessories
Prices and Specifications Subject to Change Without Notice.
THE HIGHBAND 1500:
LONG-RANGE AND INTERFERENCE FREE

Comprehensive’s Wireless Microphone System
Perfect for all types of field production, the HIGHBAND 1500 systems provide high frequency transmission of audio signals where distance or obstacles make a wired mic unacceptable. Whether you are shooting from atop the pressbox and the announcer is on the sidelines; from the rear of the church with the couple at the altar; or from the van with the announcer across a busy street, the HIGHBAND 1500 systems provide clean, crisp audio without the restrictions of a cable. The HIGHBAND 1500 operates on long range, interference free, high band VHF frequencies (203-215 MHz), not 49 MHz cordless phone channels. It also utilizes a patented companding (noise reduction) system for overload and noise free performance. You can purchase the system separately or with one of the popular brand name lavalier microphones listed below. The HIGHBAND 1500 will make a tremendous difference, adding professional quality audio, to all your productions.

HBR-1500 Wireless Receiver
- Uses standard 9V alkaline battery
- Mini XLR connector
- Audio ON/OFF and transmitter ON/OFF for ease of use
- Audio cord acts as antenna—No extra antenna needed
- Input level control for optimum adjustment
- Low battery LED indicator
- Hinged battery compartment for quick pop-in battery replacement.

HBT-1500 Lavalier Bodypack Transmitter
- Audio ON/OFF and transmitter ON/OFF for ease of use
- Audio cord acts as antenna—No extra antenna needed
- Input level control for optimum adjustment
- Low battery LED indicator
- Hinged battery compartment for quick pop-in battery replacement.
- Mini XLR connector

The HIGHBAND 1500 operates on long range, interference free, high band VHF frequencies (203-215 MHz), not 49 MHz cordless phone channels. It also utilizes a patented companding (noise reduction) system for overload and noise free performance. You can purchase the system separately or with one of the popular brand name lavalier microphones listed below. The HIGHBAND 1500 will make a tremendous difference, adding professional quality audio, to all your productions.

THE PERFECT FIELD PRODUCTION MIXER!

Look no further for an affordable compact mic mixer. If you have been looking for an affordable, compact mic mixer that is perfect for basic field production, your search is over. The MM-3100 incorporates the features most requested by video and audio sound engineers, sportscasters and electronic news professionals. It provides broadcast quality mixing by preserving the signal, avoiding all modification and distortion. Its wide, flat frequency response and rugged construction make it ideal for the most demanding applications. It's compact enough to be used anywhere! The MM-3100 combines three balanced input signals and permits these combinations to be changed easily regardless of the differences in the signal generator to conduct line testing. When you consider the reliability and the extraordinary mechanical workmanship that went into this mixer, we are convinced you will be amazed at its performance. MM-3100 $315.00

Dollar for dollar the MM-3100 is one of the best field production mixers available on the market today.

Features:
- Three balanced mic inputs with individual volume controls
- One balanced mic output, switchable +4/-20 dBu output level
- Calibrated volume control scales
- 18 VDC phantom power switchable for each microphone input
- Input number three is switchable to line level input
- Switchable low-cut filter for each input
- Master gain control
- LED display indicating quasi-peak levels
- Battery check switch
- Two 9 Volt battery compartments
- Tone generator

For more information see the “Audio” section of Comprehensive’s Complete Book of Professional Video Accessories

Prices and Specifications Subject to Change Without Notice.
SOFTLIGHTS AND TRIPODS

SOFTOUCH™ SOFTLIGHTS

SOFTOUCH™ “ACE”
Comprehensive's most compact softlight. Excellent as small fill light for one or two subjects or for small group applications. Comes equipped with 16' line cord and parallel blade U-ground plug.
ST-ACE $295.00

SOFTOUCH™ “DEUCE”
A great all-round location softlight that uses two lamps. Independent switching permits either left, right, or both lamps to be illuminated. Comes with 16' line cord and parallel blade U-ground plug.
ST-DEUCE $375.00

SOFT-STAND™
Especially designed for use with the SOFTOUCH DEUCE. Comprehensive's SOFT-STAND is finished in attractive black and chrome. It weighs only 6 lbs. 9 oz. and extends from a collapsible height of 37” to 83 1/2”.
SOFT-STAND $79.00

SP-AK Softpair ACE Kit
The ideal, “quick take” location system, this is the answer for those times when you have to make that “talking head” shot of the C.E.O. or tape an impromptu “one-on-one” interview. The SP-AK helps you achieve outstanding results and it’s an ideal way to expand your present system.
Includes:
(2) ST-ACE lights
(2) LSP light stands
(2) FWM lamps
(1) GT-10 gray gaffers tape
(1) PRC-S case
Dimensions: 37 1/2”L x 19”W x 9”H
Weight: 42 lbs. 8 oz. (Lamps included)
SP-AK Kit $829.00

LP/SP-AK Lamp Pak for SP-AK $90.00

BILORA TYPE-SIX TRIPOD
Strength, stability and versatility at an affordable price.

6144 ULTRA-COMPACT TRIPOD WITH FLUID HEAD
The all-time best-seller in its class, it is remarkably stable, yet collapses to a convenient 20 inches for hassle-free transport. Weight: 5 1/2 lbs.
Capacity: 18 lbs.
6144 $ 185.00

RELIANT 30 TRIPOD
With specifications demanded by professional videographers the Reliant 30 is available at a price you can’t afford to overlook.
The RELIANT 30’s fluid head provides smooth camera movement with a maximum capacity of 33 pounds. Separate drag and lock knobs provide for a full range of pan/tilt movement resistance as well as a secure lockdown. A knob engaged spring counterbalance keeps your camera level and avoids sudden tilt action. The 100mm ball and bubble level allow for balancing on all surfaces.
The RELIANT 30’s three section legs expand from 35” to a maximum height of 66” and are secured in place by the extendable spreader.
RELIANT 30 $ 1760.00

PROFESSIONAL TRIPOD
More stable, more rigid, light and easy to use.

PRO-930 PROFESSIONAL TRIPOD
Panning is smooth and jerk-free with the 2-way, 360°, all-metal head with fluid system and long panning handle that can be changed for left or right-handed use. The PRO-930 features a pneumatic center column which prevents camera damage and has three-part legs with interchangeable steel/rubber feet. Can be set at any height from 29 to 69 inches.
Weight: 5 1/2 lbs. Capacity: 60 lbs.
PRO-930 $ 299.00

For additional information see the “Lighting” and “Positioning, Storage and Transport” sections of Comprehensive's Complete Book of Professional Video Accessories

Prices and Specifications Subject to Change Without Notice.
All The Videotape Editor You Will Ever Need...at A Price You Can Afford.

EDIT MASTER™ computer-based videotape editing systems offer state-of-the-art performance and ease of operation at highly competitive prices.

EDIT MASTER: Full-featured at the start...
The power of EDIT MASTER comes from a vast array of standard features usually found only in expensive systems. Features that satisfy the most demanding needs, such as:

- Direct control of serial and parallel VTRs
- Active edit memory of 900 events
- Interformat editing capability
- Advanced list management and cleaning
- Auto assembly in A & B mode
- Multiple edit list formats
- VITC and LTC readers and generators
- On-line, context-sensitive help
- Full serial switcher control with E-MEM Upload and Download
- Master/Slave and assignable GPIs
- Variable speed control of DT VTRs
- Multiple preview types available, including preview outpoint
- Support of 4 channels of audio
- Edit list input/output for disk, serial communications, papertape and printer

EDIT MASTER offers you the ability to upgrade and expand your system as your needs change. You can specify the number of VTRs to control, as well as their formats—VHS, S-VHS, Hi8, 3/4-inch, Betacam, MII or 1-inch. You can even mix formats for true interformat editing. And you can control both parallel and serial VTRs from the color-coded keyboard. Choose GPI-triggered switcher control or full serial switcher control with E-MEMs and six assignable GPIs. You can even choose the IBM or compatible MS-DOS computer on which to run you EDIT MASTER System.

AND NOW...EDIT MASTER'S POWERFUL FEATURES ARE AVAILABLE FOR THE MAC!
All the features you get in EDIT MASTER are standard in EDIT MASTER MAC... plus

- Dual edit "bins of 999 events each, allowing two edit lists in memory simultaneously
- Dual Marks Table
- Full EDL Copy, Cut and Paste capabilities with record time ripple
- Sync Roll editing, permitting cuts between sources "on the fly" with list creation
- CVNET FINETUNE™ VTR adjustment built in
- Pop-up Time Code Calculator
- Import/Export "PICT" files

EDIT MASTER MAC will run on any Macintosh from the Plus up. An optional color-coded MAC keyboard following the familiar EDIT MASTER style of keyboard editing is available and the Jog/Shuttle Knob Controller can be ordered for machine control. Use the Mouse or "fly" from our EDIT MASTER MAC custom keyboard and you'll immediately recognize the look and feel of a program designed specifically for the MAC user.

... and accessories to grow with.
Jog/Shuttle Knob Controller is available for either the IBM or MAC versions of EDIT MASTER. User definable keys make this a recommended option for every edit bay.

VITC (Vertical Interval Time Code) This option gives you the accuracy of time code without having to sacrifice an audio channel.

Character Inserter lets you create window dubbed tapes. You can choose the position, size, background and color of the time code numbers. To check the accuracy of source tapes, a longitudinal time code phase indicator is included.

DOS Computer Requirements
- IBM XT-Turbo/AT or compatible
- 640K RAM
- 2 Disk Drives
- RS-232 Serial Port
- Game Port
- Monochrome or Color Monitor
- DOS 2.0 or higher

MAC Computer Requirements
- Apple Macintosh Plus, SE, or
- MAC II Series or compatible
- 2 Megabytes RAM or higher
- Hard Drive
- 2 Serial Ports (8 pin)
- Macintosh System Software 6.0.5 or higher

CV Technologies' EDIT MASTER™ is available only through authorized CV Technologies dealers.

Prices and Specifications Subject to Change Without Notice.
COLOR MONITOR SYSTEM

6545/6550 Micromatch™ Color Monitor System

- Automatic setup with 6550 Micromatch Photometer
- Soft-touch user controls
- SMPTE "C" Phosphors
- Beam current feedback and comb filter
- 13" or 19" Pil CRT sizes
- Selectable RGB or NTSC/PAL inputs

The Micromatch Color Monitor System consisting of the 6545 Color Monitor and optional 6550 Photometer is designed for the professional video studio environment. Advanced microprocessor based technology and automatic calibration set new standards in performance, stability, and operation. Critical evaluation of broadcast signals, color balancing, and matching, animation, and graphics are typical of the applications for which the 6545 Color Monitor is ideally suited.

Featuring microprocessor controlled automatic color alignment, the 6545 is a full featured, professional class color picture monitor for broadcast and post-production applications. Both 13" and 19" CRT versions of the 6545 are available in a rack-slide or cabinet configuration. The 6545 accepts NTSC, PAL, or RGB inputs. A high resolution, self-convergent, in-line CRT is used, with SMPTE "C" phosphors for best color match and white field uniformity. The 6545 features a comb filter luminance/chroma separator selectable from the front panel. When not selected, conventional filter and notch separation is used.

The 6545 monitor features quick (20 sec) automatic white balance adjustment using the 6550 Micromatch photometer. Other standard features include both NTSC and PAL decoders co-resident on the same circuit board, with auto-selection of decoding mode. Other front panel selectable functions include: H and V delay, underscan, and individual control of the three electron guns. Operating power is provided by an efficient switched mode power supply; simple switch selection of input voltage permits operation from either 115 or 230VAC input power. Standard features include a built-in CRT degausser, fail-safe scan circuits, and wideband video amplifiers.

The optional 6550 Photometer is uniquely designed to work with the 6545 monitor. The 6550 captures colorimetric data directly from the screen of the 6545 and transfers it to a memory in the 6545 by means of an umbilical plugged into the front of the monitor. The monitor's memory processes this information to achieve a desired white balance. In addition, the 6550 has an internal memory for storing variable colorimetric data, which permits the transfer of specific color values to any number of other 6545 monitors for purposes of standardizing a suite of equipment.

Specifications

Visual Performance

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution:</td>
<td>&gt; 800 TV lines</td>
</tr>
<tr>
<td>Geometry:</td>
<td>± 1.5% of raster height</td>
</tr>
<tr>
<td>Black Level:</td>
<td>&lt; 1% change of peak luminance from 10% to 90% APL</td>
</tr>
<tr>
<td>Raster Size:</td>
<td>&lt; 0.4% change from 0% to 100% APL at 20FL peak luminance</td>
</tr>
<tr>
<td>Max. Usable Brightness:</td>
<td>60 FL with a sine^2 window</td>
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<tr>
<td>Interface:</td>
<td>2:1 ~ 90%</td>
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<tr>
<td>CRT Type:</td>
<td>13V or 19V precision-in-line gun, dot mask, clear faceplate</td>
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<tr>
<td>Pitch:</td>
<td>13V: 0.31mm 19V: 0.44mm</td>
</tr>
<tr>
<td>Phosphor Colorimetry:</td>
<td>SMPTE &quot;C&quot;</td>
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</table>

<table>
<thead>
<tr>
<th>Chromaticity</th>
<th>Phosphor</th>
<th>X</th>
<th>Y</th>
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<tbody>
<tr>
<td>Coordinates</td>
<td>Red</td>
<td>0.630</td>
<td>0.340</td>
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<tr>
<td>(± 0.005)</td>
<td>Green</td>
<td>0.310</td>
<td>0.595</td>
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<tr>
<td>Tolerance:</td>
<td>Blue</td>
<td>0.155</td>
<td>0.070</td>
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</table>

<table>
<thead>
<tr>
<th>Convergence</th>
<th>Display Portion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. Deviation</td>
<td>Center circle=height</td>
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<tr>
<td>(mm):</td>
<td>.5</td>
</tr>
<tr>
<td>Elsewhere:</td>
<td>.9</td>
</tr>
<tr>
<td>Color Stability:</td>
<td>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 MFCD (Minimum Perceptible Color Difference) unit between monochrome and color input signals.</td>
</tr>
</tbody>
</table>

Protection: High voltage shut-down with loss of horizontal or vertical deflection

Frequency: 47-63Hz
Power: 200W max.
Weight: 13" 50 lbs. 19" 80 lbs.

Options

Component video (special quote)

<table>
<thead>
<tr>
<th>Option Code</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>6545R19</td>
<td>19&quot; monitor with rack slides and bezel</td>
<td>$58.85</td>
</tr>
<tr>
<td>6545C19</td>
<td>19&quot; monitor with cabinet</td>
<td>$58.85</td>
</tr>
<tr>
<td>6545Y19</td>
<td>19&quot; monitor with cabinet and ceiling or pedestal mount capability</td>
<td>$59.95</td>
</tr>
<tr>
<td>6545R13</td>
<td>13&quot; monitor with rack slides and bezel</td>
<td>$56.40</td>
</tr>
<tr>
<td>6545C13</td>
<td>13&quot; monitor with cabinet</td>
<td>$56.60</td>
</tr>
<tr>
<td>6545Y13</td>
<td>13&quot; monitor with cabinet and ceiling or pedestal mount capability</td>
<td>$56.90</td>
</tr>
<tr>
<td>6550</td>
<td>Micromatch Photometer (optional)</td>
<td>$18.95</td>
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</tbody>
</table>

Prices and Specifications Subject to Change Without Notice.
D-75 Single or Dual Channel Power Amplifier
The Crown D-75 power amplifier, requiring only 1½" (4.45cm) of vertical rack space, was designed to operate safely and continuously into a variety of load requirements. The D-75 provides 35W per channel minimum continuous average power (both channels operating) into an 8 ohm load over a bandwidth of 20Hz-20kHz at a rated sum total harmonic distortion that is 0.05% of the fundamental output voltage. The frequency response of the unit varies no more than ± 0.1dB from 20Hz-20kHz at 1W into 8 ohms. Features of the D-75 include active balanced inputs, Cannon XLR connectors, an easily accessible mono-stereo switch, and front panel LEDs indicating overloads and signal presence. A special feature of the D-75 is the provision for isolating chassis ground from electrical ground.

$549.00

D-150A-2 Single or Dual Channel Power Amplifier
The Crown D-150A-2 is a single or dual channel power amplifier designed for precision amplification of frequencies from DC Hz to 20kHz. The design of the D-150A-2 provides extremely low harmonic and intermodulation distortion with very low noise. A switch on the rear of the unit allows stereo or mono operation with no internal wiring changes. In the mono mode, the D-150A-2 is capable of a 50V balanced line output. The unit operates on AC current from 120V to 240V. 80W continuous average power per channel into 8 ohms at .05% THD.

$879.00

DC-300A-2 Single or Dual Channel Power Amplifier
The Crown DC-300A-2 is a single or dual channel power amplifier designed for precision amplification of frequencies from DC to 20kHz, 0Hz-20kHz. The design of the DC-300A-2 provides extremely low harmonic and intermodulation distortion with very low noise. A switch on the rear of the unit allows stereo or mono operation with no internal wiring changes. In the mono mode, the DC-300A-2 is capable of a 70V balanced line output. The unit operates on AC current from 120V to 240V. 155W continuous average power per channel into 8 ohms at .05% THD.

$1199.00

The DC-300A-2 contains output protection circuitry pioneered by Crown. This circuitry protects the unit completely against shorted, mismatched, or open loads and completely eliminates the need for DC fuses and mode switches to protect the amplifier. With this unique protection system, the DC-300A-2 can safely drive any speaker load, resistive or reactive, without any fear of harming the amplifier. The speakers can be paralleled with no deterioration of sound quality since changing one load impedance only affects the maximum power available, not the ability of the amplifier to produce clean sound.
MICROPHONES AND
ACCESSORIES

PZM®, PCC®, GLM™, SASS™ 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 mic 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-30R Studio PZM, 5" x 6" boundary plate, black, XLR connector. Emphasized high-frequency response. $269.00

PZM-30F Studio PZM with flat high end, 6" x 5" black boundary plate, XLR connector. $289.00

PZM-8R Low-profile PZM for conference or plexiglass panel. Emphasized high-frequency response, 2½" x 3". Male XLR connector on 15' cable, black. $349.00

PZM-6F Low-profile PZM, flat high end. Black boundary plate, 2½" x 3". Male XLR connector on 15' cable. $289.00

PZM-20R Mounts flush with a table, or in a standard 4" x 4" electrical box. Built-in electronics adapt the unit for phantom powering, black. $319.00

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' cable. $295.00

PCC-200 Same as PCC-160 but with internal gating circuitry. $329.00

PH-4B 48V phantom power supply for all types of microphones. XLR connectors for four mics. 12" x 7½" x 1¾". Ears available for rack-mounting. Operates on 120 or 240VAC. $189.00

GLM-100 Miniature omnidirectional condenser microphone. High SPL capability; reduced pickup of handling noise and wind noise. Male XLR connector on 8' cable. $189.00

GLM-200 Miniature hypercardioid condenser microphone. Increases gain-before-feedback; reduces pickup of leakage, background noise and room acoustics. Male XLR connector on 8' cable. $229.00

GLM-30 Economical and elegant miniature gooseneck mic, low-cut filter, natural sound, optional LM-300SM shock mount. $247.00

Prices and Specifications Subject to Change Without Notice.
Com-Tech™ Series Power Amplifiers

The Com-Tech Series is available exclusively for commercial sound contractors, along with an optional Installation Protection Plan. Com-Tech amps drive "constant voltage" lines without expensive, distortion producing "step-up" transformers. That includes not just common 70V lines but also 25, 35, 50, 100 and even 140V "constant voltage" lines.

P.I.P. compatibility is standard, making this series very versatile. For example, the P.I.P.-ISO provides full output isolation to iso-modified amplifiers for the ultimate in ground isolation.

Full display of vital functions is provided with front panel mounted ODEP, IOC and SPI (Signal Process Indicator) indicators.

A hybrid cooling system takes advantage of heat convection and adds variable-speed forced air assistance only when necessary.

Specifications
Hum and Noise: At 26dB gain with 8 ohm load: 105dB below rated output (A-weighted) from 20Hz to 20kHz
Input Impedance: Nominally 20K ohms balanced and 10K ohms unbalanced
Controls: Enable, channel 1 and 2 input level, dual-mono (dual, bridge-mono, parallel-mono), output mode (8/4 ohm, 70V), input sensitivity (Crown: 0.775V for full output or 26dB voltage gain. Amcron: 1.2V for full output or 26dB voltage gain)
Connectors
Inputs: Balanced 3-terminal barrier block on standard P.I.P. module
Output: 4-terminal barrier block
P.I.P.: Standard P.I.P. connector accessible through rear panel
AC Line: 3-wire male connector attached to a 5' cable

Harmonic Distortion (THD): <0.05% from 20Hz to 1kHz and increasing linearly to 0.1% at 20kHz, delivering rated power into 8 ohms/ channel
Intermodulation Distortion (IMD): <0.05% from 10mW (CT-200, CT-400) or 44mW (CT-800, CT-1600) to rated power into 8 ohms/ channel at 26dB gain
Load Impedance: Rated for 16, 8, 4 ohms, and 70V usage only. Safe with all types of loads (even reactive ones)

Output Power in Dual Mode With Both Channels Driven
FTC Continuous Average Power at 0.1% THD from 20Hz to 20kHz:
CT-200: 105W—8 ohms, 125W—4 ohms, 95W-70V line
CT-400: 195W—8 ohms, 175W—4 ohms, 195W-70V line
CT-800: 285W—8 ohms, 440W—4 ohms, 415W-70V line
CT-1600: 525W—8 ohms, 810W—4 ohms, 825W-70V line

Maximum Average Power at 0.1% THD With 1kHz:
CT-200: 110W—8 ohms, 150W—4 ohms, 105W-70V line
CT-400: 210W—8 ohms, 230W—4 ohms, 225W-70V line
CT-800: 300W—8 ohms, 480W—4 ohms, 440W-70V line
CT-1600: 540W—8 ohms, 875W—4 ohms, 890W-70V line

Dimensions and Weight
CT-200 19" standard rackmount width, 3.5" H, 16" D behind mounting surface. 29 lbs., 6.5 oz. ......... $ 790.00
CT-400 19" standard rackmount width, 3.5" H, 16" D behind mounting surface. 31 lbs., 12.5 oz. ......... $1050.00
CT-800 19" standard rackmount width, 5.25" H, 16" D behind mounting surface. 46 lbs., 12 oz. ......... $1550.00
CT-1600 19" standard rackmount width, 7" H, 16" D behind mounting surface. 67 lbs., 14 oz. ......... $1990.00

Prices and Specifications Subject to Change Without Notice.
160XT Mono Compressor/Limiter
• OverEasy or classic hard-knee compression • Dual RMS display 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 (2 units required) • True power summing when stereo coupled • Infinity + compression provides "dynamic reversal" effects • Compression ratio continuously variable from 1:1 through infinity:1 to -1:1 • Threshold variable from -40 to +20dBu • Output gain variable from -20 to +20dB • +24dBu input and output levels • Input and output connections via XL type connectors or 1/4" tip/ring/sleeve phone • Active balanced inputs and outputs provide hum and RF rejection • Provision for optional active-balanced output • Rackmountable

The 160XT delivers outstanding performance and easy-to-use operational flexibility in a single rackmount package. Its metering system provides an instantaneous picture of the gain reduction of the compressed signal compared with either the input or the output level.

160XT ........................................... $459.00
AB-1 Active-balanced output card .................. .30.00

163X Compressor/Limiter
• OverEasy compression • Single-slider control with gain reduction LEDs • Finger-adjustable level set • Front panel 1/4" high-impedance instrument pack • Stereo-strappable for true stereo compression limiting • Rackmountable

For recording situations, rear panel line-level inputs and outputs permit direct hookup of mixers, consoles and direct boxes. For live use and studio overdubs, any musical instrument can be plugged into the convenient front panel Hi-Z input, which features an adjustable trim to accept the full range of various instrument and pickup levels without distortion.

163X ........................................... $169.00

165A Mono 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 pre-emphasis and other effects • 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 • 24dBu input/output capability • Rackmountable

The 165A OverEasy compressor/limiter gives the operator complete control of the compression and limiting characteristics. The choice of automatic or manually set attack and release rates provides the ultimate in flexibility. The control design and layout reflect the concern of the sophisticated user for repeatable, precise settings.

165A ........................................... $999.00
CA-165 Coupling cable to connect 2 165As for stereo operation ............... .30.00

166 Dual-Channel Compressor/Limiter/Noise Gate
• Noise gate with switchable release rate • LED shows gate operation • Variable OverEasy compressor with infinity:1 effects • PeakStop for a more pleasant clipping sound • Side-chain monitoring for easy setup of frequency-dependent or anticipatory processing • Output level control, +21dBu 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 employing the RMS true power summing method

The gate threshold control allows an 80dB input range. The attack of the gate is very fast and the release is switchable (fast or slow). The compressor is the OverEasy circuit for great sounding effects and compression. PeakStop is a "soft clipping" circuit that rounds off the peaks of the waveform; the result is a good sounding ultra-fast limiter. Dual-mono or stereo operation is possible, and each channel has a hardwire bypass.

166 ........................................... $626.00

Prices and Specifications Subject to Change Without Notice.
900 SERIES MODULAR SIGNAL PROCESSING SYSTEM
FS900/F900A Rackmount Powered Frames
The FS900 is a slim-line (1U high) rackmount powered frame for a pair of 900 Series modules. The F900A is a 51/4" high rackmount powered frame for up to nine 900 Series modules.

FS900 2 active slots ........................................... $399.00
F900A 9 active slots ........................................... $759.00

Accessories
BP-900A Blank panel module for use with F900A
and FS900 frames ........................................... $12.00
900-EXT Extender card for 900 Series ......................... .99

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 ................................................................. $449.00

903 Compressor/Limiter Module
• Stereo strappable
• OverEasy® characteristic
• Infinity plus compression
• Independent detector input permits compression pre-emphasis, antici-
  patory 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 ................................................................. $499.00

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 ................................................................. $499.00

905 3-Band Parametric Equalization
• 3 simultaneous bands of equalization
• Infinite notch on each band
• Shelving or contour on high 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 ................................................................. $499.00

911/941A/942A Noise Reduction Modules
• 40dB noise reduction minimum
• Type I: For all high-quality tape machines
• Type II: Broadcast noise reduction for any noisy medium

The 911 is a 1-channel simultaneous record/play (encode/decode) pro-
essional NR module using dbx Type I. Type I is for pro-quality recorders
having flat frequency response (±1dB 20Hz - 20kHz) up to high levels
and operating at 15ips or greater.
The 941A (2-channel encode) and 942A (2-channel decode) combina-
tion is virtually identical to the 911 in performance, including

the amount of noise reduction. The main difference is that dbx Type II is
suited for media of non-linear frequency response (e.g., limited head-
room): cassette or cart machines, microwave STLs, etc.

Each of these dbx NR systems doubles the dynamic range of the asso-
ciated medium to 115dB or more. Depending on the medium's inherent
noise (45-50dB S/N ratio is the minimum range), Type I and Type II each
achieve noise reduction of at least 40dB.
911 1-channel Type I encode/decode ....................... $239.00
941A 2-channel Type II encode only ................... $259.00
942A 2-channel Type II decode only .................. $269.00

929 Single-Ended Noise Reduction Module
• Sharply reduces constant hiss in a variety of applications. Constant
audio and videotape and optical soundtrack hiss is the main target
• Adjustable for maximum effectiveness and flexibility
• No encoding required
• Balanced inputs and outputs
• 2 channels, stereo-strappable
• Fast sliding-filter design
• Multi-function quieting knob
• 20Hz-20kHz ± 1dB frequency response
929 ................................................................. $399.00

933 Mixer/Distribution Amplifier
• Offers user a choice of either 3 inputs to 1 output or 3 outputs from 1
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 applications for the 933 are: master signal feed to trans-
mmitter, studio monitor and archival tape recorder
933 ................................................................. $349.00

Prices and Specifications Subject to Change Without Notice.
DIGITAL RECORDING/EDITING SOFTWARE

Sound Tools
Digital Recording and Editing System for Macintosh and Atari Computers
- 16-bit, 44.1kHz (and 48kHz) stereo direct-to-disk digital recording and playback
- AES/EBU and S/PDIF digital formats (with digital interface)
- Non-destructive playlist editing
- High quality real-time dynamics compression/expansion/noise gate
- Stereo time compression/expansion
- Pitch shift with time correction
- 2:1 or 4:1 data compression options
- Real time parametric/graphic EQ
- Continuous SMPTE resynchronization
- Sample editing/transfer (Macintosh version only)

Sound Tools is a stereo direct-to-disk recording and playback system with extensive editing features and powerful digital signal processing functions. Sound Tools is ideal for music editing and mastering, and audio post production for any application that requires high-fidelity audio and high-speed, flexible editing. Sound Tools consists of the Sound Accelerator digital signal processing card, Sound Designer II audio editing software, analog interface and digital interface.

Compatibility: Macintosh II family
Sound Tools With analog interface ............... $3285.00
Sound Tools With digital interface ............... $3285.00
Sound Tools With analog and digital interface ... $4280.00

Audiomedia
CD-Quality Recording, Editing and Playback for Multimedia
- Includes NuBus card and audio editing software
- Includes Sound Access, an XCMD/XFCN for Director, HyperCard support
- Sophisticated, yet easy-to-use editing tools
- Powerful real time digital signal processing

Audiomedia is based on the highly acclaimed Sound Tool System, bringing you the same tools the music pros have used at a fraction of the cost. Audomedia allows you to add high-fidelity sound to multimedia presentation packages such as Director, HyperCard and SuperCard without using much needed memory. Audomedia plays directly from your hard disk—a CD quality soundtrack uses only 50K of RAM and loads instantly, allowing you to dedicate the majority of your computer's RAM to your visuals.

Compatibility: Macintosh II
Audiomedia ............................................. $995.00

DECK
Digital Multitrack Recording Software
DECK uses the direct to disk recording capabilities of Sound Tools or Audiomedia to turn the Macintosh into a CD-quality 4-track digital recording studio. DECK features unlimited track bouncing and sound on sound recording, automated mixdown, MIDI file playback while recording and playing audio, digital effects (with Audiomedia) and optional 2:1 data compression.

DECK retails for $349.00.
Compatibility: Macintosh II
DECK ..................................................... $349.00

MacProteus
32-Voice Digital Sound Module
MacProteus is a polyphonic (32 voices), multimbral (up to 16 instruments at once) 16-bit digital sound module on a Mac II NuBus card. Based on E-mu Systems' popular Proteus, MacProteus features digitally sampled "real" instruments such as piano strings, guitar, etc., and can be controlled via a MIDI keyboard or MIDI Manager compatible sequencer for recording or live performance. MacProteus has 2 outputs, a headphone jack and includes front panel software.

Compatibility: Macintosh II
MacProteus ............................................ $895.00
With Opcode Systems' EZ Vision* ................. $995.00

SampleCell
16-bit Stereo Sample Playback Card
- 16-bit, 16-voice, stereo sample playback card
- SampleCell Editor sample management software
- 600M byte CD-ROM sound library disk
- Sound Designer II SC sample editing software

SampleCell is a 16-bit RAM-based stereo sample playback card for the Mac II. SampleCell features 16 CD quality voices, 8 polyphonic outputs and up to 8M bytes of standard Mac II RAM. SampleCell includes a 600M byte CD-ROM sound library disk, interface software and Sound Designer II SC software for sample editing and universal sample transfer. Additional SampleCell cards add 16 more voices each, and the system is compatible with Sound Tools or Audiomedia, creating a direct to disk digital recording and sampling system on the Mac. RAM upgrades are available from Digidesign or through RAM vendors.

Compatibility: Macintosh II
SampleCell With 0M byte RAM ..................... $1995.00
SampleCell With 8M byte RAM ...................... $2995.00

Prices and Specifications Subject to Change Without Notice.
Video F/X™ Desktop Video Production System

- Picture-based editing
- Video switcher
- Stereo audio mixer
- Character generator
- Graphics and title keyer
- Wipes and dissolves
- Macintosh graphics I/O
- Timecode generator
- Full machine control
- Non-linear editing

The Video F/X system provides a full range of video production capabilities: storyboarding and scripting; logging, previewing and trimming clips; creating and keying of graphics over live video; wipes and dissolves; import and export of anti-aliased Macintosh graphics and text; import of Macintosh animation; as well as auto-assembly of the final videotape or export of a CMX-compatible edit decision list.

Video F/X supports a wide range of tape decks to meet your specific project and budget requirements.

Video F/X also integrates random access, non-linear editing, allowing you to edit and preview your programs in real time. Built-in PostScript graphics and fonts produce anti-aliased, broadcast quality graphics and character generation.

Soft F/X™ Desktop Video Production Software

Soft F/X software provides a stand-alone, non-linear digital editing on a Macintosh II. After digitizing the video with the Video F/X system and storing it on a hard disk, you can edit entirely from your Macintosh. You do not need a VTR or a Video F/X unit attached in order to use Soft F/X. Yet you still have the capabilities for broadcast quality editing found in Video F/X, including graphics, audio, wipes and dissolves.

Soft F/X is ideal for multi-user projects where writers and editors need to work simultaneously, sharing the Video F/X system for digitizing the footage and auto-assembly of the final tape. (Soft F/X users can also get access to Video F/X at authorized Video F/X service bureaus.)

Hardware Features

Video Inputs
- NTSC source 1, 2 and record video in
- RGB video in
- External reference (color black)
- Digital video in/out to DB25 card

Video Outputs
- NTSC, RGBs and alpha preview out
- NTSC program out
- VTR reference

Video System Functions
- Automatic full system genlock
- Internal master sync pulse generator
- Internal NTSC decoder and encoder, software controlled
- Internal A/D and D/A converters (8 bits per channel)
- Software controlled source 1 and source 2 input gains
- Internal test signal generation and calibration
- Full software control from the Macintosh

Video Switcher Functions
- Edit preview switcher (video and audio)
- 2 matte generators (background and wipe border color)
- Two 2 x 1 linear keyers
- Transition generator supporting mixes and wipes (hard, soft and bordered)
- Digital wipe pattern generator

Audio Inputs
- 2 stereo audio channels

Audio Outputs
- Stereo audio preview
- Stereo audio program

Audio Mixer
- Computer-controlled mixing of 2 stereo audio channels
- Software controlled audio input gain
- Tone generator

Control Ports
- Source 1 and source 2 control out
- Record VTR control out
- Macintosh serial port

Machine Control
- Control for source and record VTR
- Up to 3 VTRs for A/B roll editing
- Frame accurate (± 0 frames)
- SMPTE RS-422 serial control

Ratings
- UL listed
- FCC Class A

Supported VTR/VCRs

Source
- Betacam SP: Sony BVW-60, 65, 70, 75
- Betacam: Sony BVW-40
- U-Matic SP: Sony VO-9800, 9850
- Sony BVU-700, 920, 950
- S-VHS: Panasonic AG-7850, 7750
- Hi8: Sony EVO-9800

Record
- Betacam SP: Sony BVW-70, 75
- Betacam: Sony BVW-40
- U-Matic SP: Sony VO-9850, BVU-950
- S-VHS: Panasonic AG-7750

Prices and Specifications Subject to Change Without Notice.
### MONOCHROME MONITORS

**6VM917 Single 6" Black and White Monitor**
- 600 lines horizontal resolution
- 100% solid-state circuitry
- Desktop or console mount design
- Fast AFC circuit
- 8MHz video bandwidth
- Heavy-duty single chassis construction
- Continuous DC restoration
- Regulated power supply for stable operation
- Time-lapse VTR capability
- Easy-to-remove chassis assembly
- Intercompartment shielding prevents cross-talk
- Coaxial connectors mounted at 60° angle
- Front-mounted major controls and adjustments
- Metal cabinet: 7" x 5'/8" x 10'/8"
- 8'/4 lbs.
- $555.00

**6VM917T Triple 6" Black and White Monitor**
- Three 6" monitors in a row with rack/desktop metal cabinet
- 7" x 17'/4" x 10'/8"
- 28 lbs.
- $1694.00

**9VM1030 9" Black and White Monitor**
- General purpose 9" monitor
- 1000 lines horizontal resolution
- Convenient up-front operating controls
- Simplified service adjustments
- Time-lapse VTR capability
- Heavy-duty single chassis construction
- 100% solid-state circuitry
- Fast AFC circuit
- Regulated power supply for stable operation
- Switchable underscan standard
- Metal cabinet: 10.47" x 11.57" x 12.01"
- 18 lbs.
- $780.00

**12VM1050 12" Black and White Monitor**
- 20MHz bandwidth
- 1000 lines horizontal resolution
- Carrying handles
- Switchable underscan standard
- Time-lapse VTR capability
- Rugged, heavy-duty single chassis construction
- 100% solid-state circuitry
- Fast AFC circuit
- Regulated power supply for stable operation
- Time-lapse VTR capability
- Metal cabinet: 10.31" x 15.37" x 12.5"
- 24 lbs.
- $949.00

**14VM1060 14" Black and White Monitor**
- Low profile
- 20MHz bandwidth
- 1000 lines horizontal resolution
- Carrying handles
- Metal cabinet
- Switchable underscan standard
- Heavy-duty single chassis construction
- 100% solid-state circuitry
- Fast AFC circuit
- Regulated power supply for stable operation
- Time-lapse VTR capability
- Metal cabinet: 10 1/2" x 15 5/8" x 12 7/8"
- 29 lbs.
- $949.00

**15VM939 15" Black and White Monitor**
- 100% solid-state circuitry
- 1000 lines (or better) resolution
- Front-panel operating controls
- Regulated power supply
- Plug-in module incorporation of major components
- CRT bleeder discharge system
- Superior gray scale
- Time-lapse VTR capability
- Fast AFC circuit
- 15MHz video bandwidth
- Switchable DC restoration
- Complies with federal rules governing X-radiation
- Metal cabinet: 10 1/2" x 15 5/8" x 12 7/8"
- 29 lbs.
- $949.00

**17VM922 17" Black and White Monitor**
- Silicon 100% solid-state circuitry (except CRT)
- 800 lines (or better) resolution
- Front-panel operating controls
- Regulated power supply
- Fast AFC action for optimum VTR operation
- Back porch clamp
- 15MHz video bandwidth
- Switchable DC restoration
- Time-lapse VTR capability
- Superior gray scale
- All major components incorporated in plug-in modules
- Metal cabinet: 15" x 16'/4" x 11'/4"
- 33 lbs.
- $875.00

**23VM952 23" Black and White Monitor**
- Front "slide-out circuitry" for reduced down time and on-the-spot servicing
- Also permits in-the-wall installation in areas where rear access is impossible
- 20MHz video bandwidth
- Switchable DC restoration
- 800 lines horizontal resolution
- Silicon 100% solid-state circuitry
- All major controls are front mounted
- Power supply is regulated
- Superior gray scale and VTR capability
- 17 3/4" x 22 1/2" x 16 1/2"
- 60 lbs.
- $1075.00

**Prices and Specifications Subject to Change Without Notice.**
Graphics Factory Video Graphics Workstation
Graphics Factory combines the power of a character generator, a paint system, a still store and a 3-D animation system into a single, integrated unit. Its modular design lets you customize to fit your own specific needs. And as your needs change, Graphics Factory changes with you, with easy hardware and software upgrades.

Designed to produce the highest quality results in the least amount of time, Graphics Factory thrives in a production environment. Its anti-aliased text and graphics exceed the most exacting post-production standards. Yet it is rugged and reliable enough to be at home in a remote truck. It’s easy to use, flexible and fast.

Graphics Factory plays back full-color animation in real time, eliminating hours of costly single-frame tape recording. A built-in sequencer and macro programming language make special effects and live presentations a breeze.

Graphics Factory features 2 4:2:2 digital, component frame buffers. With 8M bytes of memory per plane, full-color, pixel-by-pixel images can be displayed. On-board memory holds up to several seconds of fairly complicated animation. Dual lomega disk drives accept 20M byte cartridges for storing up to 20,000 text pages per disk. 2 keyboards, 2 GVG CV-25N NTSC encoders and a CV-95N sync generator are standard.

There is ample room for plug-in circuit boards to expand memory, enhance speed, or upgrade functions as needs or technology change. Each model builds on the 1 before.

GF-30
A dual channel, true dual user character generator. Each operator controls a single channel, keyboard and status monitor for advanced text functions, typing over full-color backgrounds, and playing back sequences and animations. All functions are available to each user at the same time. And, Dubner’s well-known effects and on-line help screens are only keystrokes away. Plus, "K" programming language provides a convenient shortcut for creating and reproducing animated effects. With "K", any sequence of keystrokes can be used immediately or recorded for use later on. GF-30 is the first step toward the most sophisticated graphics tool you’ll ever need.

GF-40
A dual channel, full-color video paint system. Each independent display plane has a linear key output. Additional hardware includes painting tablet with pressure sensitive stylus and 4-field, NTSC frame grabber. With workstations for character generation and paint, GF-40 includes the text and animation functions of GF-30, plus color correction, color crawl inhibit, motion elimination and advanced painting system software. All brushes and graphics are anti-aliased. Functions and effects are accessed via the keyboard for on-air use or from on-screen menus using the tablet. Integrating the best features of Dubner’s stand-alone paint systems, GF-40’s user-friendly design combines the power of paint and text manipulation in a single unit.

GF-50
For 3-D modeling, rendering and animation. A deluxe keyboard with dedicated keys for single stroke access to commands, plus a 300M byte drive are included. Objects are built in 3-D and assigned surface characteristics such as textures, colors or shading. Models and animations can be previewed in wire frame or low resolution, before rendering with multiple color light sources and moving cameras.

GF-60 AXcel
GF-50 configuration plus expanded 32M byte display memory per channel for a total of 64M bytes and a graphic accelerator board to speed production.

GF-35/45/55
Library/Still Store option to turn Graphics Factory into an image archiving and retrieval system, and on-line, 2-channel still store. Hardware includes a 300M byte fixed disk, callup panel and full-color frame grabber as required.

Specifications

<table>
<thead>
<tr>
<th>Interface</th>
<th>Connections:</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial I/O</td>
<td>DB-25</td>
<td>2.0V ±0.1V comp.</td>
</tr>
<tr>
<td>SCSI I/O</td>
<td>DB-25</td>
<td>2.0V ±0.1V comp.</td>
</tr>
<tr>
<td>GPIB in</td>
<td>DB-25</td>
<td>2.0V ±0.1V comp.</td>
</tr>
<tr>
<td>GPIB out</td>
<td>DB-25</td>
<td>2.0V ±0.1V comp.</td>
</tr>
<tr>
<td>CPU-1 Term</td>
<td>DB-25</td>
<td>2.0V ±0.1V comp.</td>
</tr>
<tr>
<td>CPU-2 Term</td>
<td>DB-25</td>
<td>2.0V ±0.1V comp.</td>
</tr>
<tr>
<td>I/O Proc</td>
<td>DB-25</td>
<td>2.0V ±0.1V comp.</td>
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<tr>
<td>Spare Ports</td>
<td>DB-25 (3)</td>
<td>2.0V ±0.1V comp.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Video Inputs:</th>
<th>Video Outputs:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Genlock</td>
<td>Status Monitor</td>
</tr>
<tr>
<td>Sync</td>
<td>1.0V p-p comp.</td>
</tr>
<tr>
<td>Subcarrier</td>
<td>4.0V p-p</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Channel A:</th>
<th>Channel B:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status Monitor</td>
<td>1.0V p-p mono, comp.</td>
</tr>
<tr>
<td>Red</td>
<td>0.7V p-p non-comp (2)</td>
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<tr>
<td>Grn</td>
<td>0.7V p-p non-comp (2)</td>
</tr>
<tr>
<td>Blue</td>
<td>0.7V p-p non-comp (2)</td>
</tr>
<tr>
<td>Red w/Cursor</td>
<td>0.7V p-p non-comp</td>
</tr>
<tr>
<td>Grn w/Cursor</td>
<td>0.7V p-p non-comp</td>
</tr>
<tr>
<td>Blue w/Cursor</td>
<td>0.7V p-p non-comp</td>
</tr>
<tr>
<td>Sync</td>
<td>4.0V p-p (3)</td>
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<tr>
<td>Linear Key</td>
<td>1.0V p-p comp.</td>
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<tr>
<td>Hard Key</td>
<td>1.0V p-p comp.</td>
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<tr>
<td>NTSC</td>
<td>1.0V p-p comp.</td>
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<th>CCIR-601 Output (opt)</th>
<th>PAL Output (opt)</th>
</tr>
</thead>
<tbody>
<tr>
<td>D2 Output (opt)</td>
<td>DF-9, RS-422 (12)</td>
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</table>

<table>
<thead>
<tr>
<th>GF-30N</th>
<th>GF-30N plus digital still store and library</th>
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</thead>
<tbody>
<tr>
<td>$60,000.00</td>
<td>$75,000.00</td>
</tr>
</tbody>
</table>

Prices and Specifications Subject to Change Without Notice.
CHARACTER GENERATORS

30-K Dual Channel Character Generator
* Dual channel 30-K character generator * Designed for the broadcast environment

Mainframe
* 1 compact unit houses the basic electronics * 30-K consists of a 68020 32-bit microcomputer, 2 independent display planes each with a built-in encoder and downstream linear keyer, a sync regenerator and 2 20M byte disk drives for removable, dependable storage * Standard configuration also includes a full-function "K Series" keyboard

Display Characteristics
* Each display plane has 4M bytes of memory for full anti-aliased text composition over complex backgrounds * Each display plane has a full linearity key signal for creating dissolves, fades and other transient effects * Resolution is 40ns with the apparent resolution of anti-aliased images better than 10ns * Outputs are RGB analog and NTSC/PAL composite

Single and Dual Operation
* In single operator mode, the operator controls the preview and program channels from a single keyboard * Both channels have a foreground and background image and both display 1024 colors selected from a palette of 16 million * In dual operator mode, each channel is assigned to a different keyboard and operator * 1 can be used to create graphics while the other is used for display or both can be on-air

Disk Storage
* Each twin 20M byte removable cartridge holds up to 20,000 text pages * With dual disk drives, the 30-K keeps hundreds of fonts and pictures on-line * Quick loading lomega disks are durable, portable and easy to backup with average recall time of 1/2 second

Hardware/Software Compatibility
* 30-K’s 20M byte drives read lomega disks from any Dubner graphic system * Fonts, messages, backgrounds and animations are transferred via disk to the 30-K for playback or titling * When there are differences in resolution between systems, a unique combination of 30-K software and hardware makes the adjustment * Through a software process known as "quantizing," full color images created on Dubner Paint Systems, Graphics Factory or CGI/TEXTA systems can be displayed on the 30-K * Quantized images then can be used as full screen backgrounds and titled by the 30-K or assigned to individual font characters

30-K Animator
* Expanded 60M byte display memory per channel for a total of 32M bytes * Internal 40M byte hard drive * Tablet with paint software

20-K/10-K Character Generators
* 20-K and 10-K character generators are identical systems, except for the disk drive * 20-K system includes a 10M byte lomega cartridge disk drive, while the 10-K features a 1M byte 5½" floppy disk drive * With more storage, the larger disk capacity of the 20-K permits full compatibility with other Dubner systems * You can choose from a wide choice of standard and high resolution anti-aliased fonts, colors, edges and backgrounds that can be manipulated and displayed with ease * K-Series character generators have the power and advanced features that make them the systems of choice for today’s video professional * They are menu-driven and provide a separate monochrome output for menu displays * Operator prompts let even beginning operators choose the right button for every situation * Systems feature a Help key, along with a "help screen display" for every operational key on the keyboard

20-K/10-K options
* 20-KEL ** 20-K including election system with terminal (NTSC) ........................................... $29,500.00
* 20-KWN 20-K20 including weather system with paint (NTSC) .................................................. $35,000.00
* 30-KN Dual channel character generator with 20M byte disk drives, NTSC SEK .................................. $36,000.00
* 30-KNA Animator .................................................. $46,000.00
* N denotes NTSC
** Available in NTSC only

30-K/20-K OPTIONS
K-PG Presentation Graphics Software
* Combines versatile text composition and high resolution fonts with multi-faceted graphical displays * 8 basic chart formats, composite and overlapping charts .................................................. $2,700.00

K-Dig Digitizer
* Hardware/software product for anti-aliased camera capture * 16 level gray scale * Includes font compose software, NTSC or PAL.................................................. $5,500.00

K-PNT Painting (Standard on 30-K Animator)
* 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 .................................................. $3,000.00

K-CS Color Scanner Option
* To input color graphics for customized backgrounds and fonts .................................................. $11,000.00

K-B1.2,3,4 Backgrounder Sets
* High-end backgrounder graphics to enhance text displays
* K-B1.2 Generic backgrounder which cover wide spectrums .................................................. $850.00
* K-B3 Full screen digital paint backgrounds .................................................. $850.00
* K-B4 Partial screen digital paint backgrounds .................................................. $850.00

K-5KN 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 8 regular fonts or 4 anti-aliased fonts 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 9 selectable speeds * Animation playback of up to 40 frames from the Dubner Textra or CBG-2 is possible, plus displaying all backgrounds from Textra and CBG-2 * All the pre-packaged Backgrounder programs will run on the Dubner 5-KN .................................................. $10,500.00

Networked Systems
* K-5KSE Automated election system with terminal (NTSC) .................................................. $29,500.00
* K-5KWN2 Automated weather system with paint (NTSC) .................................................. $35,000.00
* K-5KN2 Dual channel character generator with 20M byte disk drives, NTSC SEK .................................. $36,000.00
* K-5KNA2 Animator .................................................. $46,000.00
* N denotes NTSC
** Available in NTSC only

Prices and Specifications Subject to Change Without Notice.
DPS-1N 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: hue, saturation, 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 3° 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
- Automatic assembly onto disk
- VTR control
- Animation
- Larger disk drives

Options
- VTR control
- Animation
- Larger disk drives

The DPS-1N is a full-video color painting system that grabs images from any NTSC source for storage and modification. For perfect picture quality, the DPS-1N stores and uses all four fields of the NTSC color sequence.

The DPS-1N is based on software innovation that allows the composite NTSC signal to be digitally sampled and manipulated without decoding and re-encoding.

DPS-1N .................................................. $25,000.00
DPS-1XN DPS-1N plus 200M byte hard disk .......... $30,000.00

TBS-20 Turbo Paint System
- +20 Meg cartridge disk
- Image manipulation along the X, Y, and Z axes
- Rotate with roll
- Pitch and yaw
- Perspective moves
- Both real time and frame by frame effects
- Automatic edit

Options
- Full color painting and animation
- 650M optical disk
- Color scanner input

Digital Composite Still Store with input, save, recall and output in the digital domain without degeneration. The DSS-4 combines Dubner paint basics with mass storage and library software. Dual channel save and recall provide rapid assembly of library material.

DSS-4 Digital Composite Still Store
- NTSC four field capture
- Dual channel (program-preset)
- READ and STORE in either channel
- READ-NEXT take to air, load next picture
- One button GRAB/STORE
- Wipe, dissolve, fade and cut channels
- 20M byte removable disk
- 200M byte internal hard disk
- Additional disk drive options
- Control panel and terminal control
- Play list sequencer with editor
- Change picture size and position
- Search with “close” matches

Options
- Full color painting and animation
- 650M optical disk
- Color scanner input

Prices and Specifications Subject to Change Without Notice.
SERIES 1500 VIDEO DISTRIBUTION AMPLIFIERS

- May be used as self-contained, standalone units for desktop or custom mounting.
- For rackmounting applications, units can be installed in the FR-1500A rackmounting frame which occupies only 1 3/4" of standard 19" rack space.
- All units are equipped with BNC type signal connectors unless otherwise noted. Mating connectors are not included.

DA-1510B Video Distribution Amplifier
- Provides four isolated 75 ohm source terminated outputs from one high impedance looping input.
- Input: 75 ohm unbalanced, high impedance looping, 1V p-p; BNC connectors.
- Outputs: 4, 75 ohm source terminated, 1V p-p, BNC connectors.
- Gain: Adjustable ± 3dB
- Frequency Response (ref. 1MHz): 100kHz-10MHz: ± 0.5dB; 30MHz: ± 1.2dB; ± 3dB.
- Differential Gain: 0.25% at 5MHz, 10-90% APL, 1V p-p output.
- Differential Phase: 0.25° at 5MHz, 10-90% APL, 1V p-p output.
- Hum and Noise: 65dB RMS below 1V p-p, 10MHz bandwidth.
- Size: Module only, 1"/16" H x 5 3/4" W x 9" D; mounted in MB-1504A deskmount, 2" H x 6" W x 9 3/4" D.
- Power: 115-230VAC ± 10%, 50/60Hz.
- Net Weight: 2 1/2 lbs.

FR-1500A Rackmounting Frame
- Provides mounting for three 13") Series 1500 units in standard equipment racks.
- Captive screw fastener at the rear of the frame, and guide pin at the front, secures each unit, allowing equipment to be used in mobile applications.
- Size: 1 3/4" H x 19" W x 6 1/2" D.
- Net Weight: 2 1/2 lbs.

BP-1502B Blank Module
- Fills one unused space in FR-1500A Frame.
- Net Weight: 1 1/4 lbs.

MB-1504A Deskmount Kit
- For one Series 1500 unit. Includes rugged aluminum cover, rubber feet and hardware.
- Net Weight: 13 oz.

PULSE DISTRIBUTION AMPLIFIERS

PD-1515B Pulse Distribution Amplifier
- Provides four isolated, source terminated outputs from one high impedance looping input.
- Regenerative input, linear output.
- Normal output with up to 1000' Belden 8281 input cable.
- Input: 2-4V p-p negative pulses, 75 ohm unbalanced, high impedance bridging, BNC connectors.
- Common Mode Rejection: > 60dB. 50-400Hz, ± 30V reference chassis ground.
- Outputs: 2-4V p-p negative pulses, 4 each 75 ohm source terminated, BNC connectors.
- Output Return Loss: > 35dB at 5MHz.
- Output Isolation: > 40dB at 5MHz.
- Output Rise Time: 130ns.
- Gain: Adjustable.

PASSIVE VIDEO SWITCHERS

VS-6D Video Switcher
- Switches from one to six inputs to a single output.
- Incorporates switch-controlled terminations.
- Equipped with separate auxiliary switch section for user wiring of balanced audio, balanced audio, external cue lights, or other secondary functions.
- For lighted pushbutton operation, order LK-1541A Lighting Kit shown below. Inputs: Six (all except operating channel terminated in 75 ohms).
- Outputs: One. Connectors: BNC.
- Size: 1 3/4" H x 19" W x 6 1/2" D.
- Net Weight: 2 1/2 lbs.

VSA-6D 6 x 1 Passive Video Audio Switcher

VSA-12D 12 x 1 Passive Video Audio Switcher

LK-1541A Optional Lighting Kit
- For pushbutton lighting. For use with passive switchers. Provides 6VDC at 100mA to power lamps provided with switcher. Calculator style plug-in transformer with 6' cable.
- Connector: Miniature male, 3.5mm (mates with Switchcraft No. 41 jack provided on rear of switcher).
- Primary Power: 115VAC, 60Hz.
- Net Weight: 6 oz.

Prices and Specifications Subject to Change Without Notice.
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 DV/5 or edit controllers
- EquiLinear attenuator design for 0.02% distortion

The AFS is a computer-controlled switcher for audio mixing in a video environment. Intended to complement the DV/5 switcher, the AFS can be a stand-alone programmable mixer or it can be controlled by the DV/5. In this mode, the AFS will automatically switch audio to follow video; that is, selecting Program bus video 5 will cause the AFS to switch to Program audio source 5. Up to 4 sources can be designated as audio only and will not respond to video switching.

11 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 2 or more buttons are pushed simultaneously all buttons will remain lit and all sources will be selected.

Diagnostic software is included which performs self-test and calibration functions on powerup and at predetermined intervals thereafter without operator intervention. Diagnostic LEDs are accessible on cover removal by the technician.

An EquiLinear circuit using LED/dual photoconductor attenuators provides much improved distortion and noise performance compared to the typical voltage controlled amplifier (VCA) specifications.

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 2 wires to chassis
- 12 video inputs total, 10 are looping impedance (47K ohm) or 75 ohm terminated. 2 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), 1 RGB or composite chroma keyer. 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. 2 independent mix-effects systems and direct bus switching handle up to 12 video inputs, including black and background. 2 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 2 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.
PRODUCTION SWITCHERS/ SOFTWARE

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 * 2 mix-effects systems for effects and auto-take * Dual memory power supply * Soft. Take Take computer control of all switching and effects * Contact-closure editing interface will initiate any pre-programmed event * Remote fully digitized control panel with 2 wires to chassis * 38 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 2RU chassis and a 12 1/4" remote front control panel. The electronics chassis uses just 2 printed circuit cards.

Built-in computers handle advanced features such as frame programming, calibration and fault diagnosis. Self-calibration circuitry sets a new standard for accuracy and reliability in the most demanding applications.

The DV-5 is used in 2 modes: production or programming. In production mode, the switcher allows control of both wipe patterns and digital 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.

DV-5 Production Switcher

$795.00

Options

DGS-5 Drop shadow generator (15 lines) for DV-5 switcher... $200.00
GLS-5 Genlock sync generator for DV-5... $100.00
RWP-5 Rotary wipe package for DV-5... $650.00
QSP-5 Quad split package for DV-5... $500.00
MEC-5 Memory expansion for DV-5... $400.00
BPS-5 Backup 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
SMPT-8 SMPT-8 serial interface to any editor controller for DV-5... $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 (basic units include 1) for DV-5... $150.00
OPS-5 Operators manual for DV-5... $45.00
RCW-5 Rotary and clock wipes package... $965.00
EDC-5 External drive card (info when ordered with DV-5)... $850.00
CWP-5 Clock wipe package... $350.00
DVC Square pack for the DV-5... $795.00

DVC-IBM/DV-5 Communications Software

- 16 programs on your IBM PC or clone * Includes a menu-select graphic screen and will run on any IBM computer configuration * Allows you to save DV-5 sequences and setups on your IBM, in IBM file format, on floppy or hard disk * An unlimited number of sequences and setups can be saved and later recalled to the DV-5 at 5 seconds per block * DV-5 is capable of storing a maximum of 99 panels setups and 5 sequences of 1000 steps each; the DVC will save and reload this memory in 5 blocks with 20 setups and 1 sequence per block
- Included: DVC software on 5 1/4" and 3 1/2" low-density disks, 25' cable with 9-pin D-type connectors, manual.
- You will need: IBM personal computer, any version, with any graphics setup; 1 RS-232 communications port available; DV-5 switcher with Edit port unused.

DV-7 Production Switcher

* 8-input, 1 mix-effects * Built on a single PC card * Packaged in a 2RU chassis, with separate 5RU control panel * Control panel is remountable up to 1000' on a single coax cable * Chassis features automatic computer calibration which obsolete your resident technician * 18-character alphanumeric display guides the user through operations such as digital color entry and the use of commands which allow seldom-used functions such as key reverse or key softness to be performed * Internal background and black as well as 3 color generators * 3 video busses * 10 wipe patterns including circle + SMPT-8 link editing facility + 2 linear keyers + Wipe patterns have soft and hard versions, and the pattern travel is compensated by the computer for low (< 50%) deadband for frame-accurate edits * Take section allows mix or pattern take-to-preview * Downstream key generator provides a keyer with 2 external key selections as well as a fade-to-black function + RGB chromakey card is optional * NTSC or PAL

Versions are available + Panel lights tally the on-air source with high brightness, and you can write your own source name for bus switches. These names are displayed when the corresponding bus switch is pushed + Audio switching can be handled with a APS audio switcher, and a SMPT-8 interface is dedicated to this purpose + Edit control interface is optional

DV-7 Production Switcher

$9995.00

Options

RGB-7 Chromakey... $995.00
SMPT-7 Serial interface to most editors... $995.00
NTSC-7 Encoded chromakey... $995.00

Options

Bard Graphic Layout Software

* Object-oriented graphic layout package, running on a Mac computer * Includes 50 high-quality, scalable, anti-aliased fonts, using 32 bits per pixel + 8 bits per color plus a key channel + Connects by SCSI link or can operate stand-alone + Fill text with solid color, color wash, live video or any tempest background disk + Import files from paint programs + Broadcast quality CCIR 4:4:4:4 images + Draw rectangular shapes and custom graphic shapes + RGB input, RGB or YIQ output * Mouse controlled, easy-to-use heads-up display * Kerning, justification, rotation, scaling, drop shadow, transparency

Bard is object oriented rather than pixel oriented like the typical paint program. When you add an object like a character or a rectangular wash effect, it does not write into the frame memory, it overlays it. Many layers of objects can be overlaid to produce complex images, and any object can be repositioned later. Experiment for the best graphics.

Bard accepts .PICT, .TIFF or .ECH file formats. High resolution images can be captured with optional 4M byte RAM; hardware pan and zoom are used to display movable windows.

Bard can be operated stand-alone with disk output or RGB or YIQ genlockable studio output. It can also be used for other jobs such as generating color presentation slides, and for sequencing and transition of up to 20 images.

Bard Graphic Layout Software

$3995.00
Jazz Digital Video Effects System
- Broadcast quality video - 14.3MHz sampling rate
- 4:2:2 component internal processing
- Composite and S-VHS (Y/C) inputs and outputs
- Accepts asynchronous, non-time-base corrected video inputs
- Simple, intuitive control panel
- Single keystroke operation
- Manual or programmable A/B video switching
- Key output
- Context sensitive - Help key
- Key frame link controls: Curvilinear, linear motion; acceleration and deceleration; variable duration; specified flips and tumbles; GPI out
- Key sequence controls: Variable duration; play function to run or step through key sequences in forward or reverse; complete edit capabilities; GPI stack can be remotely triggered using GPI in
- Key sequence storage: Internal memory and external memory card for sequence storage; complete directory capabilities; complete edit capabilities

Standard Effects
- Rotation: Variable axis, speed and direction
- Flips and tumbles: Variable axis, speed and direction; programmable, A/B video switching provides 2-channel effects
- Rota-tional shifts: Variable pulls in both X and Y
- Smooth shrink and zoom: Continuous, variable axis
- Over expansion: Variable aspect ratio to x3
- Aspect ratio: Continuously variable
- Cropping: Proportional and non-proportional
- Borders: Proportional and non-proportional; any size and color
- Drop shadows: Any size and color
- Pan: Any image or effect
- Picture splits: Variable control in both X and Y
- Mirror images: Horizontal, vertical, quad
- Field/frame/freeze: Variable live and freeze rates; variable strobe rate; step frame
- Mosaic: Variable tile sizes, aspect ratio
- Posterization: Variable levels and false colors
- Tinting: Continuous
- Background color: Infinitely variable
- Fade to black
- Transitional effects: Preprogrammed, variable speed; wipes to background video or color

Jazz was developed to exact specifications with the capabilities and expandability to meet future demands. Jazz is the first to eliminate complex entry codes so that creativity isn’t limited by time constraints. In S-VHS or any other format there is no more responsive piece of technology.

Jazz System ........................................... $10,995.00

Jazz Tempo
- Jazz Tempo picks up the beat of Jazz and includes:
- Foreground/Background Dissolve: Gives the user complete control over dissolves between foreground and background video
- Software Adjustable Phase Controls: All the controls listed are adjustable from the control panel. Control settings can be stored in memory and reloaded in subsequent sessions
- Horizontal Phase Control: This delay is adjustable ± 3ms
- Subcarrier Phase Control: Allows the user to adjust the subcarrier phase of the effects channel within ± 180°
- Key Output Control: Allows the user to adjust the position of the key output signal with respect to the effects channel. This delay is adjustable to cover a range of 0 to +4ms

Jazz Tempo ........................................... $12,995.00

Jazz Ensemble
- Jazz Ensemble picks up the Tempo and more:
- Transparent Drop Shadows: The flexibility of our architecture allows Jazz to offer independently programmable transparent borders and drop shadows
- Chromakey: Allows the user to selectively eliminate areas of the manipulated video that match a user specified color and substitute background video for these areas. The keyed image can then be manipulated using any of the standard Jazz effects
- Luminance Key: Allows the user to selectively eliminate areas of the manipulated video that have a luminance value less than a user specified value and substitute background video for these areas. The keyed image can then be manipulated using any of the standard Jazz effects
- Solarization: Creates the upbeat effect of spot color by isolating any existing color and converting the remaining portion of the image to black and white

Jazz Ensemble ........................................... $14,995.00

Note: All systems include control panel, processor unit, line cords and interconnect cabling.

Options
Jazz Harmony Effects
- Jazz is the only effects system offering packages of pre-programmed effects on a regular basis
- Several times a year a package of new effects will be available
- Collect them to form a library of your favorite special effects and use them to add variety and interest to your video programming

Jazz Harmony Effects Library
4 issues ........................................... $500.00

Jazz Ensemble Retrokit
Allows you to upgrade your existing Jazz System to the capabilities of the Jazz Ensemble

Additional Control Panel
Includes cabling, line cord and adaptor unit

Blank Memory Cards
Package of 3

Digital Video Effects System Prices and Specifications Subject to Change Without Notice.
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: 51/2" long; 115/32" dia.
- Weight: 6 oz.
- Cable: 15' Switchcraft A3F conn.

635A $145.00
635A Six Pack, package of six 635A mics $739.00

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
- Output Level: -61dB
- Diaphragm: Aluminum and steel
- Finish: Non-reflecting gray
- Size: .75" diameter; 2.25" long
- Net Weight: 1 oz., less cable and neck cord assembly

649B $521.00

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: 13/4" long; 3/4" max. dia.
- Weight: 1 lb., 11 oz. complete; 13 oz. mic only
- Cable: Special coil cord to extend from mic to connector (Switchcraft A3M) to shock mount ball for mechanical isolation

DL42 $857.00

D054 Dynamic Omnidirectional Microphone
Based on the RE55, the D054 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 1/2 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: -55dB
- Diaphragm: Acoustalloy
- Case: Steel
- Finish: Fawn beige micomatte
- Size: 15/8" long; 3/4" max. dia.; 3/4" shank dia.
- Weight: 6.5 oz.
- Cable: 15' Switchcraft A3F conn.

D054 $212.00

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' Switchcraft A3F conn.

DS35 $229.00

Prices and Specifications Subject to Change Without Notice.
Professional Microphones

**RE 10 Variable-D** Dynamic Super-Cardioid Microphone
A moderate cost microphone for sound reinforcement, broadcasting, choir pickup and stage work. The RE 10 is similar in design to the RE 15, 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 micromatte
- Size: 6⅞" long; 1⅞" max. diameter; ¾" shank diameter
- Weight: 6 oz.
- Cable: 15' Switchcraft A3F conn.
- Included: 310A clamp, metal carrying case

**RE 10** ................................. $245.00

**RE 11 Variable-D** Dynamic Super-Cardioid Microphone
An excellent microphone for broadcast and quality sound reinforcement, the RE 11 offers a higher level of uniformity than any formerly used unit. The RE 11 is a modestly priced unit with many of the features of the RE 16 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 micromatte
- Size: 6⅞" long; 1⅞" max. diameter; ¾" shank diameter
- Weight: 8 oz.
- Cable: 15' Switchcraft A3F conn.
- Included: 310A clamp, metal carrying case

**RE 11** ................................. $280.00

**RE 15 Variable-D** Dynamic Super-Cardioid Microphone
The performance and reliability of the RE 15 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 micromatte
- Size: 6⅞" long; 1⅞" max. diameter; ¾" shank diameter
- Weight: 8 oz.
- Cable: 15' Switchcraft A3F conn.
- Included: 310A clamp, metal carrying case

**RE 15** ................................. $365.00

**RE 16 Variable-D** Dynamic Super-Cardioid Microphone
The RE 16 is like the RE 15 except for a different bass filter. An integral part of the RE 16, the bass filter makes possible the closest handheld use without any "P-pops". 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
- Diaphragm: Acoustalloy
- Case: Steel
- Finish: Fawn beige micromatte
- Size: 7⅞" long; 1¾" max. diameter; ¾" shank diameter
- Weight: 8 oz.
- Cable: 15' Switchcraft A3F conn.
- Included: 310A clamp, metal carrying case

**RE 16** ................................. $384.00

**RE 18 Shock Mounted Variable-D Dynamic Cardioid Microphone**
The RE 18 is a direct descendant of the popular RE 15 and RE 16 microphones. While maintaining the accurate frequency response characteristics and super-cardioid polar pattern of the RE 15, the RE 18 has added an integral shockmount for even better performance.

**Specifications**
- Frequency Response: 80-15,000Hz
- Impedance: 150 ohms
- Output: -56dB
- Diaphragm: Acoustalloy
- Case: Steel
- Finish: Silver tone matte
- Size: 7⅞" long; 2⅔" max. body diameter; ¾" shank diameter
- Weight: 1 lb., 10 oz.
- Cable: 15' Switchcraft A3F conn.
- Included: Stand adaptor, metal carrying case

**RE 18** ................................. $410.00

**RE 20 Variable-D** Dynamic Cardioid Microphone
The RE 20 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 RE 20 provides performance heretofore available only from the most expensive condenser microphones.

**Specifications**
- Frequency Response: 45-18,000Hz
- Impedance: 150 ohms
- Output: -57dB
- Diaphragm: Acoustalloy
- Case: Steel
- Finish: Fawn beige micromatte
- Size: 8⅞" long; 2¾" max. diameter; 1⅜" body diameter
- Weight: 1 lb., 8 oz.
- Cable: 15' Switchcraft A3F conn.
- Included: Stand adaptor, metal carrying case

**RE 20** ................................. $552.00

**RE 27N/D Variable-D N/DYM Dynamic Cardioid Microphone**
The RE 27N/D is a professional quality dynamic cardioid microphone designed for broadcast production announce and voice-over, high-quality recording and sound reinforcement applications. The RE 27N/D utilizes a revolutionary neodymium alloy magnet and a reinforced diaphragm dome, a combination offering increased sensitivity (up to 6dB more output), undistorted output at high sound pressure levels and an extended high-frequency response.

**Specifications**
- Frequency Response: 45-20,000Hz
- Sensitivity: 0dB = 3.1mV/Pascal at 1000Hz
- Open Circuit Voltage: 0.5mV
- Power Level: -130dB at 60Hz
- Diaphragm: Neodymium alloy
- Magnetics Circuit: N/DYM net in a non-welded circuit
- Phasing: Pin 2 is positive referenced to Pin 3
- Cable: 15' Switchcraft A3F conn.
- Included: Stand adaptor, metal carrying case

**RE 27N/D** ............................. $625.00

126 Prices and Specifications Subject to Change Without Notice.
MIXERS

8400/8200 Series
High Performance Mixing Consoles

8400/8200 Common Features
- Equal headroom in all stages for optimum noise performance
- Gain-calibrated level controls for visual check of mixer stage gain
- Optimum circuit design to reduce harmonic and intermodulation distortion to inaudible levels
- Transient performance not slew-rate or power-bandwidth limited under any operating conditions, 20-20,000Hz
- Space-saving compact design with optimum tilt

8400 Series
- 6 fluorescent bargraph meters calibrated for 0dB = +4dBm at transformer isolated outputs

8200 Series
- 2 illuminated VU meters calibrated for 0VU = +4dBu at transformer isolated outputs

8400/8200 Input Section Features
- Separate microphone and line preamps and connectors, switch selectable
- 48V phantom power for microphone inputs
- Circuitry to accommodate input levels from speech with distant microphones to close miking of rock music
- Continuously variable input gain controls with 11 detents for quick, accurate resetting
- Preamplifiers with -129dBu equivalent input noise, high gain and very low distortion
- 3-band EQ with switchable midrange center frequency. Shelving frequencies are 600Hz and 3.5kHz
- 3 auxiliary send controls modifiable at each input for pre- or post-EQ or fader
- Center detents for equalizer and pan controls
- Send and return jacks on each input, for insertion of external signal processing devices
- Pre-fader solo system modifiable to post-fader, with LED indicator and metering

8400 Subgroup Section Features
- Fader, pan control, send/return jacks and solo switch for each subgroup
- Separate tape input with level and balance controls
- Assignable “talkback” input for house or stage communications

8400/8200 Output Section Features
- Independently adjustable mono output, plus stereo
- Stacking input jacks for all buses, to link with other mixers
- Power headphone amp with level control, mono switch and solo interrupt
- 2 effects-return inputs with level, pan and monitor-send controls

The 8400/8200 Series Mixers are high-performance/high-value consoles designed for fixed or portable professional sound reinforcement systems. Features and performance make them appropriate for broadcasting and recording applications. All models have left, right, mono, monitor, auxiliary 1 and auxiliary 2 outputs, all with unbalanced and transformer isolated connections. Transformer isolation reduces hum and noise caused by ground loops.

Specifications

Frequency Response — Mic Input at Maximum
Gain or Line Input at Unity Gain to Any Output:
Any Other Input (Except Talkback)
to Any Output:
Total Harmonic Distortion, Transformer Isolated Outputs, 600 Ohm Load —
Equivalent Input Noise (150 Ohm Source):
Output Noise at Transformer Isolated Left and Right Outputs, All Faders Down
Except as Indicated —
Stereo Masters at Nominal ("0"):
Stereo Masters and Subgroups at Nominal:
1 Input, Stereo Masters and Subgroups at Nominal (64dB gain):
Output Noise at Transformer Isolated Monitor or Auxiliary Outputs, Masters at Nominal ("0"), All Other Faders Down:
Maximum Voltage Gain — Mic Input to Transformer Isolated Left and Right Outputs:
Line Input to Channel Send Output:
Tape Input (8400 Series Only) and Effects Returns to Transformer Isolated Left and Right Outputs:
Talkback Input to Transformer Isolated Left and Right Outputs (8400 Series Only):
Mic Input to Transformer Isolated Left and Right Outputs, 8200 Series:
Mic Input to Transformer Isolated Left and Right Outputs, 8400 Series:
Slide Fader Reserve Gain:
Adjacent Channel Crosstalk at 1000Hz:
Channel Feedthrough at 1000Hz, Nominal ("0") Control Settings, Channel Unassigned (8400 Series Only):
Power Requirements:
Height and Depth:
Width:
Weight:

8400 Series
8416 16 channels, 31.5" W ........................................... $5037.00
8424 24 channels, 41.5" W ........................................... $6724.00
8200 Series
8216 16 channels, 26.5" W ........................................... $3807.00

Prices and Specifications Subject to Change Without Notice.
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
$659.00
WB23 Wall mount kit
$38.00

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
$659.00

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. 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 100EL
$692.00
SRB-7 Rackmount/wall mount brackets for 100A
$33.00

S-40 Compact Monitor System (Preliminary)
The S-40 is a 2-way personal-sized monitor designed to accommodate a variety of monitoring and playback applications. The S-40 features a 5 1/4" direct-radiating polypropylene woofer coupled with a 1" ferro-cooled soft-dome tweeter, a combination that produces exceptional bass response and a smooth, extended top end. Its long-term power handling is rated at 160W per EIA standard RS-426A. The S-40 includes EV’s exclusive PRO™ circuit protection, providing independent protection for the woofer and tweeter. In case of accidental overdrive, the circuit limits the power being delivered to the components and automatically resets when the system returns to a safe level. Weighing only 5 lbs., the S-40 has threaded inserts in combination with optional mounting hardware, providing a flexible mounting system. The optimally vented enclosure is constructed of high-impact polystyrene structural foam and is available in black or white.

S-40B Black
$280.00
S-40W White
$280.00
S-40MBB Wall/stand mounting bracket kit for S-40B (black)
$30.00
S-40MBW Same as above in white
$30.00

Prices and Specifications Subject to Change Without Notice.
FILM-TO-VIDEO CONVERTERS

TRV Film-to-Video Converters
Convert 16mm or 35mm slides to video with a compact, totally self-contained film-to-video converter.

Each TRV converter is a complete tele-cine transfer system with a film transport mechanism. A charge coupled device (CCD) video pickup element is combined with a special flat-field lens to produce a grainless aerial image. Color control, iris control, video and audio output are built-in.

The TRV eliminates the need for separate video cameras, multiplexers or transfer screens; simply connect the TRV video and audio output jacks to any video tape recorder and make your transfer. Or, you may connect the TRV directly to any projection video system or closed circuit video system.

Available in the following formats:
* 16mm sound or silent at 24fps
* 35mm, 2 x 2 mount slide film

Specifications

Optics: Special flat-field lens built-in 16mm and 35mm slides; 25mm for 16mm film
Iris Adjustment: Manual with fine adjustment
Focusing: Manual with fine adjustment
Light Source: 6V-10W halogen lamp (film)
               12V, 6W halogen lamp (slides)
Shading: < 10%

Video: Pickup Element: 1/2" CCD built-in
Video Output: 1.0V p-p, 75 ohm
Resolution: 240 TV lines
S/N Ratio: > 46dB
Color Compensation: Red/Blue
Video System: NTSC

Sound: Playback System: Optical/magnetic (16mm)
Audio Output: 400mV, 600 ohm
Frequency Response: Optical—50Hz to 7kHz
                     Magnetic—50Hz to 12kHz (16mm)

TRV-16G—24fps
TRV-16G with genlock circuit 24fps, 5-blade shutter, mag/opt playback. Approx. 300,000 pixels color CCD pick-up. More than 370 TV lines horizontal.
8913 .......................... $4290.00

TRV-16G—15fps
Same as 8913, modified for 15fps, silent speed, 4-blade shutter.
8913-15 .................. . $4245.00

TRV-35G Genlock Converter
The TRV-35G has genlock capability and resolution of >370 horizontal lines. It will accept 2 or more video inputs and has dissolve and overlapping image capabilities.

The TRV-35G features a built-in zoom lens for close-ups, cropping and special effects. The unit is a 1-piece, self-contained professional heavy-duty slide mechanism in a diecast metal housing. The 1/2" 300,000 pixels color CCD video pickup is built into the machine. The converter uses a standard circular 80-slide tray.

The 6.5-16.25mm f/1.8 zoom lens is manually adjustable or can be power zoomed using an optional remote control. Both focus and iris are manually adjustable. Color tone is preset but can be manually manipulated using a joystick control.
8908 .............................. $3215.00

VMX-4 4-Channel Video Mixer
2 to 4 TRV-35Gs with a dissolve controller can be set up for a multi-image system with fade-in, fade-out and dissolve directly controlled by the VMX-4.
8774 .............................. $599.00
8598  RC-35G remote control ...................... 39.95
4191-2 T-3 timer, 2-30 second variable cycle. . . . 49.00

Prices and Specifications Subject to Change Without Notice.
TC400D 4-Channel TBC Controller With Memory
- Access up to 4 TBCs/D2 VTRs from a 1 RU panel
- Dedicated controls for video and chroma level, setup and hue
- Auto delegation follows switcher crosspoints
- Expand to multiple units with simple twisted-pair LAN
- Scene-by-scene storage with 100 memory registers for each TBC
- Serial interface for memory operations and register storage in EDL
- Direct replacement for most manual remote panels, no new cables to install
- Complete timing adjustments
- Programmable transitions between TBC setups
- Less expensive with more power than manual remotes
- AppleTalk® compatible LAN port for graphic interface and off-line storage on Apple Macintosh® computers

The TC400D provides full, independent control of the proc amp functions of up to 4 VTR time base correctors or D2 VTRs. Access to these functions adds great versatility in post-production. It allows the editor to quickly and easily adjust VTR outputs as needed. Memory registers provide scene-by-scene storage of TBC setups, making subsequent revision and frame-matching easily achieved. GPI and Editor interfaces provide frame-accurate access to transitions between registers. A larger TBC control system can be built using multiple TC400Ds which are connected by a LAN. The CP10, a remote panel, is also available for greater flexibility. Large and capable systems are easily achieved.

TC400D ............................................. $3000.00

UPGRADE1 Upgrade kit for TC400 controllers to add D2 capability. Includes new TBC control module and software. Kit is user installable .................... $750.00

MEM-OPT1 Battery backup option to provide retention of memory registers when power is lost .............. 100.00

ADPT1 Interface adaptor for Ampex TBCs, connects to remote connector of TBC-6 and TBC-7. Requires 15-conductor, D-type interface cable (wired pin to pin) to connect from TC400D to ADPT1 .......... 125.00

Archival Utility IBM PC interface to the TC400D with storage capability ................................. 125.00

CP10 Network Control Panel for TC400D
- Access any 10 machines in the system at 1 time
- Compact size. Half-rack width for mounting with waveform and vectorscopes
- Low profile. Less than 2.5" deep for flush console mounting
- Simple, twisted pair interconnect to TC400Ds
- Serial interface to edit controllers

The CP10 is a control panel for use with the TC400D and shares the same LAN capability of the TC400D. By simply connecting CP10s and TC400Ds along a simple twisted pair, a flexible and comprehensive TBC control system is formed.

The CP10 control panel is designed to be used in edit suites and tape QC positions. Each of the 10 control positions on the CP10 can be assigned to any TBC, D2 VTR or proc amp under control by a TC400D. At the beginning of a session machines are assigned to the 10 TBC select buttons using the alphanumeric display.

The CP10 features the same easy user interface of the TC400D. Front panel controls provide direct access to the proc amp functions of video and chroma levels, setup and hue of the selected TBC. Continuous rotation type controls make it easy to precisely adjust parameters. Any of the 100 memory registers in each machine can be used to save and restore settings.

Adjustment of timing and control of special functions is performed through a menu-driven display.

A full serial interface allows storage of TBC settings into the EDL of selected edit controllers.

CP10 .................................................... $2500.00

TBC/STUDIO CONTROLLER

Studio Controller for Macintosh/TC400D
Television Post Production
- Complete control over TC400D
- Graphic representation of control settings
- Works simultaneously with manual operation
- Off-line storage of TC400D registers to disk
- Numeric entry for precise adjustment
- MultiFinder® compatible

Studio Controller is a Macintosh application providing graphic interface to the functions of the TC400D. Control over video and chroma levels, setup, hue and system timing is directly accessible from a familiar user interface. Studio Controller brings any TC400D or an AppleTalk® LAN as close as your Mac.

Studio Controller ................................... $125.00

Interface Cables
Ensemble Designs can provide interface cable to a wide variety of analog and digital VTRs and TBCs. The TC400D can also be used to control frame synchronizers and proc amps. Among the manufacturers currently supported are: ADDA, Ampex, FOR-A, Forte', Grass Valley Group, Harris, Hotronic, I.DEN, Microtime, Panasonic, Sony, Tektronix and others. New interfaces are being added on a regular basis.

TBC/D2 Interface Cables
When ordering cables please specify the desired length, manufacturer and model number of the unit you wish to control.

Order Example: 1 15' cable for Sony DVR 10

<table>
<thead>
<tr>
<th>Cable Length</th>
<th>Price</th>
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<tbody>
<tr>
<td>15'</td>
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<tr>
<td>30'</td>
<td>$80.00</td>
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<tr>
<td>75'</td>
<td>$100.00</td>
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GPI Cables

To facilitate GPI interfaces, a cable with bare leads at 1 end, the other end connects to the GPI port of the TC400D or CP10.

Specify TC400D or CP10 when ordering GPI cables.

<table>
<thead>
<tr>
<th>GPI Cable Length</th>
<th>Price</th>
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<tbody>
<tr>
<td>15'</td>
<td>$40.00</td>
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<tr>
<td>30'</td>
<td>$60.00</td>
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<tr>
<td>75'</td>
<td>$80.00</td>
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Prices and Specifications Subject to Change Without Notice.
Time Code Readers
ES 453 SMPTE Time Code Reader is an eight-digit SMPTE Time Code Reader displaying Hours, Minutes, Seconds and Fractions. $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. $575.00
ES 458 "Smart" SMPTE Time Code Reader. The ES 458 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 458 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 comparisons of two SMPTE code locations. $385.00
ES 270 IRIG B 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. $425.00
ES 280 Audio Time Code Generator/Reader is a 10 Digit Audio Time and Code Generator/Reader, capable of laying down a serial BCD 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. $875.00
ES 968 is a multispeed bi-directional SMPTE time code reader which displays either the time data (hours, minutes, seconds and frames) or the eight user bit digits. A rear mounted terminal block allows selection of which data is displayed on the 2" orange LED display (seconds are 1" high). The unit receives the standard SMPTE time code through the rear mounted terminal block (E8L time code operation is available as an option). The unit will accept an input level between 100mV and 10V p-p and presents an input impedance of 2K ohm. It will track time code at speeds from 1/30th play speed to 20X play speed, in both forward and reverse. The unit features an on-time frame counter, error detection and correction, a drop-frame indicator and a display hold (available on terminal block). $945.00

720 Series Programmable Clocks, Timers and Time Code Readers
10 events occur on 10 isolated output channels, in the form of momentary relay contact closures. Latched outputs may be specified at the time of order. When latched, the next event to occur serves to "unlock" 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"D. One set of thumbwheels is required for each event. The standard 750 Series units are enclosed in 3 1/2"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.

Programmers
780 Series RAM Time Programmers are the most cost-effective way of programming more than eight events. They are flexible, easy to use, and 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.

ES 727 Contains a SMPTE Time Code Reader. Code is received through a rear-mounted female XLR connector. $1208.00

Prices and Specifications Subject to Change Without Notice.
Chaser™ 7000 Chase Synchronizer

- Time code based chase synchronizer
- Continually reads edit code from 2 tape machines, a master and a slave
- Maintains a predetermined time relationship between the 2 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 overall system stability is only limited by slave transport mechanics

The master and slave time code numbers are seldom the same, as the audio and video portions of a program are not always recorded at the same time. Even if they were, the same machines are rarely used for both recording and post production. The instantaneous position that the slave is displaced with respect to the master is called the offset. (Slave-Master = Offset). With Chaser, offsets can be entered over the complete 24-hour range, with a resolution of 1/100 of a TV frame.

2 different synchronization modes give Chaser tremendous flexibility. In ‘frame-sync’ mode, Chaser maintains absolute alignment of the time code numbers, including offset and sub-frame phasing. If tapes with disrupted time code or splices need to be synchronized, the user can select the ‘auto lock’ mode, to maintain only the relative phase between the 2 tapes without regard for absolute time code numbers. After initial synchronization using time code numbers, ‘auto-lock’ continues using only the frequency component of the code.

In synchronizer applications clean and symmetric time code is essential in order to sync-lock a tape transport with sub-frame precision, without degrading the wow and flutter specifications of the audio machine. Frequently inadequate time code reader circuits degrade the overall performance in an otherwise excellent piece of equipment. We have applied our extensive time code experience to ensure the best possible reader performance. If code dropouts occur, the slave is maintained at play speed, however it may drift slightly over a period of time. When code resumes, Chaser uses its slow re-sync mode to bring the slave back into synchronization without audible speed changes. The maximum re-sync rate is programmable by the user to suit his particular program content.

Sub-frame synchronization is achieved by monitoring time code phase and adjusting the capstan over a range of ±1% to ±10%. The maximum sub-frame synchronization rate is programmable by the user. It is vital that a synchronizer not corrupt program material due to sloppy transport coupling. Chaser utilizes complex digital filtering techniques and a capstan frequency synthesizer of extremely high resolution, adding less than 0.02% wow and flutter to the system. In audio for video work, a video reference is provided to Chaser and to the master. Slave synchronization is referenced to this video so that mechanical tolerances and code irregularities in the master are not passed on to the slave in the form of unwanted wow and flutter.

The optional parallel I/O interface provides synchronization and parking tallies as well as remote punch in/out and chase enable on a 9-pin connector. ATRs can now be integrated as slave recorders or sources on many editors that do not have available VTR control ports. (For editors with available ports use everzt Emulator.)

Chaser 7000 ............................................. $2950.00

7100 Emulator Audio Transport Interface

- Audio transport interface that integrates audio into the video edit suite
- Performs audio insert edits without hitting a VTR to synchronize the audio tape machine
- Simplifies 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 need 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

7100 Emulator Audio Transport Interface ............................................. $2950.00

4015 Film Footage Encoder

- 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 1RU high frame
- High resolution character generator/keyer
- Time and user bits presettable from front panel
- Parallel and serial remote control
- Supports both VITC or LTC
- Slaves LTC to LTC
- Slaves VITC to VITC
- Supports both VITC or LTC in auto mode or manual priority selection
- Jam-Sync modes with and without user bit transfer
- Adjustable LTC output level to +12dbm
- Keypad lock-out prevents unauthorized tampering

4015 Film Footage Encoder ............................................. $2950.00

Prices and Specifications Subject to Change Without Notice.
LD-2 Line Doubler and Bandwidth Expander
The LD-2 has 525-line, 2:1 interlaced, 59.94/50Hz video signals which are converted to 1050-line interlaced signals, thus making scanning lines virtually invisible. In addition, the LD-2 contains the most advanced motion detection circuitry available, which allows for full horizontal and vertical resolution display without artifacts.

The absence of visible scanning line structure, edge blurring or motion artifacts at the LD-2 outputs makes it an ideal companion for large screen video displays. Its crystal clear, artifact-free image delivers a "cinema-like" feeling from standard 525-line video sources.

The LD-2 utilizes proprietary bandwidth expansion and vertical detail processing techniques patented by Faroudja Laboratories. The use of these techniques delivers an image whose appearance is closer to an HDTV display than to 525-line displays.

LD-2 .......................................................$14,950.00

CFD-SN NTSC Precision Decoder
The CFD-SN 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 standards conversion.

The CFD-SN uses an active comb filtering method which leads to a much more effective suppression of color subcarrier dot crawl present with standard comb filter designs. In addition, the resultant image has no visible loss of resolution. The luminance bandwidth extends to 6MHz, making the CFD-SN the closest thing to true RGB possible.

Features of the CFD-SN includes unique chroma enhancement circuitry, which eliminates ringing and apparent loss of chroma bandwidth often associated with NTSC signals. In addition, it has 4-pin multi-DIN Y/C 3.58 input and output connectors to provide NTSC to Y/C 3.58 translation and Y/C 3.58 decoding to component and RGB. The decoding, in that case, does not mix Y and C and is free of crosscolor; chroma enhancement suitable for Y/C 3.58 or Hi8 applications is provided.

CFD-SN ......................................................$6,550.00

CTE-SN NTSC Encoder
The CTE-SN makes use of the process which pre-filters luminance and chrominance information prior to mixing, in order to avoid spectral overlap and artifacts; it is the only analog NTSC encoder on the market today which generates an NTSC signal, free of crosscolor and cross-luminance components. If the signal generated by the CTE-SN is decoded through the CFD-N/CFD-SN, the result is virtually indistinguishable from RGB.

The absence of artifacts and the excellent resolution of the CTE-SN gives a crystal clear, "film-like" quality to the NTSC image. Computer graphics can be recorded, manipulated or displayed under NTSC form without artifacts.

The CTE-SN will accept separate Y and C (S-VHS) signal inputs for encoding to superb NTSC images. It ensures the generation of superior S-VHS masters without any evidence of degradation. The CTE-SN will also provide an advanced black burst output for timing the RGB/component signal input device.

CTE-SN .....................................................$9,900.00

VHP Vertical and Horizontal Detail Processor
The Vertical and Horizontal Detail Processor (VHP), which uses a 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.

The main applications for use of the VHP are:

Cameras. Camera enhancers are often not effective for small details. VHP gives an extra "handle" to modify a camera look in a different way.

Video Tape Recorders. Cassette recorders often show a poor picture appearance (cartoon look) after 2 or 3 generations. VHP prevents the occurrence of this problem if used in the record mode, or corrects it if used in playback.

1" Videotape Recorders, in Stop and Slow Motion. 1" videotape recorders in stop or slow motion modes suffer from a lack of resolution in both the horizontal and vertical directions. VHP corrects both defects without introducing artifacts and makes a still frame virtually indistinguishable from a normal speed playback picture.

Video Projectors. Television projectors are quite different from TV sets in their usage, as the viewer often has little choice in selecting distance from the screen. VHP makes picture quality acceptable for all viewers; because it does not enhance edges, front row viewers will be satisfied with picture quality, while the H and V boosts will give last row customers an apparently sharp picture. In fact, VHP corrects, to a certain extent, the human eye loss of detail visibility, and an unconscious feeling of better picture quality will result from its use.

VHP-N NTSC standard ...........................................$2,400.00

VHP-P NTSC PAL/SECAM standard .......................$3,000.00

Prices and Specifications Subject to Change Without Notice.
F-Series Time Code Generator/Reader/Character Inserters

The F-Series is Fast Forward's line of rackmount longitudinal time code generator/reader/character inserters. The F22 is designed to handle most applications at minimum cost, including the added flexibility of SMPTE to MIDI conversion.

For more specialized environments, the F30 adds features like RS-422 serial computer control, a GPI output, EBU (25 frame) time code format, balanced audio and color framing.

F22 Time Code Generator/Reader/Character Inserter

Generator • Drop or non-drop frame longitudinal time code • Locks to video or syncs to internal crystal • Front panel pause button • Continuous jam sync function matches incoming code

Character Inserter • Time code is superimposed on video signal for “window dubs” or “burned in” copies • Display on/off, background on/off • Variable sizes • Window dub user bits • Combined display: user bits and time code simultaneously • Contrast adjustable from black on white to white on black

Reader • Forward and reverse, 1/30 to over 10 times play speed • Automatic error bypass • Regenerate function corrects waveform and phase errors • Generator with pause button

MIDI Time Code • Converts SMPTE time code to MIDI (Musical Instrument Digital Interface)

User Bits • Preset from front panel

Specifications
- Video input: 1.0V p-p, 75 ohm or high impedance. BNC • Video output: Character can be keyed onto the input signal. Unity gain amplification. When the F22’s power switch is off, the input signal loops through and bypasses termination. BNC
- Time code out: Adjustable from 0V to 4V p-p into high impedance. When the F22’s power switch is off, the input signal loops through to the output. Unbalanced, RCA • Time code in: Unbalanced, high impedance. Signal range from 500mV to 8V p-p. RCA
- MIDI time code out: Industry standard, 5-pin, 180°, circular DIN • Character Inserter: 4 character sizes. Contrast adjusts for white characters on black background. Position fully adjustable from front panel. Can display time code only or combination of time code and user bits. Front panel on/off • Power requirement: 110-120VAC, 50-60Hz • Dimensions: 1.75”H x 19”W x 6.25”L. Standard single unit rack size.

F22 .............................................. $995.00

F30 Time Code Generator/Reader/Character Inserter

SMPTE Longitudinal Time Code • Read: forward and reverse, 1/30 to over 10 times play speed • Generate with pause • Jam sync • Regenerate • Front panel pause button • Front panel on/off • Front panel on/off • Power requirement: 110-120VAC, 50-60Hz or 220-240VAC, 50-60Hz. Configured at factory, specify when ordering • Dimensions: 1.75”H x 19”W x 6.25”L. Standard single unit rack size.

F30 .............................................. $1495.00

P2 Time Traveller Portable SMPTE Time Code Generator/Reader/Character Inserter

- Simple, compact • Easy-to-read display • No batteries, draws power from portable VTR

Generator • Generates continuous time code slaved to camera’s trigger or free run independently of camera • Time code synced to video • Jam syncs to other SMPTE sources • Hours, minutes, seconds preset • Drop or non-drop frame SMPTE time code

Character Inserter • Superimposes time code on video for “window dub” copies

Reader • Reads and displays time code • Bi-directional 1/30 to over 10 times play speed

MIDI Time Code • Converts SMPTE time code to MIDI • Provides all functions you need to lock a MIDI sequencer to a VCR

RS-232 Serial Control • Control P2 Time Traveller from computer • 9-pin D-subminiature connector

Specifications
- Power requirement: Less than 50mA on 9-12V line sourced by VTRs battery or AC adaptor • 1/4" x 3/8" x 1/2" • Supplied cable gives BNC and RCA connectors • In-line 14-pin camera cable adaptor available

P2 Time Traveller .................................. $495.00

P1 SMPTE Time Code Generator/Reader

- Fits between a portable VTR and a camera using standard 14-pin camera connectors
- Eliminates the many cables required by stand-alone generators or readers • Simple, rugged, compact, easy to use • Recessed controls • No batteries, draws power from portable VTR

Generator • Normal mode generates continuous time code slaved to camera’s start and stop trigger • Free run mode generates continuous time code independently of camera starts and stops • Hours, minutes, seconds preset • Drop or non-drop frame SMPTE time code • Non-volatile memory retains time code when VTR power is lost

Reader • Reads and displays input time code • Generator continuously jam syncs to reader

Specifications
- Connections: Female and male standard 14-pin camera connectors. Works with both composite or S-VHS • Time code out: User selects XLR or RCA connector. Unbalanced, low impedance, factory set to XLR • Time code in: RCA jack, unbalanced, high impedance • Liquid crystal display: 8-position, shows either hours, minutes, seconds or minutes, seconds, frames. Also shows whether time code is drop or non-drop frame • Enclosures: High impact plastic. Measures 1.25"H x 1.25"W x 4"L. Weights 5 oz. • Power requirement: Minimal 25mA load on 9-12V line. Sourced by VTR’s battery

P1 ................................................ $795.00

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Prices and Specifications Subject to Change Without Notice.
## Rack Kits for JVC Products

<table>
<thead>
<tr>
<th>Model No.</th>
<th>For JVC Model(s)</th>
<th>Description</th>
<th># Rack Units Required</th>
<th>Rail Depth Required Between Front &amp; Rear Cabinet Rails</th>
<th>Mounts on (Front Rail or Front &amp; Rear)</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>RK8000</td>
<td>BRS800U</td>
<td>Rackslide Kit with Custom Ears/Handles</td>
<td>3</td>
<td>18&quot; - 28½&quot;</td>
<td>F &amp; R</td>
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<tr>
<td></td>
<td></td>
<td>Rackshelf with Custom Face Plate</td>
<td>4</td>
<td>24½&quot; - 26½&quot;</td>
<td>F &amp; R</td>
<td>$120.00</td>
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<tr>
<td>RK3200U</td>
<td>BP3200U</td>
<td>Custom Rack Kit</td>
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<td>12&quot;</td>
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<td>RK8400U</td>
<td>BPS300U</td>
<td>Rackshelf with Custom Face Plate</td>
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<td>24½&quot; - 26½&quot;</td>
<td>F &amp; R</td>
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<td>BR8400U</td>
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<td>RK57030</td>
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<td>BR7040U</td>
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<td>RK8000U</td>
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<td>BR8100U, BR8110U</td>
<td>Rackshelf with Custom Face Plate</td>
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<td>RK5800U</td>
<td>KRM800U, KRM820U</td>
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<td>RK909M</td>
<td>TM9U, TM915U</td>
<td>Dual Rackshelf for 2 TM9U/TM915U</td>
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<td>BP9U</td>
<td>TM915U</td>
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<td>RK9U(A)</td>
<td>TMR9U, TM915U</td>
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<td>14½&quot;</td>
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<td>Wave Form Adapter for Tektronix 500/Video Tek</td>
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<td>RK13U</td>
<td>TM13U</td>
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<td>$90.00</td>
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<td>RK14U</td>
<td>TMR14U, VMR140U</td>
<td>Custom Rackshelf</td>
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<td>15½&quot;</td>
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<td>$110.00</td>
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<td>RK1500U</td>
<td>TM1400SU</td>
<td>Rackshelf with Custom Face Plate</td>
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<td>16½&quot; - 26½&quot;</td>
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<td>RK190U</td>
<td>VMR190U</td>
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<td>19½&quot; - 24½&quot;</td>
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## Rack Kits for Panasonic Products

<table>
<thead>
<tr>
<th>Model No.</th>
<th>For Panasonic Model(s)</th>
<th>Description</th>
<th># Rack Units Required</th>
<th>Rail Depth Required Between Front &amp; Rear Cabinet Rails</th>
<th>Mounts on (Front Rail or Front &amp; Rear)</th>
<th>Price</th>
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</thead>
<tbody>
<tr>
<td>RK-P68SHF</td>
<td>AG6100, AG6200, AG6300, AG6450, AG6661, AG6810 AG6820</td>
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<td>RKS-P68</td>
<td>Custom Rackslide Kit</td>
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<td>18&quot; - 27¼&quot;</td>
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<tr>
<td>RKS-P68S5</td>
<td>AG6500</td>
<td>Rackslide Kit (Use with Panasonic Ears, which come with VTR)</td>
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<td>$115.00</td>
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<tr>
<td>RKS-P73SHF</td>
<td>AG7100, AG7110, AG7300</td>
<td>Rackshelf with Custom Face Plate</td>
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<td>17½&quot;</td>
<td>F</td>
<td>$120.00</td>
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<tr>
<td>RKS-P73</td>
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<td>18&quot; - 27¼&quot;</td>
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<td>RKS-P68S5</td>
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<td>AG7800</td>
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<td>17½&quot;</td>
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<td>RKS-575</td>
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<td>18&quot; - 27¼&quot;</td>
<td>F &amp; R</td>
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## Rack Kits for Sharp VCRs

<table>
<thead>
<tr>
<th>Model No.</th>
<th>For Sharp Model(s)</th>
<th>Description</th>
<th># Rack Units Required</th>
<th>Rail Depth Required Between Front &amp; Rear Cabinet Rails</th>
<th>Mounts on (Front Rail or Front &amp; Rear)</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>RK-RP30B</td>
<td>AX300, AX305, AX310</td>
<td>Custom Rack Kit</td>
<td>2</td>
<td>12½&quot;</td>
<td>F</td>
<td>$75.00</td>
</tr>
</tbody>
</table>

Prices and Specifications Subject to Change Without Notice.
VPS-500 Video Production System

- Combines all features and capabilities of a post-production video switcher with time base correction and digital effects
- Built-in 5.0MHz TBCs + V/C 443 (358) or composite inputs/outputs + 2 buses, 6 inputs plus black and color background + 12 wipe patterns + 6 fixed compression patterns with joystick positioning + ALT function changes the priority of A and B bus
- Auto center function + 3 digital slide patterns + Paint, mosaic, negative
- Field, frame and strobe freeze + 3 independent auto transition controls for mix effect, fade to black and DSK + Colorizer (background, border and DSK matte) + DSK (2 external key source inputs, 1 external key fill RGB input and internal color matte generator) + Auto transition, key invert and key mask functions + 4 DOC inputs, 4 advanced sync outputs + Advanced blackburst reference outputs + Optional independent TBC outputs from A bus and B bus + RS-422, GPI, AFV interfaces for edit control + Optional FXM-500 EXTRILT* effects memory stores 40 static commands and 230 effects

VPS-500CK Chroma Keyer

- Expands the capabilities of the VPS-500, allowing "over-the-shoulder" images to be keyed onto background video sources with sharp, clear edges and high resolution + Accepts external YPbPr or RGB inputs used to generate key signal and component insert signal + Built-in transcoder provides RGB or YPbPr input and output signals + Front panel controls

DVM-300 Digital Video Mixer

- All-digital 10-bit signal processing + Operators can develop their graphics in a 5-layer configuration that provides priority selection + 3 external key sources for titling and 2 video signals + Built-in background and fade generators + Operating modes include: cut, mix, wipe, Z-wipe, tear and split display + A variety of wipe patterns are created by combining 4H patterns and 4V patterns, adjustable in 12 steps + Up to 256 different character edges with soft and shadow adjustments can be implemented + Character flesh with variable speed adjustments + From a palette of 16 million colors, 3 colors can be preset for each input + Color gradation is selectable from control console + Either automatic, manual or trace transitions may be selected

*Price On Request
MF-3000 Multifex 3-D Digital Effects 
Generator/Time Base Corrector
* Provides both composite and Y/C input and output interfaces for use with U-Matic, S-VHS and other 4:3 and 16:9 systems
* A complete array of 3-D effects includes Z-axis spin, rotation and perspective plus curve and twist effects
* Over 100 X-Y-Z effects can be generated
* "Coin flip" effects can be programmed to show the same input on both sides
* All popular 2-D effects are provided including zoom up to 8X, paint, mosaic, post-rotation, freeze, freeze, and negative plus a variety of wipes and up to 16 different movement patterns
* 3 independently selectable sources — background video, foreground video A and foreground B — provide operational flexibility and an impressive array of effects
* 4:2:2 component processing
* Built-in infinite range TBC with 5.0MHz response and an adaptive comb filter for composite video inputs
* Full-frame memory of the TBC automatically phases sources to video system timing, even with non-synchronous VTRs
* The memory also provides storage for freeze-frame and freeze-field displays
* The Operator Control Console is easy to program and operate since all functions use color-coded panel switches that individually light up before the next operation, prompting the operator in selecting the next step
* Touch-key operation and the 3-axis joystick facilitate smooth operation
* Incremental cropping
* Dual input selection with automatic or manual operation
* Adjusted mosaic and post-rotation
* Variable border generation for horizontal and vertical size
* Internal anti-aliasing keyer for "ripple free" motion
* Expandable for channel operation
* Sequential event memory with easy "key point" identification
* Removable volatile memory card

Prices and Specifications Subject to Change Without Notice.

137
 Prices and Specifications Subject to Change Without Notice.
TBCs/FRAME SYNCHRONIZER/ DIGITAL EFFECTS

FA-220 Digital Time Base Corrector
With Freeze Frame
- Designed for use with 1/2" and 3/4" heterodyne VTRs
- Exclusive recursive filter, motion-compensated noise reduction for luminance and chrominance
- Auto Chroma Control (ACC) maintains correct chroma levels
- Chromacor® compensation circuitry corrects Y/C delay errors associated with S-VHS productions
- Wideband CCD comb filter ensures high resolution and picture quality
- Frame synchronizing full-frame memory eliminates correction range limitations and automatic picture freeze when poor quality input video signal is detected or input video is absent. $2950.00
FA-220MX Monochrome extended black and white TBC: $3750.00

FA-300 Digital Time Base Corrector With S-VHS
- Component processing with 4:1:1 sampling and 8-bit processed Y and C
- Universal compatibility: Y/C 358 as well as composite in and out
- Wideband CCD comb filter maintains high resolution and high quality pictures
- Frame memory eliminates correction range limitations
- Freeze functions: frame/field selectable; auto freeze by detecting absence of input signal; optional remote control allows setting freeze and strobe duration
- DOC (dropout compensation)
- Digital delay line for luminance signal can adjust luminance-to-chrominance delay with a high degree of accuracy
- ACC restores reduced chroma signal level to correct level at playback
- Black stretch enhances low level luminance input signals
- Chromacor Y/C delay compensation
- Optional remote control unit allows adjustment of output signal level and phase; controls freeze and switching between bypass and operate modes
- Optional dynamic tracking
- PCU-2 Remote control: $3150.00

FA-310 Digital Time Base Corrector
With 3-D Noise Reduction
- To provide optimized performance in processing 1/2" and 3/4" formats, the FA-310 uses an exclusive 3-step motion-compensated noise reduction for luminance and chrominance
- Recursive filter noise reduction increases output signal-to-noise ratio as much as 9dB with none of the resolution loss typically encountered with H and V dimension noise reduction
- Working in conjunction with the recursive filter and motion-compensated circuits that automatically eliminate the introduction of motion defects into the picture
- Adaptive comb filtering ensures 5.0MHz bandwidth for composite VCR sources; and for Y/C inputs, full-band channel and Rec. 601 4:2:2 processing for the highest possible resolution
- 1H Y delay circuit to correct vertical Y/C delay errors in the built-in dropout compensator, eliminating annoying tape dropouts
- Automatic chroma level control to compensate for varying or reduced chroma levels resulting from frequency response variations which may occur during record/playback
- DT option allows the FA-310 to process dynamic tracking VTRs without a glitch
- Composite video, Y/C 358, and YPbPb formats make the FA-310 a functional decoder, encoder and transcoder
- Top and bottom 4-bit data swap
- Automatic selection of color or B/W mode
- Built-in RS-170A standard sync signal generator with genlock
- For use with U-Matic SP
- Output signal-to-noise ratio up to 9dB with none of the loss in resolution typically associated with H and V dimension noise reduction
- Wideband comb filter
- Highly sensitive ALC circuit to minimize color distortions that might otherwise be introduced into the chroma during record/playback
- Each TBC incorporates full color frame memory, automatic picture freeze and digital dropout compensation
- Separate power supplies ensure high system reliability
- Common genlock for both channels provided in both internal and external modes of operation
- $6250.00

FA-425 Digital Time Base Corrector
- Automatic/manual full color frame or field picture freeze plus variable time interval freeze
- Corrects errors from 1/2" and 3/4" VTRs or any V-lock or non-V-lock source to produce standard NTSC signal
- Permits a full bandwidth TBC processing mode
- Fully digital DOC and built-in RS-170A standard sync signal generator with genlock
- For use with U-Matic SP
- PCU-2 Remote control
- $5300.00

FA-800 AUTOCOR™ Time Base Corrector/Frame Synchronizer
- Frame memory with automatic level control 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 freezes the last good video frame when the video input is interrupted
- Selectable video freeze or black signal output in automatic freeze mode
- Freeze 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 or B/W 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
- $5950.00
- RU-1 TBC rack slide kit
- RU-800 Remote control
- $110.00

Note: All For-A products are available in PAL standard. Call for pricing.

*U-Matic SP is a trademark of Sony Corp.

Prices and Specifications Subject to Change Without Notice.
Fostex

E-2 Stereo Master Recorder
- Has a third, center channel for SMPTE control
- 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 pinpoint precision
- When the pitch control is engaged a flashing warning light is displayed along with the exact percentage of speed deviation
- Gapless/seamless punch in and out
- Time readout changes to read percentage of tape speed when pitch control is touched
- 10 line adaptor with center track SMPTE, 7.5 and 15 ips standard
- Provides switchable LED display of absolute time and SMPTE time code, readout of program number, and the ability to write song start IDs, skip IDs, end IDs and re-number up to 799, which is the limit of the DAT format
- Other features include complete remote control of all front and rear panel functions, locate that can be addressed via program number, absolute time, or SMPTE time code
- Programmed play allows for unattended playback of audio for duping or A/V purposes and also includes repeat play
- Programmed play up to 99 songs in any order
- Built-in battery supplies auto backup for cue points, program play and repeat play
- Storage for 10 cue points with position #9 always storing the last "start" point
- 3,750.00

G-16S 16-Track Recorder With Integrated Synchronizer Capability and Dolby S Noise Reduction
- Built-in remote control
- Transport logic is smooth and quiet
- Time and memory display on front/remote panel
- Meters programmable to function 3 ways: permanent peak hold, peak reading and temporary peak hold
- Pitch control for variable speed adjustments ± 12% in both record and play
- MIDI controllable with optional 8330 synchronizer card
- Front panel control of 8330 card
- "Second Page" mode allows multi-function operation of individual command keys
- Up to 10 cue points
- Preroll, Auto locate, Auto play, Auto return, Zone limiting
- Tape reel zone limits
- Memory access
- 8,800.00

8330 Plug-in Card
- SMPTE time code generator/reader with a full chase synchronizer
- MIDI interface with MTC-1 functions
-EPROM option for Sony VTR emulation via RS-422 serial port
- For use with G-165/G-24S
- 11,000.00

G-24S 1" 24-Track Recorder With Integrated Synchronizer, Sony VTR Emulation and Dolby S Noise Reduction
- Built-in SMPTE controllable, MIDI controllable, transport functions can be controlled via MIDI—MTC-1 functions
- Sony VTR emulation: 8VU 950 and BVH 2000/3000 via the RS-422 serial port
- Includes 8310 system expansion board which supports not only different emulation modes, but also multiple editor specific modes
- Supports editors such as: GVG 141/151, CMX300, Ampex ACE 25/200, etc.
- Built-in remote control
- The entire front panel is removable, so you can control all functions
- Jog shuttle and spot erase
- Programmable meters, permanent peak hold, peak reading, and temporary peak hold—user adjustable
- Pitch control ±12%—in both record and play modes—with a separate on/off switch
- Front panel angle, position at ±30° or a 45° angle for operating ease, and for alignment at 90°
- Second page mode, multi-function operation of individual command keys
- Remote control foot switches available as options for punching in/out and for automatic locating
- Automation features: up to 10-point memory, preroll, auto locate, auto play, auto return, zone limiting, total memory access—verify or change
- 14,500.00

D-20 Digital Master Recorder
- SMPTE/EBU time code recording with IEC or Fostex format
- Comes complete with 8310 expansion card which includes Sony VTR emulation capabilities, as well as IEC time code format
- Performs audio assembly editing controllable from a video editor
- No black boxes needed—Optional 8320 system control unit plugs into the D-20 serial port
- Refresh time code
- Off-the-tape monitoring
- Slave capability
- Variable speed control
- Automatic locate
- Switchable LED display of absolute time and SMPTE time code
- Readout of program number
- Ability to write song start IDs, skip IDs, and IDs and re-number up to 799 (the DAT format unit)
- Repeat and auto play can be addressed using A-time or SMPTE time code for locations
- Variable speed ± 10% in 0.1% increments
- Programmed play allows unattended playback of audio for duping or A/V purposes
- Buffered RS-422 serial port for communicating with other devices
- Programmed play up to 99 songs in any order
- Built-in battery supplies auto backup for cue points, program play and repeat play
- Storage for 10 cue points with position #9 always storing the last "start" point
- 8,800.00

8320 System Control Unit
- Provides switchable LED display of absolute time and SMPTE time code, readout of program number, and the ability to write song start IDs, skip IDs, and IDs and re-number up to 799, which is the limit of the DAT format
- Other features include complete remote control of all front and rear panel functions, locate that can be addressed via program number, absolute time, or SMPTE time code
- Programmed play allows for unattended playback of audio for duping or A/V purposes and also includes repeat play
- 8,800.00

Accessories
8440 Cable for 80/20, R8 and E Series
- 100.00
MN-50 Compressor/fine mixer (5 x 1)
- 70.00
TT-15 Test tone oscillator
- 48.00
TS-15 FSK tape sync unit for drum mach/sequencer
- 53.00
8700 SMPTE time code generator
- 210.00
9007B "7" black metal tape up reel
- 11.00
3011 Normalled patch bay
- 100.00
HD-10 Professional head demagnetizer
- 31.50
CT-6 C-60 cassette, best quality with track chart
- 6.00
WR-1 Wood rack for recorders
- 175.00
9930 1/4" editing block
- 18.00
9931 1/2" editing block
- 26.00

R8 Multi-track Recorder
- 8 track with Dolby C
- Built-in remote
- MIDI control with MTC-1, optional
- Computer ready to interface with MIDI or SMPTE automation
- Entire front panel is removable for control of all functions
- Time and memory display on remote panel
- Meters are programmable
- Three modes of operation: permanent peak hold, peak reading and temporary peak hold
- Fine mode reads 1dB increments
- Programs up to 10 memory points
- Preroll, auto locate, play and return
- Zone limiting
- Tape reel zone limits
- Memory access
- 2,800.00
- MTC-1 MIDI to serial adaptor
- 350.00

Prices and Specifications Subject to Change Without Notice.
SMPE TIME CODE EQUIPMENT / AUTOIMATED MEDIA EDITOR

4000 Series SMPE Time Code Equipment
- Truly contemporary hardware is software based. All 4000 Series products are designed for easy upgrades with socketedEPROMs
- 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, SMPE to MIDI or any combination of all the above.

4010 Time Code Generator/Reader
- Multi-format: generates, reads and regenerates all formats of SMPE/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, synchronote, 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 one frame ahead or the actual current frame
- Electronic event memories
- Generates user bits and hex
- Reads user bits and hex
- True regeneration
- Jam (with sync 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 upgradeable
- Serial data port

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

4020 SMPE/MIDI Event Controller
- 999 events can be programmed
- Built-in SMPE time code generator
- Real time control possible via MIDI instead of using event set-up
- Built-in wide-band reader provides readable SMPE time code speed range from 1/10 to 100 times play speed in both forward and reverse
- Also accepts MIDI message for control
- Two RS-422 serial ports are included for "chaining" 4020s together.
- Serial port
- #1 is normally used for controlling VTRs and ATRs, while #2 is normally used for external control of the 4020.
- These are DB-9 connectors
- F.A.M.E. Support
- Software version 1.7 of the audio/video editing program has screen support for the 4020 so that all aspects of your editing process can be controlled from one console
- "Time" information can be supplied to the 4020 by any of the following: SMPE (with or without tach and direction), MIDI time code, tach and direction, and internal clock

4030 Synchronizer
- Synchronizes up to four machines (one master and three slaves)
- Fast lock-up
- Interfaces to most brands of video and audio tape recorders
- Synchronizes to within 1/2" 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
- 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
- Does not include cables or interfaces

4035 Controller
- Sophisticated remote controller for the 4030
- 10-position auto-locate
- 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 rehearsal 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 editor using bi-phase sync pulses with the addition of the 8710 interface
- 8710 interface contains software to designate each 4030 as slave 1, 2, or 3

4050 MIDI Synchronizer/Autolocator
- Sync MIDI to SMPE, the universal timing standard, with built-in SMPE/MIDI generator
- Automatic punch-in/out with Rehearsal and Take modes
- Complete autolocate for Fostex models 20, 80 and E-Series
- Autolocate to a SMPE 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
- Does not include cable

F.A.M.E. Fostex Automated Media Editor
- Software application for controlling video and/or audio recorders via the 4030 synchronizers from an IBM PC or compatible computer
- Allows audio editing via the EDL on the computer display
- Up to 500 takes and event data for each machine can be stored on the disk
- By swapping the edit in/out and offset data of 4030, F.A.M.E. can execute the sequence of event takes automatically
- Assign a name or description to each event or take
- Print out the EDL data list
- Use up to three slaves (you need one 4030 for each slave and interface)
- Edit all the list at a glance

F.A.M.E. For Macintosh SE or better
- Hard disk system

F.A.M.E. For IBM PCs and clones

Prices and Specifications Subject to Change Without Notice.
Mini-Fill Lights
- Extremely lightweight—only 12 oz. • Compact size—2" x 41/4" • 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-lighthead configuration from one power source • Rugged construction—Built by Frezzolini®—the world leader in portable lighting and power

Single Light Configuration (includes 100W or 75W bulb)
MF-12P Mini-Fill w/cigarette lighter plug $175.00
MF-12C Mini-Fill w/30V battery plug $175.00
MF-12V Mini-Fill w/Frezzi amp connector $175.00
MF-AX Mini-Fill w/XLR-5 connector $175.00
MF-5X Mini-Fill w/XLR-5 connector $175.00
MF-12PT Mini-Fill w/power tap connector $225.00
MF-30 Mini-Fill w/2 pin amphenol connector for 30V operation (includes 80W bulb) $180.00

Dual Light Configuration
DMF-12 Twin Mini-Fill interconnected for power from one (1) source. Choice of power connectors: Sony BP-90 In-Line, Frezzi®-Amp, XLR-4/5 or cigarette lighter type $335.00
DMF-30 Same as DMF-12 except wired for 30V operation including 2 pin amphenol connector $345.00

Uni-Fill NP-1(A) Powered Mini-Fill Light
- Self-contained • Portable • Up to one hour of operation with single NP-1 battery • Lamp type: 20W • Weight: 12 oz. • Nickel Cadmium batteries: NP-1(A) in-line NP-1(A) holder, 3" light post, diffused front glass and BAB (20W) lamp $225.00
MFDF-1H Replacement LED 1AH battery for Sony NP-1(A) $95.00
MFFC Custom carrying/shipping case $165.00

MFK-90 Professional Mini-Fill Kit
- (1) MF-12C Mini-Fill Lighthead with integral NP-1(A) holder, 3" light post, diffused front glass and BAB (20W) lamp $225.00
- MFDF-1H Flip-up dichroic filter $95.00
- FNP-1HC Replacement 1.5AH battery for Sony NP-1(A) $165.00
- MFFC Custom carrying/shipping case $165.00

9807 ML Bracket With LS-1 Stud
- Designed for all-purpose mounting clamp • Adjustment knob • Tapered moving jaws • High-density plastic • Easy to clamp to any camera handle $85.00

Camera Mounted Lite/Mic Holders
LS-1 Lite-Stud, 3" x 1/4", 1/4-20 thread $27.00
LS-1A Lite-Stud, 1/2" x 1/4", 1/4-20 thread $27.00
LS-21 Lite-Stud, 3" shoe type $31.00

Frezzi On-Board® Battery Packs
"Superior to Camera Manufacturer-Supplied"
Features: Extended Life With No Memory
- Battery mounts directly to camera manufacturer-supplied Anton/Bauer bracket or optional Frezzolini mounting bracket • No cables or modification required • Full 4H-5AH capacity—only premium selected NiCad cells used • Lightweight 2-3AH models available • Custom-designed mounting brackets available • Rugged welded aluminum case • Internal fuse and thermal protection • Spare fuse included for field replacement • Charge compatibility with camera manufacturer-supplied battery systems or Frezzolini fast, overnight or multiple battery chargers

FBP-90/FBP-90FC Frezzi Premium-Grade Direct Replacement for Sony BP-90 Battery Packs
- Full 4H-5AH 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 lighthheads • Weight: 3.5 lbs. • Complete charge compatibility with: Sony BC-210 charger; Frezzi BC-120S overnight charger; Frezzi MBC-6 6-cell charger; Frezzi BC-70U 1 hr. fast charger w/HV fast-charge adapter cable; plus other Frezzi fast/slow multi-battery charging stations

FREZZOLIN FBP-90 Battery Packs
BP-90 4AH, 12V $265.00
BP-12 4AH, 12V $285.00
BP-13 3AH, 13.2V $135.00
BP-123 3AH, 12V $315.00
BP-125 5AH, 12V $545.00
BP-14 5AH, 12V $180.00
BP-143 4AH, 13.2V $315.00
BP-142 3AH, 14.4V $345.00
BP-149 2AH, 12V $225.00
BP-141 1AH, 14.4V $175.00

Frezzi NP-1 Type Batteries
Computer verified premium high capacity in-board battery. NP-1A premium battery replacement.
FNP-1HC 12V, 1.8AH $95.00
FNP-1M 12V, 3AH $215.00
FNP-1B 12V, 5AH $315.00
FNP-1S 12V, 5AH $330.00

Frezzi On-Board® Battery Packs
- Single Light Configuration $225.00
- Dual Light Configuration $335.00
- Uni-Fill NP-1(A) Powered Mini-Fill Light $95.00
- MFK-90 Professional Mini-Fill Kit $165.00
- Camera Mounted Lite/Mic Holders $85.00
- Frezzi Battery Packs $205.00

Prices and Specifications Subject to Change Without Notice.
### MICROCOMPUTER CHARGERS

#### MICROMASTER SERIES
- Fully automatic
- Fast charge/balancer
- Maintains charge
- Auto cutoff—leave batteries on indefinitely

**9526 Micromaster**
- 100-260VAC, 50-60Hz
- 2.5 lbs.
- Fast charge capability of NP-1(A): 1 in 20 min.; BP-90: 1 in 60 min.; BP-13/14*: Pro Pac 13/14: 1 in 60 min.
- Voltage/amp hour range: Any 6-15V, 1.5-12AH
- $850.00

**9730 Dual Micromaster**
- Dual channel: 100-260VAC, 50-60Hz
- 4 lbs.
- Fast charge capability of NP-1(A): 2 in 20 min.; BP-90: 2 in 60 min.; BP-13/14*: Pro Pac 13/14: 2 in 60 min.
- Voltage/amp hour range: Any 2-6-15V, 1.5-12AH
- $1400.00

#### MC2 QUADMASTER SERIES
- Selectable
- Fully automatic
- Fast charge (sequentially)
- Computer-controlled
- Any mix of packs/belts

**9720 MC2**
- 7 lbs.
- Fast/slow charge capability of NP-1(A): 1 in 20 min./4 in 80 min. (total sequentially)
- BP-90: 1 in 60 min./4 in 240 min.; BP-13/14*: Pro Pac 13/14: 4 in 240 min.
- Voltage/amp hour range: Any 8-6-15V, 1.5-12AH
- $1695.00

**9722 MC2**
- Same as 9720 except 12VDC input (vehicle)
- $1695.00

**9724 DC**
- Same as 9720 with hard-mounted NP-1 bracket
- $1695.00

**9722DC**
- 12VDC input (vehicle) version
- $1695.00

#### SC2 Battery Management System
- 8-channel/revitalization
- Fully automatic
- Fast/slow revitalize
- 2 at a time
- 2 independent modes

**9704**
- $2200.00

#### SPEEDCHARGE 6000 SERIES
- Widest range
- Fully automatic
- Fast/slow/revitalize
- Any mix of packs/belts
- Computer-controlled
- 100-260VAC, 50-60Hz

**6000SM Speedcharger**
- 11.4 lbs.
- Fast charge capability of NP-1 (A): 1 in 20 min.; BP-90: 1 in 60 min.; BP-13/14*, Pro Pac 13/14: 1 in 60 min./8 in 480 min.
- Voltage/amp hour range: Any 8-6-30V, 1.5-12AH
- $1675.00

**6000 Sequencer**
- 8-channel
- 22 lbs.
- Fast charge capability of NP-1 (A): 8 in 160 min. (total sequentially)
- BP-90: 8 in 480 min. (total sequentially); BP-13/14*: Pro Pac 13/14: total sequentially
- Voltage/amp hour range: Any 8 6-30V, 1.5-12AH sequentially
- $1075.00

**All models equipped with BP-90 sockets and any combination of brackets:** Paglok, Snap-On or NP-1 (A).

*Specify Snap-On brackets in place*

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**Prices and Specifications Subject to Change Without Notice.**

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### Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>9501/1</td>
<td>Micromaster shipping case</td>
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<tr>
<td>9501/3</td>
<td>Dual Micromaster shipping case</td>
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<td>9501/2</td>
<td>MC2 shipping case</td>
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<td>9501/4</td>
<td>SC2 shipping case</td>
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<td>9501/6</td>
<td>SF1 shipping case</td>
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<td>9455F</td>
<td>BP-90 to XLR-4(M) charge adaptor</td>
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<tr>
<td>9455/(5IF)</td>
<td>BP-90 to XLR-5(M) charge adaptor</td>
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<td>9458F</td>
<td>BP-90 to &quot;Snap-On&quot; clip charger adaptor</td>
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<tr>
<td>9468F</td>
<td>BP-90 to Steadicam plug</td>
<td>$60.00</td>
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<tr>
<td>9514</td>
<td>BP-90 to Peglok charger adaptor</td>
<td>$48.00</td>
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<tr>
<td>9578F</td>
<td>BP-90 to Panasonic AG BP-212 battery adaptor</td>
<td>$58.00</td>
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<tr>
<td>8576F</td>
<td>BP-90 to NP-1(A) charger adaptor</td>
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<tr>
<td>9517</td>
<td>Converts Paglok charger/camera end to accept A/B</td>
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<td></td>
<td>batteries</td>
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<tr>
<td>9518</td>
<td>Converts A/B camera end to accept</td>
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<td></td>
<td>Paglok batteries</td>
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<tr>
<td>9516F</td>
<td>Paglok NP-1(A) holder</td>
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<td>9469</td>
<td>Speedcharge 6000/sequencer stacking bracket</td>
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<td>9599</td>
<td>Speedcharge 6000/BP-90 to 2-pin AMP, amphenol</td>
<td>$50.00</td>
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<tr>
<td></td>
<td>connector (for 30V belt)</td>
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</table>

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*Note: Prices and specifications subject to change without notice.*
# Fujinon ENG/EFP CCD Lenses

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Focal Length</th>
<th>Zoom Ratio</th>
<th>Extender</th>
<th>Maximum Aperture Ratio</th>
<th>M.O.D.</th>
<th>Object Dimensions At M.O.D.</th>
<th>Angular Field Of View</th>
<th>Macro</th>
<th>Size</th>
<th>Weight (w/o Lens Hood)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A4x7.5RH/MD</td>
<td>7.5 ~ 30mm</td>
<td>4x</td>
<td>-</td>
<td>f/2.8</td>
<td>0.45m</td>
<td>7.5mm 572.3 x 429.3mm</td>
<td>22mm 143.1 x 107.3mm</td>
<td>20mm 80°48' x 57°30'</td>
<td>119mm</td>
<td>0.75kg</td>
</tr>
<tr>
<td>A8x.12RH/MD</td>
<td>12 ~ 96mm</td>
<td>8x</td>
<td>-</td>
<td>f/2.8</td>
<td>1m</td>
<td>12mm 698.4 x 523.9mm</td>
<td>96mm 87.3 x 65.5mm</td>
<td>12mm 40°16' x 30°45'</td>
<td>103mm</td>
<td>0.7kg</td>
</tr>
<tr>
<td>A8.5x5.5RMR/ER</td>
<td>5.5 ~ 47mm</td>
<td>8.5x</td>
<td>-</td>
<td>f/1.7</td>
<td>0.3m</td>
<td>5.5mm 492 x 369mm</td>
<td>47mm 57.9 x 43.4mm</td>
<td>5.5mm 77°19' x 61°55'</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>A8.5x5.5RMR/ER</td>
<td>(1x) 5.5 ~ 47mm</td>
<td>(1.7x) 9.4 ~ 80mm</td>
<td>8.5x</td>
<td>1.7x</td>
<td>f/1.7</td>
<td>0.3m</td>
<td>5.5mm 492 x 369mm</td>
<td>47mm 57.9 x 43.4mm</td>
<td>5.5mm 77°19' x 61°55'</td>
<td>with</td>
</tr>
<tr>
<td>A16x9.5RMR</td>
<td>9.5 ~ 152mm</td>
<td>16x</td>
<td>-</td>
<td>f/2.3</td>
<td>0.95m</td>
<td>9.5mm 817 x 613mm</td>
<td>152mm 51 x 38mm</td>
<td>9.5mm 49°42' x 38°19'</td>
<td>235mm</td>
<td>1.93kg</td>
</tr>
<tr>
<td>A16x9.5RMR</td>
<td>(1x) 9.5 ~ 152mm</td>
<td>(2x) 19 ~ 304mm</td>
<td>16x</td>
<td>2x</td>
<td>f/2.3</td>
<td>0.95m</td>
<td>9.5mm 817 x 613mm</td>
<td>152mm 51 x 38mm</td>
<td>9.5mm 49°42' x 38°19'</td>
<td>with</td>
</tr>
<tr>
<td>A14x8.5RMR</td>
<td>(1x) 8 ~ 112mm</td>
<td>(2x) 16 ~ 224mm</td>
<td>14x</td>
<td>2x</td>
<td>f/2.1</td>
<td>0.7m</td>
<td>8mm 885.6 x 664mm</td>
<td>112mm 83.4 x 7mm</td>
<td>8mm 57°37' x 44°50'</td>
<td>237mm</td>
</tr>
<tr>
<td>A14x8.5RMR/ERD</td>
<td>(1x) 8.5 ~ 119mm</td>
<td>(2x) 17 ~ 238mm</td>
<td>14x</td>
<td>2x</td>
<td>f/2.0</td>
<td>0.8m</td>
<td>8.5mm 777 x 583mm</td>
<td>119mm 44.1 x 37mm</td>
<td>8.5mm 54°44' x 42°26'</td>
<td>with</td>
</tr>
<tr>
<td>A18x8.5RMR/ERD</td>
<td>(1.8) 8 ~ 153mm</td>
<td>(2) 17 ~ 306mm</td>
<td>18x</td>
<td>2x</td>
<td>f/2.3</td>
<td>0.2m</td>
<td>8.5mm 878 x 657mm</td>
<td>163mm 49 x 37</td>
<td>8.5mm 54°44' x 42°26'</td>
<td>with</td>
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<tr>
<td>A24x11.5ERD</td>
<td>(1x) 11.5 ~ 276mm</td>
<td>(2x) 23 ~ 552mm</td>
<td>24x</td>
<td>2x</td>
<td>f/2.7</td>
<td>1.8m</td>
<td>11.5mm 1268 x 972mm</td>
<td>276mm 54 x 40.5mm</td>
<td>11.5mm 41°52' x 32°10'</td>
<td>with</td>
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<tr>
<td>A24x16.5ERD</td>
<td>(1x) 16.5 ~ 400mm</td>
<td>(2x) 33 ~ 800mm</td>
<td>24x</td>
<td>2x</td>
<td>f/3.9</td>
<td>1.8m</td>
<td>16.5mm 903.3 x 677.5mm</td>
<td>400mm 37.3 x 27.9mm</td>
<td>16.5mm 29°51' x 22°37'</td>
<td>with</td>
</tr>
</tbody>
</table>

### Fujinon ENG/EFP CCD Lenses

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Focal Length</th>
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<th>Maximum Aperture Ratio</th>
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<th>Macro</th>
<th>Size</th>
<th>Weight (w/o Lens Hood)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S4x5.5R/MD</td>
<td>5.5 ~ 22mm</td>
<td>4x</td>
<td>-</td>
<td>f/2.0</td>
<td>0.45m</td>
<td>5.5mm 572.3 x 429.3mm</td>
<td>22mm 143.1 x 107.3mm</td>
<td>22mm 80°48' x 57°30'</td>
<td>124mm</td>
<td>0.75kg</td>
</tr>
<tr>
<td>S8x.8R/MD</td>
<td>8.8 ~ 70mm</td>
<td>8x</td>
<td>-</td>
<td>f/2.0</td>
<td>1m</td>
<td>8.8mm 692.7 x 519.9mm</td>
<td>70mm 87.1 x 65.3mm</td>
<td>8.8mm 54°56' x 30°30'</td>
<td>108mm</td>
<td>0.7kg</td>
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<tr>
<td>S8.5x4.2RMR/ER</td>
<td>4.2 ~ 36mm</td>
<td>8.5x</td>
<td>-</td>
<td>f/1.4</td>
<td>0.3m</td>
<td>4.2mm 469.3 x 351mm</td>
<td>36mm 55.1 x 41.3mm</td>
<td>4.2mm 74°35' x 59°29'</td>
<td>219mm</td>
<td>1.79kg</td>
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<tr>
<td>S8.5x4.2RMR/ERD</td>
<td>(1x) 4.2 ~ 36mm</td>
<td>(1.7x) 7.1 ~ 60mm</td>
<td>8.5x</td>
<td>1.7x</td>
<td>f/1.4</td>
<td>0.3m</td>
<td>4.2mm 469.3 x 351mm</td>
<td>36mm 55.1 x 41.3mm</td>
<td>4.2mm 74°35' x 59°29'</td>
<td>with</td>
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<tr>
<td>S14x8.2ER/ RMR/ERD</td>
<td>(1x) 8.2 ~ 87mm</td>
<td>(2x) 12.4 ~ 174mm</td>
<td>14x</td>
<td>2x</td>
<td>f/1.6</td>
<td>0.7m</td>
<td>6.2mm 830.6 x 623mm</td>
<td>87mm 59.4 x 44mm</td>
<td>8.2mm 54°36' x 42°18'</td>
<td>241.5mm</td>
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<td>S14x8.4ER/ RMR/ERD</td>
<td>(1x) 8.4 ~ 90mm</td>
<td>(2x) 12.8 ~ 180mm</td>
<td>14x</td>
<td>2x</td>
<td>f/1.4</td>
<td>0.8m</td>
<td>6.4mm 761.5 x 636mm</td>
<td>90mm 54.4 x 40mm</td>
<td>6.4mm 53°08' x 41°07'</td>
<td>with</td>
</tr>
<tr>
<td>S16x7R</td>
<td>7 ~ 112mm</td>
<td>16x</td>
<td>-</td>
<td>f/1.4</td>
<td>0.95m</td>
<td>7mm 812 x 609mm</td>
<td>112mm 51 x 38mm</td>
<td>7mm 40°09' x 37°51'</td>
<td>160mm</td>
<td>1.3kg</td>
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<tr>
<td>S16x7R</td>
<td>(1x) 7 ~ 112mm</td>
<td>(2x) 14 ~ 224mm</td>
<td>16x</td>
<td>2x</td>
<td>f/1.4</td>
<td>0.96m</td>
<td>7mm 806 x 605mm</td>
<td>112mm 51 x 38mm</td>
<td>7mm 40°09' x 37°51'</td>
<td>with</td>
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<tr>
<td>S18x8.4ER/ RMR/ERD</td>
<td>(1x) 8.4 ~ 115mm</td>
<td>(2x) 12.8 ~ 230mm</td>
<td>18x</td>
<td>2x</td>
<td>f/1.4</td>
<td>0.8m</td>
<td>6.2mm 876 x 657mm</td>
<td>112mm 47.3 x 35mm</td>
<td>6.2mm 53°08' x 41°07'</td>
<td>with</td>
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<tr>
<td>S24x8.8ERD</td>
<td>(1x) 8.8 ~ 211mm</td>
<td>(2x) 17.6 ~ 422mm</td>
<td>24x</td>
<td>2x</td>
<td>f/2.1</td>
<td>1.8m</td>
<td>8.8mm 1321.8 x 823.9mm</td>
<td>211mm 51.4 x 38.5mm</td>
<td>8.8mm 39°58' x 30°30'</td>
<td>with</td>
</tr>
</tbody>
</table>

Prices and Specifications Subject to Change Without Notice.
## CCD LENSES

### 2/3" EFP CCD Lenses

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Focal Length</th>
<th>Zoom Ratio</th>
<th>Extender</th>
<th>Maximum Aperture</th>
<th>Iris Range</th>
<th>M.O.D.</th>
<th>Object Dimensions</th>
<th>Angular Field Of View</th>
<th>Macro</th>
<th>Size (mm)</th>
<th>Weight (w/o Lens Hood)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A15x8BESM</td>
<td>(1) 8 ~ 120mm</td>
<td>15x 2x</td>
<td>f/1.5</td>
<td>0.58m</td>
<td>8mm 18mm</td>
<td>0.5mm</td>
<td>9mm 81mm</td>
<td>57°44'</td>
<td>Avail.</td>
<td>228x238x438</td>
<td>13kg</td>
</tr>
<tr>
<td>A18x8BESM</td>
<td>(1) 8 ~ 144mm</td>
<td>2x</td>
<td>f/1.5</td>
<td>0.58m</td>
<td>8mm 81mm</td>
<td>0.5mm</td>
<td>144mm 35mm</td>
<td>57°44'</td>
<td>Avail.</td>
<td>228x238x438</td>
<td>13kg</td>
</tr>
<tr>
<td>A20x7ESM</td>
<td>(1) 7 ~ 140mm</td>
<td>2x</td>
<td>f/1.4</td>
<td>0.5m</td>
<td>7mm 100mm</td>
<td>0.5mm</td>
<td>140mm 22mm</td>
<td>64°15'</td>
<td>Avail.</td>
<td>228x238x480</td>
<td>15.8kg</td>
</tr>
<tr>
<td>A34x10ESM</td>
<td>(1) 10 ~ 340mm</td>
<td>2x</td>
<td>f/2.4</td>
<td>1.8m</td>
<td>10mm 100mm</td>
<td>0.5mm</td>
<td>340mm 33mm</td>
<td>64°15'</td>
<td>Avail.</td>
<td>228x238x438</td>
<td>13kg</td>
</tr>
<tr>
<td>A34x20.5ESM</td>
<td>20.5 ~ 700mm</td>
<td>3x</td>
<td>f/2.4</td>
<td>3m</td>
<td>20.5mm 100mm</td>
<td>0.5mm</td>
<td>700mm 150mm</td>
<td>24°18'</td>
<td>Avail.</td>
<td>263x256x657</td>
<td>18.8kg</td>
</tr>
<tr>
<td>A44x8.5ESM</td>
<td>8.5 ~ 420mm</td>
<td>2x</td>
<td>f/1.4</td>
<td>2.2m</td>
<td>9.5mm 100mm</td>
<td>0.5mm</td>
<td>420mm 32mm</td>
<td>42°16'</td>
<td>Avail.</td>
<td>228x238x492</td>
<td>14.6kg</td>
</tr>
<tr>
<td>A55x9.5ESM</td>
<td>9.5 ~ 525mm</td>
<td>2x</td>
<td>f/2.9</td>
<td>0.3m*</td>
<td>9.5mm 205mm</td>
<td>0.5mm</td>
<td>525mm 28mm</td>
<td>42°16'</td>
<td>Avail.</td>
<td>240x240x561</td>
<td>18.4kg</td>
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</tbody>
</table>

*With Macro

### 1/2" CCD Studio and Field Lenses

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Focal Length</th>
<th>Zoom Ratio</th>
<th>Extender</th>
<th>Maximum Aperture</th>
<th>Iris Range</th>
<th>M.O.D.</th>
<th>Object Dimensions</th>
<th>Angular Field Of View</th>
<th>With Extender</th>
<th>Size (mm)</th>
<th>Weight (w/o Lens Hood)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S15x8BESM</td>
<td>(1) 8 ~ 90mm</td>
<td>16x 2x</td>
<td>f/1.4</td>
<td>0.58m</td>
<td>8mm 90mm</td>
<td>0.5mm</td>
<td>90mm 54mm</td>
<td>58°64'</td>
<td>228x228x469</td>
<td>13.3kg</td>
<td></td>
</tr>
<tr>
<td>S18x8BESM</td>
<td>(1) 8 ~ 108mm</td>
<td>2x</td>
<td>f/1.4</td>
<td>0.58m</td>
<td>8mm 108mm</td>
<td>0.5mm</td>
<td>108mm 43mm</td>
<td>65°28'</td>
<td>228x228x469</td>
<td>13.3kg</td>
<td></td>
</tr>
<tr>
<td>S20x5.4ESM</td>
<td>5.4 ~ 108mm</td>
<td>2x</td>
<td>f/1.4</td>
<td>0.5m</td>
<td>5.4mm 108mm</td>
<td>0.5mm</td>
<td>108mm 33mm</td>
<td>65°28'</td>
<td>228x228x513</td>
<td>16.8kg</td>
<td></td>
</tr>
<tr>
<td>S34x8BESM</td>
<td>(1) 8 ~ 272mm</td>
<td>34x 2x</td>
<td>f/1.4</td>
<td>1.8m</td>
<td>8mm 272mm</td>
<td>0.5mm</td>
<td>272mm 39mm</td>
<td>65°28'</td>
<td>228x228x469</td>
<td>13kg</td>
<td></td>
</tr>
<tr>
<td>S44x7.3ESM</td>
<td>7.3 ~ 32mm</td>
<td>44x 2x</td>
<td>f/1.4</td>
<td>2.2m</td>
<td>7.3mm 32mm</td>
<td>0.5mm</td>
<td>32mm 22mm</td>
<td>65°28'</td>
<td>228x228x525</td>
<td>15kg</td>
<td></td>
</tr>
<tr>
<td>S65x7.3ESM</td>
<td>7.3 ~ 405mm</td>
<td>56x 2x</td>
<td>f/1.4</td>
<td>2.4m</td>
<td>7.3mm 405mm</td>
<td>0.5mm</td>
<td>405mm 28mm</td>
<td>65°28'</td>
<td>240x240x504</td>
<td>17.5kg</td>
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</tr>
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</table>

*With Macro

### 2/3" Format Teleconferencing Lenses

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Focal Length</th>
<th>Zoom Ratio</th>
<th>Maximum Aperture</th>
<th>Iris Range</th>
<th>M.O.D.</th>
<th>Iris Control</th>
<th>Field Angle Horizontal</th>
<th>Field Angle Vertical</th>
<th>Front Thread</th>
<th>Weight (w/o Lens Hood)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A10s10MD</td>
<td>10mm ~ 100mm</td>
<td>10x</td>
<td>f/1.6</td>
<td>1m</td>
<td>1.6-1.8</td>
<td>Manual</td>
<td>47°30'</td>
<td>38°32'</td>
<td>72mm</td>
<td>0.75kg</td>
</tr>
<tr>
<td>A13s10MD</td>
<td>10mm ~ 130mm</td>
<td>12x</td>
<td>f/1.7</td>
<td>1.0m</td>
<td>1.0-1.7</td>
<td>Servo Manual</td>
<td>47°30'</td>
<td>38°32'</td>
<td></td>
<td>1.3kg</td>
</tr>
<tr>
<td>A16s9.5MD</td>
<td>9.5mm ~ 152mm</td>
<td>18x</td>
<td>f/1.8</td>
<td>0.95m</td>
<td>1.8-1.9</td>
<td>Manual</td>
<td>49°42'</td>
<td>38°19'</td>
<td>77mm</td>
<td>0.75kg</td>
</tr>
</tbody>
</table>

### 1/2" Format Teleconferencing Lenses

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Focal Length</th>
<th>Zoom Ratio</th>
<th>Maximum Aperture</th>
<th>Iris Range</th>
<th>M.O.D.</th>
<th>Iris Control</th>
<th>Field Angle Horizontal</th>
<th>Field Angle Vertical</th>
<th>Front Thread</th>
<th>Weight (w/o Lens Hood)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S12x7.5MD</td>
<td>7.5mm ~ 90mm</td>
<td>12x</td>
<td>f/1.4</td>
<td>1.1m</td>
<td>1.4-1.6</td>
<td>Manual</td>
<td>42°12'</td>
<td>36°29'</td>
<td>72mm</td>
<td>0.75kg</td>
</tr>
<tr>
<td>S16x7MD</td>
<td>7mm ~ 112mm</td>
<td>16x</td>
<td>f/1.4</td>
<td>0.95m</td>
<td>1.4-1.6</td>
<td>Manual</td>
<td>49°30'</td>
<td>38°16'</td>
<td>77mm</td>
<td>0.75kg</td>
</tr>
</tbody>
</table>

*0.07m or less with macro operation. **Plus fully closed.

Prices and Specifications Subject to Change Without Notice.

145
**MIXERS/VIDEO KEYING SYSTEMS**

**608/612/616 Edit Suite Audio Mixers**
- Designed specifically for television editing • Dual channel • Editor control of source selection, preview monitoring, transition starts and transition duration • Interfaces for most popular editing systems • Direct interface available for additional GPI control • Switcher AFV interface • Timed transitions from front panel or editor • May be operated manually as an audio mixer • Built-in preview switcher with editor control • Separate control panel and electronics for flexible mounting with minimal space requirements • Available with either PPM or VU meters • Out-of-phase warning system for program channels • Optional programmable equalization system with memory and editor control • System tone input • Monitor mute control

- 608 8-input edit suite audio mixer, includes 1 parallel or serial editor interface, 25' control cable, VU meters, out of phase warning system, tone input
- 612-12-input edit suite audio mixer, includes serial editor interface, enhanced support software, 50' control cable, PPM or VU meters, out of phase warning system, tone input, module extender
- 616-18-input edit suite audio mixer, includes serial editor interface, enhanced support software, 50' control cable, PPM or VU meters, out of phase warning system, tone input, module extender

**Options**
- Audio Input Modules
  - 8-channel digital input module $900.00
  - 8-channel analog input module $2,400.00
- Assignment panel $1,000.00
- 16-channel parametric equalization system $5,400.00
- Analog meters VU or PPM instead of LED $1,000.00
- Output connector panel XLR analog/AES digital $450.00
- Input connector panel XLR analog $650.00
- Output connector panel XLR analog/DATS digital $550.00
- Input connector panel DATS to AES converters (16 BNC) $750.00

**Stand Alone Equipment**
- LED VU meters $1,500.00
- Analog meters VU or PPM $1,850.00

**Digital Audio Transmission Systems**
- Model 10 AES to DATS source converter $50.00
- Model 20 DATS to AES destination converter $50.00

**612/616/618 Edit Suite Audio Mixers**
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- 8-channel analog input module $2,400.00
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DIGITAL EFFECTS SYSTEMS

**DPM-700 Digital Effects System**
- Full range of 3-D effects
- Sophisticated motion control
- Multiple motion paths
- Advanced signal processing
- Internal 4:2:2 digital component processing
- Analog component, D1, analog composite or D2 models
- Fully programmable using E-MEM (effects memory system)
- Effects can be created and stored within effects memory registers
- Each effects register can hold up to 100 keyframes with a system maximum of 500 keyframes
- Keyframes can be added, deleted, moved and changed in any way
- New sequence of keyframes may be created while recalling any pre-programmed effects
- Extensive serial, peripheral and GPI interfaces for control of external input selectors, routers, edit controllers, Model 100 production switcher and incoming/outgoing GPIs
- Reference timing from 3 separate internal sync generators for upstream or downstream transformations
- Optional second effects channel with digital combiner
- Priority dissolves and shadow translators for unstream or downstream transformations

**Composite Options**
- Factory installation for conversion kit...

**Conversion Kits**
- DPM-127N1 DPM-100 to DPM-700 conversion kit, 1 channel NTSC...
- DPM-127N2 DPM-100 to DPM-700 conversion kit, 2 channels NTSC...
- DPM-127INST Factory installation for conversion kit...

**Component Systems - Single Channel**
- Analog NTSC...
- Digital (D1) 525...

**Component Options**
- DPM-702NA Second channel - composite analog NTSC...
- DPM-702ND Second channel - composite digital (D2) NTSC...
- DPM-720-100K Control cable fab kit...
- DPM-731CV Recursive memory for 525 systems...
- DPM-733-2 Composite input selector for DPM-700 channel, 120V...
- DPM-752CV Disk remote kit...
- DPM-753CV Control panel rackmount adaptor...
- DPM-758CV Data terminal with cable...

**DPM-100 Digital Effects System**
- Includes same features as DPM-700 except 2-D effects only

**Prices and Specifications Subject to Change Without Notice.**

147
Model 110 Production Switcher

The Industry Standard for small studios, mobile applications, and post production, the Model 110 is part of a family of products that includes the AMX-170 Audio Mixer and DPM-100/700 Digital Picture Manipulators, audio-follow-video mixers and effects memory systems.

Unique 3-Bus Multi-Level Mix/Effects System
* 8 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
* 10 E-MEM registers available from the control panel * Clean Feed video output * Linear BORDERLINE® Generator option for title borders, solid and transparent drop shadows and matte filled outline * 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 blackburst on program output for stable output and recordings * Standard contact closure editor interface (GPI) to each of the 3 auto transitions or a fourth “select” line which allows selection of any 1 * Program and preset buses for background transitions * Video key bus for linear keying, 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 frames, lever arm transition or cut button * 10 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 * PAL and NTSC versions available

Video Keyer
* KeyLink™ for external manipulation of the effects key signal by the DPM-100 or DPM-700 Digital Picture Manipulators * 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
* Linear and luminance keying * 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 title borders, solid and transparent 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 adapter can be placed in modular rack enclosures (requires 8 rack units) * Electronics frame requires 3 rack units and 20” depth * Single 15-conductor control cable (110m length standard) * Full tally system * Selectable power ranges from 100 to 240V, 50 or 60Hz

110NTSC Production Switcher .................................................. $10,995.00

Options
110-19 Model 110/AMX-170 panel rackmount adaptor .................. $100.00
110-30S 30m control cable ...................................................... 300.00
110-33 RGB chrome keyer ...................................................... 850.00
110-34 Chroma key bypass board ........................................... 54.00
110-40 NTSC linear borderline generator ................................. 1,500.00
110-41 NTSC pulse regenerator ............................................... 1,000.00
110-50 Serial interface adaptor .............................................. 1,500.00

110CV Component Video Production Switcher

The 110CV 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 110CV has all the qualities expected by the most sophisticated user.

The 110CV features non-looping video inputs, 8 in all, and 3 sets of BNC connectors for every input. Utilizing the same control panel as the 110 Production Switchers, the 110CV Component Video Production Switcher has updated electronics that incorporate as standard equipment many of the features offered as options on the 110.

The electronics frame of the 110CV requires 6 rack units and 20” depth.

110CV-52SC 110CV basic system for all formats ...................... $18,950.00
110CV-3S256C 525 System—frame and maintenance manual only ........................................ 16,950.00
110CV-40 525 System—linear borderline generator ..................... 1,500.00

Model 110/110CV Family Options
CV-21 Y, R-Y, B-Y to RGB translator (for use in CV-20 tray) ......................... $995.00
CV-22 RGB to Y, R-Y, B-Y translator (for use in CV-20 tray) .................... 995.00
CV-23 Color bar generator (for use in CV-20 tray) ......................... 1,295.00
CV-24N NTSC decoder (for use in CV-20 tray) ......................... 1,695.00
CV-25N NTSC encoder (for use in CV-20 tray) ......................... 1,495.00
CV-95N NTSC sync pulse generator module (for use in CV-20 tray) ........ 1,395.00
CV-20T CV-20 Series 2RU tray with power supply .......................... 895.00
CV-20PS Backup power supply for CV-20T .................................. 285.00
CV-20EXT Module extender ..................................................... 110.00

Model 100 or 100CV to Model 110 or 110CV Upgrade Conversions

The Model 100 or 100CV switchers can be fully or partially upgraded to equal the performance of the Model 110 or 110CV. Features added in the upgrade include linear keying in both the mix/effects and downstream keyer, E-MEM Effects Memory from the control panel, Clean Feed video output and KeyLink.

The following upgrade kits are available:

110-71 Model 100 to 110 full upgrade kit .................................... $3,500.00
110-73 Model 100 to 110, no Clean Feed or KeyLink ...................... 2,850.00
110-75 Model 100 to 110 backpanel replacement, must have 110-73 installed ...................................... 800.00
110CV-71 Model 100CV to 110CV full upgrade kit ...................... 4,700.00
110CV-73 Model 100CV to 110CV, no Clean Feed or KeyLink ...................... 3,500.00
110CV-75 Model 100CV to 110CV backpanel upgrade, must have 110CV-73 installed ...................................... 1,300.00
110-78* Factory installation of 110-71, 73, 75 ................................ 500.00
110CV-78* Factory installation of 110CV-71, 73, 75 ............................. 500.00

*Requires customer service to be contacted for scheduling and return authorization.
**PRODUCTION SWITCHERS**

**Model 200 Series Production Switchers**
- Cut and auto transitions in the ME, downstream keyer and fade-to-black system
- 1 matte generator for each keyer, 1 for each wipe system and 2 standard background generators in addition to the color-black generator
- Background generators provide background wash feature
- Program effects in any of 30 standard registers and quickly recall effects setups on any or all switcher levels
- Dual series interface adaptor lets you communicate with peripherals and provides serial control
- Safe title generator with cross and SMPTE pattern gives you proper title positioning
- 4 auxiliary buses with local and remote panels provide input switching for technical monitoring, digital effects or graphics devices
- Routing switcher multi-destination displays can be mounted
- Streamline™ Effects Controller lets you reprogram the switcher's current personality from the control panel, and then save it to a disk
- Linear and luminance keying for smooth integration with the latest graphics and digital effects systems
- Chroma key from RGB or color difference sources
- Preset wipe mix or wipe to a pre-set position and size
- "Over" function switch keyer priority in each mix effect
- Auto select mode automatically selects the pre-assigned key source when the fill source is selected
- Accumulative latch for fill and key signals extends the capability of each keyer by combining 5 key sources in a single keyer
- 8 assignable external key sources, including inputs assign key signals from character generators or digital effects systems to follow desired switcher video fill inputs
- 4 external key fill dedicated key fill inputs provide quick access to the most important key fill sources for fast-paced operation and quick accumulation
- 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 for each source
- Silhouette™ Key Edger provides a number of features including movable transparent shadows and split shadows, asymmetrical border and outline, drop shadow left and right, and dynamic key edging effects when used with Streamline Effects Controller
- Multi-format chroma keyers for up to 8 sources*
- 200-2N has 20 primary inputs and 2 mix effects (ME), giving you freedom of 5 full function keyers, 2 in each ME and 1 in downstream. Use either ME as a background for downstream keyer, which also includes fade-to-black and an output blanking processor
- 200-1N has 1 ME version, 3 keyers: 2 in ME and 1 in downstream

The 200 standard E-MEM® effects memory system gives you the freedom to program effects with standard registers and quickly recall them on any switcher level.

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.

### Options

<table>
<thead>
<tr>
<th>Options</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>200-401 System control cable fab kit</td>
<td>$200.00</td>
</tr>
<tr>
<td>200-402 Bulk system control cable/per meter</td>
<td>$4.00</td>
</tr>
<tr>
<td>200-410 System control cable 10m</td>
<td>$250.00</td>
</tr>
<tr>
<td>200-423 System control cable 25m</td>
<td>$375.00</td>
</tr>
<tr>
<td>200-450 System control cable 50m</td>
<td>$500.00</td>
</tr>
<tr>
<td>200-499 System control cable 100m</td>
<td>$750.00</td>
</tr>
<tr>
<td>200-505 Component chroma key</td>
<td>$3,350.00</td>
</tr>
<tr>
<td>200-506* Silhouette key edger</td>
<td>$3,125.00</td>
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<tr>
<td>200-507* Silhouette key edger package of 3</td>
<td>$7,500.00</td>
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<tr>
<td>200-508* Silhouette key edger package of 5</td>
<td>$12,500.00</td>
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<tr>
<td>200-510 Enhanced analog wipe generator (200-2N)</td>
<td>$5,250.00</td>
</tr>
<tr>
<td>200-511 Enhanced analog wipe generator (200-1N)</td>
<td>$2,750.00</td>
</tr>
</tbody>
</table>

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*Not for Retrofit

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**Prices and Specifications Subject to Change Without Notice.**

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**Model 200-1N Production switching system, NTSC**

<table>
<thead>
<tr>
<th></th>
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**Model 200-2N Production switching system, NTSC**

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**Options (cont'd)**

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<td>200-515 Matrix wipe generator</td>
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<tr>
<td>200-517 Mask pattern generator basic</td>
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<td>200-518 Mask pattern generator enhanced (enhanced wipe generator 200-1N)</td>
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<td>200-520 Dual serial adaptor (DSA)</td>
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<td>200-530 Safe title generator</td>
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<tr>
<td>200-540 Streamline effects controller and disk storage system</td>
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<tr>
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<td>200-553 Satellite tally module</td>
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<td>200-602 Bulk Satellite auxiliary bus control cable/per meter</td>
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<td>200-699 Satellite auxiliary bus control cable 100m</td>
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<td>200-700 Redundant power supply option (panel and frame)</td>
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<td>200-705 Control panel power supply fan 110V (1 assembly)</td>
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<td>200-706 Control panel power supply fan 220V</td>
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<td>200-710 Second diagnostic pod with manual (200-2N)</td>
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<td>200-711 Second diagnostic pod with manual (200-1N)</td>
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<td>200-727 Recommended spare modules (200-2N)</td>
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<td>200-728 Recommended spare modules (200-1N)</td>
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<tr>
<td>200-765 Model 200 spare operator’s tape (NTSC) (VHS only)</td>
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<tr>
<td>200-949 NTSC switcher output processor</td>
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200-CV Production Switching System

The basic system comprises 20 primary inputs, two cascaded Mix/Effects (M/E), a Downstream Keyer (DSK), and Fade-to-Black. Each M/E has two full function keyers. Auto transition and cut are standard in the DSK, Fade-to-Black, and both M/Es. Separate matte generators provide color matte fill for each of the five keyers and each M/E’s wipe border. Two color background generators and a black generator can be connected as desired to any primary input. Each color background generator has the Background Wash mode and Background Generator 1 can be combined with Background Generator 2’s color to create a full screen color wash. Standard pulse regenerator and output processor simplify system installation.

Each M/E provides a Preset Black Mix and a Transition Preview mode, as well as look-ahead preview and Program monitor outputs. Each of the two full function keyers in each M/E is capable of linear, luminance, preset pattern, and chroma key from any primary or external key fill source. The M/E keyers can use any of the primary inputs, four external key fill inputs, or six external key source inputs as a luminance or linear key source. Each primary and external fill video can have one of the six external key sources associated with it or act as a self key. Each keyer has a dedicated shutter mask or can use either M/E’s wipe pattern as a mask. In addition, the standard chroma key provides high quality keys with background color suppression.

A Silhouette® Key Edger can be added to any of the 5 key edges in the 200-CV, providing powerful key edging effects. Effects possible include movable transparent shadows and split shadows, asymmetrical border and outline, drop shadow left and right and dynamic edging effects when used with the Streamline® Effects Controller.

The system's extensive set of modifiers includes border symmetry (Halo), edge softness, border width, aspect, rate-controlled positioner, vertical and horizontal multipliers. The vertical and horizontal multipliers repeat patterns up to four times. Additional options to the basic wipe system include the Matrix Wipe Generator which provides 32 patterns, in addition to the powerful pattern mix function. Also, the Enhanced Analog Wipe generator provides four additional patterns and modifiers for rotation, modulation and pattern split.

Standard E-MEM® Effects Memory System provides storage for 30 complete switcher setups. Learn and recall of switcher effects setups can be initiated as a combination of levels (M/E 1, M/E 2, DSK, or User). Basic operation can be enhanced with Streamline® Effects Controller and Disk Storage option.

Rack electronics consists of two frames, each 11 rack units (RU) high total 22 RU (38.5”). One electronics frame processes the Y (luminance) component of the 200-CV system. The Y frame also generates the control signals and timing pulses needed to control the second frame. The second C Frame handles the R-Y and B-Y (chrominance) component channels. The two electronic chassis are interconnected by five ribbon cables. This requires that the two chassis be mounted directly above one another and/or beside each other. The Switcher operates in any one of 12 color difference (Y, R-Y, B-Y) formats. Switcher inputs must be externally transcoded to match the internal format. Switcher outputs may also need to be transcoded to match external destinations. The CV-20 Series input and output translator systems are available as options.

The Dual Serial Adaptor option provides a dedicated RS-232/422 editor interface and a second port for controlling peripheral devices. Frames and control panel are each powered separately. The frames (primary and secondary) power supplies mount in the main electronics chassis. The panel supply mounts in a separate rackmount chassis interconnected to the panel with a standard 8-meter cable (included). One set of manual, an extender, and an Installation/Diagnostic Pod are supplied with each system. The control panel is connected to the electronics frame using a single 15-conductor serial cable. System Control Cable is not included and must be ordered separately.

200-CV-525/60 Basic System Options

- 200CV-508 $3,125.00 Silhouette key edger
- 200CV-510 $3,500.00 Enhanced analog wipe generator
- 200CV-515 $4,200.00 Matrix wipe generator
- 200CV-520 $2,250.00 Dual serial adaptor (DSA)
- 200CV-530 $780.00 Safe title generator
- 200CV-540 $5,995.00 Streamline effects controller and disk storage system

*Not for Retrofit

Auxiliary Bus Options

The 200-CV has provisions for four internal auxiliary buses. Each bus accesses 20 primaries, both M/Es, Program output and two direct inputs. The two direct inputs appear only on the auxiliary buses. The Auxiliary Output Modules also provide a Clean Feed (program bus direct) output. It can accommodate a maximum of four Satellite Auxiliary Control Panels (or Satellite Auxiliary Bus Panel Kits) and one local control panel. Each Satellite Auxiliary panel communicates with it using serial RS-422 ports while the local panel uses the main control panel serial port. Both the local and satellite control panels have delegate facilities allowing any panel to control any combination up to four auxiliary buses. Installation programming allows the user to define which bus or buses each control panel may access. The Satellite Auxiliary Control Panels provide chop mode for test and maintenance operations, GPI inputs, and On-Air indicator. The GPI input when activated causes the associated bus to switch from its current state to assigned input (defined by personality). This switch can be momentary or latched. Control of the auxiliary buses is also available through the Dual Serial interface.

The primary sources of Auxiliary Bus 1 can be used as key fill and/or key source on the DSK. A DSK external key source can be associated with Auxiliary Bus 1 through Personality assignment.

<table>
<thead>
<tr>
<th>Option Code</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>200CV-551</td>
<td>Local auxiliary bus control panel</td>
<td>$1,750.00</td>
</tr>
<tr>
<td>200CV-552</td>
<td>Satellite tally module panel</td>
<td>$3,125.00</td>
</tr>
<tr>
<td>200CV-554</td>
<td>Satellite auxiliary bus control panel</td>
<td>$760.00</td>
</tr>
<tr>
<td>200CV-555</td>
<td>Auxiliary bus control cable kit</td>
<td>$4,200.00</td>
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<tr>
<td>200CV-601</td>
<td>Satellite auxiliary bus control cable</td>
<td>$200.00</td>
</tr>
<tr>
<td>200CV-602</td>
<td>Bulk control cable for auxiliary bus</td>
<td>$3,500.00</td>
</tr>
<tr>
<td>200CV-610</td>
<td>Satellite auxiliary bus cable 25 meter</td>
<td>$300.00</td>
</tr>
<tr>
<td>200CV-650</td>
<td>Satellite auxiliary bus 50 meter</td>
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</tr>
<tr>
<td>200CV-689</td>
<td>Satellite auxiliary bus 100 meter</td>
<td>$600.00</td>
</tr>
</tbody>
</table>

Other Available Options and Accessories

- 200CV-701 Redundant Power Supply Option 200-CV
  - One control panel and two electronics frame power supplies are included .......................... $6,250.00
- 200CV-705 Control Panel Power Supply Fan Assembly
  - 110V Operation
  - Used with control panel power supply when two rack units of recommended cooling space cannot be provided. Voltage dependent select for proper voltage operation .......................... $250.00
- 200CV-706 Control Panel Power Supply Fan Assembly
  - 220V Operation
  - Used with control panel power supply when two rack units of recommended cooling space cannot be provided. Voltage dependent select for proper voltage operation .......................... $250.00
- 200CV-712 Second Diagnostic Pod Model with Manual for 200-CV
  - Used for installation, maintenance diagnostics and personality programming .......................... $398.00
- 200CV-720 Recommended Spare Component Kit 200-CV
  - Kit includes components for both control panels, frame electronics, and options except OEM power supplies and major assemblies such as the disk drive and display used in the Streamline Effects Controller option .......................... $2,950.00
- 200CV-727 Recommended spare module set for 200-CV
  - 24,450.00
- 200CV-928 CV-20 Series Translator Output System
  - Option includes two CV-21, Y, R-Y to RGB translator modules, module extender, and 2 RU CV-20 tray with power supply. CV-20 tray has two additional slots for other CV-20 module options. Six interconnect coaxial cables included .......................... $2,950.00
- 200CV-929 CV-20 Series Translator Input System
  - Option includes three CV-22 RGB to Y, R-Y, B-Y translator modules and a 2 RU CV-20 tray with power supply. CV-20 tray has one additional slot for an additional CV-20 Series module. Nine interconnect coaxial cables are included .......................... $3,895.00

Prices and Specifications Subject to Change Without Notice.
VPE-131, VPE-141 and VPE-241

Video Production Editors

These are a family of full-featured edit controllers, starting at a very affordable price. All 3 models are based on the same compact electronics frame, which includes a computer system optimized for real time control of multiple serial services. Battery backed-up CMOS memory is used for storage of operating software and EDLs, which means the system is up and ready to run almost instantly, and it also ensures that a power failure can't cause the loss of an EDL. They use the latest version of Super Edit (V6.0) software.

These editor models are selected with 1 of 2 keyboard choices, the "K2" traditional Qwerty-style with Jogger located in the center. Both keyboards feature a touch-sensitive knob with Jog, Variable and Shuttle modes always active.

For convenience, each of these models may be ordered with or without on-site training included. The "training included" models cover 1-day on-site training with the customer facility, including 2 days of lodging and travel for the trainer. Other training arrangements are available, including classes at the GVG training center, or on-site training chargeable at a daily rate plus expenses.

The standard Preview mode with each model is "E-E," which uses the E-E switch in the record VTR to simulate an edit. An optional preview switcher is available for applications which require it (such as when record devices are switched in the record VTR to simulate an edit). An optional preview switcher is also available.

The GVG training center, or on-site training chargeable at a daily rate plus expenses.

The standard Preview mode with each model is "E-E," which uses the E-E switch in the record VTR to simulate an edit. An optional preview switcher is available for applications which require it (such as when record devices are switched in the record VTR to simulate an edit). An optional preview switcher is also available.

Prices and Specifications Subject to Change Without Notice.

151
IPS-110 Integrated Production System

- Full capability post production system
- Single chassis design
- Will control most RS-422 machines including 3¾", Beta and M-II ½" formats, and type "C"
- Unit includes a Model 110 video switcher, editor and edit keyboard with JogKnob, AMX-170 audio mixer, a powerful edit controller with full list management capabilities, sync and pulse distribution with test signals, and an optional character generator (NTSC systems only)
- Shock mounted transport cases and quick connect cable assemblies optional

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-110/IPS-110P PAL ............................................. $62,800.00

IPS-110B/
IPS-110BP As above—excludes AMX-170 and Model 110 switcher control panel. System is capable of video and audio edits, transitions and video session prints ............................................. $53,800.00

Keyboard Selections
Note: System orders must include at least 1 of the following:
IPS-110K2 Keyboard, JogKnob version for IPS-100/IPS-110 ............................................. $1,500.00
IPS-110K3 Keyboard, dedicated version for IPS-100/IPS-110 ............................................. $1,500.00

Machine Control Protocols
See Table for Specific Protocols

Software Options
SW-005 Film mode ............................................. $1,050.00
SW-006 Source color framing (APL) (standard on PAL) ............................................. $1,050.00
SW-011 Edit reel ID ............................................. $275.00

Hardware Options
IPS-CC1 Chassis carrying case ............................................. $2,500.00
IPS-AC1 Accessory carrying case ............................................. $2,500.00
IPS-CG Character generator kit (NTSC only) ............................................. $9,000.00
IPS-GC8 Quick connect cable set, 4m ............................................. $2,000.00
PFR-80 80-column line printer ............................................. $850.00
110-19 Model 110 control panel rackmount adaptor ............................................. $100.00
110-33 Model 110 RGB color keyer ............................................. $850.00
110-34 Model 110 chroma key bypass board ............................................. $64.00
128PP Preview switcher, component/composite and 4-channel audio (NTSC) ............................................. $4,500.00
IPS-110TXT Text entry keyboard for use with IPS-110K3 keyboard ............................................. $300.00

Internal Character Generator Options (NTSC)
Note: Please state software ID (SN) number of character generator.
IPS-AF Anti-aliased font in 4 sizes ............................................. $220.00
IPS-B1 Backgrounder #1 ............................................. $850.00
IPS-B2 Backgrounder #2 ............................................. $850.00
IPS-F1 Non-anti-aliased fonts, 4 styles, 4 sizes (English only) ............................................. $600.00
5K-KEY "K" style keyboard with 20' cable ............................................. $600.00
IPS-UPD Character generator software update ............................................. $600.00

Editor Display Monitor
DM-12 12" TTL color monitor (120V only) ............................................. $1,000.00
DMDP Display monitor distribution panel TTL to TTL/RGB ............................................. $1,200.00

Note: The IPS-100/IPS-110 are designed for use with either a composite video monochrome monitor or a color (computer-type) TTL/monitor monitor. Connecting a composite monochrome monitor requires a customer supplied video cable with BNC connector. A TTL/monitor monitor (CGA resolution) may be connected to the 8-pin "D" connector on the IPS-110 frame with the cable supplied (by most manufacturers) with the color monitor. The DM-12 includes this cable. If you are placing the color monitor more than 1.5 meters from the IPS-110 frame, it is recommended that the DMDP be used, to convert the digital TTL RGB signal to analog RGB. The DMDEP includes a 1.5 meter cable to connect the DMDP to the IPS-110 frame, and a 16 meter cable to connect the DMDP to the monitor’s supplied cable. The DMDP also provides 3 BNC connectors for connecting standard RGB television monitors, using customer supplied cables.

Editing System Source Protocols

<table>
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<tr>
<th>GVGM Model</th>
<th>Sony VTR/Device</th>
<th>Panasonic VTR/Device</th>
<th>Hitachi VTR/Device</th>
<th>Ampex VTR/Device</th>
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<td>SV-BETA</td>
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<table>
<thead>
<tr>
<th>Models Number</th>
<th>Other VTR/Device</th>
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<tbody>
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<td>SV-LEX</td>
<td>Lexicon 1200 2400</td>
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<tr>
<td>SV-LYNX</td>
<td>TimeLine &quot;LYNX&quot;</td>
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<tr>
<td>SV-MCP1</td>
<td>Machine Protocol 1</td>
</tr>
<tr>
<td>SV-MCP2</td>
<td>Machine Protocol 2</td>
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<tr>
<td>SV-ESPI</td>
<td>Peripheral Protocol 1</td>
</tr>
<tr>
<td>SV-SCDPE</td>
<td>GVG Kaleidoscope</td>
</tr>
<tr>
<td>SV-DPM100</td>
<td>GVG DPM-100</td>
</tr>
</tbody>
</table>

1\ No Delta T control.
2\ When used with E-E preview, monitoring for both recorder and program switcher is recommended.
3\ Only available with Grass Valley Group models 100, 200, 300 or Kadenza switchers.
4\ No charge, not counted toward 5 protocols that are free with system purchase.
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:
Record Device Inputs:
VCA Faders:
Filters:
Equalization:
Outputs:
Monitor Controls:
Sources Monitored:
Video Editor Control:

AMX-170S ........................................... $19,500.00

Control Panel Cables
170CBL-10 10m ...................................... $150.00
170CBL-16 16m ...................................... $200.00
170CBL-30 30m ...................................... $250.00

Prices and Specifications Subject to Change Without Notice.
GRASS VALLEY GROUP

8500 Series Audio/Video Distribution Amplifiers

All 8500 Series models feature differential inputs with 6 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 B8211) and a 2-speed clamp. The line also includes the 8520, a pulse DA.

The 8551 is a high performance volume-mode audio DA. It has an active, balanced HI-Z input (input Z >40k ohms) and 6 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 2 channels of audio, manipulated Lo-Z outputs (output Z > 50 ohms). The 8560 Series houses up to 4 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

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>8500</td>
<td>Utility VDA (no equalization)</td>
<td>$120.00</td>
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<tr>
<td>8501</td>
<td>VDA</td>
<td>$76.00</td>
</tr>
<tr>
<td>8502</td>
<td>VDA with variable cable EQ</td>
<td>$285.00</td>
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<tr>
<td>8502-S</td>
<td>VDA with variable cable EQ (for 'RG-59/U' cable)</td>
<td>$285.00</td>
</tr>
<tr>
<td>8502-SP</td>
<td>VDA with variable cable EQ (for special cable types: 8500-EG network required)</td>
<td>$285.00</td>
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<tr>
<td>8503</td>
<td>VDA with step/vernier EQ (for B8211-type cables)</td>
<td>$425.00</td>
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<tr>
<td>8503-S</td>
<td>VDA with step/vernier EQ (for 'RG-59/U' cable)</td>
<td>$425.00</td>
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<tr>
<td>8504</td>
<td>Delay DA (with cable EQ for B8211-type cables)</td>
<td>$485.00</td>
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<tr>
<td>8504-S</td>
<td>Delay DA (with cable EQ for 'RG-59/U' cable)</td>
<td>$485.00</td>
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<tr>
<td>8504-D</td>
<td>Delay DA (with cable EQ for 8281-type cable)</td>
<td>$275.00</td>
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<tr>
<td>8504-D300</td>
<td>300ns Delay submodule</td>
<td>$200.00</td>
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<tr>
<td>8504-D500</td>
<td>500ns Delay submodule</td>
<td>$250.00</td>
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<tr>
<td>8504-D800</td>
<td>800ns Delay submodule</td>
<td>$275.00</td>
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<tr>
<td>8505</td>
<td>Field VDA (with cable Eq for B8211-type cables)</td>
<td>$565.00</td>
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<td>8505-S</td>
<td>Field VDA (with cable Eq for 'RG-59/U' cable)</td>
<td>$565.00</td>
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<tr>
<td>8506</td>
<td>Clamp VDA (with cable Eq for B8211-type cable)</td>
<td>$435.00</td>
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<td>8506-S</td>
<td>Clamp VDA (with cable Eq for 'RG-59/U' cable)</td>
<td>$435.00</td>
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<tr>
<td>8506-SPL</td>
<td>Clamp VDA (special cable type: 8500 EG network required)</td>
<td>$435.00</td>
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<tr>
<td>8510R</td>
<td>Remotely-controlled VDA (with cable EQ for B8211-type cable)</td>
<td>$585.00</td>
</tr>
<tr>
<td>8510R-S</td>
<td>Remotely-controlled VDA (with cable EQ for 'RG-59/U' cable)</td>
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<tr>
<td>8511</td>
<td>Wideband (100MHz VDA)</td>
<td>$485.00</td>
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<tr>
<td>8520</td>
<td>Pulse DA</td>
<td>$295.00</td>
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<tr>
<td>8520-B281</td>
<td>Pulse DA with B281 Eq</td>
<td>$375.00</td>
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<tr>
<td>8520-EG</td>
<td>Pulse DA with 'RG-59/U' Eq</td>
<td>$375.00</td>
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<tr>
<td>8520-R</td>
<td>Pulse DA with regenerator</td>
<td>$365.00</td>
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<tr>
<td>8520-EGQ</td>
<td>'RG-59/U' EQ submodule only</td>
<td>$125.00</td>
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<tr>
<td>8520-REG E</td>
<td>Pulse regen, submodule only</td>
<td>$100.00</td>
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<tr>
<td>8500T1-120</td>
<td>1 RU video tray with 120V PS (holds 4 DAs)</td>
<td>$650.00</td>
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<tr>
<td>8500T1-240</td>
<td>1 RU video tray with 240V PS (holds 4 DAs)</td>
<td>$650.00</td>
</tr>
<tr>
<td>8500T2-120</td>
<td>2 RU video tray with 120V PS (holds 8 DAs)</td>
<td>$785.00</td>
</tr>
<tr>
<td>8500T2-240</td>
<td>2 RU video tray with 240V PS (holds 8 DAs)</td>
<td>$785.00</td>
</tr>
<tr>
<td>NOTE:</td>
<td>Loss characteristics vary considerably among cables with 'RG-xx' designations. FO networks on 8500 Series VDA's are optimized for the following specific cables: 'RG-59/U': Belden 8263 'RG-59/U': Belden 8269 'RG-11/U': Belden 8238 Exact loss curves are available upon request.</td>
<td></td>
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DISTRIBUTION AMPLIFIERS

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
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<tbody>
<tr>
<td>8500T2</td>
<td>2 RU video tray with 120V PS (holds 8 standard or remotely-controlled DAs)</td>
<td>$895.00</td>
</tr>
<tr>
<td>8500T2-240</td>
<td>2 RU video tray with 240V PS (holds 8 standard or remotely-controlled DAs)</td>
<td>$895.00</td>
</tr>
<tr>
<td>8500PS-120</td>
<td>Backup PS for 8500T2-120 or 8500T2-120</td>
<td>$275.00</td>
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<tr>
<td>8500PS-240</td>
<td>Backup PS for 8500T2-240 or 8500T2-240</td>
<td>$275.00</td>
</tr>
<tr>
<td>8500T2-DC48</td>
<td>2 RU video tray with 48VDC PS</td>
<td>$1300.00</td>
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<tr>
<td>8500PS-DC48</td>
<td>Backup 48VDC power supply</td>
<td>$750.00</td>
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<tr>
<td>8500EX</td>
<td>Extender card</td>
<td>$75.00</td>
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AUDIO DISTRIBUTION EQUIPMENT

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
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</thead>
<tbody>
<tr>
<td>8551</td>
<td>Audio DA</td>
<td>$265.00</td>
</tr>
<tr>
<td>8552R</td>
<td>Remotely-controlled Audio DA</td>
<td>$395.00</td>
</tr>
<tr>
<td>8553</td>
<td>Audio tone generator</td>
<td>$295.00</td>
</tr>
<tr>
<td>8501T-120</td>
<td>1 RU audio tray with 120V PS (holds 4 DAs)</td>
<td>$725.00</td>
</tr>
<tr>
<td>8501T-240</td>
<td>1 RU audio tray with 240V PS (holds 4 DAs)</td>
<td>$725.00</td>
</tr>
<tr>
<td>8505T2-120</td>
<td>2 RU audio tray with 120V PS (holds 8 DAs)</td>
<td>$895.00</td>
</tr>
<tr>
<td>8505T2-240</td>
<td>2 RU audio tray with 240V PS (holds 8 DAs)</td>
<td>$895.00</td>
</tr>
<tr>
<td>8505T2T-120</td>
<td>2 RU audio tray with taper pin connectors and 120V PS (holds 8 DAs)</td>
<td>$1475.00</td>
</tr>
<tr>
<td>8505T2T-240</td>
<td>2 RU audio tray with taper pin connectors and 240V PS (holds 8 DAs)</td>
<td>$1475.00</td>
</tr>
<tr>
<td>8500PS-120</td>
<td>Backup PS for 8500T2-120 or 8500T2T120</td>
<td>$385.00</td>
</tr>
<tr>
<td>8500PS-240</td>
<td>Backup PS for 8500T2-240 or 8500T2T240</td>
<td>$385.00</td>
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</tbody>
</table>

STEREO AUDIO DISTRIBUTION EQUIPMENT

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
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</thead>
<tbody>
<tr>
<td>8561</td>
<td>Stereo audio distribution amp</td>
<td>$845.00</td>
</tr>
<tr>
<td>8581-MFS</td>
<td>Stereo audio distribution amp with muti-function submodule</td>
<td>$845.00</td>
</tr>
<tr>
<td>8581-PCS</td>
<td>Stereo DA with phase adjustable channel switch</td>
<td>$850.00</td>
</tr>
<tr>
<td>8581SM-MFS</td>
<td>Multi-function submodule</td>
<td>$850.00</td>
</tr>
<tr>
<td>8581SM-PCS</td>
<td>Multi-function submodule</td>
<td>$850.00</td>
</tr>
<tr>
<td>8581RCK</td>
<td>Remote control kit for multi-function submodule equipped 8561s</td>
<td>$95.00</td>
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</tbody>
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154

Prices and Specifications Subject to Change Without Notice.
SYNCHRONIZATION GENERATORS

9500 SERIES
NTSC 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 2100 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.

9505A Color Black Locking Source Sync Generator
The 9505A is a single-module system available for either encoded subcarrier or color black reference. SC/H phase is always correct. No adjustment is necessary.

1RU frame, color black slave SPG module with standard oscillator, power supply, instruction manual, accessory pack and line cord. Color black outputs with 7.5 IRE setup.

Input Power: 100-125VAC or 210-250VAC, 50/60Hz
Power Consumption: 15W maximum
9505A .................................................. $2295.00
9505-TCXO Temperature Compensated
Crystal Oscillator (TCXO) .......................... 200.00
9505-TSG Test Signal Generator Module .............. 895.00
9505-SID Source Identification Submodule
for TSG .................................................. 295.00

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.

Input Power: 100-125VAC or 210-250VAC, 50/60Hz
Power Consumption: 20W maximum
9510A NTSC Reference Synchronizing Generator ........... $2695.00
9510-TSG Test Signal Generator Module .............. 895.00
9510-SID Source Identification Submodule
for TSG .................................................. 295.00
9510-PPC Phase Preset Control Module ................. 395.00
Dual 9510A Dual 9510A NTSC Sync Generator System .......... 7295.00

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.

Input Power: 105-125VAC or 210-250VAC, 50/60Hz
Power Consumption: 30W maximum
9520A NTSC Master Reference Synchronizing Generator .......... $3295.00
9520A-HS 9520 with Ovenized Crystal Oscillator .............. 3795.00

9550A Sync Pulse Generator Changeover Switch
The 9550A 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 ....................... $1995.00
9550-RCK 9550A Remote Connector Kit .................... 35.00
9500-EXT 9500 Module Extender .......................... 125.00
9500A-PSM 9500A Power Supply Module ............... 335.00
9500-RCK Remote Connector Kit .................... 35.00
CV-95N NTSC Sync Pulse Generator
Module (use in 9500 VDA Tray) .................... 1395.00
STM-85N NTSC Source Timing Module (fits in 8500 VDA Tray) ... 850.00
SCB-100N NTSC Sync/Color Bar Generator ............... 1295.00
SCB-200N NTSC Genlocking Sync Color
Bar Generator ........................................ 1995.00

Prices and Specifications Subject to Change Without Notice.
3240-25 Video Processing Amplifier
- SC/H phasing
- Full regeneration of sync and burst
- Adjustable blanking width
- Soft and hard clippers
- Cable equalization
- Selectable line deletions: 10-21
- Sin^2 pulse edges
- Color black output
- Optional accessories

The 3240-25 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 3240-25 system is a fully functional processing amplifier, available in 2RU (RU = 1.75") height. Controls are available on the card edge or at a remote control point.

The expandable 3240-25 system in the 2RU 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.

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.

3240-25 NTSC Video Processor, includes external reference module $5990.00
3240-20 NTSC Video Processing Amplifier (without external reference module) $4995.00
3240-103 Remote Control Panel (rack mtg.) $525.00
3240-002 Additional 26-Pin Cable for 3240-103, per meter $20.00
3240-203 Video A.G.C. Module $995.00
3240-204 NTSC VIR A.G.C. Module $995.00
3240-206 Relay Bypass Module $295.00
3240-207 NTSC External Reference Module $995.00
3200-PS1 Backup Power Supply Module $265.00

7510N NTSC Video Processing Amplifier
The 7510N is a single-module video processing amplifier for NTSC applications. There are one input and four outputs per module. One output is connected to an automatic bypass relay which will route the input directly to the output in the event of power failure to that module. Two frame sizes are available: 1RU holding two processing amps; 2RU holding up to four processing amps.

7510N NTSC Video Processor Module $1975.00
7510T1-115 1RU Tray with 115V Power Supply $895.00
7510T2-115 2RU Tray with 115V Power Supply $1095.00
7500-PSM 7500 Power Supply Module (115/230V) $335.00
7500-EXT Module Extender $125.00
7500-RCX Remote Connector Kit $35.00
7500-CPK Remote Control Panel Kit for 7510N $135.00

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 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 $1295.00
SCB-200N Genlocking version of SCB-100N $1995.00

Prices and Specifications Subject to Change Without Notice.
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, and relay module, all in a one rack unit frame.

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-XL 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 Complete Units

<table>
<thead>
<tr>
<th>TEN-XL</th>
<th>Price</th>
</tr>
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<tbody>
<tr>
<td>TEN-XLV</td>
<td>$1595.00</td>
</tr>
<tr>
<td>TEN-XLVA1</td>
<td>$1395.00</td>
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<tr>
<td>TEN-XLRC</td>
<td>$1465.00</td>
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<tr>
<td>TEN-XLRCV</td>
<td>$1560.00</td>
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<tr>
<td>TEN-XLRCV1</td>
<td>$1360.00</td>
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<tr>
<td>TEN-XLRA1</td>
<td>$1425.00</td>
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<tr>
<td>TEN-XLA1</td>
<td>$1220.00</td>
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<tr>
<td>TEN-XLARC</td>
<td>$1390.00</td>
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<td>TEN-XLCV</td>
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<td>TEN-XLCV-V</td>
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<td>TEN-XLCVA1</td>
<td>$3095.00</td>
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<tr>
<td>TEN-XLTM</td>
<td>$3235.00</td>
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<tr>
<td>TEN-XLCVRC</td>
<td>$2250.00</td>
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<tr>
<td>TEN-XLCVA1RC</td>
<td>$3340.00</td>
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<tr>
<td>TEN-XLCV-D</td>
<td>$3200.00</td>
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<tr>
<td>TEN-XLCV-VD</td>
<td>$3375.00</td>
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<tr>
<td>TEN-XLCV-VD</td>
<td>$3375.00</td>
</tr>
<tr>
<td>TEN-XLCV-D</td>
<td>$3235.00</td>
</tr>
<tr>
<td>TEN-XLCV-RC</td>
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<tr>
<td>TEN-XLCV-RCD</td>
<td>$3300.00</td>
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<tr>
<td>TEN-XLCV-VRC</td>
<td>$3200.00</td>
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<tr>
<td>TEN-XLCV-VRCD</td>
<td>$3340.00</td>
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</tbody>
</table>

Prices and Specifications Subject to Change Without Notice.
TEN-20"/20-TEN" Compact Routing Switcher Systems

- TEN-20 switcher 10 input-by-20 output
- 20-TEN switcher 20 input-by-10 output
- 4-level control, with numerically accurate per level
- Control via twisted shielded pair cables, for simple and cost-effective installation
- PC boards removed 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 buttons per source—controls any combination of 4 levels
- 10 input buttons per source—controls any combination of 4 levels
- 4-level X-Y—controls any inputs and destinations
- Multi-bus control panel—controls 4 outputs

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 RS-232/RS-422 serial interface and the extra reliability of backup power supplies.

Video Performance Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
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<tbody>
<tr>
<td>Differential Gain</td>
<td>0.1% at 1V p-p, 0-90% APL</td>
</tr>
<tr>
<td>Differential Phase</td>
<td>0.2% at 1V p-p, 0-90% APL</td>
</tr>
<tr>
<td>Frequency Response</td>
<td>±0.1dB, 100kHz-5.5MHz</td>
</tr>
<tr>
<td></td>
<td>±0.5dB, 5.5MHz-10MHz</td>
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<tr>
<td>Total Delay (Typical)</td>
<td>20ns</td>
</tr>
<tr>
<td>Crosstalk (worst case; all inputs and outputs driven)</td>
<td>-60dB at 5.0MHz</td>
</tr>
<tr>
<td></td>
<td>-50dB at 10.0MHz</td>
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<tr>
<td>Signal-to-Noise Ratio</td>
<td>75dB, 5.0MHz low pass</td>
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Audio Performance Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Crosstalk</td>
<td>80dB, 20Hz-20kHz</td>
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<tr>
<td>Frequency Response</td>
<td>±0.1dB, 20Hz-20kHz</td>
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<tr>
<td>Total Harmonic Distortion</td>
<td>0.05% at +24dBu, 20Hz-20kHz</td>
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<tr>
<td></td>
<td>+24dBu: 120dB, 20Hz-20kHz</td>
</tr>
<tr>
<td>TEN-20-V</td>
<td>10x20 Video Switching System</td>
</tr>
<tr>
<td>TEN-20-A</td>
<td>10x20 Audio Switching System</td>
</tr>
<tr>
<td>TEN-20-SA</td>
<td>10x20 Stereo Audio Switching System</td>
</tr>
<tr>
<td>TEN-20-CV</td>
<td>10x20 Component Video</td>
</tr>
<tr>
<td>TEN-20-CVS</td>
<td>10x20 Component Video and Sync</td>
</tr>
<tr>
<td>TEN-20-V</td>
<td>20x10 Video Switching System</td>
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<tr>
<td>TEN-20-A</td>
<td>20x10 Audio Switching System</td>
</tr>
<tr>
<td>TEN-20-SA</td>
<td>20x10 Stereo Audio Switching System</td>
</tr>
</tbody>
</table>

Control Panels and Options

- JSL Joystick Override Control logic, 120V...
- MBCP Multibus Control Panel, 120V...
- XYCP X-Y Control Panel, 120V...
- 10BPS 10 Button Per Source Control Panel...
- 20BPS 20 Button Per Source Control Panel...
- SERIM Serial Interface Module and Frame...
- FLSD Four Level Status Display, 120V...
- RPSF Redundant Power Supply Frame...
- VPS Video Power Supply for RPSF...
- APS Audio Power Supply for RPSF...
- RPS Relay Power Supply...
- OPEXP Video Output Expansion Kit...

Spare/Replacement Modules

- TEN-20XP 10x20 Video Crosspoint Module...
- 20-TENXP 20x10 Video Crosspoint Module...
- TEN-20AAXP 10x20 Audio Crosspoint Module...
- 20-TENAXP 20x10 Audio Crosspoint Module...
- TEN-20RXP 20x10 Relay Module...
- CPPS Control Panel Power Supply...
- VPSCT Video Power Supply and Controller...
- APSCT Audio Power Supply and Controller...
- RPSCT Relay Power Supply and Controller...
- EXT Video/Audio and Controller Module Emulator...
- EMM Extra Maintenance Manual (One supplied with each system purchased)...
- SPK 20-TEN/TEN-20 Spare Parts Kit...

Prices and Specifications Subject to Change Without Notice.
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.

HORIZON Data Matrices

HORIZON Data Matrices eliminate the complexity of data patching encountered when using sophisticated editing systems, graphics devices and VTR's.

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 1 destination at a time.

HORIZON -X matrices may be used as stand-alone systems, or as 1 level in a larger HORIZON system. More than 1 HORIZON-X may be used to simplify complicated intercom systems.

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**

- **Gain:** <0.1% at 1V p-p out, 10%-90% APL
- **Phase:** <0.1° at 1V p-p out, 10%-90% APL
- **Frequency Response:** ±0.15dB, 100Hz to 5.0MHz, ±0.15, -0.9dB to 6MHz
- **2T Pulse/Bar Response:** Pulse 0.25%; Bar 0.25%, Pulse/Bar 0.25%
- **TR:** <0.5%
- **X-Talk:** <0.1% at 1V p-p out, 10%-90% APL
- **SNR:** >75dB
- **Output DC IDC (Default):** Blanked at 0V, ±50mV
- **Timing Scatter:** ±1° (NTSC or PAL) max., input to input on any 1 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: 45.6ns
- **Electrical Length:** (HX-128), typical: Outputs 0-15 and 64-79: 48.1ns; Outputs 16-31 and 80-86: 48.7ns; 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.:** 2.75 ohm term. outputs per bus; rel. 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

**AUDIO**

- **Frequency Response:** ±0.1dB, 20Hz to 20kHz
- **Harmonic Distortion:** <0.05% at +24dBu, 20Hz to 20kHz
- **SNR:** >100dB, ref. +24dBu, 20Hz to 20kHz
- **X-Talk:** >-83dB, 20Hz to 20kHz, all inputs hostile
- **Input Char.:** Bal. Z >12.5 ohms; CMRR >85dB
- **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

**Prices and Specifications Subject to Change Without Notice.**

159
CV-20 Series Component Video Terminal Equipment
The CV-20 Series is a 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. Mounts in 8500 Series DA tray.

Specifications
* Inputs: Y, R-Y, B-Y (75 ohms terminating); Y = 1V p-p including sync; R-Y, B-Y = ±350mV (75% saturation) * Outputs: RGB (one each) * Frequency Response: ±0.2dB to 6MHz * Gain Adjust: Unity ±1dB

CV-21 Translator
The CV-21 converts Betacam MII, SMPTE or EBU-N10 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. Mounts in CV-20T tray.

Specifications
* Inputs: Y, R-Y, B-Y (75 ohms terminating); Y = 1V p-p including sync; R-Y, B-Y = ±350mV (75% saturation) * Outputs: RGB (two each); Y = 1V p-p including sync; R-Y, B-Y = ±350mV (75% saturation) * Frequency Response: ±0.2dB to 6MHz * Gain Adjust: Unity ±1dB

CV-22 Translator
The CV-22 converts RGB signals to Betacam MII, SMPTE or EBU-N10 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. Mounts in CV-20T tray.

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 = ±350mV (75% saturation) * Frequency Response: ±0.2dB to 6MHz * Gain Adjust: Unity ±2.5dB

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. Mounts in CV-20T tray.

Specifications
* Output Signal: Full field color bars switch selectable to 75% or 100% saturation * Outputs: One each RGB and Y, R-Y, B-Y * Reference Input: Composite sync or color black * Timing Adjust: Output timing may be adjusted to ±2µs with respect to the input timing reference

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 MII, SMPTE or YIQ outputs. Mounts in CV-20T tray.

Specifications
* Input: NTSC video (75 ohms terminating), 1V p-p nominal, adjustable ±3dB * 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 ±0.2dB with 3.58MHz notched out to approximately -30dB B/S/N Ratio: >60dB (6MHz bandwidth) * Propagation Delay: Approximately 850ns

CV-25NTSC 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. Mounts in CV-20T tray.

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 ±1dB gain trim; 4V p-p sync ±6dB; 2V p-p SC, ±6dB; 2V p-p SC, ±6dB CMRR (RGB inputs): >40dB at 60Hz * Outputs: (75 ohm source terminated) Number and Type: Two each NTSC composite video; Level: 1V p-p nominal (714mV video, 286mV sync, and burst) * Frequency Response: ±0.2dB to 5MHz (luminance) * Black/White Balance: <0.5IRE residual subcarrier / I/D Quadrature: >0.5° of subcarrier * Electrical Length: 810ns ±40ns (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 $1495.00

CV-20

CV-20 EXT Module extender for CV-20T series modules.

CV-20EXT Module extender for CV-20T series modules...

CV-95N Sync Pulse Generator
The CV-95N has been designed to provide a source of reference timing pulses for analog component islands. Designed on a module that fits into the CV-20T tray, it genlocks to color black. Used in conjunction with CV products, it provides a cost-effective method of system integration.

Specifications
* Inputs: Composite color black high-impedance loopthrough * Outputs: Two composite sync, two composite blanking, two color black, two subcarrier (selectable for either GVG encoded subcarrier or standard 2V p-p subcarrier), two common pulse outputs—select either CFID (VI), VD, HD, CS, or BF * Controls (Front Panel): Coarse phase, medium phase, fine phase, vernier phase * Controls (On Board): Vertical phase: 2H advance, 1H delay; Vertical blanking width: 16.5-21 lines; Horizontal blanking width: 10.3µs to 11.3µs; Selectable pulse output: GVG encoded subcarrier or standard subcarrier indicators for reference present and color lock * Performance When Locked to Master SPG: Sync time base error: <2µs; Subcarrier filter: <0.25° of 3.58MHz; SC phase stability: 2° of 3.58MHz; Electrical length: 810ns ±40ns

CV-95N $1395.00

Prices and Specifications Subject to Change Without Notice.

CV-20T 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 $1695.00

CV-20PS Backup power supply for CV-20T tray...

CV-20EXT Module extender for CV-20T series modules...

*Betacam is a trademark of Sony Corporation.
DIGITAL DISTRIBUTION AMPLIFIER/TRANSLATORS

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'
- 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 x 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 backup power supply.

DDA-101 ........................................... $ 770.00
DDAT2-115 2RU tray with 115VAC power supply ........................................... 1065.00
DDAT2-230 2RU tray with 230VAC power supply ........................................... 1065.00
DDA-PSM Backup power supply (115/230VAC).350.00
DDA-EXT Digital DA extender ........................................... 130.00

DDA-202N Composite Digital Distribution Amplifier
- NTSC
- Supports a full 10-bit data path
- Has 1 input and 4 outputs on the module
- Each of the outputs has a separate, independent chip driver
- Standard automatic input cable equalization to 150 meters, crucial to maintaining a robust parallel data transmission

DDA-202N ........................................... $770.00

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 1 digital input and 3 component outputs. The outputs can be selected for RGB, Beta or MII by a front panel switch.

DAC-110 ........................................... $5750.00

ADC-120 Component Analog to Digital Translator
- 2 sets of CAV inputs
- Inputs may independently be either RGB or color-difference
- External reference—color black/composite sync timing reference adjustment: ± 2μsec
- Local and remote selection and indication of inputs
- 2 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 2 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 1 rack unit frame.

ADC-120 ........................................... $6995.00

Prices and Specifications Subject to Change Without Notice.
### MAX-900 Series Analog Distribution Products

The MAX-900 Series is a 3RU modular system supporting an impressive array of Component Analog Video (CAV) terminal equipment. The MAX modules are compact to save valuable rack space and can be easily configured for specific user needs. The modular frame accommodates 12 single or 6 double width modules and a standard power supply. The frame accommodates an optional backup power supply which can be installed without sacrificing 1 of the 12 cell locations.

- 3 channels, each 1 x 6
- Looping differential inputs
- Full 30MHz bandwidth
- DC coupled amplifier stages
- Multiple format capability (GBR/Y, B-Y, R-Y)
- Single tracking master gain adjustment
- Selectable 6dB gain boost (for external delay)
- Internal individual channel trims for gain and DC
- HDTV compatibility

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAX-900-120</td>
<td>3RU modular frame with 120V P/S</td>
<td>$845.00</td>
</tr>
<tr>
<td>MAX-900-240</td>
<td>3RU modular frame with 240V P/S</td>
<td>$845.00</td>
</tr>
<tr>
<td>M931</td>
<td>CAV DA</td>
<td>$595.00</td>
</tr>
<tr>
<td>M932</td>
<td>Clamping CAV DA</td>
<td>$745.00</td>
</tr>
<tr>
<td>M933-59</td>
<td>Clamping equalizing DA for use with RG-59U (Belden 9259)</td>
<td>$795.00</td>
</tr>
<tr>
<td>M934-8281</td>
<td>For use with Belden 8281</td>
<td>$795.00</td>
</tr>
<tr>
<td>M934-69</td>
<td>Clamping/sync add/EQ DA for use with RG-59B/U (Belden 9259)</td>
<td>$875.00</td>
</tr>
<tr>
<td>M930SM-DL1</td>
<td>Delay submodule with delay lines</td>
<td>$625.00</td>
</tr>
<tr>
<td>M930SM-DL2</td>
<td>Delay submodule without delay lines</td>
<td>$85.00</td>
</tr>
<tr>
<td>M910</td>
<td>5 x 1 CAV selector</td>
<td>$745.00</td>
</tr>
<tr>
<td>M911</td>
<td>CAV format translator Y, R-Y, B-Y to GBR</td>
<td>$595.00</td>
</tr>
<tr>
<td>M912</td>
<td>CAV format translator GBR to Y, R-Y, B-Y</td>
<td>$595.00</td>
</tr>
<tr>
<td>MAX-EXT</td>
<td>Module extender</td>
<td>$125.00</td>
</tr>
<tr>
<td>MAX-SWB</td>
<td>Single-width blank cover</td>
<td>$13.50</td>
</tr>
<tr>
<td>MAX-DWB</td>
<td>Double-width blank cover</td>
<td>$16.50</td>
</tr>
<tr>
<td>M900PS-120</td>
<td>120V backup P/S module</td>
<td>$345.00</td>
</tr>
<tr>
<td>M900PS-240</td>
<td>240V backup P/S module</td>
<td>$345.00</td>
</tr>
</tbody>
</table>

### MAX-9000 Series Serial/Digital Products

The MAX-9000 series is a family of modular terminal equipment designed expressly for digital and hybrid digital/analog environments. The platform for this series is the same 3RU frame and power system used for the MAX-900 series of analog equipment. This frame accepts up to 12 single-width or 6 double-width modules. The MAX-9000 series supports both composite digital and component digital standards.

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
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</thead>
<tbody>
<tr>
<td>M9102</td>
<td>Component digital serializer. Features:</td>
<td>$800.00</td>
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<tr>
<td></td>
<td>- Up to 6 modules in 3RU</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- 4 serial digital BNC outputs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Front panel LEDs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- True 75 ohm BNCs</td>
<td></td>
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<tr>
<td></td>
<td>- 10-bit data reclocking before being serialized</td>
<td></td>
</tr>
<tr>
<td>M9202-N</td>
<td>Composite digital serializer (NTSC standard).</td>
<td>$1700.00</td>
</tr>
<tr>
<td></td>
<td>Features:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Up to 6 modules in 3RU</td>
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</tr>
<tr>
<td></td>
<td>- 4 serial digital BNC outputs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Front panel LEDs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- True 75 ohm BNCs</td>
<td></td>
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<tr>
<td></td>
<td>- 10-bit clock regeneration</td>
<td></td>
</tr>
<tr>
<td>M9103</td>
<td>Component digital deserializer. Features:</td>
<td>$1050.00</td>
</tr>
<tr>
<td></td>
<td>- Up to 6 modules in 3RU</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- 25-pin D connector parallel output</td>
<td></td>
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<tr>
<td></td>
<td>- Data reclocking</td>
<td></td>
</tr>
<tr>
<td>M9203-N</td>
<td>Composite digital deserializer (NTSC standard).</td>
<td>$1050.00</td>
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<td>Features:</td>
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</tr>
<tr>
<td></td>
<td>- Up to 6 modules in 3RU</td>
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</tr>
<tr>
<td></td>
<td>- 25-pin D connector parallel output</td>
<td></td>
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<tr>
<td></td>
<td>- 10-bit data reclocking</td>
<td></td>
</tr>
<tr>
<td>M9131</td>
<td>Component/composite serial digital fanout DA.</td>
<td>$350.00</td>
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<tr>
<td></td>
<td>Features:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Economical 1-in, 6-out serial digital distribution</td>
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</tr>
<tr>
<td></td>
<td>- Up to 12 modules in 3RU</td>
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<tr>
<td></td>
<td>- Automatic cable equalization</td>
<td></td>
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<tr>
<td>M9132</td>
<td>Component/composite serial digital reclocking DA.</td>
<td>$900.00</td>
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<tr>
<td></td>
<td>Features:</td>
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<tr>
<td></td>
<td>- 6 outputs</td>
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<tr>
<td></td>
<td>- Reclocked</td>
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<tr>
<td></td>
<td>- Up to 12 modules in 3RU</td>
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</tr>
<tr>
<td></td>
<td>- Automatic cable equalization</td>
<td></td>
</tr>
<tr>
<td>M9201-N</td>
<td>Composite digital to analog converter (NTSC</td>
<td>$1700.00</td>
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<tr>
<td></td>
<td>standard).</td>
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<tr>
<td></td>
<td>Features:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Up to 6 modules in 3RU</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- True 75 ohm BNCs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Looping video input</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- 25-pin D connector parallel output</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- 10-bit D to A conversion</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Selection of parallel or serial inputs</td>
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</tr>
<tr>
<td>M9221-N</td>
<td>Analog to composite digital converter (NTSC</td>
<td>$2000.00</td>
</tr>
<tr>
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<td>standard).</td>
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<tr>
<td></td>
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<tr>
<td></td>
<td>- Up to 6 modules in 3RU</td>
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<td></td>
<td>- 25-pin D connector parallel output</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- 10-bit A to D conversion</td>
<td></td>
</tr>
</tbody>
</table>

Prices and Specifications Subject to Change Without Notice.
Excalibur DS3 Video Codec and Digital Multiplexer

- Meets or exceeds RS-250C short haul specifications
- Standard 4-channel, 16-bit CD-quality digital audio
- 10-bit A/D video processing
- Optional T1 auxiliary channels (up to 8, which are dynamically bandwidth allocated with the video)
- Forward error correction allows full performance operation at up to 10⁻² error rate
- Extensive local/remote control and diagnostics
- NEBS compliant
- FCC part 15

The Excalibur DS3 lets you show your TV broadcast customers the clear advantages of digital transmission over unlimited distances.

Because it's fully compatible with all standard interfaces, you can use it with existing digital networks provided by local exchange and inter-exchange carriers.

The Excalibur system carries full motion video with up to 8 T1 auxiliary channels that are dynamically bandwidth allocated. Another advanced feature lets you monitor video and data performance on-line. Each codec can also, by local or remote command, be reconfigured into its complimentary function, i.e., an encoder can become a decoder or vice versa.

The Excalibur Video Codec gives 4-channel, 16-bit "CD-quality" digital audio, plus the added performance of 10-bit A/D video processing and greater than or equal to 67dB S/N ratio for exceptional picture quality.

The Excalibur frame will hold up to 10 codec modules. This allows 10 video and 40 CD quality audio channels per frame.

Each codec module can be set up as either an encoder or decoder.

Specifications

**Video Performance (NTSC)**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amplitude Response (50 IRE unit sine wave)</td>
<td></td>
</tr>
<tr>
<td>0.5MHz: +0.7 to -0.7 IRE units</td>
<td></td>
</tr>
<tr>
<td>1.0MHz: +0.9 to -0.9 IRE units</td>
<td></td>
</tr>
<tr>
<td>2.0MHz: +1.0 to -1.0 IRE units</td>
<td></td>
</tr>
<tr>
<td>3.0MHz: +1.2 to -1.1 IRE units</td>
<td></td>
</tr>
<tr>
<td>3.58MHz: +0.6 to -0.6 IRE units</td>
<td></td>
</tr>
<tr>
<td>4.2MHz: +1.2 to -1.1 IRE units</td>
<td></td>
</tr>
<tr>
<td>Chrominance-to-Luminance Gain Inequality</td>
<td>+2 to -2 IRE units</td>
</tr>
<tr>
<td>Chrominance-to-Luminance Delay Inequality</td>
<td>+20 to -20ns</td>
</tr>
<tr>
<td>Field-Time Waveform Distortion</td>
<td>≤3 IRE units p-p</td>
</tr>
<tr>
<td>Line-Time Waveform Distortion</td>
<td>≤0.5 IRE units p-p</td>
</tr>
<tr>
<td>Short-Time Waveform Distortion</td>
<td>≤2%</td>
</tr>
</tbody>
</table>

**Audio Performance**

| Frequency Range (10kHz to 4.2MHz): > 67dB  |
| Frequency Range (0 to 10kHz): > 53dB       |
| Frequency Range (300Hz to 4.2MHz): > 67dB  |

**Total Distortion**

| Data Rate:                                    | 44,736Mb/s ± 20 ppm, asynchronous        |
| Line Code:                                    | B3SZ, bipolar                            |
| Frame Format:                                 | M13 or C-bit parity                      |
| Line Impedance:                              | 75 ohms, unbalanced coax                 |
| N-EXC-CDC-01 Excalibur Codec (2-card set)    | . . . . POR*                             |
| N-EXC-TR-02 Excalibur DC tray with 2 power    | . . . . POR*                             |
| N-EXC-MAN-01 Excalibur manual                 | . . . . POR*                             |

*Price On Request

Prices and Specifications Subject to Change Without Notice.
**EZ-LINK**

**Series 87 FM Fiber Optic Systems**

Modular design permits several video applications in 1 EZ-Link tray assembly. For example, you can combine security monitoring or surveillance with instructional video distribution within a building, academic campus, financial institution or airport. All of these applications can be supported with the same EZ-Link modules. As your needs change, the modules can be rearranged to support different video and audio requirements.

EZ-Link with optional audio is also ideal for video conferencing on university and corporate campuses. EZ-Link offers you both LED and laser transmitters for video and audio distribution over distances up to 30km.

An FM square wave carrier eliminates video distortion due to optical system nonlinearities and delivers video S/N performance of greater than 60dB.

EZ-Link gives you a 10MHz frequency response for compatibility with standard NTSC or PAL baseband video (5.5MHz with audio option, NTSC only). In addition, a switchable AGC can reduce variations in audio levels, which are conveniently displayed by a front panel LED bar graph.

For even more flexibility, both AC and DC power supplies are available. You can choose from the standard 8-module rackmount tray or the 2-module wall mount version with convenient hinges that give you easy access for rear panel connections. The 2-module EZ-Link is ideal for installations with space limitations.

### Flexible Fiber Choices

Modules in the EZ-Link family work with multimode fibers in common sizes of 50/125 and 62.5/125 as well as single mode fiber in 8.7/125.

Flexible combinations of optical power level, operating wavelength and connector type allow EZ-Link video modules to interface with optical fiber networks originally planned for data communications or telephone applications.

### Specifications

#### Video Performance

- **Frequency Response:**
  - 30Hz to 5MHz ± 0.5dB, 10Hz to 8MHz ± 1dB, 8MHz to 10MHz +1dB, -5dB
  - 2T Pulse to Bar:
    - 3% & 15ns (NTSC or PAL)
  - Field Tilt:
    - <2% & 5%
  - Differential Phase:
    - <3% & 5°
  - Relative Chrominance to Luminance Delay:
    - <30ns (NTSC CIR)
  - S/N Ratio, CCIR Weighted 10kHz to 5MHz:
    - ≥ 60dB at -25dBm received power through attenuator
  - Differential Gain:
    - ≥ 57dB at -25dBm received power through attenuator
  - Differential Phase:
    - ≥ 5°

#### Audio Performance

- **Frequency Response:** 50Hz to 15kHz ± 3dB
- **Distortion:** 3% at 400Hz, 100% modulation
- **S/N Ratio (-25dBm Received Optical Power):** 50dB, NTSC multiburst on video, compression off

#### Alarms

- **Video Transmitter:** Loss of video input
- **Video Receiver:** Loss of carrier
- **Audio Receiver:** Loss of subcarrier
- **Alarms:** Loss of input indicated by front panel LED and signals a major alarm, minor alarm or no alarm (jumper selectable)

### EZ-Link视频, Audio, Transmitters and Receivers

- **87V-830-TX-ST** Video 830nm LED transmitter, ST . $580.00
- **87V-830-TX-S** Video 830nm LED transmitter, SMA . $580.00
- **87V-830-RX-ST** Video 830nm receiver, ST . $580.00
- **87V-830-RX-S** Video 830nm receiver, SMA . $580.00
- **87V-1300-LTX-ST** Video 1300nm multimode laser transmitter, ST . $1550.00
- **87V-1300-LTX-ST** Video 1300nm high power singlemode laser transmitter, ST . $2590.00
- **87V-1300-RX-ST** Video 1300nm receiver, ST . $1050.00
- **87A1-MV** Single channel audio modulator . $395.00
- **87A1-DV** Single channel audio demodulator . $395.00

### EZ-Link Trays

- **87TR8-AC-B** Tray, 2RU, 8 module with AC-B power supply . $890.00
- **87TR2-WAC** Tray, wall mount, 2 module with 87AC-W power supply . $450.00
- **87TR3-WAC-B** Tray, wall mount, 3 module with AC-B power supply . $750.00
- **87TR8-DC** Tray, 2RU, 8 module with 48V DCPS . $890.00

### EZ-Link Options

- **87EXT** Extender, EZ-Link . $105.00
- **87BP** Blank front/rear module panel for module slots . $36.00
- **87BP-P5-B** Blank panel for 87AC-B power supply slot . $35.00
- **87AC-B** AC power supply . $365.00
- **87AC-W** Wall mount AC power supply . $235.00
- **87DC-48** 48VDC power supply . $365.00
- **87TR-23** 23" mounting brackets for 2RU tray . $46.00

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**FIBER OPTIC TRANSMISSION SYSTEMS**

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**Grass Valley Group**  
— Telecom Systems —

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Prices and Specifications Subject to Change Without Notice.
Wavelink Series 3291 Analog Fiber Optic Systems

Wavelink Series 3291 Systems give you high quality analog fiber optic transmission of video, audio and data. You can specify systems with a variety of options, including: LED or high/lower power laser optical sources, operating wavelengths, optical connectors, cable equalizers, power sources, audio modules, data modules and alarm modules. Systems are available in a choice of rackmount or portable designs.

Model WDM Wavelength Division Multiplexer
This compact system lets multiple optical sources share a single fiber, effectively doubling the capacity of fiber optic cables. The WDM can be used for bi-directional or unidirectional multiplexing.

CS-43 Carrier Selectable Audio Multiplexer Option
This Wavelink option supports 2 to 4 channels of high quality audio transmission. Audio subcarriers are user programmable between 5.8MHz and 8.3MHz. The CS-43 offers 70dB S/N performance at less than 0.25% total harmonic distortion.

3291 20MHz Wideband
This video-only configuration is the ideal solution for high resolution applications such as HDTV, computer graphics, high resolution component video, wideband RGB and multiplexed analog video transmission.

Auto Changeover System
The Audio/Video Auto Changeover System protects program channel information from being interrupted by failure of the optical path or the video transmission equipment. It protects by controlling which of 2 paths carrying the same information (a preferred path and a backup path) will serve as the final system output. If either video or the optical carrier of the preferred path disappears, the system changes over to the backup path.

Wavelink-MC Multi-Channel System
The Wavelink-MC is a highly economical analog transmission system providing up to 4 video channels over a single fiber optic link.

Wavelink-MC gives you the added flexibility of multiple audio channels with each channel of video. Like all Wavelink family products, the Wavelink-MC shares a high commonality of modules for ease of expansion and simplified maintenance.

Modular construction meets your needs whether you’re transmitting video only or a combination of video, audio and data. The Wavelink-MC meets RS-250C short haul specifications with 4 video channels and 16 audio channels all in 1 fiber.

Wavelink 3291 Specifications

**Singlemode: Single Channel**

<table>
<thead>
<tr>
<th>Laser Launch Power Into</th>
<th>9µm Fiber Core (Singlemode, Including Repeaters):</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1300nm, ELD: &gt;-17dBm; 1300nm, LP laser: &gt;0dBm; 1550nm, laser: &gt;0dBm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Received Power for 67dB S/N Ratio (Weighted, 1kHz to 5MHz):</th>
</tr>
</thead>
<tbody>
<tr>
<td>1300/1500nm: -25dBm; CS43 4sc: -22dBm</td>
</tr>
</tbody>
</table>

**Optical Connector Options:** Biconic, "ST" or "FC"; 9/125µm cable

**Multimode**

<table>
<thead>
<tr>
<th>Laser Launch Power Into</th>
<th>9µm Fiber Core (Singlemode, Including Repeaters):</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1300nm, laser: &gt;0dBm</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Received Power for 67dB S/N Ratio (Weighted, 1kHz to 5MHz):</th>
</tr>
</thead>
<tbody>
<tr>
<td>1300nm: &gt;-15dBm</td>
</tr>
</tbody>
</table>

**Audio Performance (Single and Dual Channel)**

<table>
<thead>
<tr>
<th>Frequency Response:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Video only: 1Hz to 5MHz: ± 0.1dB; 5MHz to 8MHz (ref. 10kHz): ±0.2, -0.75dB; 8MHz to 10MHz: ±0.25dB</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>THD:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audio: 0.25%; audio with data: 0.5%; 1kHz at +20dBm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Crosstalk:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Channel-to-Channel: &lt;70dB</td>
</tr>
</tbody>
</table>

**Harris/Feinon Compatible**

<table>
<thead>
<tr>
<th>Frequency Response:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Video only: 1Hz to 5MHz: ± 0.1dB; 5MHz to 8MHz (ref. 10kHz): ±0.2, -0.75dB; 8MHz to 10MHz: ±0.25dB</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>THD:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audio: 0.25%; audio with data: 0.5%; 1kHz at +20dBm</td>
</tr>
</tbody>
</table>

**Wavelink 3291**

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3291-TX-112</td>
<td>Transmitter 830 LED 5.8 filter</td>
<td>$1450.00</td>
</tr>
<tr>
<td>3291-RX-112</td>
<td>Receiver 830 APD 5.8 filter</td>
<td>$1950.00</td>
</tr>
<tr>
<td>3291-TX-312</td>
<td>Transmitter 1300 LED 5.8 filter</td>
<td>$2480.00</td>
</tr>
<tr>
<td>3291-RX-212</td>
<td>Receiver 1300/1550 APD 5.8 filter</td>
<td>$2270.00</td>
</tr>
<tr>
<td>3291-TX-412</td>
<td>Laser TX 1300 5.8 filter</td>
<td>$7210.00</td>
</tr>
<tr>
<td>C3291-OP-11</td>
<td>Dual channel audio modulator</td>
<td>$780.00</td>
</tr>
<tr>
<td>C3291-OP-12</td>
<td>Dual channel audio demodulator</td>
<td>$780.00</td>
</tr>
<tr>
<td>C3291-OP-17</td>
<td>Carrier select audio modulator</td>
<td>$1360.00</td>
</tr>
<tr>
<td>C3291-OP-18</td>
<td>Carrier select audio demodulator</td>
<td>$1650.00</td>
</tr>
<tr>
<td>C3291-OP-22</td>
<td>Video/audio changeover</td>
<td>$2000.00</td>
</tr>
<tr>
<td>3291-TR-3221</td>
<td>Tray, video/audio/data 2RU AC</td>
<td>$1130.00</td>
</tr>
<tr>
<td>3291-TR-6221</td>
<td>Tray, video/audio changeover</td>
<td>$1340.00</td>
</tr>
</tbody>
</table>

**Wavelink MC**

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>N-WLPC-MOD</td>
<td>Modulator, multi-channel Wavelink</td>
<td>POR*</td>
</tr>
<tr>
<td>N-WLPC-DEM</td>
<td>Demodulator, multi-channel Wavelink</td>
<td>POR*</td>
</tr>
<tr>
<td>N-WLPC-TX</td>
<td>FDM laser TX, multi-channel Wavelink</td>
<td>POR*</td>
</tr>
<tr>
<td>N-WLPC-RX</td>
<td>FDM receiver, multi-channel Wavelink</td>
<td>POR*</td>
</tr>
<tr>
<td>N-WLPC-TR</td>
<td>4RU tray, multi-channel Wavelink</td>
<td>POR*</td>
</tr>
</tbody>
</table>

*Price On Request

Prices and Specifications Subject to Change Without Notice.
HD-16X Series Expandable Routing Systems

Control of the HD-16X system is achieved by means of a high speed serial link implemented with twisted pair cable. This allows frame-to-frame intercommunication and remote panel control for audio, video, data or HEDCO’s CCIR 601 and D2 digital routing systems.

All switches in this series are designed to work as stand-alone or in combination with any of the 16X panels. The variety of panels allows you to tailor the 16X system to your specific installation—no compromise. Pushbutton, alphanumerics, thumbwheel and status panels are available. Attributes include salvo operations, breakaway, user programmable labels, 8 level breakaway switching, single level switching, programmable input and output restrictions and simple operation.

The optional SCE-101 interface board provides RS-232 serial control. Remote control by modem and telephone line or microwave subcarrier, breakaway functions, status viewing, real time switching and up to 38 separate salvo operations are possible uses. This board can be installed in any unit, allowing you computer control for the entire system.

The various 16X control panels, in any combination, can be integrated into your system. Multiple panel choices offer flexibility today and expand in the future without obsoleting existing equipment.

Video Routing

The HD-16X16V router operates as a stand-alone or companion frame in a multi-frame system. For larger system requirements, additional units provide expansion up to 8 breakaway levels of 32 x 32 or larger. For systems requiring less than 16 x 16 routing, units are available in 16 x 8 and 16 x 4 configurations.

RGB can be configured as 3 separate levels or as a master unit and 2 slave units on the same level. External sync provides vertical interval switching.

In order to maintain compatibility and uniformity in this series, the basic circuitry in the various video models is identical. This design allows extreme flexibility in your applications.

Audio Routing

The HD-16X16 audio router was designed with the user in mind. Stereo, dual or mono configurations are available. Each frame can be installed as a stand-alone unit by adding only a local control panel. Should expansion be required in the future, simply add expansion modules and additional routers.

From these configuration choices, stereo 8 x 8 is available in a 1RU frame or 4 levels of 8 x 8 audio in 2 rack units. Up to 8 breakaway levels are possible. A variety of configurations can be assembled using HEDCO’s 16X routers and control options.

The 16 x 16 audio frame can be used in systems of 32 x 32 or larger in any combination with 16X video, data and digital routers.

The high impedance, balanced input circuits reduce loading effects and noise on the incoming signals. Quiet 16 x 1 crosspoint circuits result in high quality switching. Low impedance drivers provide +30dBu signal outputs. 25-pin subminiature “D” connectors are used for input and output connections. A 25-pin “D” plug-in adaptor to barrier strip connection is available as an option.

Data Routing

Reconfigure your studio at the touch of a button. The HD-16X16D data router simplifies the installation of any system which requires machine control.

The HD-16X data router is a true 4-wire operationally transparent regenerative digital routing system that provides 16 x 16 2-way digital paths for the routing of RS-422 and RS-232 signals. Single or multiple units in combination with 16X series video, audio and digital video routers can be used to build a complete system up through 8 levels.

The control standard is RS-485 compatible, common to all 16X series routers. RS-232 serial control is optional.


Prices and Specifications Subject to Change Without Notice.
100MHz 16Xplus Video Bandwidth Router

For general purpose routing, or when high bandwidth routing of computer graphics or HDTV is required, use the 16Xplus 100MHz video bandwidth router. Both the 16 x 1 video board and the 16 x 1 dual audio board plug into rear slots on the 16Xplus.

Its modular concept permits: • 100MHz of video and stereo audio in a 1RU frame • 100MHz of RGB video and stereo audio in a 2RU frame • Optionally available in an RF switching version

With 30MHz bandwidth (jumper selected) and the addition of an expansion module to the video board, inputs can be increased up to 32 x 1 in 1RU, or 64 x 1 in 2RU. Adding an expansion module to the audio board allows input expansion up to 64 x 1 stereo in 2RU. Secondary switching permits both audio and video to be expanded up to 256 x 1.

These routers can use existing 16X system control panels, or the 3-in-1 Numeric X-Y Panel, the RCP-NXY.

RCP-NXY Numeric X-Y Display and Control Panel

The multi-purpose RCP-NXY employs dip switch settings to define its use within 16X systems.

The same keypad allows you to: • Control the inputs on 4 outputs (a multi-bus, single-level panel) • Breakaway control the inputs on 1 output of 4 router matrices (a single-bus, multi-level panel) • Breakaway control all inputs on all outputs of 3 router matrices (an X-Y or multi-bus, multi-level panel)

When the largest matrix is a 16 x 16 or less, a keystroke-saving feature allows a jumper to redefine the keypad from a 10-key numeric entry mode to a 16-key input/output selection mode.

HD-8 x 8V/HD-8 x 8AS

The HD-8 x 8V 8 x 8 8 Video Router/HD-8 x 8AS 8 x 8 Stereo Audio Router are available in 1RU, and constructed with the same high performance specifications and control systems as the rest of the 16X Series. The 8 x 8s can be optionally controlled with the serial control add-on board, SCE-101, or the remote serial control unit, RSCE-101.

RSCE-101 Remote Serial Control Unit

The RSCE-101 is a stand-alone 1RU unit with its own power supply and performs the same functions as an SCE-101 board that is mounted internally in a 16X Series routing frame, providing RS-232 serial communications. The RSCE-101 is used to monitor the status of the system crosspoint connections, to make crosspoint connections or disconnections, to preset crosspoint programs, and to perform certain system operations such as the programming of RCP-AN series alphanumeric remote control panels. If the HD-16X system has several routing frames, more than 1 SCE-101 module or RSCE-101 may be installed in the system, thus providing multiple independent serial ports to the network.

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 ±9dB or ±8 to -60dB is factory set. Other ranges available by special order • Available as stand-alone units or rackmounted with 3 or 10 to a frame

Specifications

Input Impedance: >10K, differential, balanced or unbalanced
Level: +18dBm max.
Common Mode Rejection: >60dB at 60Hz
Output Impedance: 600 ohm or 150 ohm, source terminated +21dBm at 600 ohms +24dBm at 150 ohms +27dBm voltage
Output Level: >10K, differential, balanced or unbalanced +18dBm max.

SAS-345 4 x 1 Switchers

• Self-contained including on-board power supply • SAS-345 is a vertical interval switcher with full broadcast specifications, 30MHz bandwidth, 2 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 ±12V and the fuse

Specifications (SAS-345)

Impedance: >10K differential, balanced or unbalanced
Level: +18dBm max.
Common Mode Rejection: >60dB at 60Hz
Output Impedance: 600 ohm source terminated
Output Level: +18dBm at 600 ohms +24dBm voltage mode
Distortion: <0.1% at 20kHz at +18dBm
Crosstalk: >80dB at 20kHz
Signal-to-Noise Ratio: >100dB
Input/Output Connector: Barrier strips

SVA-345/SAS-345 Hedline 4 x 1 Switchers

Prices and Specifications Subject to Change Without Notice.
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 1 f/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.
- 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 660 lines horizontal resolution.
- Sensitivity: 2000 lux, f/6.7 (89.9% reflection factor).
- Auto white balance (2 memories) - 2 kinds of memories for 2 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 ±1/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: 60dB (NTSC), 57dB (PAL).
- Sync System: Internal (conforming to RS-170A) or genlock.

Since various accessories are available, the FP-C1 is usable as an EFP/studio camera in conjunction with a remote operation panel.

FP-C1 Without lens and AC adaptor .............. $6,449.00
FP-C1UG With 12:1 lens ......................... 7,701.00
FP-C1UH With 15:1 lens ......................... 8,090.00

FP-C2U
- Professional ENG camera is dockable to a Betacam VTR.
- 660 lines horizontal resolution.
- High sensitivity 2000 lux with f/5.6.
- Since there is no need for registration adjustment, the FP-C2U is ideal for ENG camera use.
- Besides the ENG combo application, the FP-C2U 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 60dB typ.; PAL 57dB typ.
- Sync system: Internal (conforming to RS-170A) or genlock.
- Operation with composite video signal or blackburst signal.

FP-C2U Without lens and AC adaptor .............. $8,430.00
FP-C2UG With 12:1 lens ......................... 9,540.00
FP-C2UH With 15:1 lens ......................... 9,860.00

CK-2B 3-Chip CCD Camera
- Same as FP-C2.
- 660 lines resolution.
- High sensitivity 2000 lux.
- Signal-to-noise 60dB.
- Built-in 6-speed electronic shutter, up to 1/2000 sec.
- Compact and lightweight.
- Dockable with a variety of 1/2" VTRs.

CK-2BUF Without lens and AC adaptor ........... $ 9,645.00
CK-2BHUH With 15:1 lens ....................... 10,860.00

Z-ONEA 3-Chip CCD Color Camera
- Improved vertical smear.
- Docks directly to Betacam.
- 400,000 pixels.
- Horizontal resolution: 750 TVL.
- Real time auto white balance function.
- 6-speed, variable electronic function.
- 600 lines 1.5" viewfinder.
- Contrast function for improving black suppression in shooting a scene against light.
- Auto knee function for improving white suppression at highlights.
- Auto iris function for providing the picture with a sense of nature.
- 6-memory auto white balance corresponding to the optical filters.
- ID display function in the color bar mode.
- Memory backup by E2ROM (battery unnecessary).
- Masking circuit enables subtle color adjustment.
- Clear pictures even in high light.
- Used in ENG and dockable 1/2" broadcast VTR applications and in EFP/studio applications.
- Signal-to-Noise Ratio: 60dB.
- Minimum sensitivity 25 lux.
- Adjustable shoulder mount maintains a comfortable balance with large lenses and dockable recorder.
- Viewfinder displays the camera's operating status and diagnostics on the screen.
- Flip-up eyepiece for easy viewing at any angle.

Z-ONEA-UF Without lens and AC adaptor ........ $ 9,900.00
Z-ONEA-UL With Fujinon 16:1 lens .............. 11,500.00
Z-ONEA-UH With Canon 15:1 lens .............. 11,500.00

Prices and Specifications Subject to Change Without Notice.
SK-F1/SK-F2/SK-F3 Portable CCD
Dockable Color Cameras

By employing the CCD, sensitivity, sticking characteristics, resistance to vibration and shocks, registration, etc., have been improved, and further, compactness, light weight and low power consumption have been realized. Horizontal resolution of 650 TV lines (SK-F1) and 700 TV lines (SK-F2/F3), Built-in electronic shutter enables the operator to obtain a sharp, clear picture with little blur even when shooting a rapidly moving object. Shutter speed can be selected from six speed modes including maximum 1/5000 seconds by the camera head. Color reproducibility matching color of Plumbicon® tube + Auto set up functions for white balance, black balance and pulse cancel are incorporated. Auto knee, knee aperture and contrast functions + RGB and gamma can be remote-controlled from the Base Station Unit (BSU). AUX input connector is provided on the camera head. GL input and VBS output provided on the camera head allow diversified operations. Color bars conforming to the SMPTE standard are employed. Recording camera operation + Viewfinder display + 1.5" high resolution, quick start viewfinder + Lens extender correction function is provided to correct deterioration of picture quality caused by shading simultaneously with lens extender switching + Auto iris is controlled by a microprocessor. SK-F3 and SK-F3A are also available with micro lens array CCDs.

The SK-F1 and the SK-F3 are broadcast ENG/EFP color cameras featuring high performance and high picture quality. The cameras employ a Frame Interline Transfer (FIT) type CCD as an imaging device, which remarkably improves smear, fixed pattern noise, etc. The SK-F1 employs an FIT CCD with 300,000 pixels, 650 lines, 60dB; the SK-F2 employs a newly developed 400,000 pixel IT CCD, 700 lines, 62dB; and the SK-F3 employs an FIT CCD with 400,000 pixels, 700 lines, 62dB. These cameras provide the same function, performance, operability, appearance, etc., except resolution and S/N. Since the cameras are compact, light weight and of low power consumption, they are suitable for operation as recording cameras. The cameras also allow stand-alone operation using the camera adapter, and further, allow full-scale EFP operation in conjunction with the base station unit providing various kinds of remote control. Besides, the SK-F1, SK-F2 and SK-F3 have compatibility with the SK-97D, SK-F1A, SK-F2A, and further, provide full-scale EFP operation in conjunction with the CCU. All cameras dock directly to Beta.

The CCU, the power supply, the triax unit and the control panel are integrated, which realizes the compact, lightweight CCU of half-rack size and weighing only 20kg. The triax uses the wideband RGB transmission system of 7MHz for the G channel and 6MHz for the R/B channels, so that the high resolution and high S/N can be ensured. Since the CP-F300 Control Panel (optional) can be easily detached between the CP-F300 and CCU is 100m and further, compactness, light weight and low power consumption have been realized. Horizontal resolution of 650 TV lines (SK-F1) and 700 TV lines (SK-F2/F3).
SK-F700/F710/F750/F760 Studio/Field CCD Cameras
- SK-F700/F750 are the wideband, triax RGB versions and SK-F710/F760 are the multicore cable or VBS triax versions
- FIT CCD + 62dB at 2000 lux, 1/5.6 + SK-F700/F710 ensure 700 lines resolution with 400,000 pixels
- SK-F750/F760 ensure 800 lines resolution with 450,000 pixels
- Easy replacement of CCD black
- Thermoelectric cooling by the peltier effect
- Color reproducibility matching color of standard Photube camera dynamic contrast
- 3DTL system
- Aperture circuit for RGB channels
- Various types of studio lenses ranging from 15X to 50X are available
- The availability of these various versions will meet requirements for diversified applications
- SK-F700/F710, SK-F750/F760 can be used with SK-F2/F3 ENG/EFP CCD cameras

Compact and Lightweight System
The camera is compact and weighs only 66 lbs. including the viewfinder. The half-size base station (BSU) and the compact remote control unit (RCU) of the SK-F760 allow not only control necessary for normal operation, but also write of auto setup commands, manual data, etc. The SK-F750 has a CCU.

Microprocessor-Controlled Auto Iris
Response of the lens iris is greatly improved. Lens iris is automatically controlled through a NAM (Non-Additive Mixing) circuit by detecting the highest video level among the R, G, and B channels. This feature provides proper control even under monochromatic illumination.

Filter Disk Consists of 2 Disks
The filter disk consists of 2 disks, 1 for ND filters and the other for color (CC) filters. The disks can be selected independently of each other. In addition, since servo control is available, the ND and CC filters can be controlled from the RCU through the BSU.

7" High Performance Viewfinder
A 7" high brightness, high resolution (800 TV lines) viewfinder is tiltable ± 45° to the horizontal and rotatable ± 135° with the center of gravity as a revolving center.

Viewfinder Display
The following indications and alarms are displayed on the viewfinder screen with characters for 5 seconds after each setup.
- High-gain information
- ND filter information
- CC filter information
- Name of data file used (A, B, C, or D)
- Selected lens extender (1X or 2X)
- Camera control at the camera head (CTL head)
- Video level
- Camera No. (DIP switch on camera head)
- Simultaneous indication of control for the RGB channels (only in manual control mode)
- Auto setup mode
- Results of auto setup
- On/Off control
- Control channel, control mode, and control amount of analog control items
- Fault diagnosis
- Shutter speed
- Graticule (picture frame, size and position variable)
- Zoom indicator

High-gain Switch
When the RCU and the SCU are used, a selection of up to 18dB is available in 3dB steps.

Rear Control Panel
All controls necessary for camera operation including auto setup are provided on the rear control panel of the camera. In camera head standalone operation, the same control items as the items in the CCU operation are available.

2-wire/4-wire Intercom System
Either 2-wire (RTS) or 4-wire intercom system can be selected at the BSU or CCU.

Automatic Cable Compensation
Loss of video signal characteristics is automatically compensated for.

Wideband RGB Triaxial System
The video and audio signals are modulated by the FM system to provide frequency multiplex. Transmission of a high-quality picture with high S/N is ensured.

Prices and Specifications Subject to Change Without Notice.
S-VHS/D-2 Recorder/Players

VL-S100 Professional/Industrial S-VHS VCR
- 14-pin terminal allows connection to a professional camera for high-resolution pictures without dot interference or cross-color problems
- S-terminal for separate Y/C signals and a video line input terminal are also available for a wide selection of video sources
- Equipped with a rotating head especially devoted to real time monitoring
- Sound is recorded with 2-channel VHS Hi-Fi recording and 2-channel linear recording with Dolby Noise Reduction
- Equipped with input and output terminals for the SMPTE time code so recording and reproduction of the time code is possible using an external time code generator
- Highly dependable wired remote control unit
- Built-in digital TBC with video memory and LSI controller offers stable picture reproduction without jitter
- External sync function easily and transparently mixes images from another VCR or a camera with images from the VL-S100
- Framing servo circuitry
- RS-422 serial port
- Using a dial on the editing controller, "jog" for close observation of individual frames and "shuttle" for quick access to the destination are possible
- When connected with S-VHS compatible TV monitors, provides a picture with 400 lines of horizontal resolution without dot interference
- Built-in chroma noise reducer circuitry cuts down on chroma noise for a clear image with natural color
- Starting and ending points of the repeat play operation can be easily set for repeated observation of the scene of interest
- Front loading

VL-S100 ........................................ $3,990.00

Accessories
VL-EC10 Editing control unit. Editing point and total time display, preview editing and review, editing point search, jog/shuttle dial ........................................ $2,000.00
VL-AC10 AC adaptor/battery charger. Charging time 1 hour for each battery ......................... $440.00
VL-BP12 Battery for VL-S100, 1.5 lbs. ................. $80.00
VL-RM10 Remote control unit for VL-S100 .................. $48.00

Dolby and Double-D Mark symbol are trademarks of Dolby Laboratories Licensing Corporation.

VL-D500 D-2 Compositing Digital VTR
- Smallest full-featured S/M/L D-2 recorder
- Streamlined menu system
- Built-in digital test generator
- Shuttle speed of ± 60 times variable speed playback
- Programmable time compression and expansion
- Simultaneous monitoring
- Comprehensive editing functions
- On-screen display
- Independent level meters
- Operator-friendly panel
- Multi-cue function for extensive editing
- Error correction and interpolation
- Diagnostic troubleshooting capability
- Multi-dimensional tape loading mechanism
- Various remote functions
- Built-in SMPTE time code generator/reader
- Occupies seven rack units in a standard 19" rack
- Plays all three cassette sizes (S-M-L) automatically for a recording time of 208 minutes
- Control panel adjustable in seven steps up to a 70° angle

Specifications
Recording Time: 208 minutes (L-size), 94 minutes (M-size), 32 minutes (S-size)
Tape: Maxell DL-208 MDV/DM-94 MDV/DS-32 MDV or metal (1500 Ohm) with equal specifications
Servo Lock Time: < 1 second from Standby On
Loading/Unloading Time: < 5 seconds
Shuttle Speed: Maximum ± 60 times normal speed
Variable Slow: From -1 to +3 times normal speed
Variable Play Speed: ± 20%
Editing Accuracy: 0 frame (when used with time code)
Fast Forward/Rewind Time: < 34 seconds (with S-size cassette)
< 96 seconds (with M-size cassette)
< 214 seconds (with L-size cassette)

Power Supply
Voltage: 90-135VAC
Frequency: 50/60Hz
Power Consumption: 480W (max.)
Outer Cabinet Dimensions: 12.6" H x 17.2" W x 26.5" D
Weight: 108 lbs.
VL-D500 ........................................... $79,000.00

Prices and Specifications Subject to Change Without Notice.

VL-D500
System 50 Body-Pac Wireless Microphone System
- VHF Hi-band RF link with switching diversity receiver • NRX-II™ Noise Reduction System designed for wireless mics, > 115dB dynamic range • Dual frequency selection

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 5VDC power available at the connector for electret elements. There's a mute switch and a low battery indicator. It 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 mic elements: HME HM58 dynamic (standard); optional Shure SM58 dynamic; or Shure SM85 or SM87 condensor cartridges • Ideal for multiple system operation—up to six in simultaneous operation

The TX555 handheld transmitter has an auto lock on the power switch which makes certain that power won't accidentally be turned off. There's a mute switch and a low battery indicator. It 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.

Prices and Specifications Subject to Change Without Notice.
IEC-750 Video Distribution Amplifier
- 1 input, 8 outputs
- Select dual 1 x 4
- Differential input
- Mount 3 in 1RU frame
- Low power consumption
- Portable

The input is high impedance loopthrough in the 1 x 8 mode of operation. In the dual 1 x 4 mode, the input is terminated internally. The dual mode of operation provides 4 outputs of each of the 2 inputs.

A switch on the rear panel allows the unit to operate as a dual DA with 2 terminated inputs with 4 outputs each. 2 gain controls on the front panel adjust the video level to ±3dB for each set of 4 outputs.

The IEC-750 has a video bandwidth of 20MHz, making it a very useful device for any application. A fuse on the front panel provides easy replacement. The IEC-750 is a self-contained video DA with an onboard power supply that draws only 4W. 3 units can be mounted in a 1RU frame ........................................ $375.00

IEC-843 Encoder
- RGB to composite video
- 360° subcarrier phase
- Internal RS-170A sync generator
- Y and C outputs
- PC lock

The IEC-843 is an RGB to NTSC encoder with RS-170A sync generator. The system is a self-contained unit measuring only 1 1/4" high and 8" deep. It can be mounted in a standard 19" equipment rack.

The required signal input is RGB with or without sync on the green channel. An external composite video or blackburst input is available to genlock to an external source. The internal sync generator provides blanking and burst to the encoder section.

The IEC-843 provides all sync generator pulse outputs that conform to the RS-170A specification. The propagation delay of the encoded signal is 250ns. An internal set of jumpers provide Y and C outputs for recording on S-VHS tape recorders.

Front panel controls are AC on/off, normal lock, internal lock, PC lock, internal frequency, SC phase and horizontal phase. The unit operates on 115VAC and draws approximately 15W ......................... $1995.00

PCD-873 NTSC Decoder
- RGB output
- Comb filter
- Video gain
- Chrome gain
- Hue control
- NTSC and YC input
- Y, R-Y, B-Y output

The PCD-873 Decoder will input either NTSC composite video or S-VHS (YC) component video. Input is determined by a front panel switch. The PCD-873 then outputs 2 each of the decoded red, green, blue and sync signals. The PCD-873 is internally selectable to provide Beta Y, R-Y, B-Y outputs. The green output, or Y output in Beta format, may be composite on non-composite via an internal adjustment. The sync output is jumper selected for either 4.0V p-p or 3.0V p-p amplitude, depending on customer requirements.

The PCD-873 Decoder features front panel selection of either 2-line comb filter or notch filter operation for NTSC video processing. In the S-VHS video mode the input is processed full bandwidth with no input filtering. Front panel controls provide for video gain, chrome gain, hue and input selection .................................................. $1995.00

PSG-412 Master Sync Generator
- RS-170A
- Genlock
- SC/H phased
- CRS output
- Blackburst output
- Vertical blanking line select
- Field 1, Line 10 ID pulse

The PSG-412 is a self-contained RS-170A master sync generator with genlock. The unit is designed with the engineer in mind. The PSG-412 allows the adjustment of all pulse widths except horizontal drive, vertical drive and field ID. All pulses have both amplitude and DC off set controls. Another unique feature of the PSG-412 is the vertical blanking width control. A DIP switch allows the selection of vertical blanking width from 17 through 21 lines. This permits the selection of vertical blanking with absolute accuracy and without adjustment tools.

The PSG-412 incorporates an ultra stable ovenized crystal oscillator as its master internal time bases. The internal ovenized oscillator operates at 14.31818MHz with a stability of 1 part per million per year. This oscillator is the master clock from which all pulses, including subcarrier, are derived. An LED indicator on the front panel is used to show proper operating temperature of the ovenized crystal oven. The bi-state LED will be red during the first few minutes of warmup and then turn green when the crystal has reached normal operating temperature.

1 of the many features of the PSG-412 is horizontal sync, SC/H, phase relationship. A rigid SC/H phase is maintained. In the insert bypass mode of operation the unit will insert new RS-170A sync and burst on the incoming video signal. In the genlock mode there is a 5ns timing range. There are 11 plug-in modules that make servicing an easy task ......................... $2475.00

IEC-835 System Timing and SC Phase Instrument
The IEC-835 Phaselcon measures the subcarrier to horizontal condition of any composite NTSC video signal and displays the results on any standard monitor. This measurement system also greatly decreases the time involved in extremely precise system timing. The information shown on the video monitor is horizontal timing and subcarrier phase. The visual display of the Phaselcon is key to the selected input. The Phaselcon displays the graphics for SC/H in the lower half of the video display.

In the certify mode of operation, a sine wave is displayed that represents 1 cycle of subcarrier. A vertical line represents the leading edge of sync relative to subcarrier phase. In the compare mode of operation, the certify and compare signals are displayed. An additional vertical mark is displayed on the left side of the display that shows relative differences in horizontal timing between the 2 composite signals. An additional vertical line display appears on the right to aid in extremely accurate horizontal timing.

Although the primary function of the Phaselcon is SC/H certification, it checks system timing and burst amplitude as well. Timing of 2 video sources are accomplished by adjusting the source timing until the 2 vertical lines on the left side of the display are superimposed. As the source timing approaches 200ns, the vertical line is moved to the right side of the display to increase the accuracy of the measurement. SC/H is accomplished by adjusting the source subcarrier for a match of the 2 sine waves. Each source to be matched should be switched into the compare input of the Phaselcon and calibrated until all sources in the system are timed and phased.

The shadow mode of operation reduces the video level behind the sine wave graphics. This area is calibrated to represent 40 IRE units for accurate burst level adjustment. The single sine wave signal should touch the top and bottom area of the shadow signal. By comparing all video sources in the system, a perfect burst match can be obtained ......................... $2475.00

Prices and Specifications Subject to Change Without Notice. 173
HL-57 CCD Digital Processing Camera (Preliminary)

- High performance 1/2" FIT CCDs
- With approximately 90% digital video processing circuitry, RGB signals are uniform, and phase and frequency response remain highly stable regardless of changes in temperature and time
- Digital processing circuitry allows precise parameter settings not achievable by conventional analog cameras: Gamma, Matrix, H.DTL, V.DTL, Slim DTL, Diagonal DTL, Comb Filter, Skin DTL, Aperture Correction
- Parameter settings can be easily and precisely adjusted according to your shooting conditions, since these settings are numerically controlled
- Setting values can be stored in a ROM, and since these settings do not change with temperature and time, etc., readjustment is unnecessary to maintain camera performance
- Compatible with all HL-55/55A accessories

Specifications

| Sensitivity: 2000 lux at 1/6.2 |
| Gain Switchable: 6/12/18/30dB (selectable by internal switches) |
| S/N Ratio: 62dB (typical) |
| Resolution: 750TVL |
| Video Output Signal: VBS 1V p-p, 75 ohm, 1 output; component output 1 channel; RGB output 1 channel |
| Shutter Speeds: 1/60 (off), 1/100, 1/200, 1/500, 1/1000, 1/2000 seconds |
| DTL Correction: Digital (H/V/Slim/Diagonal) |
| Pickup Device: Frame interline transfer 1/2" CCD image sensor with 400,000 pixels |
| Digital Processing |
| Sampling Frequency: 14.3MHz/28.6MHz |
| Quantizing: 10-bit |
| Dimensions: 510 x 3.7 x 6.1 in |
| Weight: 5.7 lbs. without 1.5" viewfinder |
| Lens Mount: Bayonet (compatible with HL-95/79/55) |
| Optical Filter: 3200°K 5600°K 5600°K 5600°K |
| +1/2ND +1/4ND +1/8ND |
| HL-57 Specifications: |
| Price: $39,000.00 |

HL-55 FIT ENG Color CCD Camera

- Increased video gain of +24dB
- Minimum illumination of 10 lux
- Gain can be selected between 0 and +24dB in 6dB steps
- White shading correction
- Horizontal DTL
- Auto highlight
- Optical filter with temperature and time correction
- Frame interline transfer 2/3" CCD image sensor
- Optical system with high sensitivity prism
- Low pass filter
- Auto balance
- Audio level controller
- VF indicators
- Remote control
- VCR interface
- Beta type optical filter
- Activity prism
- Low pass filter
- Electronic shutter
- Genlock function

Specifications

| Lens Mount: Bayonet (compatible with HL-95/79E) |
| Optical Filter: |
| Sensitivity: 2000 lux at 1/6.6 |
| Gain Switchable: 0, +9, +18dB (STD); 0, +12, +24dB; |
| S/N Ratio: 62dB |
| Resolution: H: 700TVL; V: 4000TVL |
| Video Output Signal: VBS 1V p-p, 75 ohm, 1 output; component output 1 channel; RGB output 1 channel |
| VF Video: R+G+B (normal) or monitor output signal selected by the monitor switch |
| Shutter Speeds: 1/100, 1/200, 1/500, 1/1000, 1/2000 seconds |
| Dimensions: 9" x 3.7" x 6.1" |
| Weight: 6.8 lbs. with 14" viewfinder |
| HL-55 Basic Camera: |
| Price: $32,144.00 |

HL-55 ENG configuration, includes: basic HL-55 camera configuration, CA-95C camera adaptor with battery bracket, module extender card for CA-95C and rain cover

Price: $35,094.00

HL-55A

- Same as the HL-55 but high-performance camera designed for ENG/EFP use
- Can be configured with on-board 1/2" broadcast VCRs like the HL-55, but also with Betacam and MII types

Specifications

| Optical Filter: |
| Gain Switchable: 0, +9, +18dB (STD); 0, +12, +24dB; |
| Resolution: H: 700TVL; V: 4000TVL |
| Video Output Signal: VBS 1V p-p, 75 ohm, 1 output; Component output 1 channel; RGB output 1 channel |
| VF Video: R+G+B (normal) or monitor output signal selected by the monitor switch |
| Shutter Speeds: 1/100, 1/200, 1/500, 1/1000, 1/2000 seconds |
| Weight: 6.8 lbs. with 14" viewfinder |
| HL-55A Basic Camera: |
| Price: $36,500.00 |

HL-55A ENG configuration, includes: basic HL-55 camera configuration, CA-95C camera adaptor with battery bracket, module extender card for CA-95C and raincover

Price: $38,500.00

HL-55A

Price: $39,570.00

Accessories

TA-55A Triax cable adaptor system for HL-55 and HL-55A
Price: $19,300.00

PTR-1 Compact microwave automatic tracking system for HL-55/55A
Price: $105,000.00

HL-53 ENG Color CCD Camera

- Interline Transfer (IT) CCD image sensor
- Optical system with high sensitivity prism
- Low pass filter
- Electronic shutter
- Genlock function
- White shading correction
- Dynamic DTL
- Mix DTL
- Auto black balance
- SMPTE color bar generator
- Docking with a VCR
- Highlight compression/knee
- Aperture correction
- Optical system with high sensitivity prism
- Low pass filter
- Electronic shutter
- Genlock function

Specifications

| Lens Mount: Bayonet (interchangeable with HL-95/79E) |
| Optical Filter: |
| Sensitivity: 2000 lux at 5.6 |
| Gain Switchable: 0, +9, +18dB (STD); 0, +12, +24dB; |
| S/N Ratio: 62dB (typical) |
| Resolution: H: 700TVL; V: 4000TVL |
| Video Output Signal: VBS 1V p-p, 75 ohm, 1 output; Component output 1 channel; RGB output 1 channel |
| VF Video: R+G+B (normal) or monitor output signal selected by the monitor switch |
| Shutter Speeds: 1/100, 1/200, 1/500, 1/1000, 1/2000 seconds |
| Weight: 6.8 lbs. with 14" viewfinder |
| HL-53 Basic configuration camera head (less lens): |
| Price: $32,500.00 |

HL-53 ENG configuration, includes: HL-53 basic camera configuration, CA-95C camera adaptor with battery bracket
Price: $25,450.00

Prices and Specifications Subject to Change Without Notice.
HL-V55 Digital 1-Piece Camera/Recorder (Preliminary)

**Camera Features**
- High performance 7/3" FIT CCD
- With approximately 90% of the video processing circuitry digital, RGB signals are uniform, and phase and frequency response remain highly stable regardless of changes in temperature and time.
- Digital processing circuitry allows precise parameter settings not obtainable with conventional analog cameras: Gamma, Matrix, H.DTL, V.DTL, Slim DTL, Diagonal DTL, Comb Filter, Skin DTL, Aperture Correction.
- Setting values can be stored in a ROM, and since these settings do not change with temperature and time, etc., readjustment is unnecessary to maintain camera performance.

**VTR Features**
- A full 50 minutes of digital pictures and clean PCM audio onto a compact 1/2" cassette. (A 64 min. tape will be available mid 1991.)
- 8-14 modulation channel coding and powerful error correction provide high picture quality and reliability at a high recording density.
- 4fsc, 8-bit video sampling, 54dB video S/N ratio and 6MHz video bandwidth.
- 48kHz 16-bit sampling onto 4 PCM audio channels, with frequency response from 20Hz to 20kHz (± 0.5dB) and dynamic range of 100dB.
- Backspace edit facility (to allow smooth transition to next sequence).
- Audio monitor speaker.
- 48V phantom power for microphone.

**Specifications**

<table>
<thead>
<tr>
<th>Camera Section</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Image Sensor</td>
<td>3-chip 7/3&quot; FIT CCD</td>
</tr>
<tr>
<td>Picture Element</td>
<td>400,000 pixels</td>
</tr>
<tr>
<td>Sensitivity</td>
<td>2000 lux (3200°K) with f/8.2, 0dB video gain, 89.9% reflectance, knee off</td>
</tr>
<tr>
<td>S/N Ratio</td>
<td>62dB (typical)</td>
</tr>
<tr>
<td>Resolution</td>
<td>750 TVL</td>
</tr>
<tr>
<td>Optical Filter</td>
<td>3200°K 5600°K 5600°K 5600°K</td>
</tr>
<tr>
<td>DTL Correction</td>
<td>Digital (H/V/Slim/Diagonal)</td>
</tr>
<tr>
<td>Shutter Speed</td>
<td>1/600 (off), 1/120, 1/240, 1/600, 1/1000, 1/2000 seconds</td>
</tr>
<tr>
<td>Gain Selection</td>
<td>6dB/12dB/18dB/30dB</td>
</tr>
<tr>
<td>Registration</td>
<td>&lt; ±0.03% of picture height (without lens)</td>
</tr>
<tr>
<td>Viewfinder</td>
<td>1.5&quot; quick start type, 550 TVL resolution at center</td>
</tr>
<tr>
<td>Microphone</td>
<td>Unidirectional, phantom powering</td>
</tr>
</tbody>
</table>

| VTR Section (Video Performance) |  |
| Sampling Frequency | 4fsc 14.3MHz |
| Quantization       | 8 bits |
| Channel Coding     | B-14 |
| Bandwidth:         | 5Hz - 5.5MHz ± 0.5dB |
| S/N Ratio:         | 54dB |
| Differential Gain: | ≤ 2% |
| Differential Phase:| ≤ 1% |
| Filter:            | 0 |
| K Factor:          | ≤ 2% (2T pulse) |
| Y/C Delay:         | < 15ns |
| DTL (Horizontal and Vertical):| ≤ 1% |
| Low Frequency      | Linearity: |
| Headroom:          | 20dB |
| Operating Level:   | 0/-80dB |
| Emphasis:          | T/ = 50μsec, T/ = 15μsec. (on/off selectable) |

**CCD CAMERAS**

HL-V57 Digital 1-Piece Camera/Recorder (Preliminary)

**Camera Features**
- High performance 7/3" FIT CCD
- With approximately 90% of the video processing circuitry digital, RGB signals are uniform, and phase and frequency response remain highly stable regardless of changes in temperature and time.
- Digital processing circuitry allows precise parameter settings not obtainable with conventional analog cameras: Gamma, Matrix, H.DTL, V.DTL, Slim DTL, Diagonal DTL, Comb Filter, Skin DTL, Aperture Correction.
- Setting values can be stored in a ROM, and since these settings do not change with temperature and time, etc., readjustment is unnecessary to maintain camera performance.

**VTR Features**
- A full 50 minutes of digital pictures and clean PCM audio onto a compact 1/2" cassette. (A 64 min. tape will be available mid 1991.)
- 8-14 modulation channel coding and powerful error correction provide high picture quality and reliability at a high recording density.
- 4fsc, 8-bit video sampling, 54dB video S/N ratio and 6MHz video bandwidth.
- 48kHz 16-bit sampling onto 4 PCM audio channels, with frequency response from 20Hz to 20kHz (± 0.5dB) and dynamic range of 100dB.
- Backspace edit facility (to allow smooth transition to next sequence).
- Audio monitor speaker.
- 48V phantom power for microphone.

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<td>Optical Filter</td>
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<tr>
<td>Registration</td>
<td>&lt; ±0.03% of picture height (without lens)</td>
</tr>
<tr>
<td>Viewfinder</td>
<td>1.5&quot; quick start type, 550 TVL resolution at center</td>
</tr>
<tr>
<td>Microphone</td>
<td>Unidirectional, phantom powering</td>
</tr>
</tbody>
</table>

| VTR Section (Video Performance) |  |
| Sampling Frequency | 4fsc 14.3MHz |
| Quantization       | 8 bits |
| Channel Coding     | B-14 |
| Bandwidth:         | 5Hz - 5.5MHz ± 0.5dB |
| S/N Ratio:         | 54dB |
| Differential Gain: | ≤ 2% |
| Differential Phase:| ≤ 1% |
| Filter:            | 0 |
| K Factor:          | ≤ 2% (2T pulse) |
| Y/C Delay:         | < 15ns |
| DTL (Horizontal and Vertical):| ≤ 1% |
| Low Frequency      | Linearity: |
| Headroom:          | 20dB |
| Operating Level:   | 0/-80dB |
| Emphasis:          | T/ = 50μsec, T/ = 15μsec. (on/off selectable) |

**Prices and Specifications Subject to Change Without Notice.**
HC-V 1-Piece S-VHS-C Camera/Recorder

- 1/2" 3-CCD image sensor with 400,000 pixels delivers outstanding picture performance, with an ultra-low level of smear and a superior dynamic range.
- Exceptional picture quality: 750 lines of horizontal resolution and 60dB S/N ratio.
- Cross-color suppression circuit.
- Linear matrix circuit.
- Black stretch circuit.
- Chroma-aperture circuit.
- Super color circuit.
- SMPTE color bar generator.
- Magnesium diecast housing for light weight and portability.

The HC-V features a 1/2" FIT CCD image sensor with 400,000 pixels and delivers exceptionally low smear, very high resolution and excellent color fidelity. The HC-V takes full advantage of the high picture quality and recording versatility provided by the S-VHS-C format. With camera and VCR built into a single body, the HC-V offers great maneuverability and operational flexibility. It also supports 2-roll recording. This camera is a 1-piece camera for high picture quality, offering a wide variety of applications including ENG and production.

### Specifications

**Camera Portion**

- **Pickup Device:** 3-chip 1/2" FIT-CCD with 400,000 pixels (total)
- **Sensitivity:** 2000 lux (3200°K) f/5.6 0dB video gain, 89.9% reflectance, knee off
- **S/N Ratio:** 60dB typical (camera output) (with gamma, DTL, chroma, matrix, all off, PED 5%, bandwidth 4.2MHz)
- **Resolution:** H: 750TVL; V: 400TVL (2000 lux, Retma standard resolution chart, gamma off)
- **Optical Filter:** 13 3000°K 5600°K 5600°K Effect + 1/8ND
- **DTL Correction:** H: RGB mix; V: 2H system (with comb filter)
- **Shutter Speeds:** 1/60 (off), 1/100, 1/250, 1/500, 1/1000, 1/2000 second
- **Gain Up:** -3, 0, + 9, + 18, + 24dB
- **VF Video:** NAM video
- **Viewfinder:** 1.5" fast start type, 500 TVL resolution at center
- **Microphone:** Unidirectional, phantom
- **Microphone Control:** Bars, auto iris, AWB mem, select (A/B off), AWB cont (start), ABB cont (start), gain select, shutter speed select, VTR (start/stop), black stretch

**VTR Portion (Video Performance)**

- **Television Format:** NTSC (525 lines, 60 fields)
- **Modulation System:** Y: frequency modulation; C: down converted subcarrier/separate Y/C signals
- **Horizontal Resolution:** > 400 lines (S-VHS color); > 240 lines (VHS color)
- **S/N Ratio:** 45dB (Rohde & Schwarz noise meter)

### Hi-Fi Audio

- **Frequency Response:** 20Hz - 20,000Hz
- **Dynamic Range:** > 80dB
- **Wow and Flutter:** Within 0.007% RMS

### Normal Audio

- **Frequency Response:** 40Hz - 12,000Hz
- **S/N Ratio:** > 44dB (with NR off)
- **Wow and Flutter:** Within 0.25% RMS

### Electrical

- **DC Input Power:** 12V (11 - 16V)
- **Power Consumption:** Approx. 23W (12V)
- **Consumption:** VBS (885), 1V p-p ± 6dB (0.45V p-p ± 6dB), 75 ohm
- **Mic:** 600 ohm balanced, -60dB, 48V phantom power
- **Video Output:** Composite, 2 channels

### Mechanical

- **Temperature:** 0 ~ 40°C
- **Humidity:** < 85% RH (non-condensating)
- **Storage Temperature:** -20 ~ 60°C
- **Tape:** 1/2" oxide tape VHS-C, S-VHS-C
- **Tape Speed:** 33.35mm/sec.
- **Recording/Playback Time:** Max. 20 min.

### Prices and Specifications Subject to Change Without Notice.

<table>
<thead>
<tr>
<th>Item</th>
<th>Specifications</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>HC-V</td>
<td></td>
<td>$14,995.00</td>
</tr>
</tbody>
</table>
CCD CAMERAS

HC-200 3-CCD Compact ENG Color Camera
- Horizontal resolution is 530 lines or better
- Electronic shutter
- Used in illumination as low as 20 lux at f/1.4 with +18dB gain
- Auto knee
- Comprehensive design for combined use
- Allowance for various VCRs
- Microcomputer control
- 1.5" viewfinder
- Remote control
- Compatible with computer graphics systems
- 4-channel scene filing function
- Lens compatibility

Specifications
- Optical System: RGB prism beamsplitter, f/1.4
- Lens Mount: 1/2" bayonet
- Optical Filter: 3000°K/5600°K + ND

Effective Number of Pixels: Approx. 250,000 pixels (510H x 492V) - NTSC
Approx. 290,000 pixels (500H x 582V) - PAL
- Shutter Speeds: 1/100, 1/500, 1/1000 sec.
- Horiz. Res.: 530 lines or better (at center) in Y channel
- S/N Ratio: Approx. 250,000 pixels (510H x 492V) - NTSC
Approx. 290,000 pixels (500H x 582V) - PAL
- Weight: 6.6 lbs. (excluding VF, lens and battery)

HC-200 Camera head includes: 1.5" viewfinder, camera adaptor, zoom lens, Canon 12X, mic, mic holder, carrying case, test extender, tripod mount plate, operation manual...

HC-200 Camera prices:...

HC-230 3-CCD Portable Color Camera
- Compact and lightweight
- Dust-proof construction
- Rugged
- High resolution and high signal-to-noise ratio
- Multi-speed electronic shutter
- Auto knee
- Auto setup
- Microphone
- Optional component amplifier, RGB amplifier and genlock module
- Compatible with computer graphics systems (RS-232C)
- Remote control
- Counter light

Specifications
- Pickup Device: 3-chip 1/2" FIT CCD
- Effective Number of Pixels: NTSC: 485(V) x 670(H)
- Sensitivity: 2000 lux f/4.5
- S/N Ratio: NTSC: 60dB typical
- Horiz. Res.: 600 TVL typical (PAL-B and NTSC)
- Lens Mount: 1/2" bayonet

Specifications
- Pickup Device: 3-chip 1/2" CCD
- Effective Number of Pixels: NTSC: 485(V) x 670(H)
- Sensitivity: 2000 lux f/4.5
- S/N Ratio: NTSC: 60dB typical
- Horiz. Res.: 600 TVL typical (PAL-B and NTSC)
- Lens Mount: 1/2" bayonet

Prices and Specifications Subject to Change Without Notice.

177
HK-355 CCD Studio/Field Camera

- Well-balanced camera head, made of aluminum, provides proper balance and increased portability
- Using a 2/3" FIT CCD with 450,000 pixels, it has a horizontal resolution of 800 TV lines (Y ch), a vertical resolution of 400 TV lines and a high S/N ratio of -62dB
- Saves camera adjustment and maintenance time by eliminating the need for registration, geometry and other time-consuming adjustments. The camera head also incorporates plug-in modular motherboard construction
- High-sensitivity prism is employed. A 6-directional optical LPF is incorporated to suppress false signals inherent in the CCD, with resolution that rivals 30mm tube cameras
- 3-channel detail correction is incorporated and made for color objects lacking the green component. A complete MIX DTL is also provided to suppress the DTL-induced moire
- Optical axis adjustment gives full correction of optical axis, especially when a lens with high magnification is used
- Electronic shutter can be adjusted for shooting various scenes under special conditions
- Highlight compression ensures a wide contrast range in image reproduction
- Video matrix and auto level setup
- 6-vector color correction
- Linear matrix circuit
- Color corrector
- Auto color corrector
- 7" viewfinder
- Camera head can be used alone as a self-contained unit
- Camera cables—triax, multicore and fiber optic—can be changed simply by plug-in module
- Various control panels, such as OCP, CCP and MCP, can be connected to the base station to perform versatile operations for each particular application
- Adaptation of various cables

Specifications

Rating

Input Signals

Genlock: VBS (BBS), 1V p-p (0.45V p-p), 75 ohms non-looping
Mic: -70 to -50dB, 600 ohms, 2 channels
Incom: 0dB, 600 ohms, 2 channels, 4W RTS
Tally Cont.: R,G, 2 channels, contact/power
Output Signals

Line: VBS or VB, 1V p-p, 75 ohms, positive, 1 channel
QTV Video: VBS, 1V p-p, 75 ohms, 1 channel
Monitor Video: VF select signal, 75 ohms, 1 channel
Aux. Power: 220V/240V± 0.5A; 100VA (117V±1A)

Overall Performance

Frequency Response (at Base Station Out) NTSC
Below 60Hz Failing
60Hz-4.5MHz Within ± 0.5dB
4.5MHz-6MHz Within ± 1dB
Overall 6MHz Failing

Gain Control

HK-355 (master)
HK-355P
HK-355P
HK-355P

Resolution

HK-355 (with super-V on; V: 450TVL)
HK-355P (with super-V on; V: 450TVL)

Registration

HK-355

HK-355BT Triax version with wideband head Triax adaptor
HK-355P Handheld version of HK-355
HK-355BM Multicore version with head multicore adaptor includes: camera head, head test extender, blind plate for head lens mount, adjustment tool, spare lamp and fuse, service manual

HK-355-OP-1-2 VFC 7-3 7" Color Viewfinder

- incorporates ICs and chips in its compact design, and is easy to operate as a conventional black and white viewfinder
- Sharpness provided by a fine-pitch, high-resolution CRT, a color-mono selector switch for specific purposes and images and a degauss switch

HK-353 CCD Studio/Field Camera

- Same features as the HK-355
- 2/3" IT CCD with 400,000 pixels
- Horizontal resolution of 700 TV lines (Ych) and a high S/N ratio of 62dB (typical)

HK-353BT Triax version

HK-353BM Multicore version with head multicore adaptor, includes: camera head, head rest extender, blind plate for head lens mount, adjustment tool, spare lamp and fuse, service manual

Prices and Specifications Subject to Change Without Notice.
COLOR MONITORS

15-Series Color Monitors
- Fine dot pitch shadow mask for 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, 15-Series uses a Digital Control System (DCS) for preset level modifications
- 3 operator memories
- To ensure long-term black level stability, 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.

15-Series high resolution color monitors are available in 13V and 19V configurations.

- TM 14-15RH units are available in cabinet or rack configurations, occupying 10½” height. The TM 20-15RH configurations are available in cabinet or rack configuration occupying 15¼” height.
- TM 14-15RH 14” auto set-up color monitor .......................... $5831.00
- TM 20-15RH 20” auto set-up color monitor .......................... 6810.00
- ASP-15 Auto set-up probe .............................................. 1695.00
- RCT-15N Wireless remote control box ............................... 154.00

16-Series Color Monitors - In-Line Gun Type

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
- Feedback clamp provides excellent black level stability with 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), front panel switchable
- 12V can be rack-mounted in 10.5” height
- 19V can be rack-mounted in 15.25” height
- Horizontal time constant can be selected either 0.5ms or 2ms

Test Facilities provided:
- Underscan switch to permit observation of picture corners
- Pulse cross switch for sync signal verification

16-Series are high performance, low cost monitors. Units are 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.

- TM 20-16R 20” NTSC with case ...................................... $2350.00
- TM 14-16R 14” NTSC with case ..................................... $2030.00

TM 10-16R 10” Broadcast Color Monitor

- In-line self converging electron gun assures convergence stability
- Black matrix surrounding CRT face assures high contrast under bright ambient illumination
- Flat square CRT assures easy to observe picture
- Comb filter provides wide band luminance, switchable to notch filter at front panel
- Feedback clamp provides excellent black level stability with varying APL
- Pre-set operating controls: chroma, brightness, contrast
- Sweep failure protection circuits prevent phosphor burns
- The TM 10-16R can be supplied for use with either AC power (standard) or from DC power (option) by replacing power unit. When the optional bracket is used in conjunction with the DC power unit, the TM 10-16R can be operated by battery (option)
- Blue Only function. A front panel switch allows the blue signal to be applied simultaneously to R, G and B channels. This makes for easy hue and color level checking using a color bar signal feed to the monitor

- TM 10-16R ............................................................... $1515.00

19-Series High Resolution Color Monitors

TM 20-19RH and TM 14-19RH Color Monitors

- The 19-Series monitors have the same cathode ray tube, system convenience and optional RGB or component input features as the 9-Series models TM 20-9RH and TM 14-9RH

Circuitry:
- Beam feedback system assures long-term stability by detecting CRT cathode current
- Wide band R-Y, B-Y precision demodulation provides faithful reproduction of input signal colorimetry
- Color filter preserves input signal resolution, switchable to notch filter
- Keyed back porch clamp prevents black level fluctuation, over 0-100% range of APL
- Automatic frequency phase control assures accurate color locking
- Color killer automatically activated at burst levels below 5 IRE
- Digital Control System (DCS) for preset level modifications
- 3 operator memories
- To ensure long-term black level stability, 19-Series monitors have the same cathode ray tube, system convenience and optional RGB or component input features as the 9-Series models TM 20-9RH and TM 14-9RH

Test Facilities provided:
- Rotation control, adjusts purity when monitor position is rotated
- Residual subcarrier test circuit evaluates input signal condition
- Underscan switch to permit observation of picture corners
- Set-up switch to disable vertical deflection for adjustment of low light white balance
- Individual switches to disable R-G-B beams
- On-demand degauss circuit demagnetize shadow mask

- TM 20-19RH 20” color monitor with case ........................... $8292.00
- TM 14-19RH 14” color monitor with case .......................... 5531.00
- TM 10-19RH 10” color monitor with case .......................... 2335.00

Prices and Specifications Subject to Change Without Notice.
20 Series Color Monitors

Preliminary

- Fine dot pitch shadow mask results in high resolution (700TVL). Dot trio pitch 0.31mm for TM14-20RH and 0.43mm for TM20-20RH
- In-line self converging electron gun assures convergence stability
- Controlled phosphors (to American broadcast standards) provide consistent and known colorimetry
- Black matrix surrounding phosphor dots assures high contrast under bright ambient lighting
- 13V and 19V units available
- Digital control system (DCS)
- Auto setup system with probe
- Remote control operation
- Infrared serial interface
- Beam feedback system
- Comb filter decoder (optional) under license from Faroudja Laboratories

Input capabilities include:
- 3 composite video inputs and an RGB or a component (Y, R-Y, B-Y) input as standard
- Optional plug-in decoder boards are available for digital (D1 or D2), PAL-B, SECAM, PAL-M TV standard systems
- Modular construction for ease of repair and adjustment
- Plug-in boards, many can be removed while monitor is mounted in rack

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM14-20RH</td>
<td>14&quot;</td>
<td>$5831.00</td>
</tr>
<tr>
<td>TM20-20RH</td>
<td>20&quot;</td>
<td>$6810.00</td>
</tr>
</tbody>
</table>

30 Series Color Monitor

20" High Resolution Color Monitor

Preliminary

- High-end color monitor
- 900 TVL with super fine dot pitch shadow mask
- Accepts different TV standards (NTSC, PAL-B, SECAM, PAL-M, D1, D2) with optional plug-in boards
- Optional auto setup probe
- Menu driven and user friendly
- Adaptive comb decoder (optional) under license from Faroudja Laboratories
- Safe title generator (100, 95, 90, 85, 75, 100+90+80% selectable) reference and variable horizontal position
- Infrared remote control (with optional remote box)
- Remote control with serial interface (optional)
- Test signal
- Video A/B split (reference and variable vertical position)
- Color/mono split (reference and variable vertical position)
- Beam feedback system
- Menu assist

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
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<tbody>
<tr>
<td>TM20-30RH</td>
<td>20&quot;</td>
<td>$8631.00</td>
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</tbody>
</table>

Prices and Specifications Subject to Change Without Notice.
TRIPODS

ITE-T6 Elevation Tripod
- Camera/Head Load Capacity: 50 lbs. * Min. Height: 29" * Max. Height: 65"
ITE-T6 ........................................... $1100.00

ITE-T10 Elevation Tripod
ITE-T10 ........................................... $1600.00

ITE-T12 ENG/EFP Tripod With Spreader
- Camera/Head Load Capacity: 50 lbs. * Min. Height: 24" (at max. leg spread)
ITE-T12 ........................................... $895.00
Includes removable, adjustable spreader (tyrod) assembly, rubber foot pads and spikes.

ITE-T30 Tripod Elevation Column
Features 3-section legs with radial locks for extension and contraction. An adjustable, lockable sperry provides structural stability. The ITE-T30 is equipped with a spirit level and combination rubber leg tips and metal spikes.
ITE-T30 ........................................... $1295.00

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 sperry for structural stability, the elevator column adjusts to 16°. Spirit level and rubber-tipped legs are provided.
ITE-T40 ........................................... $486.00

ITE-T45 Pneumatic Tripod “A” Frame
ITE-T45 ........................................... $895.00

ITE-T48 Tripod
ITE-T48 ........................................... $650.00

ITE-T20/60 Tripod
ITE-T20/60 ........................................ $1295.00

ITE-SP670 Tripod Spreader
ITE-SP670 Tripod spreader for T70 (aluminum) ........................................... $395.00

ITE-T300 Tripod
ITE-T300 Tripod ........................................... $4200.00

ITE-T500 Tripod
ITE-T500 ........................................... $750.00

ITE-T553 Tripod
- Load Capacity: 45 lbs. * Min. Height: 6.5° * Max. Height: 64° * Min. Folded Length: 30" * Width: 7.5" * Weight: 8 lbs. * Leg Sections: 3 * Bowl: 110mm * Finish: Anodized aluminum and black wrinkle * Optional Accessories: Reducer bushings 110mm to 100mm; 100mm to 75mm
ITE-T553 ........................................... $796.00

ITE-T554 Tripod
ITE-T554 ........................................... $875.00
Includes rubber foot pads and spikes

ITE-T600 Tripod
ITE-T600 ........................................... $950.00

ITE-T650 Tripod
ITE-T650 ........................................... $1100.00

ITE- MT1/MT2 Tripods for Camera and Microwave Applications
ITE-MT1 ........................................... $1800.00
Includes spreader; foot pad/spike/spherical ball set; Mitchell base
ITE-MT2 ........................................... $2100.00

Prices and Specifications Subject to Change Without Notice.
<table>
<thead>
<tr>
<th align="left"><strong>ITE-H6 Hydrocam Head</strong></th>
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</tr>
</thead>
<tbody>
<tr>
<td align="left"><strong>Camera Load Capacity:</strong></td>
<td align="left">130 lbs.</td>
</tr>
<tr>
<td align="left"><strong>Tilt Angle:</strong></td>
<td align="left">Up to 50°</td>
</tr>
<tr>
<td align="left"><strong>Height:</strong></td>
<td align="left">8&quot;</td>
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<tr>
<td align="left"><strong>Width:</strong></td>
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<tr>
<td align="left"><strong>Includes:</strong></td>
<td align="left">Dual handles and wedge adaptor and wedge plate</td>
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<tr>
<td align="left"></td>
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<tr>
<td align="left"><strong>ITE-H8 Microwave Pan/Tilt Head</strong></td>
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<tr>
<td align="left"><strong>ITE-H30 Fluid Head — Counterbalanced</strong></td>
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<td align="left"><strong>ITE-H100 Fluid Drag Head</strong></td>
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**FLUID HEADS**

| **ITE-H6** |  |
|  |  |
| **ITE-H8** |  |
| **ITE-H30 Fluid Head — Counterbalanced** |  |
| **Height:** | 8"  |
| **Weight:** | 2 lbs.  |
| **Includes:** | Flat plate 
Pan Rotation: 360°  |
| **Base:** | Mitchell type  |
| **ITE-H100 Fluid Drag Head** |  |
| **ITE-H20 Fluid Head** |  |
| **ITE-H40 Fluid Head — Counterbalanced** |  |
| **ITE-H48 Fluid Head** |  |
| **ITE-H50 Fluid Head** |  |
| **ITE-H60 Fluid Head** |  |
| **ITE-H70 Fluid Head — Adjustable Counterbalance** |  |
| **ITE-H100 Fluid Drag Head** |  |
| **ITE-H500 Horizon Series Fluid Head** |  |
| **ITE-H600 Horizon Series Fluid Head** |  |

**ITE-H30 Fluid Head** |  |
| **ITE-H40 Fluid Head — Counterbalanced** |  |
| **ITE-H48 Fluid Head** |  |
| **ITE-H50 Fluid Head** |  |
| **ITE-H60 Fluid Head** |  |
| **ITE-H70 Fluid Head — Adjustable Counterbalance** |  |
| **ITE-H100 Fluid Drag Head** |  |

**Prices and Specifications Subject to Change Without Notice.**
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

IVU, impedance, balanced, bridging inputs
Balanced, transformer output
301
SC2
1176SA
Pushbutton selection of four compression ratios, to satisfy various program requirements
High attack time front panel adjustable from 20-800ms independent of peak duration or frequency
Release time front panel adjustable from 20-800ms independent of the degree of limiting
High impedance, balanced, bridging inputs
Balanced, transformer outputs
Low noise, low distortion
Switchable meter ballistics

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 inputs
* Balanced, transformer output
* Stereo coupling, with accessory 1176SA

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
DR-1 Double rackmount for two LA-4s
SR-1 Single rackmount for one LA-4
301 XLR/QG adaptor

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
SC-6 Security cover

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
SC1 Security cover
301 XLR/QG adaptor

535 Octave 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 Octave Graphic Equalizer
SC1 Security cover
301 XLR/QG adaptor

53549A Graphic Equalizer/5549A Room Equalizer
* 1/3-octave filters on ISO centers
* 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

53549A Graphic Equalizer/5549A Room Equalizer
SC1 Security cover
301 XLR/QG adaptor

Prices and Specifications Subject to Change Without Notice.
POWER AMPLIFIERS

SR Series Power Amplifiers
- Ideally suited for broadcast applications
- Low feedback
- Low distortion
- Conveniently wrapped in a small, roadworthy, forced-air-cooled two rackspace package
- Satisfies specific demands of the audio professional by offering extreme efficiency, high reliability and impressive sonic quality
- Filtered cooling air is drawn in from the rear and exhausted at the front of the case
- Protective circuit breakers are fitted for overload/short circuit protection and are fast and easy to reset
- Meet requirements of U.S. and international safety agencies (UL, CSA, VDE)

<table>
<thead>
<tr>
<th>Model</th>
<th>Power (W per channel)</th>
<th>Price</th>
</tr>
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<tbody>
<tr>
<td>SR 6615</td>
<td>150W</td>
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</tr>
<tr>
<td>SR 6630</td>
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<tr>
<td>SR 6650</td>
<td>500W</td>
<td>$1195.00</td>
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</table>

ES Series Power Amplifiers
- Precision calibrated digital input attenuators with a lock-out function
- Plug-in input ports
- Variable speed fans
- Frequency response: ±1 dB, 20Hz-20kHz at any level up to rated power

<table>
<thead>
<tr>
<th>Model</th>
<th>Power (W per channel)</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>ES 150</td>
<td>75W at 4 ohms</td>
<td>$725.00</td>
</tr>
<tr>
<td>ES 300</td>
<td>150W at 4 ohms</td>
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<tr>
<td>ES 600</td>
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<td>ES 900</td>
<td>450W at 4 ohms</td>
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</tr>
<tr>
<td>ES 1200</td>
<td>600W at 4 ohms</td>
<td>$1595.00</td>
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</tbody>
</table>

6210/6211 Energizer Amplifiers
- Fit conveniently on back of speaker enclosure
- Symmetrical mounting pattern allows units to be mounted vertically
- 40W output into 8 ohms
- Complementary output stages with minimum negative feedback for low Transient Intermodulation Distortion (TIM)
- 3-pin XLR and 1/4" phone jack input connectors wired in parallel and active balanced inputs which will accept balanced or unbalanced line level sources
- 6211 is fitted with a switch-activated preamplifier for low impedance mic inputs and a user selectable high pass filter for reducing mic proximity effects and wind pops
- Optional 19" rackmount kit

<table>
<thead>
<tr>
<th>Model</th>
<th>Power (W per channel)</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>6210</td>
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</tr>
<tr>
<td>6211</td>
<td></td>
<td>$365.00</td>
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</tbody>
</table>

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 Transient Intermodulation Distortion (TIM)
- 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.

<table>
<thead>
<tr>
<th>Model</th>
<th>Power (W per channel)</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>6215</td>
<td></td>
<td>$725.00</td>
</tr>
</tbody>
</table>

6230, 6260 Power Amplifiers
- Active balanced bridging input circuitry
- Full complementary driver and output circuitry
- Low transient intermodulation distortion (TIM)
- Rugged, roadworthy construction
- Individual stepped gain controls
- XL-type, phone jack, and barrier strip input connectors
- 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

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 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.

<table>
<thead>
<tr>
<th>Model</th>
<th>Power (W per channel)</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>6230</td>
<td></td>
<td>$645.00</td>
</tr>
<tr>
<td>6260</td>
<td></td>
<td>$795.00</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Model</th>
<th>Power (W per channel)</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>6290</td>
<td></td>
<td>$1650.00</td>
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</table>

Prices and Specifications Subject to Change Without Notice.
SPEAKERS

4406 Studio Monitor
* Frequency Range (-6dB): 45Hz-27kHz  * Frequency Response (± 2dB): 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 ........................................... $250.00

4408 Studio Monitor
* Frequency Range (-6dB): 40Hz-27kHz  * Frequency Response (± 2dB): 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 ........................................... $325.00

4410 Studio Monitor
* Frequency Range (-6dB): 35Hz-27kHz  * Frequency Response (± 2dB): 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.

4410 L,R ...................................... $495.00

4412 Studio Monitor
* Frequency Range (-6dB): 35Hz-27kHz  * Frequency Response (± 2dB): 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.

4412 L, R ...................................... $750.00

Prices and Specifications Subject to Change Without Notice.
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. ................................................................. $1095.00

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 2-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 2 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 2 models differ chiefly in their frequency capabilities. The dual 15" (380mm) low frequency drivers of the 4435 provide greater bass output than is provided by the single 15" bass driver of the 4430.

4430 L.R ................................................................. $1695.00
4435 L.R ................................................................. 2395.00

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 035Ti driver. This high frequency transducer uses a 1" (25mm) pure titanium dome, which maintains flat on-axis response to 27kHz.

4312A L.R ................................................................. $575.00

Control I™ Personal Sized Monitor Loudspeaker
- Frequency Response: (± 3dB) 120Hz to 20kHz
- Power Capacity: 150W
- Sensitivity: 90dB SPL
- Crossover Frequency: 6kHz
- Enclosure Material: High-impact polystyrene
- Dimensions: 9" x 6 1/4" x 5 5/8" x 36" x 24" x 17" x 12" D x 75Hz to 20kHz
- Power Capacity: 175W
- Sensitivity: 92dB SPL
- Crossover Frequency: 3kHz
- Finish: Black or gray
- Dimensions: 15 1/4" x 9 7/8" x 9" D
- Weight: 10 lbs.
- Sonic advantages afforded by a larger enclosure allows the Control I to be used in the same manner as a large reference monitor.

Control I ................................................................. $575.00

Control 5™ Compact Control Monitor Loudspeaker
- Same features as Control I except:
- Frequency Response: (± 3dB)
- 75Hz to 20kHz
- Power Capacity: 175W
- Sensitivity: 92dB SPL
- Crossover Frequency: 3kHz
- Enclosure Material: High-impact polystyrene
- Dimensions: 15 1/4" x 9 7/8" x 9" D
- Weight: 10 lbs.
- 3-way design
- Magnetically shielded transducers
- Durable
- Portable
- Built-in carrying handle
- 1" titanium dome tweeter
- 12" driver
- Adjustment of mid range and high frequency level possible

Control 5 ................................................................. $395.00

Control 10™ Monitor Loudspeaker
- Frequency Response: 35Hz to 27kHz
- Power Capacity: 300W
- Sensitivity: 94dB SPL
- Nominal Impedance: 8 ohms
- Crossover Frequency: 1kHz
- Enclosure Material: High-impact polystyrene
- Dimensions: 24" H x 17" W x 12" D
- Weight: 32 lbs.
- 3-way design
- Magnetically shielded transducers
- Durable
- Portable
- Built-in carrying handle
- 1" titanium dome tweeter
- 12" driver
- Adjustment of mid range and high frequency level possible

Control 10 ................................................................. $575.00

Control 12SR™ Sound Reinforcement Loudspeaker
- Same features as Control 10 except:
- Frequency Response: (± 3dB)
- 55Hz to 16.5kHz
- Power Capacity: 200W
- Sensitivity: 97dB SPL
- Enclosure Material: High-impact polystyrene
- Dimensions: 24" H x 17" W x 12" D
- Weight: 44 lbs.
- High power handling (200W)
- 1 1/8" titanium diaphragm high frequency driver
- 12" low frequency driver

Control 12SR ........................................................... $795.00

SB-1 Control Series Sub-Bass System
- Designed to receive 2-channel stereo input and provide properly filtered signal to full range satellite systems
- Extends bass response
- Extends low frequency bandwidth
- Low distortion
- Features Triple Chamber Bandpass (TCB®) sub-bass technology
- 3-chamber, 4-woofer configuration
- 4 low frequency transducers are mounted as pairs
- Transducers are wired in opposing polarities to create a "push/pull" system
- High power handling (200W)
- Enclosures finished in matte black vinyl
- Noise reduction: 6Hz to 100Hz

SB-1 ................................................................. $295.00

SS-5 Same as SB-1 except can be teamed with either a single pair of Control 5 or 4 Control I loudspeakers ........................................ 375.00
## CCD CAMERAS

**KY-25U 3/4" 3-CCD Color Camera**
- 700 lines horizontal resolution
- 60dB S/N ratio
- Designed to work with BR-S411U with optional adaptors for MII and Betacam recorders
- Multi-format output signals: S-VHS, component and RGB
- RS-170A sync signal generator
- Zebra pattern video level indicator
- 2H vertical contour correction circuit
- Self-diagnostic system with character display
- High speed electronic shutter
- Stereo audio circuit
- Auto setup function
- 2 white balance memories
- 4-position filter turret
- Negative/positive image reversal
- Color matrix circuit
- False correction circuit
- Microprocessor controlled auto iris circuit
- Genlock circuit
- Solid-state imaging system
- Intercom headset terminal with output level control
- Earphone jack
- VTR trigger select switch
- Auxiliary video switch
- f/1.4 RGB prism
- Eyepiece system
- Closed optical filter
- 3200°K, 5600°K + 1/eND
- 2/3" bayonet lens mount
- f/5.6 at 2000 lux
- Illumination: 23 lux at 2.2fc with +18dB switch on

### Docking Camera Packages

#### ENG-51 Includes: KY-R25U 3-CCD color camera, HZ-S13U 13:1 servo zoom lens, BR-S411U S-VHS portable with battery, AA-G1OU AC adaptor/charger
- $7,640.00

#### ENG-61 Includes: KY-R25U 3-CCD color camera, HZ-S186BU 16:1 servo zoom lens, BR-S411U S-VHS portable with battery, AA-G1OU AC adaptor/charger
- $6,565.00

### Studio Camera Packages

#### STU-61 Includes: KY-H25U 3-CCD camera less lens (for camcorder), ENG version without the KA-20U adaptor. For use in camcorder applications only. Standard accessories: KA-232U camcorder carrying handle, VF-P1OU 1.5" viewfinder, KA-220U shoulder pad, KA-500XU tripod base, KA-300U intercom headset, VF-P1OU 1.5" viewfinder
- $1,050.00

#### STU-62 Includes: KY-H25U 3-CCD camera less lens (head only). Standard accessories: KA-20U adaptor, KA-231U handle
- $6,565.00

### Accessories

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
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<td>A10X10BMDS9</td>
<td>10:1 teleconference lens</td>
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<tr>
<td>A14X983ERM</td>
<td>14:1 servo zoom lens w/2X extender</td>
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<td>A18X5BMDS9</td>
<td>16:1 teleconference lens</td>
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<td>13:1 servo zoom lens</td>
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<td>HZ-S186BU</td>
<td>16:1 servo zoom lens</td>
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<td>AC adaptor/charger for BR-S411U/BR-G1U</td>
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<tr>
<td>AA-P200U</td>
<td>AC adaptor (snap-on)</td>
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<td>AA-P250U</td>
<td>AC adaptor/charger</td>
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<td>Battery holder (NB-G1U)</td>
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<td>CB-P410U</td>
<td>Carrying case</td>
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<td>DC-C11U</td>
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<td>KA-231U</td>
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<td>Carrying handle (B4S11/KY25)</td>
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<td>KA-280U</td>
<td>Bulk connector for VC-P110 camera cable</td>
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<tr>
<td>KA-500XU</td>
<td>Tripod mounting plate for KY cameras</td>
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<tr>
<td>KA-B20U</td>
<td>Betacam adaptor</td>
<td>$990.00</td>
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<td>KA-M20U</td>
<td>1/2&quot; VTR adaptor</td>
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<tr>
<td>MV-P612U</td>
<td>Hot-shoe stereo microphone</td>
<td>$570.00</td>
</tr>
</tbody>
</table>

**Prices and Specifications Subject to Change Without Notice.**
BY-10U Series 1/3" 1-Chip Color Camera

- 360,000 pixel CCD produces more than 450 lines of horizontal resolution • S-VHS camcorder capability with the BR-S411U (no adaptor required) • 2 lens versions, X and 16X zoom lenses, are available • Versatile applications—studio, ENG/EFP and teleconferencing • 3-speed shutter function of 1/80, 1/200 and 1/1000 • Built-in character generator for self-diagnostic warnings • Preset plus 2 auto balance white memories • Special lens mount as well as a C-mount. Most C-mount lenses can be used for teleconferencing applications • Multi-position, 11X and 16X zoom lenses, are available • Versatile applications—studio, VHS camcorder capability with the BR-S411U (no adaptor required) • 2 lens versions, 11X and 16X zoom lenses, are available • Versatile applications—studio.

VHS camcorder capability with the BR-S411U (no adaptor required)

2 lens versions, 11X and 16X zoom lenses, are available

Versatile applications—studio, VHS camcorder capability with the BR-S411U (no adaptor required)

2 lens versions, 11X and 16X zoom lenses, are available

Versatile applications—studio, VHS camcorder capability with the BR-S411U (no adaptor required)

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2 lens versions, 11X and 16X zoom lenses, are available

Versatile applications—studio, VHS camcorder capability with the BR-S411U (no adaptor required)
S-VHS RECORDER/PLAYERS

**BR-S411U S-VHS Docking Portable Recorder/Player**
- S-VHS recording and playback circuitry
- VITC (Vertical Interval Time Code) recording capability via time code generator (SA-R100U)
- Hi-Fi VHS stereo sound with a dynamic range of more than 85dB and extended frequency response of 20Hz to 20kHz
- XLR balanced audio input/output connectors
- Rotary erase heads
- AEF Automatic Editing Function
- Shuttle search and frame advance
- LCD tape counter switchable to lap timer
- Long pause mechanism
- Flexibility as a camcorder or portable: Can be docked directly with any of the KY-17U/25U 3-CCD cameras or the BY-10U single-CCD camera; also can be used as a separate portable recorder
- Can be used as a feeder in a simple editing system
- Comprehensive warning system
- Video S/N ratio 45dB

**BR-S405U S-VHS Portable Recorder/Player**
- High quality S-VHS pictures with built-in chroma noise reduction
- 14-pin camera connector
- Y/C input and output
- Twin impedance rollers in the tape path greatly reduce jitter
- Hi-Fi stereo sound and normal 2-track audio
- Balanced XLR audio input connectors
- High speed shuttle search
- Rotary erase heads and AEF function
- Large record indicator
- Comprehensive warning system
- Video S/N ratio 46dB
- S-VHS, 45dB VHS
- Horizontal resolution: 240 lines VHS color
- 400 lines S-VHS color

**BR-S420CU S-VHS-C Dockable Recorder/Player**
- S-VHS and VHS recording and playback using compact C-size cassettes (SP mode only)
- Designed for direct docking with KY-17U/25U 3-CCD and BY-10U single-CCD video cameras
- 20-minute ENG recording with a single cassette
- VITC recording capability with the attachable SA-R100U optional time code generator
- Rotary erase head and AEF function for clean assembly edits
- Power supply flexibility: NB-G1U battery pack via adapter, AA-G10U battery charger/AC adaptor
- Video S/N ratio 43dB
- S-VHS (46dB when recorded tape is played back on BR-S811U), 42dB VHS (45dB when recorded tape is played back on BR-S811U)
- Absolute resolution 400 lines (S-VHS)
- Standard accessories: NB-G1U rechargeable battery, SA-S10U battery holder and SA-CP11U Professional VHS cassette adaptor.
- $2799.00

**Accessories for BR-S411U/S405U/S420CU**
- AA-G10U AC adaptor/charger. Charges up to 4 NB-G1U batteries. Also provides power for the recorder...
- NB-G1U Rechargeable 2.2AH snap-on battery...
- BH-P40U Battery holder (BR-S411U)...
- SA-R100U Time code generator (BR-S411U/S420U)...

**BR-S600U S-VHS Recorder/Player**
- S-VHS picture with separate Y/C input/output
- Hi-Fi stereo sound with a dynamic range of more than 85dB
- VHS recording and playback circuitry
- Direct tape access functions: Time Go-To, VHS Index Search with Mark/Erase, intro search
- Visual search and special effects playback including variable speed search, double-speed playback and shuttle search at 7X normal
- Slow motion and still playback: clean and noise-free stills and frame advance at speeds of 1/10, 1/5, 1/2X, 1/2 of normal speed
- Instant editing function with rotary erase head
- Timer playback and full-repeat playback
- Wired remote control
- Next function memory
- Auto rewind
- Real time tape counter
- EP tape playback
- Video S/N ratio 45dB
- Horizontal resolution: 400 lines S-VHS, 230 lines VHS
- $1200.00

**BR-S601MU S-VHS Recorder/Player**
- S-VHS recording and playback
- High performance frame memory
- Conforms to the medical UL safety standard
- Hi-Fi stereo sound with a dynamic range of more than 85dB
- Rotary erase head
- Multiple search functions including still, frame advance and shuttle search, and VHS Index Search System with Mark/Erase
- Remote control
- Counter backup
- Output flexibility: 2 separate Y/C outputs and a composite output
- Video S/N ratio 45dB
- Horizontal resolution: 400 lines S-VHS, 230 lines VHS...
- $2490.00

**BR-S605UA S-VHS Recorder/Player**
- With Built-In PWB Slots
- 2 external PWBs (Printed Wing Boards) for system customization
- RS-232C serial remote controllability with optional 8-pin RS-232C board (SA-K17U) PWBs optionally available for added flexibility
- Separate Y/C input and output
- S-VHS picture quality with built-in chroma enhancer
- 4-channel audio or 2-channel Hi-Fi audio and 2-channel linear audio with Dolby B NR
- Manual audio level controls and meters
- Automatic digital tracking
- Frame servo
- EDP Function Select System for easy setup and troubleshooting
- Mode lock
- Variable-speed dial search
- External sync input and RF output for DOC
- Automatic repeat playback
- Counter memory
- Hour meter on EDP display
- 19" EIA rack-mountable
- Video S/N ratio 45dB (SP)
- Horizontal resolution: 400 lines S-VHS, 240 lines VHS...
- $1995.00

**Accessories for BR-S600U/S601MU/S605UA**
- RM-G61U Wired serial remote control, large shuttle control dial (BR-S600U/S601MU/S605UA)...
- SA-F15U Parallel interface unit (15-pin to 45-pin)...
- SA-K17U RS-232C interface board for BR-S605UA...
- SA-K18U 45-pin interface board for BR-S605UA...
- SA-K33U 33-pin interface board for BR-S605UA...

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**Prices and Specifications Subject to Change Without Notice.**
BR-S611U S-VHS Recorder/Player
BR-S811U S-VHS Editing Recorder/Player
- High picture quality: chroma enhancement, improved crossstalk cancellation circuitry, improved luminance signal frequency response and improved picture stability with TS (Tape Stabilizing) head drum • S-VHS recording and playback circuitry featuring 3-line Logical Comb Filter • Professional quality editing functions (BR-S811U only) • Separate Y/C input/output connectors • Hi-Fi VHS stereo sound with a dynamic range of more than 90dB and extended frequency response of 20Hz to 20kHz • Audio dubbing possible on normal audio channel 2 soundtrack (BR-S811U only) • Professional standard XLR balanced audio connectors: input and output levels selectable from +4dB, 0dB and -6dB • Manual audio/video level meters and controls • SMPTE time code recording and playback • Variable speed dial search and jog control • Large, illuminated function buttons • Easy-to-see LED indicators • Half loading mechanism • Digital time counter • Full repeat and counter memory • Timer recording and playback with external timer (BR-S611U only) • Heavy-duty mechanism • Self-diagnostic warning system • Front panel test points • Automatic head cleaning • Hour meter • 45-pin remote connector • External sync input and RF output for DOC (dropout compensator) • Framing servo on/off switch • Headphone jack with adjustable output level • 2 Video Line Out connectors and 1 separate Y/C monitor connector • 19" EIA rack-mounting possible • Video S/N ratio 46dB (S-VHS) • Horizontal resolution 400 lines (S-VHS)
BR-S611U S-VHS recorder/player ........................................ $ 3,690.00
BR-S811U S-VHS editing recorder/player .................................. $ 5,000.00
VES-21 Editing System Package: BR-S811U S-VHS Editing Recorder; BR-S811U S-VHS Editing Recorder; RM-G810U Parallel Editing Controller; ......................................................... $10,640.00
VES-41 Editing System Package: BR-S811U S-VHS Recorder/Player; BR-S811U S-VHS Editing Recorder; RM-G810U Parallel Editing Controller; SA-T400U Time Base Corrector; ......................................................... $13,000.00
VES-21TBC Editing System Package: BR-S811U S-VHS Editing Recorder; BR-S811U S-VHS Editing Recorder; RM-G810U Parallel Editing Controller; BR-S811U S-VHS Editing Recorder; RM-G810U Parallel Editing Controller; SA-T400U Time Base Corrector; ......................................................... $11,690.00
BR-3200U 2/6-Hour VHS Recorder/Player
- Oval cut DA-4 head system • Quick response full loading mechanism • Digital tracking • Full function wireless remote control • 1-month/6-event programmable timer • 3-lead power cord • BNC connectors for video in/out ........................................ $465.00
BR-3700U 2/6-Hour VHS Recorder/Player
Includes all the features of BR-3200U plus: Flexible timer playback • Serial remote in/out • Auto play and eject off • Noiseless stills and slow-motion playback • Microphone mixing input ........................................ $570.00
BR-3900U 2/6-Hour VHS Recorder/Player
Includes all the features of BR-3200U/3700U plus: Double speed playback with intelligible audio • Series recording/playback capability ........................................ $4669.00
BR-6400U 2-Hour VHS Recorder/Player
- Microprocessor full logic control • Shuttle search at up to 10 times normal speed in either direction • Capstan servo and external sync capability • Remote control and random access options • 2-channel selectable audio dubbing • Interfacing source machine for editing system • Automatic backspace editing control makes edits virtually undetectable • Automatic repeat of entire tape • Direct drive motors • Video S/N ratio more than 280 lines (black and white) ........................................ $1,985.00
BR-6400TR Multi-Standard VHS Recorder/Player
Includes all basic features of BR-6400U plus: Records PAL and SECAM signals • Plays back PAL, SECAM and 4.43MHz NTSC signals ........................................ $2,450.00
BR-7700U 2-Hour Hi-Fi VHS Recorder/Player
- Heavy-duty mechanism with direct drive motors • Variable speed dial search from still to 10 times normal in forward and reverse • 45-pin remote control connector • Video AGC on/off switch • External sync capability • Vertical interval switching (AEF) • Warning indicator for any malfunction related to tape transport mechanism or connectors • Video S/N ratio: 45dB (Rohde & Schwarz noise meter) • Horizontal resolution 240 lines color, 300 lines black and white ........................................ $2,560.00
BR-8600U VHS Editing Recorder/Player
- Professional quality editing functions • Preroll functions for automatic editing • Heavy-duty mechanism with direct drive motor • Variable speed dial search from still to 10 times normal in forward and reverse • Improved color dubbing quality • 3 video inputs selectable • External sync capability • Warning indicator for any malfunction related to tape transport or moisture condensation • Video S/N ratio: 45dB (Rohde & Schwarz noise meter) • Horizontal resolution 240 lines color, 300 lines black and white ........................................ $3,440.00
VEP-31 Editing System Package: BR-8600U VHS Editing Recorder; BR-8600U VHS Editing Recorder; RM-G810U Parallel Editing Controller; SA-T400U Time Base Corrector; ......................................................... $9,130.00
BR-8600U VHS Editing Recorder; RM-G810U Parallel Editing Controller; SA-T400U Time Base Corrector; ......................................................... $8,250.00
RM-G410U Editing Controller
• Simple cut editing control unit designed to work with the BR-S411U and BR-S811U S-VHS editing recorders • LED displays total time, elapsed time of edit and edit-in and edit-out points including total edit duration ........................................ $285.00

RM-G810U Remote Control Editing Unit
• A remote editing controller for the KR-M800U, BR-S811U, BR-S611U, CR-850U, CR-800U, CR-8250U, CR-8600U, BR-7700U and JVC VCRs with 45-pin connectors • Built-in jog function • Connected to KR-M800U, BR-S811U or BR-S611U the tape counter display can indicate times (H, MM, SS, Frame) in FF/rew and high speed search mode as well as playback and recording mode by counting CTL pulse • Self-illuminating buttons ........................................... $2250.00

RM-G860U A/B Roll Editing Controller
• Dual source editing • Accepts both 9-pin (serial) and 45-pin (parallel) VTRs • Time code referenced editing (with serial VTRs) • Audio split editing • Dual search dials • 3 LED counters • 2 GPI ports • VTR cables (VC-G7050U 45-pin or serial) not included .................. $3695.00

RM-LP80U Small Remote Control Unit
• For GY-X1TCUL14 camera • Compact unit for controlling camcorder • Functions include bars, VTR trigger, test out select, gain select, white balance, paint, iris level, iris auto/manual, master black, etc. • Maximum distance 328' from camera • Includes 16' cable ............... $670.00

SA-D811U Y/C Distribution Amplifier
• Separates and distributes Y and C signals to a maximum of 21 duplicators (with a pair of BNC and 20 7-pin connectors) • Loops through input for parallel connection • Convenient front panel test points and level controls • Input signal format: NTSC component Y/C signals • Input signals: Y 1.0V p-p, unbalanced; C 0.286V p-p (burst signal) high impedance, 75 ohms switchable • Output signal format: NTSC component Y/C signals • Output signal: Y 1.0V p-p ± 1dB, 75 ohms unbalanced; C 0.286V p-p ± 1dB, 75 ohms (burst signal) ................. $3840.00

SA-D820U Video Distribution Amplifier
• SA-D820U has 2-input/12-output (BNC) video amplifiers and can be used as a Y/C distribution amplifier • Input signal x 2:1.0V p-p, unbalanced, 75 ohms or high impedance switchable • Output signal: 1.0V p-p ± 1dB, 75 ohms or high impedance switchable • Output connectors: BNC connectors for A and B channel x 12 sets • A built-in hum noise canceller provides a clean signal transfer ........................................ $4300.00

SA-E100U Y/C Separator
• Separates the input NTSC composite signal into Y/C signal components • 2 BNC connectors and a single 7-pin connector are provided for output signals • Loops through input for parallel connection • Input signal format: NTSC composite standard, 525 lines • Input signal: 1.0V p-p, unbalanced high impedance or 75 ohms switchable • Output signal format: NTSC component Y/C signals • Output signals: Y: 1.0V p-p, 75 ohms, unbalanced; C: 0.286V p-p (burst signal) ............... $2730.00

SA-T411U Time Base Corrector/Noise Reducer
• Designed to expand the use of JVC's Professional S equipment in editing suites • Converts codes from the 33-pin output connector of the BR-S411U or BR-S811U to JVC 45-pin parallel interface • Swap editing capability for use with JVC KR-M820U and other serial VTRs with front panel editing controls • VITC reader/generator via Y/C or composite signals • LTC reader/generator via RCA connectors • On-screen display (window generator) for time code • Rack mountable • Powered by 45-pin VTR ........................................... $1360.00

SA-R100U Time Code Generator
• Attaches directly to the rear or bottom of the BR-S411U • Outputs VITC or longitudinal time code (via DIP switch) • Selectable user bits • LCD display for time code or user bits • Start/stop or free run modes • Drop or non-drop frame modes (via DIP switch) ................ $1000.00

SA-F911U Time Code Reader/Generator
• 9-pin serial (RS-422) to JVC 45-pin parallel interface • 25-pin serial (RS-232) to JVC 45-pin parallel interface • Swap editing capability for use with JVC KR-M820U and other serial VTRs with front panel editing controls • VITC reader/generator via Y/C or composite signals • LTC reader/generator via RCA connectors • On-screen display (window generator) for time code • Rackmountable • Powered by 45-pin VTR ........................................... $1360.00

SA-T411U Time Base Corrector/Noise Reducer
• Ideal for enhancing multi-generational dubbing quality in an S-VHS editing system • Separate Y/C digital processing for high-precision operation • Built-in noise reducer to improve chrome S/N in multigeneration dubs • BNC and 7-pin Y/C 358 connectors • Built-in frame memory • Built-in dropout compensator • Y-signal digital delay line • Switchable ACC circuit • Black stretch circuit • Frame and field freeze • Remote control capability ........................................ $4800.00

SA-T400U Time Base Corrector
• High picture quality by processing the signal in 4:1:1 component format, with 8-bit quantization of both Y and C components. Resolution is greatly improved through use of new wideband CCD comb filter • BNC and 7-pin Y/C 358 connectors • Built-in frame memory extending over 2 fields • Dropout compensator • A digital delay line is provided to adjust the delay of the Y signal with respect to the C signal; for precise adjustment, the delay can be adjusted in 16 steps of 74ns • Switchable ACC circuit • Black stretch circuit • Frame and field freeze can be performed manually or automatically. When in the automatic mode the SA-T400U will freeze the picture on the last good field of video • Remote control, optional ........................................ $3950.00

Prices and Specifications Subject to Change Without Notice.
BR-7000UA VHS HI-FI Duplicator
- Large cassette guides for easy loading and unloading
- Erasure prevention tab override
- Professional Hi-Fi dubbing system
- Direct drive motor, heavy-duty chassis
- Essential test points located on front panel
- Front panel hour meter
- Easy tape path maintenance
- Standard EIA 19" rack mount capability
- Auto head cleaning

BR-7030U VHS HI-FI Duplicator
- 3-in-1 cost saving duplicator
- Reduced power consumption
- Record-only chassis
- Single input for 3 recording units
- Self-diagnostic warning system
- 1 parallel and 2 serial remote control connectors
- 3 5000-hour meters
- ID address code input connector
- Front panel test points
- Warning output connector
- Independently replaceable recording units
- Automatic head cleaning mechanism
- Video S/N ratio: 45dB (color)
- Horizontal resolution: 240 lines

BR-7040UAL VHS HI-FI Auto-Loading Duplicator
- 3-in-1 design for 3-wayings (S-VHS SP and EP recording as a single recording deck)
- Records S-VHS SP and EP recording as a single recording deck
- Automatic cassette loaders are easy to attach and capable of simultaneously accommodating 1 standby cassette and 1 ejected cassette
- Continuous cassette loaders are easy to attach and capable of simultaneously accommodating 1 standby cassette and 1 ejected cassette
- Automatic video/audio distribution amplifiers as a single recording deck
- Records an 8-digit code onto the control track
- Use 1 for each of the 3 recording units in the BR-7030U

BR-S747U S-VHS HI-FI Autoloading Duplicator
- Combining 3 independent tape transports in a single cabinet, the BR-S747U provides substantial savings in equipment and peripheral equipment costs
- Automatic cassette loading system
- Hi-Fi sound with dynamic range of more than 90dB
- 8-digit ID code recording capability
- Self-diagnostic warning system
- 1 34-pin parallel and 2 serial remote control connectors
- 3 large record indicators light during recording
- blink for warning
- 3 tape run indicators
- 3 2000-hour meters
- Dolby B noise reduction for normal audio
- Audio input level meter
- 4-position switch (Hi-Fi L, Hi-Fi R, Normal L, Normal R) and independent level control knobs for 4 channels
- Front panel test points with recorder unit can be independently removed and replaced with a new unit
- Replacement units optionally available
- Automatic head cleaning mechanism
- Video S/N ratio: 45dB
- Horizontal resolution: 240 lines

BR-S777U S-VHS Duplicator
- 3-in-1 design
- S-VHS picture quality: carrier frequency up to 7MHz
- Hi-Fi video sound with dynamic range of more than 90dB
- 8-digit ID code recording capability and external ID code inputs
- Serial remote control capabilities
- Self-diagnostic warning system
- Rear panel Check Out connector
- 3 tape run indicators
- 3 2000-hour meters
- Dolby B noise reduction for normal audio
- Audio level meter with 4-position switch (Hi-Fi L, Hi-Fi R, Normal L, Normal R) and independent level control knobs for 4 channels
- 3 large record indicators light during recording
- Front panel test points with recorder unit selectors
- Warning output connector for external concentrated control of entire duplicating system
- Each recorder unit can be independently removed and replaced with a new unit.
- Replacement units optionally available
- Automatic head cleaning mechanism
- Video S/N ratio: 45dB (VHS)
- Horizontal resolution: 240 lines
- VHS

Prices and Specifications Subject to Change Without Notice.
### COLOR MONITORS

**TM-22U 5" Portable Color Monitor**
- In-line black stripe picture tube capable of accurate, well-defined color reproduction
- Flexible AC/DC power supply — household AC or built-in exclusive rechargeable NB-P1 NiCad battery pack — enabling both indoor or outdoor use
- Built-in speaker enables simultaneous audio and video monitoring
- Dual circuits provided for audio and video signals

<table>
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<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
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<tr>
<td>TM-63U 5&quot;</td>
<td>Portable Color Monitor</td>
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<td>TM-900SU 9&quot;</td>
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<tr>
<td>VM-R190SU 19&quot;</td>
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**TM-200SU 20" Color Monitor**
- Includes common features plus: 20" FS data-grade CRT
- Horizontal resolution of over 500 lines
- Bridged output possible via Y/C 358 connector
- 80W power consumption

**VM-R190SU 19" Color Monitor**
- Horizontal resolution of over 600 lines
- Multi-format compatibility: component video (MII/Betacam); Y/C separate video (S-VHS); composite video (IBM CGA); pulse-cross circuit
- Underscan switch
- Horizontal AFC select switch
- Rackmountable
- Tally lamp
- Remote control

### MONITOR/RECEIVERS

**TM-2080SU 20" Stereo Color Monitor/Receiver**
- Cable compatible 180-channel tuner
- MTS stereo with speakers
- Matrix surround system
- On-screen display
- Full square tinted tube
- S-Video inputs

<table>
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<th>Model</th>
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<tr>
<td>TM-2760SU 27&quot;</td>
<td>Stereo Color Monitor/Receiver</td>
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<tr>
<td>TM-200SU 20&quot;</td>
<td>Stereo Color Monitor/Receiver</td>
<td>$1615.00</td>
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Prices and Specifications Subject to Change Without Notice.
### MI-1200U Professional Audio Mixer
- Ideal for use in combination with the KM-1200U
- AC/DC 2-way operation
- 10 input bus lines (4 balanced mic, 4 unbalanced aux, 1 tape, 1 phone)
- 2 monophonic output lines (1 balanced, 1 unbalanced)
- Large slide controls for easy operation
- 5-LED level meter display
- EIA rackmount standard

#### Specifications

**Input Signals**
- **Microphone:** x4, -64dBs, 600 ohms balanced transformer type (XLB-31-3) (Hot: pin 3 for MI-1200U)
- **Turntable:** x1, -54dBs, 50K ohms unbalanced (RCA type pin x2) (L/R mixing system)
- **Tape Recorder:** x1, -10dBs, 50K ohms unbalanced (RCA type pin x2) (L/R mixing system)
- **Auxiliary:** x4, -10dBs, 50K ohms unbalanced (RCA type pin)

**Output Signals**
- **Program:** x1, OdBs/-20dBs switchable, 600 ohms balanced (XLB-32-3)
- **Program (sub):** x 1, -10dBs, 10K ohms unbalanced (RCA type pin)
- **Headphones:** x1, 80mW max., 8 ohms load (stereo phone jack)
- **Frequency Response:** 50 to 15,000Hz, ± 1.5dB (at 1kHz)
- **S/N:** > 60dB (at 1kHz)
- **Residual Noise:** < -70dB
- **Distortion:** < 1% (at 1kHz, rated output)
- **Level Indicators:** 5 LEDs (-15/-10/-3/0/ + 3dB indications)
- **Ambient Temp.:** 0°C to 40°C (32°F to 104°F)
- **Power Supply:** 120VAC (MI-1200U), or 12VDC
- **Power Consumption:** 5W IACI, 2.2VA (DC)

**Dimensions**
- **Unit Dimensions:** 51/4"H x 19"W x 3½"D
- **MI-1200U** .................................................. $485.00

### MI-3000U 10-Channel Audio Mixer
- 8 monaural channels plus a set of stereo channels
- Built-in VCA (voltage-controlled amplifier) can be controlled by the MI-F3OU
- EIA rackmountable
- 3-band equalizer for each channel (low, mid and high)
- Trim control (channels 1 to 8)
- 100mm scale ultra-smooth fader control
- Power requirement: 120VAC, 60Hz × 4/15×"H x 19"W x 15½×"D
- Weight: 27.6 lbs.

**Specifications**
- **Frequency Response:**
  - Mic: 20Hz to 20kHz (+0dB/-2dB)
  - Line: 20Hz to 20kHz (+0dB/-1dB)
- **THD:**
  - Mic: < 0.1% (1kHz)/0.3% (30Hz to 20kHz)
  - Line: < 0.1% (20Hz to 20kHz) (+ 20dB output)
- **Equivalent Input Noise:** < 12dBd (input 150 ohm, termination filter IHF-A)
- **Residual Noise Level:** < 90dB (master fader off), < 78dB (channel faders off)
- **Crosstalk:** < 70dB (1kHz, between channels, between PGM and AUX out)
- **Oscillator:** 1kHz, sine-wave
- **Max. Output:** + 20dB
- **Phantom Power Supply:** 48VDC

**Power Supply:** 120VAC, 12VDC (with optional DC/DC converter)
**Power Consumption:** 17W AC, 1A DC (with optional DC/DC converter)

**Dimensions:** 41½×"H x 19"W x 15½×"D
**Weight:** 18 lbs.
**Finish:** Panel: Metallic brown
**Case:** Metallic black
**MI-3000U** .................................................. $1260.00

### MI-F3OU Serial Control Interface for MI-3000U
- Enhanced interface flexibility (RS-422, RS-232C and 3 GPIs)
- 4 different transition patterns with possible transition rates 0 - 999 frames
- 100-event memory
- EIA rackmountable
- Power requirement: 120VAC, 60Hz × 3½×"H x 19"W x 7½×"D
- Weight: 12.1 lbs.

**MI-F3OU** .................................................. $1700.00

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Prices and Specifications Subject to Change Without Notice.
SPECIAL EFFECTS GENERATORS/ACCESSORIES

KM-3000U Component Special Effects Generator
- Component processing * 8-input component mixer, inputs 6, 7 and 8 also accept RGB signals * Outputs in 3 different signal formats (component, composite and Y/C) * Soft chroma, external and luminance keys also possible * Auto and manual transition: special effects, downstream keys and fades can be operated either automatically or manually * Transition time in auto mode can be set to 988 frames with rotary dial or 10-digit keypad * Color matte generation for border, background color and downstream key * Built-in data memory (up to 16 events and 24 colors) * 3-mode composite effects can be mixed by leaving both the Background and Key switches on and actuating 1 extra effect * RS-422 or GPI interface with editing controllers * 23 different wipe patterns * Power requirement: 120VAC, 60Hz * Dimensions: control unit 5" H x 19" W x 12¾" D; main unit 7½" H x 19" W x 16¾" D * Weight: control unit 14.4 lbs.; main unit 32 lbs. KM-3000U ................. $15,000.00

KM-D6000 Y/C Digital Effects Generator
- Built-in dual channel TBC * Digital effects (freeze, strobe, mosaic, slide, paint, negative and compression) * Y/C 358 and composite signals can be input * Y = 8 bits, C = 8 bits * DOC and Advanced Sync for VTR * Built-in full field color bar generator * Auto and manual transition * Soft wipe * Positioner wipe * GPI control for connection with VTR controller * Built-in RGB chroma key * Built-in color matte generator * Fill video input terminal for DSK * DSK masking function * Y, C and black levels and hue can be preset * Dimensions: main unit 7½" H x 19" W x 13½" D; control unit 3½" H x 16¾" W x 12¼" D KM-D6000 ................. $7,950.00

KM-2500U Color Special Effects Generator
- Specially designed for a wide range of wipes, transitions and special effects * Color border wipe * Color bar generator and background generator * Auto transition * DSK Fill video input terminal * Flip-flop mix circuit * GPI (General Purpose Interface) input terminal * RGB chroma key circuit * SSG conforming to RS-170A * Built-in DSK * Multiple input connectors * Superimpose * 3-button program selector * DSK and superimpose signals can be previewed * 13 wipe patterns available * 3-way switching of wipe direction: normal, reverse and normal/reverse * Tally circuit * Dimensions and Weight: main unit standard EIA rack size (4 unit size) 22.2 lbs.; control unit standard EIA rack size (6 unit size) (11.1 lbs.) (The 2 units are connected with 10m cables with 37-pin connector) KM-2500U ................. $5,995.00

KM-1600U Y/C Special Effects Generator
- Built-in color matte generator: any color can be created independently for either the background or the DSK * Simplified flip-flop bus operation: you can automatically change over the program bus and the preset bus using the fade lever or the Auto button * Built-in data memory: the luminance key and chroma key slice level settings of the Effects Keyer are independently memorized for each input channel * Auto transition: DSK and all of the main effects, including mix and wipe, can be operated automatically. A timer is built-in to set the period between pushing a button and completing an effect * Soft wipe function is effective in both normal and reverse * Dimensions: 10¾" H x 19" W x 7¼" D * Weight: 20.9 lbs. KM-1600U ................. $4,495.00

KM-1200U Color Special Effects Generator
- 4 composite video input connectors * Genlock input is usable as the 5th video input instead of having background color * Auto-take * Color background generator * DSK (downstream keyer) * Chroma keyer * Mix * Wipe * External keying * 2 PGM outputs, 1 PVW output and 1 DSK PVW output * Sync pulse output connectors * AC/DC operation * Power requirement: 120VAC, 60Hz or 12VDC * Dimensions: 7" H x 10" W x 4" D * Weight: 9.3 lbs. KM-1200U ................. $2,150.00

KM-E300U Border Generator for KM-3000U/KM-1600U/KM-D600U
- Allows you to add color borders, drop shadows and outlines to DSK and Effects Keyer graphics * 2-piece rackmountable unit * Accepts RGB signals KM-E300U .................... $2,450.00

SW-203U 5-Input Video/Audio Switcher
- Passive switcher * 5 video (Y/C 7-pin) inputs * 5 stereo audio (RCA) inputs * 1 video output (7-pin) * 1 stereo audio output (dual RCA) SW-203U ................. $300.00

Prices and Specifications Subject to Change Without Notice.
Kangaroo Video Pack™ Recorder Packs

- Provide 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
- Even white-balancing is easy with built-in white balance panels
- Compact enough for 1-man operation, versatile enough for 2-man crews
- 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 BCN-25, 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-400**
- Panasonic AU-400
- $220.00

**KVP-500**
- Panasonic AU-500
- $220.00

**KVP-2000**
- Sony Digital
- $120.00

**KVP-DVR-2**
- Sony DVR-2
- $245.00

**KVP-4400**
- JVC CR-4400U, Panasonic NV-9400, Hitachi SV-340, blue only
- $210.00

**KVP-4400LU**
- JVC CR-4400ULU, RCA HE-1020, Ampex VPR-4400, blue only
- $210.00

**KVP-4700**
- $169.00

**KVP-4800**
- Sony VO-4800
- $162.00

**KVP-5000**
- Panasonic NV-8420
- $120.00

**KVP-8200**
- JVC BR-8200
- $140.00

**KVP-8400**
- Panasonic AG-8400
- $140.00

**KVP-8800**
- Sony VO-6800
- $179.00

**KVP-7400**
- Panasonic AG-7400
- $165.00

**KVP-8800**
- Sony VO-8800
- $187.00

**Emikote™ Products**

- An advanced line of products and custom design services
- Protection of sensitive electronic equipment and recording media from the effects of electromagnetic radiation

**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

**Kangaroo Semi-Tough™ Camera Cases**

- Side-loading camera case
- Ideal for airline travel or limited space situations
- Rigid frame of tough aircraft aluminum completely surrounding the camera
- Convenient detachable pocket holds batteries, tapes and cables
- Comes complete with hand strap and heavy-duty padded shoulder strap for over-the-shoulder carrying

**KCC-SEMTGH**
- $285.00

**Kangaroo Super-Tough™ Camcorder Cases**

- Meet a variety of carrying needs for users of the following camcorder combinations: Sony BVW-3, BVW-30, BVW-3 and BVW-30 with DC-100 battery
- Top-loading case
- Triple-hemmed U-shaped aluminum frame to maximize equipment protection while dense Evafoam foam helps insulate the camera's most sensitive components
- Inner pockets on both sides hold extra batteries, tapes, headset and tripod plate
- 3-way zipper system
- Ideal for access from the back of car or remote van

**KCC-STGH3**
- Sony BVW-3 or BVW-30
- $280.00

**KCC-STGHL3**
- Sony BVW-3 or BVW-30
- $280.00

**KCC-STGH LTD**
- Sony BVW-3 or BVW-30 with DC-100 battery
- $280.00

**KCC-SUPTGH**
- Custom designed to fit any camera
- $280.00

196 Prices and Specifications Subject to Change Without Notice.
**SIGNAL PROCESSING EQUIPMENT**

**SERIES 300 GRAPHIC EQUALIZERS**

Common Features
- Circuit designs utilize "Melt" filters
- Electronically balanced input and LED overload indicator
- Earth lift switch enables signal chassis grounds to be isolated, eliminating ground loop problems
- Equalization bypass allows comparison between direct and equalized signals

DN300 30-Band 1/3 Octave Graphic Equalizer
Includes standard 300 Series features plus: 30 45mm oil damped precision faders graphically positioned at 1/3 octave ISO frequencies between 25Hz-20kHz * Adjustable high and low cut 12dB/octave shelving filters with selectable 6/12dB per octave high cut slope .................................................. $1150.00

DN301 1/3 Octave Attenuating Graphic Equalizer
Includes standard 300 Series features plus: 30 45mm oil damped precision faders graphically positioned at 1/3 octave ISO frequencies between 25Hz-20kHz * Adjustable high and low cut 12dB/octave shelving filters with selectable 6/12dB per octave high cut slope .................................................. $1150.00

DN332 Dual 16-Band 2/3 Octave Graphic Equalizer
Includes standard 300 Series features plus: 2 x 16 45mm oil damped precision faders graphically positioned at 2/3 octave ISO frequencies between 20Hz-20kHz * Sturdily constructed throughout and complies with standard 19" 2U rackmounting requirements * Useful low cut 18dB/octave filters prevent subsonic components from overdubbing speakers or amplifiers .................................................. $1095.00

DN360 Dual 30-Band 1/3 Octave Graphic Equalizer
Includes standard 300 Series features plus: 2 x 30 30mm oil damped precision faders graphically positioned at 1/3 octave ISO frequencies between 25Hz-20kHz * 30 45mm oil damped precision faders graphically positioned at 1/3 octave ISO frequencies between 25Hz-20kHz * Scale switching gives choice of either higher slider resolution (+ 6dB) or normal (- 12dB) * Low cut 18dB/octave filters prevent subsonic components from overdubbing speakers or amplifiers .................................................. $1795.00

**SERIES 400 PARAMETRIC EQUALIZERS**

Common Features
- 100% frequency overlap and a wide range of filter bandwidths
- Individual EQ in/out switch with LED "Filter On" status indication for each parametric filter section and overall EQ in/out switch
- Automatic fail-safe bypass facility
- Electronically balanced inputs and LED overload indicator
- Earth lift switch enables signal and chassis grounds to be isolated, eliminating ground loop problems

DN405 5-Band Single Channel Parametric Equalizer
- 5 bands of full parametric equalization with separate variable high and low pass filters .................................................. $775.00

DN410 5-Band Dual Channel Parametric Equalizer
- 2 channels of 5 bands of full parametric equalization with separate variable high and low pass filters in each channel
- Switchable dual/mono operation, automatically bypassing unwanted controls in the single channel 10-band mode .................................................. $1195.00

**SERIES 500 DYNAMIC PROCESSORS**

DN500 Dual Compressor/Limiter/Expander
- 2 channels of full function compression, expansion, limiting and peak clipping in 1 unit of rack space
- Variable knee control for compression styles from hard to easy
- Auto attack/release for inaudible compression and easy setup
- Manual attack/release mode for creating compression effects
- Separate side chain inputs provided for compressor and expander sections
- Stereo link
- Gain reduction meters for compressor/ expander sections and output level meter .................................................. $1195.00

DN504 Quad Compressor/Limiter
- 4 channels of compression in 1 unit of rack space
- Switchable knee function provides hard and soft compression styles
- Auto attack/release mode for inaudible compression and easy setup
- Manual attack/release mode for creating compression effects
- Separate side chain inputs provided for each channel
- Gain reduction and output level metering provided for each channel
- Stereo link function provides 2 pairs of stereo channels .................................................. $1350.00

DN510 Advanced Dual Gate With MIDI
- Velocity sensitive MIDI out provides instant triggering for drum machines and samplers
- Additional DC trigger inputs/outputs allow triggering of non-MIDI devices or remote keying of DN510
- Fixed envelope function allows reshaping of existing or sampled sounds and predetermines MIDI note length when required
- 'Mask' removes offsets, drum fills or echo and creates accents
- During MIDI operations 'Mask' allows modified rhythms to be generated by selective triggering
- 'Duck' for automatic voice-over control or level change keyed from dominant track
- 'Delay' sets envelope initial delay to produce slap-back effects, control percussion reverb and enable audio to MIDI time shift .................................................. $1100.00

DN514 Quad Auto Gate
- 4 frequency-conscious gates in 1 unit of rackspace
- 2 semi-automatic attack modes and hold time automatically scaled to release value
- Sync synchronizes harmony parts, brass sections, etc., by interlocking all 4 gate release times
- Additional key inputs for each channel allow triggering from external sources
- Side chain monitor simulates filter setup
- Re-lease contour indicated by release LED
- Master and channel bypass switches provided to aid setup .................................................. $1100.00

DN716 Multiple Outlet Digital Audio Delay Line
- Provides for 1 input and 3 outputs, with 1300ms delay available for each output at a full bandwidth of 20kHz
- Variation of 10dB from the nominal output level is possible from the front panel for each output
- Audio connection is via XLR style connectors
- 1 input, 3 output digital delay, 0.1-3 sec .................................................. $1625.00

DN780 Digital Reverberator/Processor
- Half, chamber, room and plate programs with 20 factory set variations
- Comprehensive effects package including chorus, infinite room, multistep echo and delay on 5 or more audio channels
- 16-bit linear conversion and 12kHz bandwidth
- 50 non-volatile user memory locations combined with 16-step sequence function offer instantaneous recall
- Input level indication allows maximum use of dynamic range
- MIDI "in," "through" and "tape" for storing programs to tape and reloading
- Full function remote control .................................................. $2995.00
- 780MC MIDI card retrofit kit for existing 780 units .................................................. $175.00

**Prices and Specifications Subject to Change Without Notice.**
Legend Character/Graphics Generator

- Antialiasing of all fonts and graphics with Paint option = 65,000+ colors displayed on a single page—display line-by-line standard, or pixel-by-pixel with Paint option, on text, backgrounds and graphics. Paint system operates on the separate plane, allowing all character generator capabilities to be used over paint backgrounds. Real time operation—one-line capability.
- Program output with a true preview channel. Standard special effects feature—includes horizontal and vertical wipes, venetian blind effect, random "pixellate" and slow reveal. Dual 3/4" floppy disk drives. Expanded output with optional encoder. Major options allow expansion—Including paint, hard disk, camera entry, Font Developer II and more.
- Automatic display sequences—rolls and crawls in multiple speeds.
- Programmable auto sequencing allows character generator to provide continuous unattended display.

The basic Legend has an array of features with speed and simplicity of operation matched only by an array of readily available options.

Legend maintains a significant degree of compatibility with 1500 Series character generators. Existing pages, fonts, font bases, auto sequences, Pen Tip files, graphic files and color palettes created on a 1500 with any level of 2.X operating software will run directly on Legend without conversion. Material created on a 1500 with operating software earlier than version 2.0 can run on Legend by using a one-time conversion utility program.

Most files created on Legend are backward compatible to 1500 character generators with 2.X or newer software, except the special effects available in Legend. Dynamic pages created on Legend which incorporate a special features package will appear as static pages on a 1500.

Several graphic character enhancement features are standard: italics, edging, kern, tuck and overlap, horizontal and vertical flip.

Specifications

- Resolution: 35n (1506 pixels x 483 lines)
- Fonts Furnished: 70
- Fonts in RAM: 16
- Fonts Displayable per Page: 16
- External Video Channel Frequency Response: 20Hz-5MHz ± 1dB
- Line Time Distortion: < 0.1%
- Line Time Distortion: < 0.1%
- SN Ratio: 56dB
- Pages in RAM: 16
- Inputs: PGM IN-composite, 1 V p-p, loop; ENC-composite, 1 V p-p looping; AUX-RS-422
- Outputs: RGB-non-composite, 0.7V p-p; KEY-composite, 1 V p-p, monochrome; PGM-composite, 1 V p-p; PW/W-composite, 1 V p-p, monochrome; AUX-RS-422
- Connectors: BNC (Video, RGB, Key, Sub. D, 8-pin (auxiliary))
- Dimensions: Main Unit-7" H x 17" W x 15.75" D; Keyboard-3.5" H x 22.50" W x 9.0" D; 2.5"H (feet flat)
- Combined Weight: 45 lbs.

Little Legend Character generator, similar to Legend except no disk drives, has 11 fonts, upgradeable to full Legend, should have BC-326 power supply. $4,895.00

Little Legend/2 Same as Little Legend, except with 1032 encoder. $5,895.00

Little Legend/2YC Same as Little Legend, except with 1032 Y/C encoder. $6,440.00

Little Legend Plus Character generator, similar to Legend. Has dual disk drives, 14 fonts and Augmencia. Upgradeable to full Legend. $6,495.00

Little Legend Plus/2YC Same as Little Legend Plus except with 1032 Y/C encoder. $7,795.00

Legend-GXT/2YC Same as Legend-GXT, except with 1032 Y/C encoder. $8,340.00

Legend-GXT/2YC Character/Graphics generator, keyboard, 70 fonts $8,195.00

Legend/2YC Same as Legend, except with 1032 Y/C encoder. $9,520.00

Legend-GXT/2 Same as Legend-GXT, except with 1032 encoder. $9,195.00

Legend-GXT/2YC Same as Legend-GXT, except with 1032 encoder. $9,320.00

Legend/2YC/2 Same as Legend/2YC, except with 1032 encoder. $9,320.00

Legend/2YC/2YC Same as Legend/2YC, except with 1032 Y/C encoder. $9,520.00

Legend/2YC/2YC/2 Same as Legend/2YC/2YC, except with 1032 encoder. $10,090.00

Legend-GXT/2 Same as Legend-GXT, except with 1032 encoder. $10,620.00

Legend-GXT/2YC Same as Legend-GXT, except with 1032 Y/C encoder. $11,090.00

Legend-LX Character/Graphics generator, same as the Legend, except with 1540 Paint, 1534 hard disk drive, 1529 Font Developer II, 1526 Camera Entry and 1524 Data Tablet. $8,500.00

Legend-LX/2 Same as Legend-LX, except with 1032 encoder. $17,320.00

Legend-LX/2YC Same as Legend-LX, except with 1032 Y/C encoder. $17,890.00

Options

- Y/C cable adaptor, 7-pin female to 2 BNC. $30.00
- Y/C cable adaptor, 7-pin male to 2 BNC. $30.00
- Y/C cable adaptor, 4-pin S-Video DIN to 2 BNC. $30.00
- Color encoder, RGB to NTSC. $1,326.00
- Same as above with full Y/C compatibility. $1,895.00
- Deluxe option package, includes 1540 Paint option, 1534 hard disk drive, 1524 Data Tablet, 1526 Camera Entry and 1529 Font Developer II. $8,600.00
- Power supply required for a remote/second keyboard or a 1524 Data Tablet, rackmountable, with 15" cable (50' and 100' available). $500.00
- Rackmount, with slide for legends. $120.00
- Camera Entry, requires separate B and W camera, copy stand 1524 and 1529. $1,800.00
- Font Developer II. $1,000.00
- Hard disk drive. $995.00
- Clock/calendar. $400.00
- Paint option. $3,800.00
- Augmencia software package with 2.2 or later software. $300.00
- Graphics import program, allows import of GIF, TIFF and TGA files. $595.00
- T-Graphics import program, allows import of GIF, TIFF and TGA files. $595.00
- Alias control fonts—set of 225 fonts (12 new typefaces in 10-20 sizes). $895.00
- Font Master typefaces—set of 12 masters, 256 scanlines high. $995.00
- Can be developed into smaller sizes with use of 1529 Font Developer II. $495.00

*Special package pricing. **Price with combined purchase of a Legend
1450/1480 Color Character Generators

- 35ns resolution
- Capable of producing 65,000 different colors
- 6 resident fonts, with optional 6 for 12 total
- 100 pages of memory and a keyboard
- Built-in color encoder
- Features enhancements such as italics, edging, outline, 4 quadrants of drop shadow and 8 intensity levels
- Vertical and horizontal flip
- Inverted video
- Flash and underline
- Capable of roll up or down at any of 9 speeds
- Crawl left or right at any of 6 speeds
- Can be used either downstream or as a stand-alone system
- Encoder modulates RGB signals into composite NTSC
- Rackmountable

The standard configurations of the 1450/1480 include 6 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 1450/1480 feature: italics (at 1 of 7 angles from 12° to 56°), edging (with full edge, outline, 4 quadrants of drop shadow and 8 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 9 speeds and crawl left or right at any of 6 speeds.

The 1450/1480 can be used "upstream," "downstream," or as a "stand-alone" systems. All timing adjustments are accessible behind the front panel.

An optional 1422 Computer Interface Kit allows the 1450 to communicate with most IBM® compatible computers. This feature permits unlimited, permanent storage of text on the computer's floppy disk.

1450
Includes 6 fonts and encoder, should have optional BC-200 power supply. 3995.00
1480
Same as 1450 but has a remote disk drive. 5295.00

Options and Accessories
BC-200
Trip Lite uninterruptable power supply. 200W, for 1450 400.00
1401
Optional font set 400.00
1402
Optional international font set 400.00
1403
Any 6-font set, select any 6 from library. 600.00
1420
Rackmount, with slide 120.00
1422
Computer interface kit (1450 only) 200.00
1482
Upgrade existing 1450 to 1480 1300.00
1484
Upgrade 1450 to 1480 with existing PC to 1480 800.00
1486
Upgrade 1450 with existing PC and RS-422 card to 1480 500.00

CG-7000/ES and CG-7000Y/C

Color Character Generators
- Vertical scroll in 4 speeds
- Full editing capability
- 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 any quadrant and surround edge, with 0-100% shadow level control
- Characters can be filled in by an 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 colorized
- 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 3 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
- Optional rackmount with slide for main unit
- 13 optional fonts
- Auto page sequence in 4 speeds
- Auto-sequencing of all lines on all pages at any screen position in 4 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
- Random page access

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/C-3.58 dual input, built-in Y/C channel keyers and Y/C-3.58 dual outputs. The unit also has composite NTSC program and preview outputs.

CG-7000/ES
- NTSC output only 2295.00
CG-7000Y/C
- Y/C, NTSC outputs 2495.00

Prices and Specifications Subject to Change Without Notice.
CKM-4 Series Multi-Layer Keyers

CKM-4 Series keyers are all variations of a 4-input device which can be utilized in any post production suite no matter what type of production switcher is used. Each CKM-4 is a freestanding unit, requiring no modifications to your switcher or other production equipment.

The unique design of the CKM-4 Series allows 4 distinct layers to be generated by 4 separate keyers. Any combination of synchronous key sources may be stacked in any order. Inputs may be taken from any video source with or without associated key signals. Sources may include DVEs, still stores, character generators, paint systems, chroma keyers, cameras, VTRs, etc. It's like adding another M/E or more to your switcher.

In addition to its many uses with a production switcher, a CKM-4 Series keyer can be used as a stand-alone keyer/switcher/fader in conjunction with an editing system utilizing its built-in GPI control interface.

The layering proficiency of CKM-4 Series keyers offers distinct advantages over existing multiple-input keyers. Instead of just superimposing video signals, the upper layers cut a hole and fill over lower layers, not only in the background video, but in all video sources under the foreground. Thus, a true layering effect is achieved.

All CKM-4 Series keyers offer flexibility in changing layer priorities. Layers may be interchanged instantaneously by simply presetting sources on the control panel and pressing the Take button. GPI contacts in parallel with the Take and Fade buttons allow the presets to be executed by an edit system or other external controller.

CKM-4 Series keyers will execute external keys from sources that provide a key signal and internal keys (self-key) from sources that provide only a video signal. The internal key is a luminance key with adjustable clip level. If desired, CKM-4s will execute 4 different self-keys at 1 time, including graphics on tape with a drop shadow, in any layer combination. All of these layers may be recorded with 1 pass of the videotape machine.

All CKM-4 Series keyers are extremely versatile and easy to operate. The control panels contain 4 sets of illuminated switches, each of which represents 1 of the 4 priority levels within the key "stack" (background, mid-back, mid-fore and foreground). The switches within each set represent the 4 input channels, permitting any of the inputs to be assigned to each level. When steadily illuminated, these buttons indicate the active input on each layer. When a new input selection is preset by pushing 1 of the buttons, that button will flash until the preset is executed by pushing the Take button. 4 clip level adjustments on the panel allow the key level to be adjusted on each of the inputs.

The control panel is available in 3 package configurations for rack-mounting, desktop mounting or for installation in a GVG-style accessory bridge. Each control panel is supplied with a 25' cable for connection to the CKM-4 chassis.

CKM-4A

The CKM-4A is the basic model of the series for use in composite video (NTSC or PAL) systems.

The CKM-4A can be installed with any production switcher, either into the external key input (upstream) or into the downstream keyer—or both.

When used in an upstream application, the CKM-4A feeds a composite key/video signal into the switcher's built-in keyer consisting of a background signal with as many as 4 inserts keyed into it before the effects from the switcher are added. In downstream operation, the CKM-4A provides up to 4 different key sources inserted over the switcher background.
HALF-RACK WIDTH VIDEO MEASUREMENT

5870 Combination Waveform Monitor, Vectorscope and SCH Display

- SCH, line number, field and all display
- Up to 9 points of fields and line numbers can be preset in memory for recall
- All front-panel switches can be remotely controlled
- Dual-channel display function
- DP and DG can be easily measured through a one-touch operation
- An RGB and YRGB parade display function is provided
- Can use a supply voltage of 85-264VAC and 48-440Hz or 11-20VDC without switching

The 5870 is a unique TV signal measurement monitor that integrates a waveform monitor with a vectorscope in one body, and has a built-in SCH phase measurement circuit. Waveforms and vectors can be independently or simultaneously displayed on a single CRT by operating the provided electronic switches (this feature is only available for horizontal time limit display). In addition, this equipment has a built-in SCH phase numerical measuring function for video editing. The phase variations of jitter are also displayed with the waveform. Furthermore, a full-line selector function is installed for reading the field and line number on the CRT. As a result, the 5870 is very useful not only in observing the blanking time intervals for VITS, VIR, character broadcasting and ITS, but also in checking the various characteristics of video camera resolution.

5870 NTSC ................................................... $4995.00
5871 PAL ................................................... 7395.00
5872 NTSC without SCH and full line select ........... 3795.00

5130 NTSC Color Monitor

The 5130 is a half-rack color picture monitor designed to make more efficient use of rack space. It fits into the space made vacant by the use of combination waveform monitor/vectorscopes such as the 5870 or 5872. Underscanned operation is standard, and remote control of selected function is available. The 5130 has dual video inputs and external sync drive and operates from both AC power mains or 12VDC (battery or vehicle) power.

5130 .............................................................. $1495.00

5860C Series Waveform Monitors

The 5860C is an economical half-rack Waveform Monitor. The unit has an internal graticule and a 7KV 18KV "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-5860H/C are half-rack mountable and can be mounted side by side with the 5850B Vectorscope. The LBO-5860H is also available in a PAL/SECAM version as the 5861V. The LBO-5865 features all the above features plus full line select capability with LED numerical readout.

5860C NTSC ................................................... $1850.00
LBO-5860H NTSC (lines 7-21 line select) ............... 1995.00
5861V PAL ................................................... 2875.00
LBO-5865 NTSC (full line select) ....................... 2745.00

5850C/5851V Vectorscopes

The 5850C 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. The 5850C includes three loopthrough inputs including a dedicated external subcarrier reference input which is front panel selectable. Either of the two composite video loopthrough 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. A gain control, with a detented calibrated position, provides for continuous amplitude adjustment. A phase control permits rotating the display through 360°. The 5850C is supplied in a protective carrying case or in a half-rack width configuration.

5850C NTSC ................................................... $1995.00
5851V PAL ................................................... 2750.00

5100 Component/HDTV Waveform Monitor

Designed to provide convenient and precise video system measurements for component, PAL, NTSC composite and HDTV (1125/60) signals, the 5100 features overlaid display of 4 signals such as Y, R-Y, B-Y and composite as well as parade displays of 3 channels. Also featured is a vector display of color difference or RGB signals and display of the unique "shark fin" signal developed by Leader (Model 425) to provide a high-resolution relative timing reading over a wide band of frequencies. The unit also features full raster line select for 525/60/625/50 and 1125/60 signals and provides 4-channel output (3 decoded to RGB from Y, R-Y, B-Y for 525/60 systems). Cursor operation aids in level measurements and in presetting measured parameters to specified values. And the switching mode power supply adjusts automatically to a very wide range of AC line voltages and frequencies, as well as DC from 12VDC battery or vehicle supplies.

5100 .............................................................. $3800.00

Prices and Specifications Subject to Change Without Notice.
LEADER
FOR PROFESSIONALS WHO KNOW
THE DIFFERENCE

QUARTER-RACK WIDTH
VIDEO/AUDIO MEASUREMENT

LVM-5863A EFP/ENG Monitor
- Combination color monitor/audio monitor/waveform monitor
- Perfect for EFP/ENG crews
- Full monitoring capabilities for video camera, VCRs, and audio recorders
- Confidence tests camera and VCR performance
- Operates from 12 VDC NP-1 batteries
- IRE filter
- Size: 3 1/2" H x 8" W x 10 1/4" D
- Lightweight—only 8 lbs.
- Full-color NTSC and 2H and 2V waveform displays
- Soft carrying case with hood and shoulder strap

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. The 1V/0.25V selector acts as a 4X magnifier to simplify setup level and black-balance checks. It makes field productions as technically and artistically correct as they can be.

LVM-5863A ....................................................... $2195.00

5854 EFP/ENG Vectorscope
- NP-1 or BP-90 battery is used
- Built-in battery check function to blink the pilot lamp when power voltage drops (+10.5V or less)
- A and B input connectors
- Input sensitivity is selectable from either CAL or Variable
- Horizontal synchronization is selectable from either A or B on the front panel
- Phase control on the front panel
- 75mm rectangular internal graticule CRT
- Loopthrough type BNC input connectors

The 5854 is the same size as the 5864A Waveform Monitor and the LCG-413 Pattern Generator, so it can share various attachments. This feature lets you make your own system according to your application.

This vectorscope displays the chrominance component (amplitude and phase) on the CRT. It demodulates the chrominance component and then displays the chrominance in vector field for measuring the phase and amplitude to the burst signals in each chrominance component.

5854 ............................................................ $1495.00

5864A Dual Input EFP/ENG Waveform Monitor
- Battery powered
- 2H, 2V, 2H Mag and 2V Mag time bases
- Accelerating potential 1.5kV
- 2 loopthrough input terminals (A or B switchable) on rear panel
- Switchable IRE filter facilitates lens opening checks
- 1V/0.25V selector acts as a 4X magnifier to simplify setup level and black-balance checks

5864A ............................................................ $1395.00

LCG-413 Video Pattern/Audio Tone Generator
- SMPTE color bar, EIA, full field, white raster
- 400Hz/1kHz audio signal (XLR)
- Battery operated
- 4 alphanumeric character display
- Character width can be set to narrow or wide

Checking and distinguishing numerous productions transmitted by the various stations during field television broadcasting can prove to be a difficult task. This is where the LCG-413 takes action. Easy circuit identification has been made possible by the character display of 4 alphanumeric characters that are output on the standard color bar. Compact and lightweight, the LCG-413 is capable of operating effectively on an NP-1 battery.

LCG-413 ........................................................ $1455.00

Accessories for EFP/Quarter-Rack
Video/Audio Test Equipment
LR-2451-011 Rackmount cabinet holds up to 4 quarter-rack type devices ........................................... $225.00
LA-2019 Joint panel permits the physical connection between 2 quarter-rack type devices ................. ... 25.00
LA-2020 Battery attachment holds LP-2071 battery on side of quarter-rack type device .................... 75.00

202

Prices and Specifications Subject to Change Without Notice.
MIXER/WIRELESS MICROPHONE SYSTEMS

AS100 Powered Automatic Mixer/Equalizer
The AS100 includes an integrated equalizer and 100W power amplifier in a single package. The AS100 has 6 input channels which will accept either mic or line level signals and is an ideal choice for smaller churches, conference rooms and other installations requiring an affordable automatic mixing system. The equalizer is a constant-Q attenuation only type. The constant-Q attenuation minimizes adjacent band interaction, and the filter bandwidth characteristics stay substantially the same for all attenuation levels. A variable low frequency rolloff (20Hz-300Hz) is also part of the AS100 equalization. 10 bands of 1/2 octave filters are included in the 315Hz-2.5kHz region to allow precise equalization of the voice band. In addition, 1 octave filters at 5kHz and 10kHz permit shaping the system response above the voice band. The AS100 includes an automatic ambient threshold sensing circuit (switchable to manual) which eliminates the need to adjust for varying background noise conditions. This makes the initial setup of the AS100 quick and simple. In addition, a Last Mic Hold function is included to prevent audible “breathing” during pauses in speech, which is so common in other automatic mixers. With Last Mic Hold in the on position, the last active microphone is held on until another microphone becomes active. In this way, much better performance is achieved in situations where there are soft talkers, or talkers who turn away from the microphone.

Each channel may be jumpered either “pre-EQ” or “post-EQ” to facilitate both microphones and recorded music. The microphone channels may be jumpered pre-EQ to allow house equalization. The channel which is used for recorded music (or other line source) may be jumped post-EQ to permit full frequency sound reproduction. The volume of each channel and the main audio output may be controlled remotely by means of external linear potentiometers. A line output is provided for auxiliary feed or tape recording. A 70V output for distributed speaker systems is available as a factory option.

M170 Freedomike® VHF Transmitters
- Compressor type input suppresses overload distortion
- Crystal controlled oscillator prevents transmission drift
- Offered in 5 versions: M170 with single locking micro jack for electret lavalier mic, M170/5G0 with locking micro jack for electret lavalier mic, and M170LS with audio mute switch, M170-CBM Conference table mic/transmitter
- Compander noise reduction
- 150 to 216MHz operating frequency range
- Antenna, AC power supply included
- 19VDC, Ext. 12VDC from camcorder, etc.
- Audio output level adjustable
- $2995.00

M185 VHF Pro Series Transmitter
- Matches any mic or audio source
- LED input level indicator with adjustment
- LED battery level indicator (19VDC)
- “Soft” compressor cleans up audio input signals
- Compander noise reduction
- 150 to 216MHz operating frequency range
- $3600.00

M119/X140 Electret Lavalier Microphones
- XLR, mini, locking-micro and 5-pin TA5F connectors available
- Includes windscreen and tie clip
- The M119 is an omni-directional model ideal for use in windy or indoor conditions and has no “proximity effect.” The M140 has “brighter” frequency response and is recommended for indoor applications.
- M119/Omni-directional with 5-pin plug
- $140.00
- M140 Directional with 5-pin plug
- $140.00

H185 “Plug-On” Transmitter
- Plugs into the XLR jack of any handheld mic
- Flat frequency response preserves the characteristics of mic used
- LED input level indicator with adjustment
- “Soft” compressor audio limiting
- 150 to 216MHz operating range
- $600.00

R170 Freedomike VHF Receiver
- Crystal controlled frequency eliminates drift
- Compander noise reduction
- 150 to 216MHz operating frequency range
- Unique audio input allows “stacking” of transmitters to allow mixing of receivers without audio mixer
- 1/4” phone (600 ohms bal.), RCA (1K ohm unbal.) audio input jacks
- Antenna, AC power supply included
- $800.00

CR170 Freedomike VHF Compact Receiver
- Compact (1” x 3” x 4”) and lightweight
- Powered by 9VDC battery, AC adaptor, etc.
- Audio output level adjustment
- Compander noise reduction
- 150 to 216MHz operating frequency range
- Antenna, padded vinyl pouch included
- $480.00

RMP-3 Rackmount System
- Permits 3 receivers to be mounted in single chassis for 19” rack mounting
- $180.00

Performer XR Series Systems
- XR Std-L R170 receiver with M185 transmitter, includes lavalier microphone
- XR Std-H R170 receiver with H185 plug-on transmitter
- XR Mini-L CR170 receiver with M185 transmitter, includes lavalier microphone
- XR Mini-H CR170 receiver with H185 plug-on transmitter
- $1150.00

170 Series High Band Systems
- 170 Std-L R170 receiver with M170 lavalier style transmitter
- With M140 microphone
- $995.00
- 170 Std-XLR R170 receiver with M170-XLR plug-on style transmitter, With M140 microphone
- $995.00
- 170 Mini-L CR170 receiver with M170 lavalier style transmitter, With M119 microphone
- $995.00
- 170 Mini-XLR CR170 receiver with M170-XLR plug-on style transmitter, With M119 microphone
- $995.00
- 170 Mini-AC SR170AC receiver with M185 lavalier style transmitter, With M140 microphone
- $399.00

All 170 series standard or miniature systems include an M119 or M140 lavalier microphone.

Prices and Specifications Subject to Change Without Notice.
TCD-RT Event Controller

- Controls up to 64 tape machines, 4 functions each machine, through the use of coax bus deck interfaces
- Coax bus control of up to 64 switcher destinations (any combination of 10 x 1 switchers and/or routing switches)
- Coax bus control of up to 32 CGs
- Coax bus control of up to 32 video floppy disk players
- Easy to program, prompts users with messages instead of codes and flashing numbers
- Powerful internal event management functions
- Modern capability (requires external modem, cable and remote computer software)
- Using only 1 event, you can start a tape machine, delay ("Auto-Tag") and then switch the machine to 1 or more destinations
- 16 opto-isolated GPIO outputs (optional relay or open collector configuration)
- Bright, easy-to-read VFD display
- Coax bus control is easy to use when standard BNC video cables
- Long life battery-backed event memory
- Battery-backed real time clock
- Processor watchdog protects event memory

Your TCD-RT system is easily tied together by a coax bus system. The coax bus system runs a single line from the TCD-RT to your tape machines, switchers, video floppy disk players and character generators. Besides direct control capability, it features 16 GPIO outputs. Your TCD-RT system is easily tied together by a coax bus system. The coax bus system runs a single line from the TCD-RT to your tape machines, switchers, video floppy disk players and character generators, looping from 1 interface to the next and eliminating the stringing of cables from each piece of equipment back to the controller.

Programming the system is easy. "Plain English" prompts and menus give the user step-by-step assistance. System parameters can be entered at the time of installation. Once these parameters are programmed, the TCD-RT will automatically perform all programmed events.

TCD-RT Version 3

TCD Options

TC2PRINTER Dot matrix listing/logger printer

TC2EM Event Manager software (Version 4.10)

TC2EMODEM 2400 baud external modem for TCD-RT

TC2RELAY GPI relay (1 needed per GPI output)

TCD Character Generator Interface

TC2CG7SC Control for Laird/CM CG-7000

TCD Video Floppy Interface

TC2PFI Interface for Panasonic AG-800 or AG-ES100

TCD 10 x 1 Switcher Control Interfaces

TC2XL Grass Valley T10-XL

TC2MC Pesa/3M Mincom 101

TC2VT Videotek RS-10ARC-LSW

TC2SM Sigma SV-420

TC2SW Panasonic AG-SW100

TC2IS Integroup/ISI 952

- VV (suffix) Valid video option for above interfaces

TCD-RT Routing Switcher Interfaces

TC2S10SC Dynar Series-10

TC2DV21 Dynar Dynasty System 21

TC23MSC Pesa/3M router with 6X00 controller

Mini-T-IR Event Controller

- 64 user-programmable events with multi-day selection
- Battery-backed clock and event memory
- 4 independent output channels with 2 deck functions per channel (example: play, rewind)
- 2-line alphanumeric LCD display
- Easy-to-understand prompts and menus
- 4-key programming of the following functions: event programming, editing programmed events, setting real-time clock, forcing an immediate event, setting auto-take times for automatic switcher control, manual switching of internal switcher to another input

Using the Mini-T-IR to control your equipment allows routine tasks to be performed automatically and on time, even when no personnel are on hand. Although primarily designed to facilitate automatic playback, the Mini-T-IR can be used for off-air recording, automatic modulator input-switching, channel blackouts and many other automated operations.

The Mini-T-IR offers a 5-input video/audio switcher, 4 video tape deck control outputs and a microprocessor-based real-time controller capable of handling up to 64 programmed events. The Mini-T-IR also offers flexibility of event programming with options allowing an event to be programmed for all days, Monday-Friday, Saturday and Sunday or any single day. Event programming can also control any of the 4 tape decks or directly control the internal switcher. This programming flexibility offers you over 400 automatic operations weekly.

Easy-to-understand prompts and menus simplify the Mini-T-IR's programming. While in the Program mode, events can be entered, edited, cleared and viewed with minimal keystrokes. Setting an event is as simple as selecting the day, the time, the machine to be controlled and the machine's function. An event can also be programmed to directly control the internal 5 x 1 switcher.

Mini-T Options

MTCG-06 Control option for Laird/CM CG-7000

MTRACK Rackmount for any Mini-T

MRELAY Relay conversion box for 1 output

MTPS1 Mini-T power supply 9VDC @ 1A
CLOCK SYSTEMS

CSD-5300 Master Clock System 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.

<table>
<thead>
<tr>
<th>Part</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>5300CD</td>
<td>12V impulse driver</td>
<td>$4265.00</td>
</tr>
<tr>
<td>5300MB</td>
<td>Modern board</td>
<td>$515.00</td>
</tr>
<tr>
<td>5300RI</td>
<td>Reference interface</td>
<td>$500.00</td>
</tr>
<tr>
<td>5300ME</td>
<td>Module extender</td>
<td>$150.00</td>
</tr>
<tr>
<td>100ME</td>
<td>Module extender</td>
<td>$95.00</td>
</tr>
<tr>
<td></td>
<td>Extra instruction manual</td>
<td>$85.00</td>
</tr>
</tbody>
</table>

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 1 or 2 distribution driver modules, depending on your expansion or distribution requirements. LED status indicators and fault alarms keep you informed. Also features power backup and rear panel connections.

<table>
<thead>
<tr>
<th>Part</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDD-5400</td>
<td>Includes 1 5400ID impulse driver</td>
<td>$1985.00</td>
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<tr>
<td>5400ID</td>
<td>Second impulse driver</td>
<td>$830.00</td>
</tr>
<tr>
<td>1101ME</td>
<td>Module extender</td>
<td>$160.00</td>
</tr>
<tr>
<td></td>
<td>Extra instruction manual</td>
<td>$85.00</td>
</tr>
</tbody>
</table>

CDA-5500 Clock Driver Autochange
* Autochange for 2 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 standby power

<table>
<thead>
<tr>
<th>Part</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDA-5500</td>
<td>Includes 5500CS cable set</td>
<td>$2155.00</td>
</tr>
<tr>
<td>5500TS</td>
<td>Telephone switch</td>
<td>$295.00</td>
</tr>
<tr>
<td>1101ME</td>
<td>Module extender</td>
<td>$160.00</td>
</tr>
<tr>
<td>101ME</td>
<td>Module extender</td>
<td>$85.00</td>
</tr>
<tr>
<td></td>
<td>Extra instruction manual</td>
<td>$85.00</td>
</tr>
</tbody>
</table>

UDT-5700 Production Up/Down Timer
Fully programmable, 2-channel up/down timer for production and control applications. Each channel is completely independent, and may display either hours:minutes:seconds or minutes:seconds:frames.

<table>
<thead>
<tr>
<th>Part</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>UDT-5700</td>
<td></td>
<td>$4995.00</td>
</tr>
<tr>
<td></td>
<td>Extra instruction manual</td>
<td>$40.00</td>
</tr>
</tbody>
</table>

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 1 of 4 levels with a rear panel DIP switch.

<table>
<thead>
<tr>
<th>Part</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>DTD-5200</td>
<td>Time/date display</td>
<td>$920.00</td>
</tr>
<tr>
<td>DTD-5201</td>
<td>Time/date display with parallel BCD output</td>
<td>$995.00</td>
</tr>
<tr>
<td>DTD-5202</td>
<td>Time/date display with DDC output</td>
<td>$1300.00</td>
</tr>
<tr>
<td>DTD-5203</td>
<td>Digital time/date display</td>
<td>$1840.00</td>
</tr>
<tr>
<td>DTD-5210</td>
<td>Desktop version of the DTD-5200</td>
<td>$920.00</td>
</tr>
<tr>
<td>DTD-5220</td>
<td>2.25&quot; LED readout display</td>
<td>$1300.00</td>
</tr>
<tr>
<td></td>
<td>Extra instruction manual for the 5200 Series</td>
<td>$40.00</td>
</tr>
</tbody>
</table>

VCD-5600 Video Character Display
* Keys SMPTE/EBU time code (HH:MM:SS) into program video * Simultaneous display of time and text * 3 character sizes * RS-232/422 input * Time window can contain EEPROM-stored source ident

<table>
<thead>
<tr>
<th>Part</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>VCD-5600</td>
<td>Digital analog clock 5&quot; desktop</td>
<td>$895.00</td>
</tr>
<tr>
<td>DAC-5005</td>
<td>Digital analog clock 5&quot; rackmount</td>
<td>$855.00</td>
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<tr>
<td>DAC-5006</td>
<td>Digital analog clock 8&quot; wall mount</td>
<td>$895.00</td>
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<tr>
<td>DAC-5012</td>
<td>Digital analog clock 12&quot; wall mount</td>
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<tr>
<td>DAC-5018</td>
<td>Digital analog clock 18&quot; wall mount</td>
<td>$795.00</td>
</tr>
<tr>
<td>RM-5006</td>
<td>Rackmount panel for the DAC-5008</td>
<td>$85.00</td>
</tr>
<tr>
<td>RM-5012</td>
<td>Rackmount panel for the DAC-5012</td>
<td>$85.00</td>
</tr>
<tr>
<td>RM-5018</td>
<td>Rackmount panel for the DAC-5018</td>
<td>$85.00</td>
</tr>
<tr>
<td>WM-5012</td>
<td>Dual wall and ceiling mount kit for 2 DAC-5012s</td>
<td>$105.00</td>
</tr>
<tr>
<td></td>
<td>Extra instruction manual</td>
<td>$45.00</td>
</tr>
</tbody>
</table>

Prices and Specifications Subject to Change Without Notice.
**Listec Video**

**Prompter Displays**

A-4175 9" Displaybox EL Flat Screen Ultra-Lightweight Studio/Field Display—110VAC/12VDC operation. Mounting above the lens. Weighs 9 lbs. $3800.00

A-4250 Shoebox Prompter for Field Use—110VAC/12VDC operation. Features bright 4" monitor for palm-of-the-hand prompting or with mirror/hood assembly for camera mounting. Complete with scan reversal switch. Weighs 1 lb. $1750.00

A-2009 9" Portable/Studio Prompter—110VAC/12VDC operation. With fold-up mirror and hood assembly and easy-mount hardware. Weighs 17 lbs. $1950.00

A-2012P 12" Portable/Studio Prompter—110VAC/12VDC operation. With fold-up mirror and hood assembly and easy-mount hardware. Weighs 27 lbs. $2100.00

A-2012 12" Lightweight Studio Prompter for Full-Size Cameras—110VAC/12VDC operation. With easy-mount hardware including (1) 10 lb. counterbalance weight and 3" riser block. Weighs 42 lbs. $2175.00

A-2012SA 12" Stand-Alone Prompter—110VAC/12VDC operation. With monitor, mirror and hood assembly mounted on roll-around dolly. Recommended for use with lightweight cameras and pan and tilt heads. Weighs 22 lbs. $3000.00

A-2012SA 15" Executive Presidential Prompter—With floor mounted mirror in wood veneer case, mirror and microphone-type stand. Weighs 33 lbs. $3200.00

A-2015SA 15" Stand-Alone Prompter—With monitor, mirror and hood assembly mounted on roll-around dolly. Recommended for use with lightweight cameras and pan and tilt heads. Weighs 49 lbs. $3200.00

A-2015EFP 15" Stand-Alone Prompter for Full-Size Cameras—Lightweight with easy-mount hardware to suit any camera complement. For mounting monitor above the lens, specify A-2012EFP. Weighs 32 lbs. $3250.00

A-2015 15" Studio Prompter for Full-Size Cameras—Lightweight with easy-mount hardware to suit any camera complement. Cut-away design allows maximum tilt. Mounting above the lens. Weighs 34 lbs. $3300.00

A-2015CCD 15" Studio Prompter for CCD/ENG Cameras—110VAC/12VDC operation. With easy-mount hardware including (1) 10 lb. counterbalance weight and 3" riser block. Weighs 47 lbs. $3475.00

A-2015EFP 15" Stand-Alone Prompter for Full-Size Cameras—Lightweight with easy-mount hardware to suit any camera complement. For mounting monitor above the lens, specify A-2012EFP. Weighs 32 lbs. $3500.00

Script Tables

A-2210 Short Drive Table—For continuous roll scripts. Complete with 7/8" Vidicon camera with lens, adjustable lighting and plug-in remote speed control. 110VAC. Weighs 20 lbs. $3300.00

A-2215 Long Drive Table—For individual layout of 8 1/2" x 11" sheets. Includes 7/8" Vidicon camera with lens, lighting and plug-in remote speed control. Weighs 33 lbs. $3600.00

Electronic Prompting

A-5500 Scrollbox Electronic Prompter—With 32K memory standard. Accepts ASCII text files from serial or parallel port on host computer. Apple and PC compatible. With hand control for smooth scroll, page forward and page back. Includes AC power supply. Weighs 8 lbs. $4255.00

A-5500 Scrollbox Plus Electronic Prompter—All features as above, but with the addition of the Scrollbox Plus Editor Program. Provides simultaneous on-air edit and prompt functions from PC compatible computers through serial connection. Weighs 8 lbs. $4600.00

**TELEPROMPTERS**

A-5000PC "Live" Electronic Prompter Interface Module—For use with PC compatible computers. Complete with Listec Split Screen Editor and ScrollControl providing story start, pause, next and previous recall. Weighs 14 lbs. $4150.00

A-5000S Electronic Prompter Interface Module—Provides simultaneous edit and prompt functions in color or black and white. Requires 1 free slot in addition to that provided for the Personnel Monitor. Weighs 15 lbs. $4300.00

A-6000 Personal Prompter Software Systems for IBM Compatibles* (Recommended for computers with 12MHz clock speed or better.)

A-6000/1 Software Only, for Desktop or Laptop Computers—Provides simultaneous edit and prompt functions. Weighs 14 lbs. $3500.00

A-6000/2 Software System for Laptop Computers With Provision for External EGA Monitor—Includes Gray Scalar and Serial Mouse. Requires serial port for operation of mouse. Provides separate edit and prompt functions in black and white. Weighs 22 lbs. $3750.00

A-6000/3 Software System for Desktop Computers With Mono Adapter and Monitor—Includes EGA Card, Gray Scalar and Serial Mouse. Provides simultaneous edit and prompt in black and white. Requires 1 free slot in addition to that provided for the Mono Adapter/monitor and serial port for mouse. Weighs 24 lbs. $4250.00

A-6000/4 Software System for Desktop Computers With Mono Adapter and Monitor—Includes VGA-NTSC Card and Serial Mouse. Provides simultaneous editing in black and white and prompting in color or black and white. Requires 1 free slot in addition to that provided for the Mono Adapter/monitor and serial port for mouse. Weighs 25 lbs. $4250.00

A-6000/5 Software System for Desktop Computers With Color Monitor—Includes VGA-NTSC Card, Compatible Color Card and Serial Mouse. Provides simultaneous edit and prompt in full color or prompt in black and white. Requires 2 free slots for VGA and color cards in addition to serial port for mouse. Either an EGA or VGA monitor may be used for editing in color. Weighs 27 lbs. $4750.00

A-6000/6 Software System for Laptop Computers With Provision for External VGA Monitor—Includes gray scalar with loopthrough and serial mouse. Provides separate edit and prompt functions. Weighs 28 lbs. $4750.00

*Software Configurations

A-6000/1 Software Only, for Desktop or Laptop Computers—Provides simultaneous edit and prompt in black and white or color. Automatically provides functions based on hardware available. Requires appropriate video cards and accessories as per specifications. Weighs 15 lbs. $2250.00

Note: Dependent on whether a single or dual card configuration is selected, this program will provide either simultaneous edit and prompt or separate edit or prompt facility.
TOTA-LIGHT
- Broad Source—120, 220/240v
- Exceptional wide angle halogen source
- Gull-wing reflector produces smooth, efficient light pattern
- Watts: 750 & 500 at 120v; 800 at 220/240v
- Light controls: umbrella, gel-frame, flags, etc.
- Mounting System: stand, wall/door mount, clamps
- Protective front screen
- Closes compactly for storage and travel
- US Patent No. 3852582

OMNI-LIGHT
- Focusing—12, 30, 120, 220 & 240v
- Double parabolic, peened reflector
- Halogen Source
- Focus range: up to 10:1
- Watts: 600, 500, 420 at 120v; 550 at 220/240v; 250 at 30v (battery operation); 100 at 12v (car & battery operation)
- Quick-change high intensity reflector
- Light controls: expandable barn-doors, snoot, scrims, dichroic filter, diffuser, cookaloris . . .
- . . . And uses Tota accessories: umbrella, gel-frame, flags, etc.
- Mounting System: stand, clamps, wall/door mount, camera-top
- Protective front screen
- US Patent No. 4187531

Light Controls

<table>
<thead>
<tr>
<th>REFLECTOR</th>
<th>Tota-light</th>
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Omni Reflectors

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<td>#4 Reflect</td>
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Omni-light Screen

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Omni Light Controls

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Prices and Specifications Subject to Change Without Notice.
# Kit Comparison Chart

## ViP Kits

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<th>Kit Code</th>
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<th>P1-92</th>
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<th>VP-98</th>
<th>VP-95</th>
<th>VP-96</th>
<th>T1-90</th>
<th>T1-91</th>
<th>T1-92</th>
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@ Kit has super-spot reflector to convert light to high intensity unit.
* Kit has 1 or more umbrellas and/or gel frames with diffusion which lock into lights and produce soft-light quality.

Prices and Specifications Subject to Change Without Notice.
## KIT COMPARISON CHART

### Tota/Omni Kits continued

<table>
<thead>
<tr>
<th>Tot / Omni Kits</th>
<th>DP Kits</th>
<th>Softlight 2 Kits</th>
<th>Special Kits</th>
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<td>15.9</td>
<td>19.1</td>
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<td>13.2</td>
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</tbody>
</table>
| $1375 | $1495 | $995 | $1095 | $1695 | $2650 | $1450 | $1425 | $1895 | $1795 | $2045 | $700 | $825 | $1525 | $475 | $1295 | $625 | $895 |}

Prices and Specifications Subject to Change Without Notice.
## LIGHT COMPARISON CHART

### ViP System vs. Tota/Omni System

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<th>V</th>
<th>Tota</th>
<th>Omni</th>
<th>DP</th>
<th>Lowell</th>
<th>Soft 2</th>
<th>Array</th>
</tr>
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<td>T1-10</td>
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<td>O2-10</td>
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<td>16+</td>
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</tbody>
</table>

### Symbols

- **good:**
- **ideal:**
- **with umbrella or full diffusion:**
- **with super-spot accessory reflector:**
- **Tota and V reflector door angle normal:**
- **Tota and V reflector door angle open 180°:**

*Prices and Specifications Subject to Change Without Notice.*
QUARTZ LIGHTING

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 5 focusing fresnel units, 1 open face and 1 soft light. Together they make a complete package for all types of photographic lighting situations.

Pepper 100
PH100-1848
PA9999-510415
4-leaf barndoor
$73.00
PA9999-510466
Hinged gel frame
$21.00
PA9999-900825
Filter pak
$3.50
PA9999-901051
4-piece snoot set
$86.00
PA9999-900005
Focal spot
$171.00
PA9999-901025
Focal spot retainer ring — 100
$20.00
PA9999-A245
Full single scrim
$12.00
PA9999-A244
Full double scrim
$12.00
PA9999-901025
Half single scrim
$12.00
PA9999-901025
Half double scrim
$12.00

Pepper 200
PH200-185F
PA9999-510451
Head with 2½" fresnel lens
$320.00
PA9999-510452
4-leaf barndoor
$86.00
PA9999-900835
Hinged gel frame
$25.00
PA9999-901052
Filter pak
$4.50
PA9999-900005
4-piece snoot set
$89.00
PA9999-901025
Focal spot
$171.00
PA9999-901025
Focal spot retainer ring — 300/420
$20.00
PA9999-A247
Full single scrim
$12.00
PA9999-A246
Full double scrim
$12.00
PA9999-A249
Half single scrim
$12.00
PA9999-A248
Half double scrim
$12.00

Pepper 420
PH420-184E
PA9999-510451
Head with 3½" fresnel lens
$284.00
PA9999-510452
4-leaf barndoor
$88.00
PA9999-900835
Hinged gel frame
$25.00
PA9999-901052
Filter pak
$4.50
PA9999-900005
4-piece snoot set
$89.00
PA9999-901025
Focal spot
$171.00
PA9999-A247
Full single scrim
$12.00
PA9999-A246
Full double scrim
$12.00
PA9999-A249
Half single scrim
$12.00
PA9999-A248
Half double scrim
$12.00

Pepper 650
PH650-184H
PA9999-510460
Head with 4½" fresnel lens
$385.00
PA9999-510461
4-leaf barndoor
$97.00
PA9999-900845
Hinged gel frame
$34.00
PA9999-901053
Filter pak
$5.50
PA9999-900005
4-piece snoot set
$113.00
PA9999-A251
Full single scrim
$12.00
PA9999-A250
Full double scrim
$12.00
PA9999-A253
Half single scrim
$12.00
PA9999-A252
Half double scrim
$12.00

Pepper 500/1K
PH5/1K-106001
HEAD9999-510301
Head with 5" fresnel lens
$504.00
HEAD9999-510298
4-leaf barndoor
$91.00
HEAD9999-510298
Gel frame
$57.00
HEAD9999-A346
3-piece snoot set
$176.00
HEAD9999-A347
Small snoot #2
$41.00
HEAD9999-A348
Large snoot #4
$68.00
HA9999-445310
Full single scrim
$10.00
HA9999-445311
Half single scrim
$10.00
HA9999-445312
Full double scrim
$11.00
HA9999-445313
Half double scrim
$11.00

Pepper Soft 400
PH400-412
PA9999-50412
Head
$281.00
PA9999-30412
Gel frame
$93.00

Universal Pepper Accessories
PA9999-901170
Pepper pot: 1-channel dimmer
$202.00
PA9999-901175
Pepper pot: 3-channel dimmer
$572.00
PA9999-8389787
Light/medium pepper stand
$70.00
PA9999-8389788
Medium pepper stand
$75.00
PA9999-8387490
Light/heavy pepper stand
$121.00
PA9999-901030
Pepper scrim bag
$14.00
PA9999-510417
3" baby plate
$38.00
PA9999-428678
Scissors clamp
$14.00
PA9999-510214
3" C-clamp
$37.00
PA9999-510219
6" C-clamp with 2 ½" pins
$61.00
PA9999-8429587
Gaffer grip with ¾" pin
$33.00
PA9999-901040
Gold/silver reflector pak
$15.00
PA9999-901045
Velcro cable ties
$3.20
PA9999-901060
Leather gloves
$10.00
PA9999-901055
Globe table
$5.35
PA9999-510219
3-prong plug adaptors
$1.25

Pepper Pak Cases
PA9999-900897
Soft canvas case
$347.00
PA9999-900898
Back pak canvas case
$340.00
PA9999-900890
Hard case — cyan/green
$465.00
PA9999-900895
Hard case — full spectrum
$578.00

Pepper Paks
Blue pepper pak
$1829.00
Yellow pepper pak
$1898.00
Red pepper pak
$2168.00
Green pepper pak
$2351.00
Cyan pepper pak
$2278.00
Full spectrum pepper pak
$3612.00

Prices and Specifications Subject to Change Without Notice.
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 ........................................... $3,341.00

270W Blue Torch Kit
Includes: Blue Torch 270 MK III head with 5' head to ballast cable, solid-state square wave 24 or 34VDC inverter ballast, 5' inverter ballast to battery cable, 4-leaf barndoor and soft pak carrying case with padded compartments .......... $6,900.00

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 ........................................... $5,016.00

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 ........................................... $4,536.00

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 ........................................... $6,292.00

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 ........................................... $5,345.00

2500W 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 ........................................... $11,722.00

2500W Cinepar System
Includes: Cinepar MKIII head with 4 lens rings, Alimarc MKIII ballast 120V/60Hz, mains cable 15' and head to ballast cable 33'.
Cinepar 2500 ........................................... $11,445.00

DC to AC Inverters
500W inverter ........................................... $2,890.00
Inverter to ballast cable .......................... $91.00
1200W inverter ........................................... $4,943.00
Inverter to ballast cable .......................... $154.00

Prices and Specifications Subject to Change Without Notice.
**VIDEOCASSETTES/ VIDEOCASSETTE HANGERS**

3¼" 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.

<table>
<thead>
<tr>
<th>Playing Time</th>
<th>Price</th>
</tr>
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<tbody>
<tr>
<td>MBR-10 Hanger or Album</td>
<td>$23.68</td>
</tr>
<tr>
<td>MBR-20 Hanger or Album</td>
<td>24.36</td>
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<tr>
<td>MBR-30 Hanger or Album</td>
<td>31.61</td>
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<td>MBR-50 Hanger or Album</td>
<td>38.38</td>
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<td>MBR-60 Hanger or Album</td>
<td>40.96</td>
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<tr>
<td>Mini MBR-5S Hanger or Album</td>
<td>22.72</td>
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<tr>
<td>Mini MBR-20S Hanger or Album</td>
<td>25.59</td>
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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.

<table>
<thead>
<tr>
<th>Playing Time</th>
<th>Price</th>
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<tbody>
<tr>
<td>UCA-5 Hanger or Album</td>
<td>$20.11</td>
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<td>UCA-10 Hanger or Album</td>
<td>20.47</td>
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<tr>
<td>UCA-20 Hanger or Album</td>
<td>23.32</td>
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<td>UCA-30 Hanger or Album</td>
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<td>UCA-60 Hanger or Album</td>
<td>34.60</td>
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<tr>
<td>UCA-75 Hanger or Album</td>
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</table>

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.

<table>
<thead>
<tr>
<th>Playing Time</th>
<th>Price</th>
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<tbody>
<tr>
<td>UCA-10S Hanger or Album</td>
<td>$19.41</td>
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<tr>
<td>UCA-20S Hanger or Album</td>
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<tr>
<td>UCA-30S Hanger or Album</td>
<td>38.84</td>
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</tbody>
</table>

Betacam/Betacam SP Videocassettes

Broadcast quality products designed specifically for use on high speed ½" equipment such as Betacam SP. Has 3M's exclusive Anti-Stat Treatment. Twenty units per carton.

<table>
<thead>
<tr>
<th>Betacam Format</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>PB-5 Hanger or Album</td>
<td>$12.17</td>
</tr>
<tr>
<td>PB-10 Hanger or Album</td>
<td>14.39</td>
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<tr>
<td>PB-20 Hanger or Album</td>
<td>18.60</td>
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<td>PB-30 Hanger or Album</td>
<td>24.40</td>
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<td>PB-30L Album</td>
<td>33.63</td>
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<tr>
<td>PB-60L Hanger or Album</td>
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<td>PB-90L Hanger or Album</td>
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<table>
<thead>
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<td>PB-5M Album</td>
<td>$42.64</td>
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<tr>
<td>PB-10M Album</td>
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<td>PB-20M Hanger or Album</td>
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<td>PB-30M Hanger or Album</td>
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<td>PB-90ML Album</td>
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VHS Professional Videocassettes

Standard Grade VHS Videocassettes designed for general purpose applications. 40 units per carton.

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<th>Price</th>
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<td>T-30 Sleeve</td>
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<td>T-60 Sleeve</td>
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<tr>
<td>T-120 Sleeves</td>
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<tr>
<td>T-180 Sleeves</td>
<td>1.86</td>
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</table>

**VHS Broadcast Videocassettes**

High grade quality product with superior electromagnetic and dropout characteristics designed for critical applications. Twenty units per carton.

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<thead>
<tr>
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<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-30 Sleeve</td>
<td>.96</td>
</tr>
<tr>
<td>T-60 Sleeve</td>
<td>1.27</td>
</tr>
<tr>
<td>T-120 Sleeve</td>
<td>1.42</td>
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<td>T-120 Album Box</td>
<td>1.67</td>
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<tr>
<td>T-60 Album Box</td>
<td>1.87</td>
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<tr>
<td>T-90 Album Box</td>
<td>2.12</td>
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<tr>
<td>T-120 Album Box</td>
<td>2.54</td>
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<td>T-30 Hanger Case</td>
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<tr>
<td>T-60 Hanger Case</td>
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<td>T-90 Hanger Case</td>
<td>1.47</td>
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<tr>
<td>T-120 Hanger Case</td>
<td>1.67</td>
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</table>

**S-VHS Master Broadcast Videocassettes**

S-VHS tape is designed for peak performance with super VHS systems. Twenty units per carton.

<table>
<thead>
<tr>
<th>S-VHS Master Broadcast Videocassettes</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST-30 Hanger Shipper</td>
<td>20.81</td>
</tr>
<tr>
<td>ST-60 Hanger Shipper</td>
<td>23.42</td>
</tr>
<tr>
<td>ST-120 Hanger Shipper</td>
<td>24.98</td>
</tr>
<tr>
<td>ST-30 Album</td>
<td>20.81</td>
</tr>
<tr>
<td>ST-60 Album</td>
<td>23.42</td>
</tr>
<tr>
<td>ST-120 Album</td>
<td>24.98</td>
</tr>
</tbody>
</table>

**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

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.

<table>
<thead>
<tr>
<th>Snap Cap™ Hanger Bar System</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Betacam PB-5 Snap-Cap (PBSC-5)</td>
<td>13.98</td>
</tr>
<tr>
<td>Betacam PB-10 Snap-Cap (PBSC-10)</td>
<td>16.47</td>
</tr>
<tr>
<td>Betacam PB-20 Snap-Cap (PBSC-20)</td>
<td>21.59</td>
</tr>
<tr>
<td>Betacam PB-30 Snap-Cap (PBSC-30)</td>
<td>26.38</td>
</tr>
<tr>
<td>Betacam PB-5M Snap-Cap</td>
<td>43.85</td>
</tr>
<tr>
<td>Betacam PB-20M Snap-Cap</td>
<td>54.69</td>
</tr>
<tr>
<td>Betacam PB-30M Snap-Cap</td>
<td>60.72</td>
</tr>
</tbody>
</table>

Prices and Specifications Subject to Change Without Notice.
1" Helical Open Reel Video Tape

No. 480 Helical video tape is an improved broadcast video tape providing better signal-to-noise, color-noise qualities and virtually eliminates head suction. For use on all recorders capable of using 479 mastering/broadcast video tape (type "C" recorders).

No. 479—Helical video tape is a special application tape that can only be used with type "C" video recorders.

480 XST 1" Master Broadcast Video Tape

<table>
<thead>
<tr>
<th>Reel Size</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>8&quot;</td>
<td>$89.92</td>
</tr>
<tr>
<td>9&quot;</td>
<td>$136.44</td>
</tr>
<tr>
<td>10½&quot;</td>
<td>$204.68</td>
</tr>
</tbody>
</table>

480 XST 34 Library Box
480 XST 66 Library Box
480 XST 96 Library Box

480 XST 34 Shipper
480 XST 66 Shipper
480 XST 96 Shipper

4808 XST 34 Library Box
4808 XST 66 Library Box
4808 XST 96 Library Box

4808 XST 34 Shipper
4808 XST 66 Shipper
4808 XST 96 Shipper

479 1" Broadcast Video Tape

<table>
<thead>
<tr>
<th>Reel Size</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>8&quot;</td>
<td>$85.64</td>
</tr>
<tr>
<td>9&quot;</td>
<td>$128.98</td>
</tr>
<tr>
<td>10½&quot;</td>
<td>$194.92</td>
</tr>
</tbody>
</table>

479 34 Library Box
479 66 Library Box
479 96 Library Box

479 34 Shipper
479 66 Shipper
479 96 Shipper

479 Long Lengths Broadcast Video Tape

<table>
<thead>
<tr>
<th>Reel Size</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>10½&quot;</td>
<td>$246.21</td>
</tr>
<tr>
<td>11½&quot;</td>
<td>$284.98</td>
</tr>
<tr>
<td>12½&quot;</td>
<td>$358.36</td>
</tr>
<tr>
<td>14&quot;</td>
<td>$454.69</td>
</tr>
</tbody>
</table>

479 105 Library Box
479 125 Library Box
479 155 Library Box

479 105 Shipper
479 125 Shipper
479 155 Shipper

Tape Accessory Descriptions

- R139—1" x 8" phenolic NAB hub reel with aluminum flanges in box.
- R178—1" x 9" or 1" x 10½" heavy-duty precision reel in box designed to be used with all 479 tape.
- C129—High impact plastic shipping container for 10½" R179B reels.
- C132—High impact plastic shipping container for 9" R179B reels.
- C134—High impact plastic shipping container for 11½" and greater R179B reels.

Hanger System

A videocassette case design that’s triggered a revolution in videocassette storage and handling. The shipper/storage case 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.

Head Cleaning Videocassettes

UCS-HC (C124) (Mini; recorded) $45.26
V-HC (VHS) (Hanger box; unrecorded) $28.32

Diagonal Stripe Hold Down Tape

8125-1/4" x 90' $11.04

Prices and Specifications Subject to Change Without Notice.
OPEN REEL AUDIO TAPE/CASSETTES/ACCESSORIES

Open Reel Audio Tape
996, 226, 227 and 250 are premium quality tapes for critical music mastering. 996 allows recording at +9.
806 and 807 are high output/low print open reel tapes. 808 and 809 are low print/low noise open reel tapes designed for critical voice and general music mastering.

Studio Mastering Tapes

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Reel Size</th>
<th>Per Carton</th>
<th>List Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>996-1/4-1200</td>
<td>7&quot;</td>
<td>20</td>
<td>$14.00</td>
</tr>
<tr>
<td>996-1/4-2500</td>
<td>101/2&quot;</td>
<td>10</td>
<td>37.10</td>
</tr>
<tr>
<td>250-1/4-1200</td>
<td>7&quot;</td>
<td>20</td>
<td>14.00</td>
</tr>
<tr>
<td>2500-R181</td>
<td>101/2&quot;</td>
<td>12</td>
<td>35.78</td>
</tr>
<tr>
<td>226-1/4-1200</td>
<td>7&quot;</td>
<td>20</td>
<td>12.38</td>
</tr>
<tr>
<td>2500-RN</td>
<td>101/2&quot;</td>
<td>12</td>
<td>32.54</td>
</tr>
<tr>
<td>227-1/4-1800</td>
<td>7&quot;</td>
<td>20</td>
<td>19.04</td>
</tr>
<tr>
<td>3600-RN</td>
<td>101/2&quot;</td>
<td>12</td>
<td>56.14</td>
</tr>
</tbody>
</table>

Mastering Tapes

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Reel Size</th>
<th>Per Carton</th>
<th>List Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>806-1/4-600</td>
<td>5&quot;</td>
<td>20</td>
<td>$ 7.31</td>
</tr>
<tr>
<td>1200</td>
<td>7&quot;</td>
<td>20</td>
<td>10.87</td>
</tr>
<tr>
<td>2500-RN</td>
<td>101/2&quot;</td>
<td>12</td>
<td>29.13</td>
</tr>
<tr>
<td>807-1/4-900</td>
<td>5&quot;</td>
<td>20</td>
<td>9.19</td>
</tr>
<tr>
<td>2700</td>
<td>7&quot;</td>
<td>20</td>
<td>15.01</td>
</tr>
<tr>
<td>3800-RN</td>
<td>101/2&quot;</td>
<td>12</td>
<td>40.05</td>
</tr>
<tr>
<td>808-1/4-600</td>
<td>5&quot;</td>
<td>20</td>
<td>7.19</td>
</tr>
<tr>
<td>1200</td>
<td>7&quot;</td>
<td>20</td>
<td>12.09</td>
</tr>
<tr>
<td>2500-RN</td>
<td>101/2&quot;</td>
<td>12</td>
<td>25.89</td>
</tr>
<tr>
<td>809-1/4-900</td>
<td>5&quot;</td>
<td>20</td>
<td>9.08</td>
</tr>
<tr>
<td>1800</td>
<td>7&quot;</td>
<td>20</td>
<td>16.27</td>
</tr>
<tr>
<td>3800-RN</td>
<td>101/2&quot;</td>
<td>12</td>
<td>40.15</td>
</tr>
</tbody>
</table>

General Purpose Tape

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Pancake</th>
<th>Per Carton</th>
<th>List Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>186-1/4</td>
<td>2500</td>
<td>12</td>
<td>$ 9.50</td>
</tr>
<tr>
<td>186-1/4</td>
<td>5000</td>
<td>12</td>
<td>17.43</td>
</tr>
</tbody>
</table>

Logging Tapes

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Reel Size</th>
<th>Per Carton</th>
<th>List Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>8208-1/4-3600R183</td>
<td>101/2&quot;</td>
<td>12</td>
<td>$ 47.53</td>
</tr>
<tr>
<td>8208-1/4-3600R183</td>
<td>101/2&quot;</td>
<td>12</td>
<td>86.13</td>
</tr>
<tr>
<td>8208-1/4-3800R183</td>
<td>101/2&quot;</td>
<td>6</td>
<td>148.84</td>
</tr>
<tr>
<td>8208-1/4-3800R183</td>
<td>101/2&quot;</td>
<td>5</td>
<td>146.84</td>
</tr>
<tr>
<td>8206-1/4-1000</td>
<td>Glass 14&quot;</td>
<td>5</td>
<td>674.73</td>
</tr>
<tr>
<td>8207-1/4-3600PR7</td>
<td>101/2&quot;</td>
<td>20</td>
<td>36.16</td>
</tr>
<tr>
<td>8207-1/4-3600PR7</td>
<td>101/2&quot;</td>
<td>5</td>
<td>202.39</td>
</tr>
<tr>
<td>8614-1/4-3800RN</td>
<td>101/2&quot;</td>
<td>12</td>
<td>50.30</td>
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<tr>
<td>8614-1/4-3800RN</td>
<td>101/2&quot;</td>
<td>10</td>
<td>87.64</td>
</tr>
<tr>
<td>8614-1/4-3800RN</td>
<td>101/2&quot;</td>
<td>5</td>
<td>151.73</td>
</tr>
</tbody>
</table>

Accessories

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Reel Size</th>
<th>Per Carton</th>
<th>List Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAB Reels</td>
<td>RNB-1/4-101/2</td>
<td>12</td>
<td>$25.50</td>
</tr>
<tr>
<td>In Boxes</td>
<td>1/4-101/2</td>
<td>10</td>
<td>32.47</td>
</tr>
<tr>
<td>Splicing</td>
<td>41A-3/8-66</td>
<td>40</td>
<td>4.22</td>
</tr>
<tr>
<td>Tape</td>
<td>620-1/2-66</td>
<td>12</td>
<td>5.65</td>
</tr>
<tr>
<td>620-1/2-100</td>
<td>12</td>
<td>7.37</td>
<td></td>
</tr>
<tr>
<td>100 bulk</td>
<td>67-7/2-100</td>
<td>48</td>
<td>5.88</td>
</tr>
<tr>
<td>Leader</td>
<td>20-1/4-1000</td>
<td>12</td>
<td>9.14</td>
</tr>
<tr>
<td>Tape</td>
<td>61W-1/4-1500</td>
<td>20</td>
<td>23.19</td>
</tr>
<tr>
<td>61X-1/4-1500</td>
<td>20</td>
<td>24.37</td>
<td></td>
</tr>
<tr>
<td>Relabel Tape</td>
<td>Relabel Tape</td>
<td>48</td>
<td>2.29</td>
</tr>
<tr>
<td>Recording Studio</td>
<td>RSD-1</td>
<td>1</td>
<td>286.63</td>
</tr>
</tbody>
</table>

Digital Audio Tape

<table>
<thead>
<tr>
<th>Minutes</th>
<th>Per Carton</th>
<th>List Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3M DAT</td>
<td>46</td>
<td>40</td>
</tr>
<tr>
<td>60</td>
<td>40</td>
<td>15.00</td>
</tr>
<tr>
<td>90</td>
<td>40</td>
<td>18.00</td>
</tr>
<tr>
<td>120</td>
<td>40</td>
<td>21.00</td>
</tr>
</tbody>
</table>

AVX Professional 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. Tensilized polyester.

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Reel Size</th>
<th>Per Carton</th>
<th>List Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVX-20</td>
<td>0.5 mil.</td>
<td>40</td>
<td>$1.06</td>
</tr>
<tr>
<td>AVX-30</td>
<td>0.5 mil.</td>
<td>40</td>
<td>1.15</td>
</tr>
<tr>
<td>AVX-40</td>
<td>0.5 mil.</td>
<td>40</td>
<td>1.21</td>
</tr>
<tr>
<td>AVX-60</td>
<td>0.5 mil.</td>
<td>40</td>
<td>1.30</td>
</tr>
<tr>
<td>AVX-90</td>
<td>0.3 mil.</td>
<td>40</td>
<td>1.90</td>
</tr>
<tr>
<td>AVX-120</td>
<td>0.25 mil.</td>
<td>40</td>
<td>2.40</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Reel Size</th>
<th>Per Carton</th>
<th>List Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVX-10</td>
<td>.5 mil.</td>
<td>40</td>
<td>$ .84</td>
</tr>
<tr>
<td>AVX-20</td>
<td>.5 mil.</td>
<td>40</td>
<td>1.00</td>
</tr>
<tr>
<td>AVX-30</td>
<td>.5 mil.</td>
<td>40</td>
<td>1.04</td>
</tr>
<tr>
<td>AVX-60</td>
<td>.5 mil.</td>
<td>40</td>
<td>1.30</td>
</tr>
<tr>
<td>AVX-90</td>
<td>.3 mil.</td>
<td>40</td>
<td>2.25</td>
</tr>
<tr>
<td>AVX-120</td>
<td>.25 mil.</td>
<td>40</td>
<td>1.15</td>
</tr>
</tbody>
</table>

IRC Cassettes — Boxed

Instant Record Cassettes with a magnetically coated leader are 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. Tensilized polyester.

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Reel Size</th>
<th>Per Carton</th>
<th>List Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>IRC-30</td>
<td>.5 mil.</td>
<td>20</td>
<td>$1.55</td>
</tr>
<tr>
<td>IRC-60</td>
<td>.5 mil.</td>
<td>20</td>
<td>1.40</td>
</tr>
<tr>
<td>IRC-90</td>
<td>.3 mil.</td>
<td>20</td>
<td>2.30</td>
</tr>
</tbody>
</table>

IRC Bulk Cassettes

Bulk version of IRC Cassettes. Identical performance, but bulk packaged without labels or boxes. 400 cassettes per master carton.

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Reel Size</th>
<th>Per Carton</th>
<th>List Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>IRC-30</td>
<td>.5 mil.</td>
<td>20</td>
<td>$1.30</td>
</tr>
<tr>
<td>IRC-60</td>
<td>.5 mil.</td>
<td>20</td>
<td>1.60</td>
</tr>
<tr>
<td>IRC-90</td>
<td>.3 mil.</td>
<td>20</td>
<td>1.95</td>
</tr>
</tbody>
</table>

SX High Bias Studio Master Cassettes

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Reel Size</th>
<th>Per Carton</th>
<th>List Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>SX-30</td>
<td>Norelco Case</td>
<td>20</td>
<td>$2.75</td>
</tr>
<tr>
<td>SX-60</td>
<td>Norelco Case</td>
<td>20</td>
<td>2.90</td>
</tr>
<tr>
<td>SX-90</td>
<td>Norelco Case</td>
<td>20</td>
<td>3.45</td>
</tr>
</tbody>
</table>

Prices and Specifications Subject to Change Without Notice.
WV560/WV561 Combination Waveform Monitor/Vectorscope for Component/Composite Use
- 6 inputs for: 2 complete component signal sets, 6 composite signals, a combination of component and composite • WV560: NTSC and 525-line component standards, including Y/C; WV561: NTSC, PAL, 525-line and 625-line component standards, including Y/C • SC/H phase measurement and color frame indicator • Built-in differential phase and gain measurements • Simultaneous waveform/ vectorscope display mode • Time and voltage cursors with on-screen readouts

WVF560 Component/Composite Waveform Monitor
- 6 inputs for: 2 complete component signal sets, 6 composite signals, a combination of component and composite • Multi-standard capability for NTSC, PAL, SECAM, 525-line and 625-line component • Component vectorscope function • Component format switching for SMPTE/EBU, Betacam, M-II, GBR • Extensive memory settings for front panel setups • Time, voltage and risetime cursors with readouts • Invalid signal and Video Overdrive indicators • Overlay modes for signal comparison • Lower-cost "S" version available

WVF53DS Dual-Standard Composite Vectorscope
- 3 inputs for composite and vector displays • NTSC/PAL dual standard operation • SC/H phase measurements • Color framing indicator • Cursors for amplitude and phase measurements, with graticule and mode readouts

Signal Creator™
- Compact multiple-format generator • Memory card storage allows user-specific setups plus application-specific signal sets • Configurable for any combination of NTSC, PAL, 525-line and 625-line component analog, 525-line and 625-line D1, and 525-line and 625-line D2, including multiple digital outputs • Extensive memory sets for all formats • Creator™ software offers user-designed custom signals and transfer of signals to a memory card through a user-friendly program • Straight-forward LCD menu screens for easy visibility of chosen formats and signals • Timing/frequency/ID adjustable from front panel • Options including analog and digital stereo audio tones, sweep and zone pattern, blackburst and pulse outputs

Signal Creator NTSC-configured base unit

NTSC Options
- Opt BB Outputs for pulses, blackburst, separate SMPTE color bars
- Opt C Component analog capability
- Opt D12 525 D1/NTSC D2 signal capability
- Opt IO D2 input/analog output
- Opt A Digital and analog audio with voice capture
- Opt Z Sweep and zone plate

Signal Creator Accessories
- Blank RAM card (256K memory)
- Blank RAM card (512K memory)
- RAM card writer (includes blank 256K RAM card)

Note: Creator software is supplied with all Signal Creator units at no charge.
**TEST EQUIPMENT/ VIDEO GRAPHICS ENCODING**

2021 Programmable Test Signal Generator
- Interconnection with an IBM or compatible PC allows signal generation for virtually any existing or developing television system. Supports signal standards from 525/60 NTSC to 1125/60 HDTV and beyond, in both analog and digital formats.
- Extensive libraries of commonly used signals for NTSC, PAL, SECAM, CAV, GBR, 4:2:2, D2, HDTV, RS-343 and other formats.
- Signal Master software for user-friendly custom signal development.
- 3 analog outputs flat to more than 30MHz.
- Digital outputs with clock frequency selectable from 13.5MHz to 32X subcarrier.
- Non-volatile memory and front panel switch selection between 4 different signals (of the same or different video standards).

2021PL Programmable Test Signal Generator
- All the features of a 2021 plus a digital encoder for PAL systems B and G.
- 25MHz offset subcarrier and correct Bruch blanking (other offsets possible).
- Adds common PAL signals to the standard 2000 Series signal set.

2030 Programmable HDTV Generator
- PC interconnection for HDTV signal generation in a wide range of proposed formats: 525/29.97, 525/59.94, 787.5/59.94, 900/29.97, 1050/59.94, 1125/59.94, 1125/60.0, 1250/50.0, others.
- Full test signal library available for current HDTV standards, including tri-level and bi-level sync signals.
- 3 channels of video for GBR or Y/B-Y/R-Y test signals.
- 3 additional channels for sync or drive signals.
- 2 outputs from each channel (1V and 2V).
- Sync generator can be genlocked to external sync reference or used as studio reference source.
- Test signal generator usually locked to sync generator; can be locked to external reference for re-timing.

1515 Component (525/60) Plus Composite (NTSC) Test Signal Generator
- Component analog video and composite NTSC test signals combined in a single, half-rack unit.
- Version M: M-II™ (Y/CTDM); Version S: SMPTe (Y/PpY); Version SP: Betacam™ plus Betacam SP™ plus Y/CTDM.
- Version U: combination of all versions plus Y/C signals.
- All versions include NTSC composite, GBR and Y/B-Y/R-Y outputs.
- Up to 48 different test signals, some as multiple signals in a field matrix.
- Dual timing pulses signal for distortion-free testing between component and composite formats.
- Digital signal generation for high accuracy and stability.
- Optional D1 component digital output in 8 ports signal standards from 525/60 NTSC to 1125/60 HDTV and beyond, in both analog and digital formats.

1510A NTSC Test Signal Generator
- Optional D2 composite digital output and input.
- Convenient half-rack size conserves rack space and simplifies portable use.
- "S" version available with reduced signal set.
- 40 precision test signals, including 6MHz field sweep, 10-bit generator with 0° SC/H phase.
- 40 signals with audio tone.

1527 NTSC Signal Generator/Waveform Monitor/Vectorscope
- Expanded 22-signal generator includes test signals specific to transmitters maintenance, Character ID overlay, Differential phase and gain measurements.
- Integrated measurement package incorporates waveform and vector monitoring plus test signal generation in a single unit.
- Complete color frame and SC/H phase testing, even from a VTR.
- Demod output.
- Signal Follows Measurement mode automatically generates the correct signal for the chosen test.

125AD/125DA CAV-Digital 4:2:2-CAV Transcoders
- 8-bit rounded or full 10-bit processing.
- Selectable format inputs and outputs for GBR, SMPTe, Y/PpY, Betacam, M-II. 525/625 operation.
- Optional digital test signal generator and digital VTS insertion capabilities.
- Ancillary data input and output for user-inserted data during digital blanking.
- Digital clamping.
- Adjustable setup level or removal of setup.
- Remote control of front panel functions.
- Front panel error indicators.

VGA Producer™
- Highest-quality video encoding in versions for IBM AT or PS/2 and compatibles.
- NTSC or PAL plus Y/C inputs and outputs.
- Fully genlockable (composite or Y/C).
- Flicker stabilizer minimizes distortion in fine-line displays (optional on AT versions, standard on PS/2 versions).
- Compatible with VGA cards having a 28-pin socketed RAM DAC, or through a PLCC adaptor.

Prices and Specifications Subject to Change Without Notice.
VIDEO DELAY SYSTEMS

Mark441
Video Delay Boxes (Variable), NV Series
Impedance: 75 ohms Frequency Response: ± 0.05dB ripple up to
5.5MHz 10.1dB p-pl Return Loss: 27dB Temperature Range: 070°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 3601 or taps (type 0971
over a range of 10-665ns. A ± lns 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 NV 010010001 for a maximum delay of 2500ns. The prefix NV 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.

Boxed Delay Lines

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 features important to TV engineers.
Passive Delay Boxes
Rackmounted -V Series or Stand -Alone N Series

Boxes with Switches and ± Vernier
Delay Range Ins)

Part Number
NV 180
NV or VU 360

10-170

10-330

Price

$266.00
360.00

Delay Time Conversion Table
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320 208
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207
168
325
211
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215
174
400 260
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223
180
500 325
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94
231
187
600 390
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96
30
239
193
700 455
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101
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247
200
800 520
160
160
104
32
255
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900
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180
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107
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263
213
1000
650
200
170
110
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271
219
1100
715
220
175
114
35
279
225
1200
780
240
180
117
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1300
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412
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1277
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1031
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1915

1546
1675
1804
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2075
2235
2394

176/350 Series

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1417

Zero Loss Delay Video Delay Line
input,
output 1V p -p in -1V p -p out 75 ohm active Delay
selection 10-1830ns Delay trim at front 5ns 18° 0 PAL) 6.4 0 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 ± 15V 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

1.

1

5ns adjustment via 2 x 2ns switches and ± fns fine trim screw-

driver adjust.
2. Optional gain variation by screwdriver adjust ± 0.7dB. (Note: gain is
automatically compensated for each delay step switched).

3. Optional DC offset by screwdriver adjustment over the range
750mV.
Items 2 and 3 are normally not necessary but can be fitted if stated on
the order
POR

176/350 Series
Rackmounted PC Card Delay (Infinitely Variable)
Video delay range 10-1830ns.

Type 176 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 horizontally
POR
Type 350 Rack Frame: Height 3,/2"; accommodates 16 PC cards 12
delay lines on each card); total 32 delays; BNCs on back of PC card;
Lucite front cover; cards mount vertically
POR
PC card delay lines for 176 and 350 Series (not interchangeable).
Video delay channels available.

Available with switches (suffix "5") or taps (suffix "WI.
Price On Request

218

Prices and Specifications Subject to Change Without Notice.


## VIDEO TAPE

### D-2 Composite Digital Videocassettes

<table>
<thead>
<tr>
<th>Product</th>
<th>Length</th>
<th>Quantity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>DS-6M</td>
<td>6 min.</td>
<td>10</td>
<td>$30.97</td>
</tr>
<tr>
<td>DS-12M</td>
<td>12 min.</td>
<td>10</td>
<td>50.29</td>
</tr>
<tr>
<td>DS-22M</td>
<td>22 min.</td>
<td>10</td>
<td>70.32</td>
</tr>
<tr>
<td>DS-32M</td>
<td>32 min.</td>
<td>10</td>
<td>171.08</td>
</tr>
<tr>
<td>DM-6M</td>
<td>6 min.</td>
<td>10</td>
<td>30.97</td>
</tr>
<tr>
<td>DM-12M</td>
<td>12 min.</td>
<td>10</td>
<td>50.29</td>
</tr>
<tr>
<td>DM-22M</td>
<td>22 min.</td>
<td>10</td>
<td>70.32</td>
</tr>
<tr>
<td>DM-32M</td>
<td>32 min.</td>
<td>10</td>
<td>90.19</td>
</tr>
<tr>
<td>DM-64M</td>
<td>64 min.</td>
<td>10</td>
<td>134.02</td>
</tr>
<tr>
<td>DM-94M</td>
<td>94 min.</td>
<td>10</td>
<td>201.49</td>
</tr>
<tr>
<td>DL-126M</td>
<td>126 min.</td>
<td>5</td>
<td>279.26</td>
</tr>
<tr>
<td>DL-156M</td>
<td>156 min.</td>
<td>5</td>
<td>339.25</td>
</tr>
<tr>
<td>DL-186M</td>
<td>186 min.</td>
<td>5</td>
<td>390.19</td>
</tr>
<tr>
<td>DL-208M</td>
<td>208 min.</td>
<td>5</td>
<td>524.34</td>
</tr>
</tbody>
</table>

### Certified S-VHS Videocassettes

<table>
<thead>
<tr>
<th>Product</th>
<th>Length</th>
<th>Quantity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST-31BQ</td>
<td>30 min.</td>
<td>20</td>
<td>$18.20</td>
</tr>
<tr>
<td>ST-62BQ</td>
<td>60 min.</td>
<td>20</td>
<td>20.50</td>
</tr>
<tr>
<td>ST-126BQ</td>
<td>120 min.</td>
<td>20</td>
<td>21.85</td>
</tr>
</tbody>
</table>

### CV 1" Video Tape

**Cardboard Box**

<table>
<thead>
<tr>
<th>Product</th>
<th>Length</th>
<th>Quantity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>CV-30</td>
<td>30 min.</td>
<td>5</td>
<td>$73.60</td>
</tr>
<tr>
<td>CV-60</td>
<td>60 min.</td>
<td>5</td>
<td>95.50</td>
</tr>
<tr>
<td>CV-90</td>
<td>90 min.</td>
<td>5</td>
<td>125.50</td>
</tr>
</tbody>
</table>

**Shipper Box**

<table>
<thead>
<tr>
<th>Product</th>
<th>Length</th>
<th>Quantity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>CV-30SBQ</td>
<td>30 min.</td>
<td>5</td>
<td>$79.60</td>
</tr>
<tr>
<td>CV-60SBQ</td>
<td>60 min.</td>
<td>5</td>
<td>101.50</td>
</tr>
<tr>
<td>CV-90SBQ</td>
<td>90 min.</td>
<td>5</td>
<td>131.50</td>
</tr>
</tbody>
</table>

### KCA 3/4" Videocassettes

* Fully packaged with album and sleeve

**High Grade**

<table>
<thead>
<tr>
<th>Product</th>
<th>Length</th>
<th>Quantity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>KCA-8HG</td>
<td>5 min.</td>
<td>10</td>
<td>$23.00</td>
</tr>
<tr>
<td>KCA-10HG</td>
<td>10 min.</td>
<td>10</td>
<td>25.00</td>
</tr>
<tr>
<td>KCA-20HG</td>
<td>20 min.</td>
<td>10</td>
<td>28.50</td>
</tr>
<tr>
<td>KCA-30HG</td>
<td>30 min.</td>
<td>10</td>
<td>28.50</td>
</tr>
<tr>
<td>KCA-30HG Shipper</td>
<td>30 min.</td>
<td>10</td>
<td>30.00</td>
</tr>
<tr>
<td>KCA-60HG</td>
<td>60 min.</td>
<td>10</td>
<td>41.50</td>
</tr>
<tr>
<td>KCA-80HG Shipper</td>
<td>60 min.</td>
<td>10</td>
<td>43.00</td>
</tr>
</tbody>
</table>

**Broadcast Quality**

<table>
<thead>
<tr>
<th>Product</th>
<th>Length</th>
<th>Quantity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>KCA-5BQ</td>
<td>5 min.</td>
<td>10</td>
<td>$23.90</td>
</tr>
<tr>
<td>KCA-10BQ</td>
<td>10 min.</td>
<td>10</td>
<td>26.90</td>
</tr>
<tr>
<td>KCA-20BQ</td>
<td>20 min.</td>
<td>10</td>
<td>27.43</td>
</tr>
<tr>
<td>KCA-30BQ</td>
<td>30 min.</td>
<td>10</td>
<td>29.51</td>
</tr>
<tr>
<td>KCA-30BQ Shipper</td>
<td>30 min.</td>
<td>10</td>
<td>31.05</td>
</tr>
<tr>
<td>KCA-60BQ</td>
<td>60 min.</td>
<td>10</td>
<td>47.95</td>
</tr>
<tr>
<td>KCA-80BQ Shipper</td>
<td>60 min.</td>
<td>10</td>
<td>49.45</td>
</tr>
</tbody>
</table>

### KCS 3/4" Videocassettes

* Fully packaged with album and sleeve

**High Grade**

<table>
<thead>
<tr>
<th>Product</th>
<th>Length</th>
<th>Quantity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>KCS-10HG</td>
<td>10 min.</td>
<td>10</td>
<td>$21.94</td>
</tr>
<tr>
<td>KCS-20HG</td>
<td>20 min.</td>
<td>10</td>
<td>28.01</td>
</tr>
<tr>
<td>KCS-20HG Shipper</td>
<td>20 min.</td>
<td>10</td>
<td>27.51</td>
</tr>
</tbody>
</table>

**Broadcast Quality**

<table>
<thead>
<tr>
<th>Product</th>
<th>Length</th>
<th>Quantity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>KCS-10BQ</td>
<td>10 min.</td>
<td>10</td>
<td>$22.54</td>
</tr>
<tr>
<td>KCS-20BQ</td>
<td>20 min.</td>
<td>10</td>
<td>27.01</td>
</tr>
<tr>
<td>KCS-20BQ Shipper</td>
<td>20 min.</td>
<td>10</td>
<td>28.51</td>
</tr>
</tbody>
</table>

### VHS 1/2" Videocassettes

* Fully packaged with sleeve and label

**Standard**

<table>
<thead>
<tr>
<th>Product</th>
<th>Length</th>
<th>Quantity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-30PLUS</td>
<td>30 min.</td>
<td>10/50</td>
<td>$7.88</td>
</tr>
<tr>
<td>T-60PLUS</td>
<td>60 min.</td>
<td>10/50</td>
<td>8.21</td>
</tr>
<tr>
<td>T-90PLUS</td>
<td>90 min.</td>
<td>10/50</td>
<td>8.32</td>
</tr>
<tr>
<td>T-120PLUS</td>
<td>120 min.</td>
<td>10/50</td>
<td>8.43</td>
</tr>
<tr>
<td>T-160(EX)</td>
<td>160 min.</td>
<td>10/50</td>
<td>16.99</td>
</tr>
</tbody>
</table>

**Broadcast Quality**

<table>
<thead>
<tr>
<th>Product</th>
<th>Length</th>
<th>Quantity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>T30BQ</td>
<td>30 min.</td>
<td>20</td>
<td>$11.99</td>
</tr>
<tr>
<td>T60BQ</td>
<td>60 min.</td>
<td>20</td>
<td>12.99</td>
</tr>
<tr>
<td>T120BQ</td>
<td>120 min.</td>
<td>20</td>
<td>14.86</td>
</tr>
</tbody>
</table>

### XRSF S-VHS Videocassettes

<table>
<thead>
<tr>
<th>Product</th>
<th>Length</th>
<th>Quantity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>XRSF-120</td>
<td>120 min.</td>
<td>10/100</td>
<td>$20.85</td>
</tr>
</tbody>
</table>

### Compact Videocassettes

<table>
<thead>
<tr>
<th>Product</th>
<th>Length</th>
<th>Quantity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>EX TC-20</td>
<td>20 min.</td>
<td>10/100</td>
<td>$8.79</td>
</tr>
<tr>
<td>HGX Gold TC-20</td>
<td>20 min.</td>
<td>10/100</td>
<td>9.32</td>
</tr>
<tr>
<td>RX Pro TC-20</td>
<td>20 min.</td>
<td>10/100</td>
<td>10.26</td>
</tr>
<tr>
<td>SQ TC-20</td>
<td>20 min.</td>
<td>10/100</td>
<td>14.47</td>
</tr>
</tbody>
</table>

### Beta 1/2" Videocassettes

* Fully packaged with sleeve and label

**Standard**

<table>
<thead>
<tr>
<th>Product</th>
<th>Length</th>
<th>Quantity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>L-250PLUS</td>
<td>30 min.</td>
<td>10/50</td>
<td>$7.88</td>
</tr>
<tr>
<td>L-500PLUS</td>
<td>60 min.</td>
<td>10/50</td>
<td>8.21</td>
</tr>
<tr>
<td>L-750PLUS</td>
<td>90 min.</td>
<td>10/50</td>
<td>8.43</td>
</tr>
</tbody>
</table>

### Betacam—BQ

<table>
<thead>
<tr>
<th>Product</th>
<th>Length</th>
<th>Quantity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>B-10BQ</td>
<td>10 min.</td>
<td>10</td>
<td>$19.00</td>
</tr>
<tr>
<td>B-20BQ</td>
<td>20 min.</td>
<td>10</td>
<td>20.50</td>
</tr>
<tr>
<td>B-30BQ</td>
<td>30 min.</td>
<td>10</td>
<td>23.00</td>
</tr>
<tr>
<td>B-60LBQ</td>
<td>60 min.</td>
<td>10</td>
<td>37.00</td>
</tr>
<tr>
<td>B-90LBQ</td>
<td>90 min.</td>
<td>10</td>
<td>45.00</td>
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</table>

### Betacam—SP

<table>
<thead>
<tr>
<th>Product</th>
<th>Length</th>
<th>Quantity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>B-10M SP</td>
<td>10 min.</td>
<td>10</td>
<td>$47.78</td>
</tr>
<tr>
<td>B-20M SP</td>
<td>20 min.</td>
<td>10</td>
<td>53.08</td>
</tr>
<tr>
<td>B-30M SP</td>
<td>30 min.</td>
<td>10</td>
<td>58.38</td>
</tr>
<tr>
<td>B-60M SP</td>
<td>60 min.</td>
<td>10</td>
<td>87.88</td>
</tr>
<tr>
<td>B-90M SP</td>
<td>90 min.</td>
<td>10</td>
<td>85.88</td>
</tr>
</tbody>
</table>

### 8mm Videocassettes

* Fully packaged with sleeve and label

<table>
<thead>
<tr>
<th>Product</th>
<th>Length</th>
<th>Quantity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>EX6-15</td>
<td>15 min.</td>
<td>10/200</td>
<td>$10.28</td>
</tr>
<tr>
<td>EX6-30</td>
<td>30 min.</td>
<td>10/200</td>
<td>11.85</td>
</tr>
<tr>
<td>EX6-60</td>
<td>60 min.</td>
<td>10/200</td>
<td>13.14</td>
</tr>
<tr>
<td>EX6-90</td>
<td>90 min.</td>
<td>10/200</td>
<td>14.21</td>
</tr>
<tr>
<td>EX6-120</td>
<td>120 min.</td>
<td>10/200</td>
<td>16.31</td>
</tr>
</tbody>
</table>

### HGX 8mm Videocassettes

* Fully packaged with sleeve and label

<table>
<thead>
<tr>
<th>Product</th>
<th>Length</th>
<th>Quantity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>HGX-M P-15</td>
<td>15 min.</td>
<td>10/200</td>
<td>$10.84</td>
</tr>
<tr>
<td>HGX-M P-30</td>
<td>30 min.</td>
<td>10/200</td>
<td>12.48</td>
</tr>
<tr>
<td>HGX-M P-60</td>
<td>60 min.</td>
<td>10/200</td>
<td>13.88</td>
</tr>
<tr>
<td>HGX-M P-90</td>
<td>90 min.</td>
<td>10/200</td>
<td>14.97</td>
</tr>
<tr>
<td>HGX-M P-120</td>
<td>120 min.</td>
<td>10/200</td>
<td>16.34</td>
</tr>
</tbody>
</table>

### Video Floppy Disk

<table>
<thead>
<tr>
<th>Product</th>
<th>Quantity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>VF1-1M</td>
<td>50 frames</td>
<td>$180.00</td>
</tr>
</tbody>
</table>

Prices and Specifications Subject to Change Without Notice.
Audio Cassettes

Instant Start Cassettes (Fully Packaged — With Albums and Labels)

<table>
<thead>
<tr>
<th>Product</th>
<th>Length</th>
<th>Quantity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>IS-30</td>
<td>30 min.</td>
<td>10/100</td>
<td>$1.49</td>
</tr>
<tr>
<td>IS-60</td>
<td>60 min.</td>
<td>10/100</td>
<td>$1.75</td>
</tr>
<tr>
<td>IS-90</td>
<td>90 min.</td>
<td>10/100</td>
<td>$2.00</td>
</tr>
</tbody>
</table>

Duplicator Series Cassettes (Bulk)

<table>
<thead>
<tr>
<th>Product</th>
<th>Length</th>
<th>Quantity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUP-30</td>
<td>30 min.</td>
<td>20/200</td>
<td>$1.44</td>
</tr>
<tr>
<td>DUP-45</td>
<td>45 min.</td>
<td>20/200</td>
<td>$1.60</td>
</tr>
<tr>
<td>DUP-60</td>
<td>60 min.</td>
<td>20/200</td>
<td>$1.75</td>
</tr>
<tr>
<td>DUP-90</td>
<td>90 min.</td>
<td>20/200</td>
<td>$2.42</td>
</tr>
<tr>
<td>DUP-120</td>
<td>120 min.</td>
<td>20/200</td>
<td>$3.45</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Product</th>
<th>Length</th>
<th>Quantity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>COM-30</td>
<td>30 min.</td>
<td>10/100</td>
<td>$1.55</td>
</tr>
<tr>
<td>COM-45</td>
<td>45 min.</td>
<td>10/100</td>
<td>$1.85</td>
</tr>
<tr>
<td>COM-60</td>
<td>60 min.</td>
<td>10/100</td>
<td>$1.85</td>
</tr>
<tr>
<td>COM-90</td>
<td>90 min.</td>
<td>10/100</td>
<td>$2.47</td>
</tr>
<tr>
<td>COM-120</td>
<td>120 min.</td>
<td>10/100</td>
<td>$3.71</td>
</tr>
</tbody>
</table>

UDS II Cassettes (Packaged — Ultra Dynamic)

UD Ultra Dynamic Cassettes high sensitivity high output of 5dB at 12,500Hz wide bias latitude and frequency range.

<table>
<thead>
<tr>
<th>Product</th>
<th>Length</th>
<th>Quantity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>UDS-I-46</td>
<td>46 min.</td>
<td>10/100</td>
<td>$2.49</td>
</tr>
<tr>
<td>UDS-I-60</td>
<td>60 min.</td>
<td>10/100</td>
<td>$2.49</td>
</tr>
<tr>
<td>UDS-I-90</td>
<td>90 min.</td>
<td>10/100</td>
<td>$2.99</td>
</tr>
<tr>
<td>UDS-II-46</td>
<td>46 min.</td>
<td>10/100</td>
<td>$2.49</td>
</tr>
<tr>
<td>UDS-II-60</td>
<td>60 min.</td>
<td>10/100</td>
<td>$2.48</td>
</tr>
<tr>
<td>UDS-II-90</td>
<td>90 min.</td>
<td>10/100</td>
<td>$2.99</td>
</tr>
</tbody>
</table>

XLI-S Series (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.

<table>
<thead>
<tr>
<th>Product</th>
<th>Length</th>
<th>Quantity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>XLII-46</td>
<td>46 min.</td>
<td>10/100</td>
<td>$2.99</td>
</tr>
<tr>
<td>XLII-60</td>
<td>60 min.</td>
<td>10/100</td>
<td>$2.99</td>
</tr>
<tr>
<td>XLII-90</td>
<td>90 min.</td>
<td>10/100</td>
<td>$3.99</td>
</tr>
</tbody>
</table>

XLI-S Series (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.

<table>
<thead>
<tr>
<th>Product</th>
<th>Length</th>
<th>Quantity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>XLI-S-60</td>
<td>60 min.</td>
<td>10/100</td>
<td>$3.99</td>
</tr>
<tr>
<td>XLI-S-90</td>
<td>90 min.</td>
<td>10/100</td>
<td>$4.49</td>
</tr>
</tbody>
</table>

XLI-S Series (Studio Series — High Bias)

The XLI-S represents an advanced tape formulation, high epitaxial, with notably finer magnetic particles, plus an entirely new molecular fusion binder system. (Use XLI-S with the recorder's High, or Chrome settings for bias and equalization — 7dB.)

<table>
<thead>
<tr>
<th>Product</th>
<th>Length</th>
<th>Quantity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>XLI-S-60</td>
<td>60 min.</td>
<td>10/100</td>
<td>$3.99</td>
</tr>
<tr>
<td>XLI-S-90</td>
<td>90 min.</td>
<td>10/100</td>
<td>$4.49</td>
</tr>
</tbody>
</table>

Prices and Specifications Subject to Change Without Notice.
EFFECTS SYSTEMS/TIME BASE CORRECTORS

Genesis ACT 3® Digital Effects System
- Page turn
- Simultaneous rotation and perspective
- 9 selectable axes of rotation
- Expansion to 2X normal size
- Infinite compression
- Nine widths selectable
- Selectable softness between the picture and border
- Variable border hue, saturation, and luminance
- 7 posterize levels, including negative luminance
- 7 solarize levels, including forced monochrome
- Defocus
- Freeze
- Variable strobe freeze
- Mosaic tiles with variable size
- Individual cropping on all 4 sides of the picture
- System crop function to accommodate input blanking variations
- Programmable pauses in a sequence
- Walk mode for reviewing sequences
- Composite and component video inputs/outputs
- 2 x 1 switcher for composite video inputs
- Built-in keyer to superimpose manipulated video over a background input
- GPI input for edit control
- Control panel may be located up to 2000' from the mainframe
- Key signal output for keying in a switcher
- Available in NTSC, 525 PAL and 625 PAL versions

Genesis ACT 3 With 25' cable $19,995.00
Upgrade To add rotation, perspective and page turns to Genesis Act 1 $11,000.00
Extender Card $500.00
Additional Cable 2000' maximum $1.25/ft
DATAKEY™ 5 per package $475.00
ACT 3 Control Panel $3,500.00

Tx3FIT Time Base Corrector
- 4:2:2 processing
- Component input and output
- S-VHS dub input and output
- Composite input and output
- U-Matic dub input (standard or SP)
- Stainless steel case
- Operates in PAL highband or lowband dub
- VARI-TRAK for -1X to +3X playback
- Frame freeze
- Genlock
- Stand-alone sync generator
- Shuttle to ±40X play speed
- Proc amp controls with presets
- Optional TBC remote
- Optional effects control complements wideband component VTR formats, including Betacam, MII, S-VHS, ED-Beta, etc., Y, R-Y, B-Y (YUV); Y/C 3.58 (4.43); U-Matic dub and composite inputs are all standard, and are switch selectable from the front (or remote) panel. Multi-format outputs are also standard, providing total format interchange capability.
- Simultaneous outputs of Y, R-Y, B-Y (YUV), Y/C 3.58 (4.43) and composite video are provided

Tx3FIT $7,995.00

Tx4.2 S-VHS Time Base Corrector
- S-VHS input and output
- Composite input and output
- Component output
- U-Matic dub input (standard or SP)
- Component design
- Full frame of memory
- Provides freeze frame and interpolated field freeze
- Can be operated with or without advanced sync
- Will genlock or automatically reference to internal RS-170A sync generator (stand-alone mode)
- Dropout compensator
- Proc amp controls with presets
- Shuttle performance to ±40X

Tx4.2 $5,995.00

Tx3FIT/Tx4.2 TBC Effects Remote Control
- Posterize and solarize
- Mosaic tiles, columns or bars
- Variable strobe freeze
- Quarter size with joystick positioning
- 4 preset quarter size positions
- Dissolves, fade to black or background
- Vertical and corner wipes
- Horizontal, vertical and corner pulls
- Mid effect hold
- Pause
- 4 transition speeds
- Storage of 4 events
- Key output
- Proc amp controls
- Presets
- Freeze buttons
- Internal keyer
- Provided with the Effects Control option
- Composite TBC video can be keyed, pushed or wiped over a background video, or over black, providing a complete video production system in a single TBC

Tx3FIT/Tx4.2 Factory installed $4,500.00

Options for Tx3FIT/Tx4.2
- Noise Reducer Option for Tx4.2 $1,500.00
- TBC Remote with 75' cable $1,650.00
- Rackmount for TBC Remote Mounts 2 remotes side by side $95.00
- RGB Output Option $500.00
- Component Cable—Tx3/Tx4.2 Output to: 3 BNC $195.00
- Betacam $195.00
- M2 $195.00

Prices and Specifications Subject to Change Without Notice.
MICROTIME

Tx5 Component Time Base Corrector
- Low cost component TBC • Y/C input and output • Composite input and output • 5.5MHz luminance bandwidth • 4:2:2 component processing • Frame freeze • Field freeze • Genlock • Stand-alone sync generator • Shuttle to ± 40X play speed • Front panel proc amp and mode controls

The Tx5 is designed to stabilize the output of virtually any ¾", ½" or 8mm VTR. Use the Y/C input and output with NTSC and PAL formats to preserve the increased bandwidth of those formats. The 5.5MHz luminance bandwidth, and 4:2:2 8-bit sampling, offer wideband transparent processing. Use the composite input with virtually any VTR, Y/C and composite outputs let you transcode video between formats if you have a mixture of VTRs.

The full frame of memory lets you operate with or without advanced sync to the VTR, so you can synchronize and time base correct a remote feed. Use frame freeze for maximum resolution on still images, or, for flicker-free freeze of moving pictures, use field freeze.

Proc amp controls, timing adjustments, and all other operator controls are located on the front panel for easy access.

The built-in sync generator conforms to RS-170A in NTSC and EBU standards in 625 PAL. The Tx5 will genlock to an external reference, or will automatically select stand-alone mode if a reference is not connected.

Arithmetically correct sync-to-subcarrier phasing is maintained in the stand-alone mode.

Tx5 .........................................................$3295.00

Tx6/ABEffects System
Tx6 Modular TBC/Framestore System
Tx6 TBC/Framestore
- System configurations: dual TBC with noise reduction; dual TBC; single TBC with noise reduction; single TBC • Infinite window TBC/ framestore • Y/C input and output (for S-VHS and similar formats) • Composite input and output • Component input and output (for Betacam or M2) • U-Matic dub input (standard or SP) • Operates in PAL highband or lowband dub • Vari-Trak® for -1X to +3X playback • Frame freeze • Interpolated field freeze • Genlock • Stand-alone sync generator • Shuttle to ± 40X play speed • Proc amp controls with presets • Dropout compensation • Modular system with plug-in cards • Available in NTSC, 625-line PAL and 525-line PAL

The Tx6 Modular TBC/Framestore System allows you to achieve maximum capability from your ½" and ¾" VTRs, utilizing all current signal architectures, such as composite, component, dub and S-VHS input and output, with format transcoding.

The Tx6 is modular in design, so you may begin with a single TBC/ framestore and upgrade to a dual TBC/Framestore in the field. In addition, the Tx6 allows further upgrade capability to full AB effects as your needs and requirements change.

ABEffects Modular Framestore System
- System configurations: dual TBC with effects; dual TBC; single TBC with effects; single TBC • Infinite window framestore • Y/C input and output (for S-VHS and similar formats) • Composite input and output • Component input and output (for Betacam or M2) • U-Matic dub input (standard or SP) • Operates in PAL highband or lowband dub • Vari-Trak® for -1X to +3X playback • Frame freeze • Interpolated field freeze • Genlock • Stand-alone sync generator • Shuttle to ± 40X play speed • Proc amp controls with presets • Dropout compensation • Modular system with plug-in cards • Available in NTSC, 625-line PAL and 525-line PAL • Video effects include: posterize and solarize; horizontal, vertical and corner pulls; variable strobe freeze; horizontal, vertical and corner pushes (dual channel systems only); quarter size with joystick positioning; horizontal, vertical and corner splits; border color and size control; square wipes; fade to black, fade to background color, dissolve to other channel; mid effect hold; 4 transition speeds; stereo audio mixer with mix, fade and hold

ABEffects is available in a number of different configurations for your current and future needs. Start out with a single or dual framestore TBC and add effects later, or purchase the system in its entirety.

In the dual channel configuration, the system will operate as 2 independent framestore TBCs, each with a full complement of video inputs and outputs. Add the effects option, and each framestore can be programmed for a wide range of digital effects. The component video mixer combines the 2 channels and provides a third set of outputs.

Multiple format, switchable inputs and simultaneous outputs of composite, component and Y/C video provide total format interchange, so the ABEffects system can expand with your system.

Dual framestore TBC with mixed effects (1) ...........................................$18,160.00
Dual framestore TBC — no effects (2) ...........................................$13,490.00
Single framestore TBC — with effects (3) .....................................$15,045.00
Single framestore TBC — no effects (4) ........................................$9,335.00
Upgrade to add second TBC to item (3) or (4) .................................$8,225.00
Upgrade to add mix effects to item (2) or (4) ................................$8,225.00
Page turn option (1 per system) .....................................................$1,560.00
Noise reduction option. Order 1 per TBC ......................................$1,560.00
RGB output option. Order 1 per TBC ...........................................$520.00
TBC remote for item (2) or (4), Order 1 per TBC ..............................$675.00
Rackmount for TBC remote (mounts 2 remotes side by side) ..........$100.00

Prices and Specifications Subject to Change Without Notice.
TRANSMITTERS/ANTENNA/
MICROWAVE SYSTEM

ProStar 7T2 6/7GHz Transmitter
- Lightweight, compact and self-contained
- Frequency range: 6.425 to 7.125GHz
- Digital frequency synthesizer: 42 channels
- Video plus 2 audio program channels: selectable mic or line inputs
- Video low pass filter standard
- Sophisticated, field-proven RF circuitry
- Standby mode: instant on-frequency transmission
- Internal AC/DC power supply: 11 to 15VDC or 115/230VAC operation (50/60Hz)
- Ruggedized and weather-resistant

The ProStar 7T2 is a low-cost portable transmitter designed for television broadcast in both domestic and international bands and cable ENG operations, offering a combination of performance, functionality and reliability unmatched in the industry. This high-performance, frequency agile radio transmitter features a high degree of multichannel flexibility. It concurrently handles a color television channel and 2 audio program channels, while producing a 1.5W output in the 6/7GHz frequency bands. The 7T2's compact and lightweight design provides the mobility and quick response required in broadcast and cable ENG applications. It is a self-contained, low-cost ruggedized unit that can be installed on a seasonal or semi-permanent basis for reoccurring events such as government and education sessions, sporting events, theater and meetings.

900350 7T2 transmitter
89870-77 Lightweight tripod
900341-1 7T2 transit case
808642-1 Battery pack/charger (optional)

ProStar 2T2WB 2GHz Transmitter
- Low-cost, self-contained, lightweight
- Frequency range: 1.7 to 2.7GHz
- Digital frequency synthesizer: 30 channels cover both low and high U.S. broadcast bands
- Video low pass filter standard
- Video plus 2 audio program channels: selectable mic or line input, either channel
- Auto peak limiting on mic input
- Standby mode: instant RF transmission on-frequency
- Internal AC/DC power supply: 11 to 15VDC or 115/230VAC (50/60Hz) operation
- Ruggedized and weather-resistant

The 2T2WB is a low-cost, portable transmitter designed for domestic and international television broadcast and cable ENG operations that offers a combination of performance, functionality and reliability unmatched in the industry. This high-performance, frequency-agile radio transmitter features a high degree of multichannel flexibility. It concurrently handles a color television channel and 2 audio program channels, while producing a 3W output in the 2GHz frequency band. The 2T2WB features a compact, lightweight design that provides the mobility and quick response required for broadcast and cable ENG operations. A full line of "quick-disconnect" high-gain antennas are available for use with the 2T2WB transmitter.

ProStar 2A20/7A30 Transmit Antenna
- Rugged fiberglass-honeycomb construction
- High gain
- Broadband design covers both 2 and 2.5GHz band
- 7GHz broadband model covers 6.425 to 7.125GHz
- Dual band 2/7GHz version available
- Excellent front to back and side lobe performance

The ProStar 2A20/7A30 is a low profile, offset fed antenna. The reflector is constructed from honeycomb reinforced material which provides extreme ruggedness and light weight. Ideally suited for van applications.

It is available as a single band antenna covering either the 1.8GHz, 2/2.5GHz or 7GHz band or as a multi-band antenna system covering both the 2/2.5GHz and 6.5/7GHz bands.

The feed design permits either linear or circular polarization with a full range of remote switching options. The antenna is designed to interface with the QuickSet QPT90 pan and tilt head.

FLR 2, 6, 7 and 12GHz Direct Modulation Microwave System
- Modern, high performance design meets EIA and CCIR requirements
- Built-in, low noise GaAs FET preamplifiers are standard in all receivers and provide excellent threshold performance
- Synthesized transmitter and receiver microwave sources are field-tunable across various frequency bands
- Up to 4 internal, high performance program audio channels available with each transmitter and receiver
- Solid-state FET or bipolar broadband RF output amplifiers are incorporated in all transmitters
- High power amplifier "HP" version option available in all bands for additional fade margin protection

The FLR Series is advanced design, high performance, directly modulated microwave equipment suitable for both domestic and international applications, including: STL and TSL, multi-hop and multi-channel broadcast, CATV and ETV video system networks. The equipment may be configured as either a simplex or duplex system. Protection options such as hot-standby, including space and frequency diversity, are also available.

Prices and Specifications Subject to Change Without Notice.
TRIPODS/HEADS

System 10A Cat. 332
- Junior fluid head 101 • Junior A tripod with column lift 331 • Re-versible spike/pad feet • Single handle 270 • 10 lb. capacity
- $820.00

System 15 II Cat. 335
- Senior F fluid head 102 • Compact tripod with spreader 301 • Feet, handle • 20 lb. capacity
- $1795.00

System 20 Cat. 338
- Miller 20 fluid head 105 • Compact tripod with spreader 301 • Rubber feet 375 • Handle 271 • 20 lb. capacity
- $1920.00

System 30 Cat. 344
- Miller 30 fluid head 155 • Compact tripod with spreader 302 • Rubber feet 375 • Handle 271 • 30 lb. capacity
- $3560.00

System 30 ENG Cat. 345
- Miller 30 fluid head 155 • 2-stage tripod with spreader 302 • Rubber feet 375 • Handle 271 • 30 lb. capacity
- $3375.00

System 35 II Cat. 347
- VG50 fluid head 118 • Midi tripod with spreader 285 • Feet, 2 telescopic handles • 50 lb. capacity
- $2915.00

System 40 ENG Cat. 350
- Miller 50 fluid head 160 • Midi tripod with spreader 285 • Rubber feet 375 • 2 telescopic handles 272 • 50 lb. capacity
- $3975.00

System 40 Cat. 350
- Miller 50 fluid head 160 • Midi tripod with spreader 285 • Rubber feet 375 • 2 telescopic handles 272 • 50 lb. capacity
- $3975.00

System 80 Cat. 355
- Miller 80 fluid head 150 • Maxi tripod with spreader 290 • Set of 3 rubber feet 375 • Dual telescopic handles 274 • 80 lb. capacity
- $6940.00

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With Integrated Counterbalance

Miller 20 II Fluid Head Cat. 105
- Capacity 20 lbs. • Features integrated counterbalance system • Sliding camera platform and integrated claw-ball level
- $1145.00

Miller 30 II Fluid Head Cat. 155
- Capacity 30 lbs. • Features integrated variable counterbalance system • Multi-step drag control and integrated claw-ball level
- $2650.00

Miller 50 II Fluid Head Cat. 160
- Capacity 50 lbs. • Features integrated variable counterbalance system • Multi-step drag control • Sliding camera platform and integrated claw-ball level
- $2875.00

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
- $5495.00

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Without Integrated Counterbalance

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)
- $395.00

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)
- $900.00

Light Professional Fluid Head Cat. 106 Capacity 30 lbs. Features independent, variable pan and tilt drag adjustment and independent tilt lock
- $1375.00

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)
- $1615.00

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Prices and Specifications Subject to Change Without Notice.
TRIPODS/ACCESSORIES

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 With flat base top ........................................ $225.00
301/302 Compact Tripod II With Spreader
- 30 lb. capacity
- Collapsed height 33" • Extended height 58"
- Also available in mini size
301 With 75mm bowl ........................................... $775.00
302 With 100mm bowl ....................................... 775.00
285 Midi Tripod With Spreader
- 50 lb. capacity
- Collapsed height 35" • Extended height 61"
- Also available in mini size
285 With 100mm bowl ........................................ $925.00

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 With 75mm bowl ........................................... $690.00
321 With 100mm bowl ....................................... 690.00
310/311 ENG Tripod With Spreader
- 50 lb. capacity
- Collapsed height 36" • Extended height 60"
310 With 100mm bowl ........................................... $880.00
311 With 75mm bowl ........................................... 880.00
290/292 Maxi Tripod With Spreader
- 100 lb. capacity
- Collapsed height 35" • Extended height 61"
- Also available in mini size
290 With 150mm bowl ......................................... $1175.00
292 With Mitchell type flat base ................................ 1175.00

285 2-Stage With Spreader
- 55 lb. capacity
- Collapsed height 26.6" • Extended height 58.5"
- Eliminates need for "baby legs"
285 With 100mm bowl ........................................ $1000.00

Accessories
217 Column Lift Elevator
Provides up to 12" variable extension and ball leveling for above tripods, except 290/292 ....................... $475.00
365 Medium Duty Dolly (Formerly 209)
- 100 lb. capacity
- 5" wheels ................................................. $685.00
367 Lightweight Dolly (Formerly 224)
- 30 lb. capacity
- 3" wheels ................................................. $495.00
229/238 Millimount
- 30 lb. capacity
- 100mm bowl 229; 75mm bowl 238 ......................... $610.00
239 Millimount
- 30 lb. capacity
- 150mm bowl ............................................. $725.00

229/238/239
294/296

300 Tripak case, 7" diameter ................................ $315.00
309 Tripak case, 9" diameter (short) ......................... 315.00
245 Tripak case, 9" diameter ................................ 315.00
298 Tripak case, 11" diameter ................................ $375.00
234 Spreader suit 320, 321 tripod ............................. 175.00
295 Monopod ................................................... 225.00
254 Hi Hat, 75mm bowl ........................................ $265.00
253 Hi Hat, 100mm bowl ...................................... 265.00
255 Hi Hat, 150mm bowl ...................................... 375.00
259 Mitchell flat base .......................................... 375.00
376 Rubber feet (set) ........................................... 135.00
294/296 Soft case ................................................ 149.00
306 Soft case .................................................... 225.00
361 75mm flat base adaptor suit 104, 105 ................... 125.00
360 100mm flat base adaptor suit 114, 115, 116, 119, 155, 160 125.00
382 150mm flat base adaptor suit 150 ......................... 250.00
363 Gitzo adaptor suit 114, 115, 116, 119, 155, 160 .... 225.00
364 Gitzo adaptor suit 104, 105 ............................... 225.00
308 Fast strap, adjustable carry strap ....................... 29.95

Prices and Specifications Subject to Change Without Notice.
101/201 VHF Wireless Systems

- 101 VHF is a single channel receiver
- 201 VHF includes 2 complete front ends for true diversity reception to assure dropout-free performance
- Designed to operate simply and reliably in all conditions
- Panel combines striking graphics with the efficiency of a single overlay that includes recessed power and signal LED indicators, and a power on/off membrane switch
- Fold-down retractable antennas are positioned in front of receivers for ease of use when rackmounted

Each System Includes Receiver and Transmitter Described Below

### 101 Systems

- **101 GT**
  - With body pack instrument transmitter
  - $249.95

- **101 LT**
  - With hardwired lavalier transmitter
  - $279.95

- **101 LT/SX**
  - With body pack transmitter (mini-XLR connector)
  - $297.95

- **101 HT**
  - With handheld microphone transmitter (Shure SM-58 element)
  - $299.95

- **101 HT/SX**
  - With handheld microphone transmitter (Shure SM-58 element)
  - $329.95

### 201 Systems

- **201 GT**
  - With body pack instrument transmitter
  - $369.95

- **201 LT**
  - With hardwired lavalier transmitter
  - $409.95

- **201 LT/SX**
  - With body pack transmitter (mini-XLR connector)
  - $414.95

- **201 HT**
  - With handheld microphone transmitter
  - $429.95

- **201 HT/58**
  - With handheld microphone transmitter (Shure SM-58 element)
  - $509.95

- **201 HT/NDYM**
  - With handheld microphone transmitter (E-V 257 element)
  - $534.95

### 650 True Diversity Wireless System

- Operates on VHF high band frequencies
- 120dB dynamic range for superior sound
- True diversity for dropout-free performance

Each System Includes 650 Receiver and Transmitter Described Below

- **650 GT**
  - With body pack instrument transmitter
  - $599.95

- **650 LT**
  - With hardwired lavalier transmitter
  - $639.95

- **650 LT/SX**
  - With body pack transmitter (mini-XLR connector)
  - $639.95

- **650 LT/1200**
  - With body pack 1200 Series transmitter (mini-XLR connector)
  - $999.95

- **650 HT**
  - With handheld microphone transmitter
  - $659.95

- **650 HT/58**
  - With handheld microphone transmitter (Shure SM-58 element)
  - $859.95

- **650 HT/NDYM**
  - With handheld microphone transmitter (E-V 257 element)
  - $889.95

- **650 HT/1200**
  - With handheld 1200 Series microphone transmitter (Shure SM-58 or N/DYM 757)
  - $1099.95

### 1200 True Diversity Wireless System

- True diversity for dropout-free performance
- Instrument, handheld and lavalier transmitters with attached lavalier microphone available
- 10-channel capability allows up to 10 standard frequencies to operate simultaneously
- Available with optional 1200 Series handheld transmitters that allow user-switchable elements featuring: Shure SM 58, E-V N/DYM 357 and 757 units, plus optional 1200 LT and GT transmitter

Each System Includes 1200 Receiver and Transmitter Described Below

- **1200 GT**
  - With body pack instrument transmitter
  - $1599.95

- **1200 LT**
  - With body pack transmitter (mini-XLR connector)
  - $1599.95

- **1200 HT**
  - With handheld transmitter (Shure SM-58 or N/DYM 757)
  - $1699.95

### Prices and Specifications Subject to Change Without Notice.
WIRELESS MICROPHONE SYSTEMS

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 5 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 (mic level) are provided.

Specifications
- Frequency Response: 25Hz-20KHz ± 3dB
- Dynamic Range: 120dB (max. SPL to A-weighted noise level)
- Harmonic Distortion: <0.3%
- RF Carrier Frequencies: 5 channels: A through E, between 170-216MHz
- Frequency Stability: ± 0.005% crystal controlled
- Modulation: FM/± 15kHz
- Operating Range: 200' adverse conditions, up to 1500' line-of-sight

501 VR/LT Professional video camera wireless microphone system for ENG, EFP - lavalier $849.95
501 VR/HT Professional video camera wireless microphone system for ENG, EFP - handheld $1099.95

151 VR Wireless Microphone System
- Puts the microphone "where the action is" for professional quality audio on your tapes
- Operates on VHF high-band frequencies for interference-free performance
- Companding circuitry gives crisp, clear sound without overload distortion or background hiss
- Dynamic range over 110dB
- Compatible with all camcorders and video cameras

The 151 VR has companding circuitry for dynamic range over 110dB, which means no background hiss or overload distortion. The system works with all video cameras and camcorders having an audio input. Range is 250'. The 151 wireless transmitter body pack clips on belt where it can't be seen. Then the attached lavalier microphone is positioned near the speaker's mouth on a tie, coat, shirt, etc. The transmitter is powered by a 9V battery. Controls include transmitter on/off and audio on/off.

The 151 VR wireless receiver is ruggedly built and packed with professional features. The receiver is powered by a 9V battery in convenient "pop-in" battery compartment. LED lights indicate low battery and received signal. Controls include output level and mute adjusts. Audio output and headset connectors are 3.5mm mini-plugs. An attached software antenna extends from the top of the receiver.

151 VR/LT VHF video camera wireless lavalier microphone system $199.95
151 VR/HT VHF video camera wireless handheld microphone system $249.95

VCM-100 Video Camera Boom Microphone
- Solves the problem of poor quality sound in your videos by replacing the on-board mic supplied with your camera
- Highly sensitive super-directional microphone gives you professional quality audio in all your videos. Switchable for normal or long distance
- In long distance mode the mic eliminates extraneous noise, picks up only what you want to record. Ideal for lectures, concerts, weddings, parties or nature recordings
- Super cardioid electret condenser element gives wide frequency response with extremely low noise
- Powered by a AA battery
- Includes microphone, 3' coil cord and shoe bracket for on-camera mount, 20' cord for remote use and a full length foam windscreen
- Sensitivity: for short distance -70dB (1V/µbar 1kHz); for long distance -56dB (1V/µbar 1kHz)
- Frequency response: 80Hz-12kHz
- Output impedance: for short distance 1000 ohms; for long distance 2.3K ohms
- Power source: 1.5VDC AA battery
- Sound pressure level: 120dB max. • S/N ratio: 40dB or better

VCM-100 $64.95

Prices and Specifications Subject to Change Without Notice.
NEC

PR-2700S 27" Professional Monitor/Receiver
- 1 UHF/VHF 128-channel cable ready input
- S-video input with loop out
- 2 composite video inputs with loop out and monitor out
- Stereo TV reception with built-in MTS decoder
- DBX noise reduction
- SAP separate audio program
- On-screen time and channel display
PR-2700S .................................................. $1040.00

PM-971A 9" Color Monitor
- Black matrix picture tube
- Picture tube corrects for pincushion distortion
- Switchable AFC
- Blue raster switch for quick correct picture setup
- High DC restoration
- Heavy-duty switching power supply
- Video input/loop output with BNC connectors
- Switchable input impedance 75 ohms/high
- Detachable 3-prong grounded AC cable
- Audio inputs, built-in audio amplifier and loudspeaker
- Full range of controls: color, tint, black level, picture and sharpness
- EIA rackmount capability
PM-971A .................................................. $525.00
RM-97A Dual PM-971A rackmount kit (6 rack units high) ........ $100.00

PM-1271A 12" Color Monitor
- Black matrix picture tube with detachable tinted glass filter
- 90° deflection line picture tube with black stripe shadow mask
- 0.6mm slit pitch
- Detachable tinted glass shield
- 350 lines horizontal resolution
- Selectable AFC speed 3.58MHz trap filter
- DC restoration
- BNC type input/loop output
- 8-pin VTR connector
- Automatic controls: color killer, degausser, voltage control, color control, beam limiter
- Power requirements: 120VAC, 60Hz
- Power consumption: 61W
PM-1271A .................................................. $525.00
RM-127A Rackmount kit for PM-1271A (18 rack units high) .... $100.00

PM-1971S 19" S-VHS Color Monitor
- Black matrix picture tube with detachable tinted glass filter
- 90° deflection in-line picture tube with black stripe shadow mask
- Detachable tinted glass filter
- 450 lines horizontal resolution
- Selectable AFC speed
- 3.58MHz trap filter
- DC restoration
- Built-in stereo amp and speakers
- Wide range of inputs/outputs for future expansion
- 8-pin input/output socket
- S-video input
PM-1971S .................................................. $810.00

CM-2791 27" Color Monitor
- Cubic designed cabinet
- Takes up less space than conventional 26" monitors
- 1 video input with loop output and 1 input (4 BNC analog or 9-pin TTL/analog)
- RGB input is compatible with both CGA or EGA graphics
- Remote in/out and ABL in/out jacks
- Cubic design allows easy stacking for videowall applications
- 9-pin to 9-pin interface cable included
- 20½"H x 25½"W x 20½"D
- 104 lbs.
CM-2791 .................................................. $1030.00

SVC-10 S-Video Converter
- Interfaces S-Video VCRs to existing RGB analog monitors and projectors
- Interfaces to CM-2581A
- Allows switching between a personal computer and an S-Video VCR
- 4-pin DIN V/C input with left and right audio connections and loop through output
- 34-pin RGB input
- Individual color, tint and sharpness controls
SVC-10 .................................................... $285.00

COLOR MONITORS/VCRs

PV-1300 Professional VHS VCR
- 2-head
- Auto repeat
- 110-channel cable ready programmable timer
- 1-touch segment recording of up to 5 hours
- Record lock switch
- Real time counter
- Counter memory
- Picture search (forward or back at about 5 times normal speed in SP mode or 9 times in EP mode)
- Jet Search (visible scan at about 9 times normal speed in SP mode or 27 times in EP mode)
- Automatic and manual tracking control
PV-1300 .................................................. $2100.00
RM-130 Rackmount for PV-1300 ................................ $610.00
RC-1001E Remote control for PV-1300 ........................ $100.00

Prices and Specifications Subject to Change Without Notice.
TIME BASE CORRECTORS/ FRAME SYNCHRONIZERS

NOVA 502 EFP Time Base Corrector
- Full bandwidth direct processing
- Provides stable, wideband video playback for reliable microwave and satellite transmission from remote field locations
- Enables high quality dubbing and interformat transfer in the field
- S/DC powered—designed for portable applications
- Attaches directly to Sony's VA-500 color playback adaptor for the BVV-5 dockable VCR
- For BVW-200 or BVW-300 Betacam SP camcorders
- Easily interfaces with portable VCRs
- Matches the hue and level of the video input automatically
- DC loopthrough connections allow other 12V equipment to be powered by the same supply

Price: $1990.00

NOVA 700 Time Base Corrector
- 32-line video memory for twice the "window" of conventional time base correctors
- Heterodyne picture processing
- 8-bit, 4x subcarrier sampling for maximum transparency
- Perfect RS-170A output with digitally generated SCH
- Program and monitor composite outputs
- Video, chroma, hue, and setup adjustments with presets

Price: $2290.00

NOVA 710S Wideband Time Base Corrector
All features of the NOVA 700 plus:
- Full-bandwidth processing with U-Matic, Panasonic S-VHS, portable Betacam and MiT VCRs
- Wideband composite outputs
- S-VHS input processing with full 5.5MHz bandwidth and resolution of over 440 lines
- Subcarrier back for reliable microwave and satellite transmission from remote field locations

Price: $2890.00

NOVA 800 Full Frame Time Base Corrector
- Infinite window time base correction for reliable, error-free video
- Synchronize all inputs including non-capstan servo VCRs
- Freeze—frame, field 1 or field 2 selectable for quality still video and auto freeze upon loss of video input
- Universal heterodyne processing of all NTSC, PAL and 8mm VCRs
- 8-bit, 4x subcarrier encoding and true RS-170 outputs
- Proc amp controls with preset for video, chroma, hue and setup adjustments

Price: $2890.00

NOVA 810 Full Frame Time Base Corrector
All features of the NOVA 800 plus:
- Wideband composite video outputs with up to 5.5MHz bandwidth and 440 lines of resolution
- Y/C (Y: 3.58MHz) input processing for S-VHS, Hi8 and Ed-Beta VCRs
- VTR-SC mode—with freeze, frame, field 1, or field 2 selectable for quality still video and auto freeze upon loss of video input
- Digital dropout compensator (DOC)
- U-Matic, U-Matic SP, portable Betacam SP and MiT VCRs
- Subcarrier feedback processing for Panasonic S-VHS VCRs reduces chroma noise and improved resolution
- Digital dropout compensator (DOC) fills in missing video from tapes with dropouts

Price: $3490.00

NOVA 900 S Super Time Base Corrector
- 2 S-VHS component inputs
- 2 composite inputs
- S-VHS (Y/C) component
- Y/C (Y: 3.58MHz) input processing for S-VHS, Hi8 and Ed-Beta VCRs
- VTR-SC mode—with freeze, frame, field 1, or field 2 selectable for quality still video and auto freeze upon loss of video input
- Digital dropout compensator (DOC)
- U-Matic, U-Matic SP, portable Betacam SP and MiT VCRs
- Subcarrier feedback processing for Panasonic S-VHS VCRs reduces chroma noise and improved resolution
- Digital dropout compensator (DOC) fills in missing video from tapes with dropouts
- Digital black stretch (DBS) for bringing out details in dark pictures
- 4 x 1 input switcher + freeze

Price: $4340.00

NOVA 950 Multi-Format Transcoding Time Base Corrector
- Full bandwidth, broadcast quality signal processing
- 8-bit, 4x subcarrier 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 setup
- Compact, 1 rack unit high
- Remote feeds to master control and production switchers
- Satellite downlinks from network feeds, SNG vehicles, teleconferencing, weather satellites and scientific reconnaissance
- Microwave 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

Price: $4490.00

NOVA Sync' Frame Synchronizer
- Full bandwidth, broadcast quality signal processing
- 8-bit, 4x subcarrier 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 setup
- Compact, 1 rack unit high
- Remote feeds to master control and production switchers
- Satellite downlinks from network feeds, SNG vehicles, teleconferencing, weather satellites and scientific reconnaissance
- Microwave 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

Price: $5290.00

NOVA Sync 2 Frame Synchronizer/Time Base Corrector
All features of the NOVA Sync plus:
- Wideband time base correction
- VTR-SC and S-VHS input processing
- Auto select mode, synchronize/TBC
- Manual selection of synchronize, heterodyne, VTR-SC or S-VHS processing modes
- Digital dropout compensator (DDC)

Price: $4559.00

NOVA Sync 2 Frame Synchronizer
- Full bandwidth, broadcast quality signal processing
- 8-bit, 4x subcarrier 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 setup
- Compact, 1 rack unit high
- Remote feeds to master control and production switchers
- Satellite downlinks from network feeds, SNG vehicles, teleconferencing, weather satellites and scientific reconnaissance
- Microwave 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

Price: $6390.00

Price and Specifications Subject to Change Without Notice.
**CAMERA SUPPORT SYSTEMS**

**Ultimate Series**

<table>
<thead>
<tr>
<th>System 5-15 With 35A</th>
<th>The Ultimate 5-15 fluid head with 147/8&quot; handle, Model 35A 100mm ball quick release metal tripod, cable spreader and spike guards</th>
<th>$2,440.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>System 5-15 With 55 Metal</td>
<td>The Ultimate 5-15 fluid head with 147/8&quot; handle, Model 55M 100mm ball metal tripod, spreader and spike guards</td>
<td>$2,650.00</td>
</tr>
<tr>
<td>System 5-15 With 55 Wood</td>
<td>Same as above except substituting with a Model 55W 100mm ball wood tripod</td>
<td>$2,555.00</td>
</tr>
<tr>
<td>System 10-30 With 35A</td>
<td>The Ultimate 10-30 fluid head with 147/8&quot; handle, Model 35A 100mm ball quick release metal tripod, cable spreader and spike guards</td>
<td>$3,680.00</td>
</tr>
<tr>
<td>System 10-30 With 55 Metal</td>
<td>The Ultimate 10-30 fluid head with 147/8&quot; handle, Model 55M 100mm ball metal tripod, spreader and spike guards</td>
<td>$3,885.00</td>
</tr>
<tr>
<td>System 10-30 With 55 Wood</td>
<td>Same as above except substituting with a Model 55W 100mm ball wood tripod</td>
<td>$3,790.00</td>
</tr>
<tr>
<td>System 25-75 With 155 Metal</td>
<td>The Ultimate 25-75 fluid head with side loading platform, 17&quot; handle, Model 155M 150mm ball metal tripod, spreader and rubber feet</td>
<td>TBA*</td>
</tr>
<tr>
<td>System 25-75 With 155 Wood</td>
<td>Same as above except substituting with a Model 155W 150mm ball wood tripod</td>
<td>TBA*</td>
</tr>
</tbody>
</table>

**Originator Series**

| System 30 With 35A | Model 30 fluid head with 15" handle, Model 35A 100mm ball quick release metal tripod, cable spreader and spike guards | $2,295.00 |
| System 30 With 55 Metal | Model 30 fluid head with 15" handle, Model 55M 100mm ball metal tripod, spreader and spike guards | $2,495.00 |
| System 30 With 55 Wood | Same as above except substituting with a Model 55W 100mm ball wood tripod | $2,405.00 |
| System 50 With 35A | Model 50 fluid head with 15" handle, Model 35A 100mm ball quick release metal tripod, cable spreader and spike guards | $3,485.00 |
| System 50 With 55 Metal | Model 50 fluid head with 15" handle, Model 55M 100mm ball metal tripod, spreader and spike guards | $3,690.00 |
| System 50 With 55 Wood | Same as above except substituting with a Model 55W 100mm ball wood tripod | $3,595.00 |
| System 105 With 155 Metal | Model 100 fluid head with side loading platform, 15" handle, Model 155M super claw ball metal tripod, spreader and rubber feet | $6,010.00 |
| System 105 With 155 Wood | Same as above except substituting with a Model 155W super claw ball wood tripod | $6,775.00 |

**System 7**

| Model 57 | Model 127 Aeroped with Model 50 fluid head and 15" handle | $9,675.00 |
| System 107 | Model 127 Aeroped with Model 100 fluid head and 15" handle | $11,520.00 |
| System 107-HD | Model 127 Aeroped with Model 100-HD fluid head and 15" handle | $12,090.00 |

**System 127**

| Model 127 | Model 127 Aeroped with the Ultimate 25-75 fluid head and 17" handle | TBA* |

**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 20" 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.

*To Be Announced

230 Prices and Specifications Subject to Change Without Notice.
CAMERA SUPPORT
EQUIPMENT

Fluid Camera Heads
Ultimate 5-15
Fluid Head with fully adjustable counterbalance capability, quick release, adjustable camera platform and 100mm ball base with tiedown assembly, 2 14½” handles $1895.00

Ultimate 10-30
Fluid Head with fully adjustable counterbalance capability, quick release adjustable camera platform and 100mm ball base with tiedown assembly, 2 14½” handles $2375.00

Ultimate 25-75
Fluid Head with adjustable counterbalance system, adjustable side loading platform, 150mm ball base with tiedown assembly and 1 17” handle TBA

Model 30B
Fluid Head with quick release adjustable camera platform and 100mm ball base with tiedown assembly, 1 15” handle and counterbalance adjustment wrench $1555.00

Model 50D
Fluid Head with 200 in.-lb. counterbalance spring, quick release adjustable camera platform and 100mm ball base with tiedown assembly, 1 15” handle $2695.00

Model 100C
Fluid Head with 500 in.-lb. counterbalance spring, Mitchell base with tiedown assembly, side loading or fixed platform and 1 15” handle $4565.00

Model 100C-HD
Fluid Head with 800 in.-lb. counterbalance spring, Mitchell base with tiedown side loading platform and 1 15” handle $5150.00

Hi Hats
Model 46
Claw Ball Hi Hat (5½” height) $205.00

Model 145
Super Claw Ball Hi Hat (6” height) $270.00

Tripod Dollies
Model 53A
Tripod Dolly with 6” diameter wheels:
Regular (43” diameter spread) $1395.00
Wide Stance (48” diameter spread) $1395.00

Model 53B
Tripod transport dolly with 4” diameter wheels:
Regular (43” diameter spread) $450.00
Wide Stance (48” diameter spread) $450.00

Model 51 Claw Ball/Column Adaptor
Claw Ball to Round Column Adaptor (Please specify 1¾”, 1½” or 2”) $300.00

Tripods
Model 36A
Quick release tripod with 100mm ball top casting, built-in spreader and spike guards, load capacity 60 lbs $795.00

Model 55C-M
Metal regular tripod with 100mm ball top casting, spreader and spike guards, load capacity 100 lbs $1010.00

Model 55C-W
Wood regular tripod with 100mm ball top casting, spreader and spike guards, load capacity 80 lbs $910.00

Wood Tripod Only:
Regular (24” to 60”) $790.00
Baby (16” to 24”) $770.00

Model 155A-M
Metal regular tripod with super claw ball 150mm, or Mitchell top casting, spreader and rubber feet, load capacity 200 lbs $1490.00

Model 155A-W
Wood tripod with super claw ball 150mm, or Mitchell top casting, spreader and rubber feet, load capacity 160 lbs $1250.00

Wood Tripod Only:
Regular (30” to 70”) $1010.00
Baby (26” to 38”) $1000.00

Handles
08094 Standard handle for models 30 or 50 (1½” diameter, 15” length) $88.00
1030-145 Standard handle for Ultimate 5-15 or 10-30 (¾” x 14½” length) $85.00
1030-088 Long handle for Ultimate 5-15 or 10-30 (¾” x 19” length) $110.00

08086 Standard handle for models 100 or 150 (¾” diameter, 15” length) $110.00
08122 Long handle for models 100 or 150 (¾” diameter, 26” length). Can be cut to desired length $165.00
08189 Handle extension, fits models 30 or 50 (½” .¾” x 18”) $210.00

Molded Cases for Systems and Tripods
Fits Systems 30, 10-30 or 50. Metal or wood $265.00
Fits Model 55W or 55M Baby $255.00
Fits Model 155 Regular Wood $300.00
Fits Model 155 Regular Metal $290.00
Fits Model 155W or 155M Baby $275.00

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 $110.00

Foam Lined Molded Case
For Model 100C Fluid Head $475.00

Prices and Specifications Subject to Change Without Notice.
MX-55-N 1/4" Compact Recorder
- DC capstan, servo-controlled
- Variable speed, ± 20%
- Speed select in pairs: 15/7.5 or 7.5/3.75 ips
- Reel size compensation control
- Plug-in 4-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
- 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. 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 5 versions. These are: full track, twin track NAB or DIN stereo, twin track with center track time code 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."

MX-55-N 1/4" 2-channel recorder ........................................... $4295.00
MX-55N-HS 2-channel 30 ips half-track mastering recorder .................. 4595.00
MX-55-NM 1/4" 2-channel recorder with meter bridge console .............. 5495.00
MX-55-TM 1/4" 2-channel recorder with center track time code and meter bridge console ...... 6495.00

Accessories
ZA-5CV Voice editing module (VEM) ........................................ $263.00
CB-119 8-memory locator ................................................. 1775.00
CB-127 Remote transport control ....................................... 263.00
ZB-51A Reckmount kit for MX-55N .................................... 63.00
ZB-51F Reckmount kit for MX-55NM, TM ............................. 184.00
ZB-51D Metal roll-around floor stand for MX-55N, with skirt .......... 520.00
ZB-51E Metal roll-around stand for MX-55NM and TM, with skirt ...... 520.00
ZB-51L 30 ips retrofit kit for MX-55N .................................... 210.00

MX-50 II 1/4" Compact Recorder/Reproducer
- DC capstan PLL quartz clock motor
- Speed selectable in pairs of 15/7.5 ips or 7.5/3.75 ips
- Max. 1000m tape usable
- Standard fader start function (option for low voltage version) ± 7% vari speed
- Dump edit function
- Optional Voice Editing Mode (VEM)
- VU meters with lamp and peak indicator
- Alternate and momentary cueing
- 19" rackmount available
- Other options: CB-127 transport remote, input/output transformer, DIN AEG clamper/plate, scissor, pedestal, full track head assembly, NAB reel, Built-in monitor speaker function in addition to the standard headphone jack

The MX-50 II has 2 basic versions: high and low voltage. Each version is switchable for NAB/IEC, and a DIN version is available with AEG DIN-clamper. Speed pairs 15/7.5 ips or 7.5/3.75 ips are user selectable. The tape transport features a DC quartz PLL capstan motor and a 7-digit tape timer with search-zero and search-to-cue functions.

MX-50 II ................................................................. $2595.00

Accessories
CB-127 Remote transport control ....................................... 263.00
ZA-5EK Reckmount kit .................................................... 58.00
ZA-5EL Voice editing module (VEM) ................................... 263.00
ZB-51M Metal roll-around floor stand ................................ 368.00

ARS-1000 Automated Radio Station Reproducer
- 2 speeds—7 1/2 and 3 3/4 ips, front panel selectable
- Adjustable front panel cue control
- Recessed front adjustable output level and head azimuth, with flip-up head cover
- Plug-in professional grade PC boards and relays
- In-head IC preamp assembly improves S/N
- Simple operation plus remoteable play and stop
- Ready light indicates proper tape threading
- Special long-life pinch roller and ball bearings
- Ruggedly designed for long term reliability under continuous operating conditions
- 25Hz sensor optionally available
- Decoupled, belt-driven capstan for low wow and flutter

The ARS-1000 is a 2-speed reproduce only tape machine specifically designed to meet the needs of the automated radio broadcaster. This machine is engineered for heavy-duty continuous operation, with special emphasis placed on long term reliability, simple operation, consistent performance and ease of maintenance.

ARS-1000 ............................................................... $2250.00
EDIT CONTROLLERS

Abner-II A/B Roll Edit Controller
- 50-event edit decision list memory
- EDL input and output
- Paltex and Interchange EDL formats
- Sequential auto assembly
- Drop frame and non-drop frame time code
- Multiple GPI triggers
- VITC jam sync trigger

Abner-II provides frame accurate control of M-II, S-VHS and 3/4" U-SP. Popular VTR interfaces are all built into Abner-II: just pick the appropriate cable and plug it in. Abner-II is a true interformat controller: parallel and serial VTRs can be mixed without problems.

Abner-II is easy to operate, with individual controls for each VTR. There’s no time sharing with Abner-II, making it the logical controller for anyone currently using a simple, dual-knob cuts-only editor. Abner-II is designed for “Park and Perform” simplicity, even with A/B roll edits. Park the VTRs where you want the edit to start and press preview or edit. Abner-II takes control, automatically loads the in-edit times for the VTRs and triggers the switcher at the appropriate time. For special effects, our Animation mode is available with a single keystroke.

Abner-II comes in 2 chassis configurations, tabletop and rackmount, and a choice of 2 tape timing methods: longitudinal time code (LTC) or vertical interval time code (VITC).

Price includes 3 parallel VTR control cables. For serial VTR control, add R-SID at $300.00 per cable with system order.

ABNER-II/TC Tabletop editing system (includes LTC time code readers) $5,000.00
ABNER-II/RC Rackmount editing system (includes LTC time code readers) $5,000.00
ABNER-II/TVC Tabletop editing system (includes VITC/LTC readers) $6,000.00
ABNER-II/RVC Rackmount editing system (includes VITC/LTC readers) $6,000.00

Cables - JVC
P5005 KR-M800 MII; BR-S810/11, BR-S810/11 S-VHS $250.00
P5007 CR-850, CR-600 U-Matic $250.00

Cables - Panasonic
P5019 AG-6500 VHS, AG-7750/7650, AG-7500/A, AG-7300 S-VHS $250.00

Cables - Sony
P5002 Type V VO-5850, VO-5800 U-Matic $500.00

Cables - Optional RS-422
P1013 R-SID - JVC KR-M860/840/820/854/545/540 MII $700.00
P1013 R-SID - Panasonic AU-660/650/65/63/62 MII $700.00
P1013 R-SID - Sony BU-950, VO-9850/9860 3/4-SP $700.00

VITC Reader Exchange
VITC-EX Adds VITC decoding capabilities to Abner-II/TC and RC versions $1,000.00

ECS-85 Edit Controller
A/B/C roll edit controller with:
- Convergence joystick control
- 1000-line non-volatile EDL memory
- Sequential and checkerboard auto-assembly
- 32 special function cells per event for motion control, TenCom GPI or switcher memory
- Full 409" list management software
- Comments keyboard
- TwoCom" GPI control
- RS-422 serial switcher interface with switcher effects and register capture capability (not ECS-85/2)
- 2 to 6 RS-422 serial VTR interfaces
- 2 to 6 SMPTE/EBU LTC time code readers and generator
- RS-232 serial I/O port
- Control of popular parallel VTRs through optional SID and V-SID serial interface devices
- E-COM" PC communications software
- Software integration with optional DB-35" Optional TenCom" GPI control, with 10 independently programmable GPIs per event

R-SID Serial VTR to Parallel Control System
- Allows various RS-422 serial VTRs to interface with the Abner Editing System
- Communicates with the serial VTR and converts the data into the parallel structure needed by Abner
- Reverses the process and provides the VTR with serial data from Abner commands
- Identifies all machine types with 1 set of software, thereby allowing it to be plugged into numerous styles of VTRs without modification
- Communicates with the following: VO-9850 Series, BU-950, BU-800 Series, BVW-SP Series, AU-660, KRM-860, KRM-820, CR-850, PR-900 and others
- Comes with 9-pin serial cable, multi-pin Abner cable and external low voltage power supply

R-SID $700.00

Prices and Specifications Subject to Change Without Notice.

233
Panasonic
PROFESSIONAL/INDUSTRIAL VIDEO SYSTEMS

CLE SERIES 3-CCD COLOR CAMERAS
WV-F300 3-CCD Color Camera
- Three 1/3" semi-frame interline transfer CCDs with 344,835 pixels each
- 700 lines resolution
- 25 lux minimum illumination
- Auto white balance (Can be preset at 3200°K and will remember 2 settings)
- Auto black balance with pulse cancel
- 1.5" EVF with camera functions monitored
- 3 gains: 0, +9dB, +18dB
- Detail high/low/off switch
- Color matrix masking
- SMPTE color bars
- Iris 1/2 open/close switch
- Genlockable
- MII compatible with optional adaptor
- Usable as studio camera with optional WV-RC36 remote control unit

Standard Configuration
- Camera head
- Camera adaptor
- WV-F300
- $5,700.00

WV-200CLE 3-CCD ENG/EFP Color Camera
Same as WV-F300 except:
- Three 2/3" interline CCDs with 250,920 pixels each
- 650 lines resolution
- Without electronic shutter

Standard Configuration
- Camera head
- Camera adaptor
- WV-VF38A 1.5" viewfinder
- J12X1OBKRSM Canon 12X (10-120mm) lens
- WV-MC35 microphone
- WV-Q47 tripod mounting adaptor
- WV-CC37 soft carrying case
- WV-200CLE
- $6,900.00

System Accessory Kits for WV-F300/WV-200CLE Color Cameras
- WV-S330 Basic Kit
  - WV-VF38A 1.5" viewfinder
  - WV-PS60 1.65AH battery
  - WV-PS31 AC adaptor with quick charger
  - WV-CC37 carrying case
  - $1,350.00

- WV-S350 ENG/EFP Kit
  - J12X10BKRS12 Canon 12X (10-120mm) lens
  - WV-MC35 microphone
  - WV-VF38A 1.5" viewfinder
  - WV-PS60 1.65AH battery
  - WV-Q47 tripod mounting adaptor
  - WV-PS31 AC adaptor with quick charger
  - WV-CC37 carrying case
  - $2,700.00

- WV-S370 Studio Kit
  - Extender board
  - J12X10BKRS12 12X servo zoom lens
  - WV-LK35 lens control kit
  - WV-VF65B 5" viewfinder
  - WV-PS31 AC adaptor with quick charger
  - WV-CC37 carrying case
  - $5,150.00

- WV-S390 S-VHS Dockable Kit
  - WV-VF38A 1.5" viewfinder
  - J12X10BKRS12 12X servo zoom lens
  - WV-Q47 tripod mounting adaptor
  - WV-CC35 microphone
  - WV-VT12M S-VHS adaptor and battery holder
  - $2,500.00

DS3050 Dockable Package
- WV-F300 3-CCD color camera
- WV-S390 S-VHS dockable kit
- AG-7450 S-VHS/VHS Hi-Fi portable VCR
- AG-8745 battery charger
- AU-BP220 2.2AH battery pack
- $11,300.00

WV-330 Basic Kit
- WV-VF38A 1.5" viewfinder
- WV-PS60 1.65AH battery
- WV-PS31 AC adaptor with quick charger
- WV-CC37 carrying case
- $1,350.00

WV-200CLE
- With WV-S350 ENG/EFP Kit

Prices and Specifications Subject to Change Without Notice.
CCD CAMERA

WV-F250 3-CCD Color Camera

- Three 1/3" frame interline transfer (FIT) CCDs with 380,000 pixels each • 700 lines resolution • 60dB S/N ratio • 1/100, 1/250, 1/500, 1/1000, 1/2000, 1/4000 sec. shutter • 30 lux min. illumination (f/1.4, +18dB) • Y/C, RGB and Y/R-Y, B-Y outputs • 6dB gain switch for fine gain adjustment • SMPTE color bar generator with time/date display and camera identification display • 2 VCR start switches • Directly dockable with AG-7450 S-VHS portable VCR • Optional WV-DKT70M dockable accessory kit • Easily connected to VHS, Beta, 3/4", MII and Betacam models via optional adaptor kits • High efficiency Peltier element • 2-setting white balance memory • Auto black balance with auto pulse cancel • Color matrix masking circuit • Flare correction circuit • Iris memory • Auto black balance with auto pulse cancel • Color matrix masking circuit • Flare correction circuit • Iris memory

Standard Configuration
- Camera head • Shoulder pad

WV-F250H ........................................ $4,250.00

System Accessory Kits for the WV-F250H

WV-S250 ENG/EFP Kit

WV-AD250 Camera adaptor
S12x7.5BRM 12X zoom lens
WV-VF39 1.5" electronic viewfinder
WV-MC35 Condenser microphone
WV-PS31 AC adaptor/quick charger
WV-PS60 Battery pack
WV-QT70 Tripod mounting adaptor
WV-CC71A Carrying case ........................ $3,550.00

WV-S270 Studio Kit

WV-AD250 Camera adaptor
S12x7.5BRM 12X zoom lens
WV-LK36 Lens control kit
WV-VF25S 5" electronic viewfinder
WV-RC36 Remote control unit
WV-QT70 Tripod mounting adaptor
32A-25 Studio cable ................................ $6,750.00

WV-S290 S-VHS Dockable Kit
(for WV-F250H/AG-7450)

WV-VF39 1.5" electronic viewfinder
S12x7.5BRM 12X zoom lens
WV-MC35 Condenser microphone
WV-QT70 Tripod mounting adaptor
WV-CC71A Carrying case
WV-DKT70M Docking accessory kit .......... $2,600.00

DS2550 Dockable Kit

Contains: WV-F250H, WV-S290, AG-7450, AG-7450, AU-BP220 ............................. $10,000.00

Prices and Specifications Subject to Change Without Notice.

235
WV-F70 2-CCD Color Camera

- Two 1/2″ interline transfer CCDs with 335,500 pixels each
- f/1.4
- WV-F70H 2-CCD Color Camera
- WV-F70H Camera with Adaptor and Shoulder Pad
- WV-RC36/WV-RC37 Remote Control Unit
- WV-Q701 1/2″ servo zoom lens
- WV-QT70 1.5″ viewfinder
- WV-MC70 stereo microphone
- WV-LZ70/12 12X servo zoom lens
- WV-DKT7OM Dockable Kit
- WV-L270/12 12X servo zoom lens
- WV-DKT7OM Docking Kit
- WV-CC71 ENG/dockable carrying case

WV-F70D 2-CCD Color Camera With Docking Kit

- WV-F70D Camera with Adaptor and Shoulder Pad
- WV-FV38A 1.5″ viewfinder
- WV-MC70 stereo microphone
- WV-LZ70/12 12X servo zoom lens
- WV-DKT7OM docking kit
- WV-CC71 ENG/dockable carrying case

Standard Configuration
- Camera head
- Camera adaptor
- Shoulder pad

WV-70ACLE 2-CCD Color Camera

- WV-F70H camera with adaptor and shoulder pad
- WV-F39 High resolution electronic 1.5″ viewfinder
- WV-MC70 stereo microphone
- WV-LZ70/12 12X servo zoom lens
- WV-DKT7OM tripod mount adapter
- WV-CC71 ENG/dockable carrying case

DS-750 Dockable Package

- WV-F70D 2-CCD color camera
- AG-7450 S-VHS/VHS Hi-Fi portable VCR
- AG-B745 battery charger
- AU-BP220 2.2AH battery pack

Accessories for WV-F70H/WV-70CLE/WV-F70D

- AC/DC power adapter (use with AG-B640)...
- AC adapter w/battery charger (use w/AG-BP212)...
- 2.2AH battery (use with WV-DKT7OM)...
- Battery charger for AU-BP220...
- Anton/Bauer battery charger (use with SQ-13FV battery)...
- Anton/Bauer battery charger (use with CH-13V, LSFC)...
- Anton/Bauer quick battery charger (use w/AG-BP212)...
- Battery charger (use with WV-PS33)...
- Battery charger (use with WV-PS31)...
- S-VHS projector cable...
- Conversion cable for S-VHS VCR...
- 14-pin extension cable...
- 10-pin extension cable...
- Battery charger (use with WV-PS33)...
- Battery charger (use with WV-PS31)...
- Battery charger (use with WV-PS32)...
- Battery charger (use with WV-70ACG)...
**CCD CAMERA**

**WV-D5100 CCD Color Camera Head**
With Y/C or Composite Output
- 2/3" high density CCD • 768H x 493V pixels with color mosaic filter • Y/C or composite output • 480 lines resolution • 46dB S/N
- 1/1000 sec. shutter • ATW (TTL and sensor level mixing for accurate white balance) or AWC (auto white balance control) • AGC Low (max. + 12dB) / High (max. + 18dB)
- 4 lenses available (bayonet mount) • 2H enhancer with horizontal/vertical movement • 7 lux minimum illumination with f/1.4 lens
- Interchangeable 35mm SLR and C-mount lenses with optional adaptor • Automatic preset function

The WV-D5100 offers superb picture definition and achieves more than 480 lines of horizontal resolution. To supplement the 2/3" CCD D-5100 camera head, 3 convenient kit configurations are available to allow a wide variety of video applications.

The WV-D5100 is S-VHS compatible for outstanding picture quality. The Y (luminance) and C (chrominance) signals are output separately when the video output is switched from composite to Y/C to allow use of the WV-D5100 with S-VHS VCRs.

In addition to the WV-D5100 itself, various accessories are available to enhance its capabilities and adapt it to different applications.

**Standard Configuration**
- Camera head
- Body cap
- AAA dry battery

**WV-D5100** $1500.00
**WV-D5100RGB** with RGB adaptor attached $1720.00

**System Accessory Kits for the WV-D5100**

**WV-S051 ENG Kit**
- WV-VF02 1" EVF
- WV-MC12 stereo microphone
- Shoulder pad/grip
- Camera strap
- Cheek pad

$400.00

**WV-S061 EFP Kit**
- WV-VF02 1" EVF
- WV-MC12 stereo microphone
- Shoulder pad/grip
- WV-AD36 genlock adaptor
- WV-P053 AC adaptor
- WV-CA10 VCR cable

The genlock adaptor does not supply a Y/C signal. The Y/C signal is supplied directly from the camera head $670.00

**WV-S071 Studio Kit**
- WV-LZ15/12 studio lens
- WV-LK11 lens control kit
- WV-VF65B 5" EVF
- WV-D38A 5" EVF bracket
- WV-RC35 remote control unit
- WV-AD37 RCU adaptor
- WV-CA10 10-pin/10-pin VCR cable

The RCU does not supply a Y/C signal. The Y/C signal is supplied directly from the camera head $3000.00

**Accessories**
- 10H-30A 30' VCR extension cable $95.00
- 10H-50A 50' VCR extension cable $145.00
- 14C-30 30' studio cable (WV-D5100) $130.00
- 14C-100 100' studio extension cable (WV-D5100) $230.00
- WV-3203B AC adaptor/stereo audio $99.00
- WV-AD10 Beta format VCR adaptor $70.00
- WV-AD15A Film/slide adaptor $240.00
- WV-AD16 C-mount lens adaptor $25.00
- WV-AD36 Genlock adaptor (WV-D5100) $220.00
- WV-AD37 RCU adaptor (WV-D5100) $275.00
- WV-CA10 10-pin/14-pin conversion cable, 1", used with WV-CA10 for 3/4" VCR (14-pin) $35.00
- WV-CA14X20 14-pin VCR extension cable for use with WV-CA11 $280.00
- WV-CA14A/14 14-pin/14-pin VCR cable $95.00
- WV-CC29A Carrying case $185.00
- WV-CL19 1.5X tele-conversion lens $145.00
- WV-CR12 Camera/VCR remote controller—pan/tilt head control, WV-LZ14/8AF zoom and focus control, intermittent recording, rec, fade, rec/view VCR controls $440.00
- WV-KB12A Full keyboard tilter with scroll $185.00
- WV-LK10A Lens filter kit (use with WV-LZ14/8AF) $145.00
- WV-LK11 Lens control kit $865.00
- WV-LZ15/12 35mm SLR lens adaptor (Nikon) $50.00
- WV-LZ15/13 35mm SLR lens adaptor (Minolta) $50.00
- WV-LZ14/15 35mm SLR lens adaptor (Canon) $50.00
- WV-LZ14/16 35mm SLR lens adaptor (Olympus) $50.00
- WV-LZ15/17 35mm SLR lens adaptor (Pentax) $50.00
- WV-LZ14/8AF 8X auto focus zoom lens $550.00
- WV-LZ14/12A 12X power zoom lens $670.00
- WV-LZ15/12 12X studio lens $755.00
- WV-LZ14/15 15X power zoom lens $970.00
- WV-MC12 Stereo microphone $40.00
- WV-PH10 Pan/tilt head $660.00
- WV-PS03 AC adaptor $220.00
- WV-AD33 30" monitor replacement $180.00
- WV-AD35 Camera remote control unit (WV-D5100) $550.00
- WV-VF02 1" B/W viewfinder $280.00
- WV-VF65B 5" studio viewfinder $750.00

*Must be used with WV-AD18

Prices and Specifications Subject to Change Without Notice.

237
SINGLE CCD MICRO CAMERA SYSTEMS

WV-CD1BW 1/2" CCD Micro B/W Camera System
- Camera head measures 2/3" D x 1 ½" L (without lens)
- Camera head can be extended up to 30' from CCU using optional 24' extension cable
- Operates off any 12VDC power source such as an automobile or VCR battery
- Optional C-mount lens adaptor available
- Designed for covert security installations where size, sensitivity and picture quality are essential
- Other applications include automatic teller machines, robotics, machine vision, inspection, quality control and hazardous waste monitoring
- 510(H) x 492(V) pixel array
- 0.07 lux low light sensitivity at f/1.4 minimum illumination (with optional GP-AD22 lens)
- 380 lines horizontal resolution
- 46dB signal-to-noise ratio
- Genlock feature eliminates roll in multi-camera systems that use sequential switching

Standard Accessories
- Camera head with cable (2m)
- Camera holder
- Camera control unit
WV-CD1BW .................................................. $1915.00

WV-CD2 1/2" CCD Micro Color Camera
Same features as the WV-CD1BW except the following:
- Built-in 7.5mm ALC lens for varying light conditions
- 330 lines horizontal resolution
- 19 lux low light sensitivity at f/1.8 minimum illumination
- TTL Auto Tracing Continuous White Balance (ATW) system for true color definition

Standard Accessories
- Camera head with cable (2m)/built-in 7.5mm ALC lens
- Camera holder
- Camera control unit
WV-CD2 .................................................. $3300.00

GP-KS102 1/2" CCD Micro Color Camera Head
- 1/2" integrated color filter interline transfer for CCD 682(H) x 485(V) pixels
- 430 lines horizontal resolution
- S-VHS (Y/C connector) compatible
- 46dB S/N
- Minimum illumination of 10 lux at f/1.4 AGC on, +6dB manual gain, >30IRE of Y-signal with setup
- Genlock capability for multi-camera systems
- 1/2" diameter x 1 ½" long
- Weighs just over half an ounce

Standard Accessories
- Camera head
- Camera holder
- Camera control unit
GP-KS102 .................................................. $3000.00

Accessories
GP-AD22 C-mount lens adaptor ................................ $ 28.00
GP-CA31A Extension cable (8m) ................................ $535.00
GP-CA44 2 meter cable ........................................ $280.00
GP-CA45 5 meter cable ........................................ $290.00
GP-CA46 10 meter cable ....................................... $400.00
GP-CA49 30 meter cable ....................................... $860.00
GP-LM3 Super wide angle lens f/1.4 3mm .................. $285.00
GP-LM3T 3mm wide angle lens ............................... $330.00
GP-LM15T 15mm telephoto lens ............................. $250.00
GP-LP12 Pinhole lens (WV-CD1BW) ....................... $525.00
WV-LM7.5T Wide angle manual lens 7.5mm (WV-CD1BW) ..................... $240.00
WV-PS12 AD adaptor (120VAC, 12VDC) ................. $50.00

Prices and Specifications Subject to Change Without Notice.
AG-460U 2 CCD S-VHS Hi-Fi Camcorder
- Two 1/2" CCDs with 360,000 pixels each (1 for Y and 1 for C signals)
- 45dB video S/N 470 lines resolution 2 hour Camera search (advanced rec./review) 25 lux minimum illumination 4 laminated amorphous video heads
- Heads are composed of a cobalt-based alloy material
- Audio level controls with LCD metering
- Mic sensitivity is extremely accurate because Hi-Fi stereo mic performance is automatically adjusted while the camera's zoom lens is in operation
- 2-speed 10X power zoom lens (f/1.4/1.1) with macro function
- 0.9" EVF
- Automatic iris with manual override
- Piezo auto focus with advanced 3-step focus zone
- Advanced auto-tracing white balance with manual override
- Rotary erase head for noiseless insert editing, audio dubbing and sound-on-sound
- Variable high-speed electronic shutter, with settings of 1/250, 1/1000 and 1/10000 second
- B/W audio/video fade-in and fade-out
- Push auto button for temporary autofocus in manual mode
- Index search function 0dB, +18dB
- AGC sensitivity switch
- S-Video out terminal/synchro edit/5-pin edit terminal/edit switch/character generator direct connecting capability

Standard Accessories
- AG-B3A AC adaptor
- AG-BP212 battery pack
- System carrying case
- Line adaptor
- Shoulder strap
- Pause remote control unit
- AV cable
- Y/C cable
- VHF coaxial cable
- Battery pack charging connector
- 300 ohm to 75 ohm transformer
- Earphone

AG-460U ...................................... $3500.00

AG-450 1/2" CCD S-VHS Camcorder
- 2-hour 360,000 pixels > 400 lines resolution 45dB video S/N (VHS mode) 75P lines 60 fields 4 rotary heads
- Audio and video fade-in/out 0.9" viewfinder with status indicator and vision-compensating eyepiece
- Piezo auto focus with dual focus zones
- Video insert editing makes it possible to take a new scene and insert it while retaining the sound originally recorded
- Audio dubbing
- Edit switch maintains optimum video signal quality when dubbing
- Index search function
- 10X power zoom lens with macro function
- Standby switch
- External AV input terminal
- Pause remote control unit
- Uni-directional high-sensitivity microphone
- Earphone
- External microphone input jacks
- Automatic-tracing white balance system
- Auto/date recording allows superimposition of time/date
- Record/review function
- Optional VW-CG1 character generator

Standard Accessories
- VW-VBM7E 2.0AH battery pack
- AG-B3A AC adaptor
- VW-RM1E pause remote control
- Camera search (advanced rec./review)
- Auto/remote control unit
- Rotary erase head 0.9" electronic viewfinder
- Standby switch
- Built-in microphone
- Auto iris with manual override
- Audio and video fade-in and fade-out
- Interval and self timer recording
- Built-in microphone
- Standby function
- Macro auto focus
- 7 lux minimum illumination
- 2-hour 1/1000 sec. shutter
- Rotary erase head 0.9" electronic viewfinder
- With on-screen display
- Automatic-tracing white balance
- Camera search (advanced rec./review)
- Automatic iris with manual override
- Audio and video fade-in and fade-out
- Interval and self timer recording
- Built-in microphone
- Standby function
- Macro auto focus
- 7 lux minimum illumination
- 2-hour 1/1000 sec. shutter
- Rotary erase head

AG-190U 1/2" CCD VHS Camcorder
- 8x power zoom lens
- Piezo TTL automatic focus system
- 3 auto focus zones
- Macro auto focus
- 7 lux minimum illumination
- 1/1000 sec. shutter
- Rotary erase head 0.9" electronic viewfinder
- With on-screen display
- Automatic-tracing white balance
- Camera search (advanced rec./review)
- Automatic iris with manual override
- Audio and video fade-in and fade-out
- Interval and self timer recording
- Built-in microphone
- Standby function
- 160 min.
- Auto iris with manual override
- Laminated amorphous video heads
- CASSETTE ADAPTOR (supplied) enables videotape playback in standard S-VHS (VHS) VCRs

Standard Accessories
- AG-B6 AC adaptor/battery charger
- AG-BP212 battery pack
- System carrying case
- Line adaptor
- RF adaptor
- Shoulder strap
- Pause remote control unit
- AV cable
- VHF coaxial cable
- DC cable
- Battery pack charging connector
- 300 ohm to 75 ohm transformer
- Earphone

AG-190U ...................................... $1200.00

AG-180U 1/2" CCD VHS Camcorder
- Piezo TTL automatic focus system 1/1.2 (9-54mm) 2-hour
- Automatic iris with manual override
- Self-timer recording
- Interval recording
- Camera search function (advanced rec./review)
- EIA standard NTSC color signal 525 lines 60 fields 4 rotary heads
- Rotary erase head 0.9" electronic viewfinder
- Built-in microphone
- Standby switch
- External AV input terminal
- Pause remote control
- 2-speed 10X power zoom lens with macro function
- Auto-tracing white balance
- Automatic time/date recording
- 1/2" CCD image sensor
- Video horizontal resolution: color > 230 lines S/N ratio: video > 43dB audio > 42dB Frequency response: 100-8000Hz
- Audio track
- Standard illumination: 1400 lux
- Minimum required illumination: Standard illumination: 7 lux
- Synchro edit

Standard Accessories
- AG-B3A AC adaptor
- AG-BP212 battery pack
- AV converter connector
- Battery pack charging connector
- 300 ohm to 75 ohm transformer
- Coaxial cable
- Shoulder strap
- AG-HT4 system carrying case
- VM-RM1E pause remote control unit
- Battery for clock operation

AG-180U ...................................... $990.00

Price Specifications Subject to Change Without Notice.
Professional Industrial Video Systems

AG-7400 2 Hour S-VHS/VHS Hi-Fi Portable Recorder/Player
- Excellent picture quality over 400 lines
- Y/C comb filter
- Digital servo circuitry (10 bits) for jitter reduction
- Framing servo circuitry for clear editing
- Self-bearing equipped tape posts (P1, P2, back tension for jitter reduction)
- Rotary erase heads
- 14-pin camera connector
- Battery alarm and tape-end alarm indication possible in viewfinder
- 4-channel audio (2-channel linear with Dolby NR, Hi-Fi 2-channel)
- 80dB dynamic range in Hi-Fi
- Auto backspace function
- Camera-in switch (ENC/YC)
- Camera selector (14-pin/10-pin)
- Frame rate (±1) SMPTE time code recording and playback
- Separated S-Video terminals (4-pin)
- External battery connector for long time operation
- XLR 4-pin DC input
- Audio dub selector (CH. 2 or CH. 1/CH. 2)
- Detail switch
- Picture adjustment VR
- 1/4" phone mic jack
- S-VHS/VHS mode selector
- Soft carrying case and Y/C cable included

AG-7400

AG-7450 Dockable 2 Hour S-VHS/VHS Hi-Fi Portable Recorder/Player
- S-VHS picture quality
- Dockable with WV-F300 (optional WV-VT12/M required; directly with WV-F250 and WV-F70)
- Laminated amorphous video heads
- XLR audio input connectors
- XLR DC input connector
- 4-channel audio (2 Hi-Fi, 2 linear)
- Anti-rolling system
- Half-loading system
- TCR/TCG available (AG-F745, optional)
- VTR adaptor available (AG-S745, optional)
- Compact and lightweight
- Highly reliable 2 real motor
- Rotary erase head
- LCD audio level indicator
- Linear time counter
- Hi-Fi audio record/playback
- SP record speed
- Independent input level adjustments for four channels

The AG-7450 can be used as either an integrated camcorder with Panasonic dockable cameras, or as a portable VCR with a wide range of system configurations.

The AG-7450 docks via an optional S-VHS docking adaptor to Panasonic's Professional 200CLE and 300CLE 3-CCD video cameras. The AG-7450 will also dock directly to Panasonic's WV-F250 3-CCD video camera and WV-F70 2-CCD video camera.

Laminated amorphous video heads enhance the unit's S-VHS picture quality. The S-VHS format is capable of achieving more than 400 lines of horizontal resolution and an enhanced S/N ratio over the VHS format by increasing the FM luminance signal frequency and bandwidth, and by processing the luminance and chrominance video signals separately through S-video in/out connectors. In addition to S-VHS tapes, the unit allows playback of standard VHS tapes.

The AG-7450 delivers incredible sound by way of two Hi-Fi and two linear channels with Dolby C.

AG-7450

S7450 Portable Package
Includes:
- (1) AG-7450
- (1) AG-S745 VCR adaptor
S7450

$3,000.00

DS2550 Dockable Package
Includes:
- (1) WV-F250H 3-CCD color camera
- (1) WV-S290 S-VHS dockable kit
- (1) AG-7450 dockable S-VHS Hi-Fi VCR
- (1) AG-B745 battery charger for AU-BP220
DS2550

$10,000.00

DS3050 Dockable Package
Includes:
- (1) WV-F300 3-CCD color camera
- (1) WV-S390 S-VHS dockable kit
- (1) AG-7450 S-VHS/VHS Hi-Fi portable VCR
- (1) AG-B745 battery charger
- (1) AU-BP220 2.2AH battery pack
DS3050

$11,300.00

Accessories
- AG-B640 A/C adaptor/charger, XLR 4-pin DC output, 12VDC, 4A
- AG-B745 Battery charger for AU-BP220 (AG-7450)
- AG-BP212 Battery pack 12V, 2.3AH (AG-7400, S7450)
- AG-C70A S-Video (Y/C) cable (10') (AG-7400, S7450)
- AG-C71A S-Video (Y/C) cable (16.6') (AG-7400, S7450)
- AG-F745 Time Code Generator/Reader
- AG-S745 VCR Adaptor (converts AG-7450 for use as separate portable video recorder)
- WV-CC71A Hard shell carry case for AG-7450 docked to WV-F250 camera
- WV-F300 S-VHS dockable kit
- WV-VT12M S-VHS Interface Adaptor with battery holder for the WV-F300 to allow the AG-7450 S-VHS to dock to them

Prices and Specifications Subject to Change Without Notice.
S-VHS EDITING RECORDERS/PLAYER/CONTROLLER

AG-7750 S-VHS Hi-Fi Editing Recorder/Player
- Built-in time base corrector
- Built-in digital noise reduction circuitry
- 3-line comb filter
- 4-channel audio with dynamic range of 90dB
- RS-422A (9-pin) serial interface connector
- Field freeze at ready off mode
- Balanced XLR audio connectors
- 34-pin parallel connector
- Plug-in time code generator/reader (optional)
- 32X viewable search speed
- System setup and mode display
- More than 400 lines resolution
- Digital decoder for complete Y/C separation
- Separated S-Video input/output terminals (4-pin)
- 7-pin Y/629kHz dub-in/dub-out terminals for superior dubbing quality
- Edit switch
- 19" rackmountable with front load
- Insert and assemble editing
- Jog/shuttle dial
- Auto-promoting illuminated switch system
- Framing servo circuitry for clear editing
- Digital servo circuitry
- Rotary erase heads
- Automatic backspace function
- External sync input
- SMPTE time code record/play capability
- Built-in sync generator
- LED tape counter for frame display
- VHS mode selector
- Improved video/chrome S/N ratio with special laminate amorphous video heads and high performance record/playback circuitry
- Capstan override control for improved editing precision
- S-Video (Y/C) cable
AG-7750 ................................................................. $6500.00
AG-F700 Time code generator/reader .......................... 650.00
AG-M750 Rackmount brackets ................................. .75.00

AG-7650 S-VHS Hi-Fi Source Player
- Built-in time base corrector
- Built-in digital noise reduction circuitry
- RS-422A (9-pin) serial interface connector
- Balanced XLR audio connectors
- Plug-in time code generator/reader (optional)
- 32X viewable search speed
- System setup and mode display
- Ideally matched as a source machine for the AG-7750
- More than 400 lines resolution
- 4-channel audio
- External sync in
- Jog/shuttle dial
- Audio output level meter with Hi-Fi/normal selector
- 8-digit frame counter
- Hi-Fi/normal audio output selector
- Tracking control with meter
- 19" rackmountable
- Remote/local switch
- Stereo headphone jack (1/4" phone) with level control
- Edit switch
AG-7650 ................................................................. $4500.00
AG-F700 Time code generator/reader .......................... 650.00
AG-M750 Rackmount brackets ................................. .75.00

AG-A750 Editing Controller
- Edit point setting with large jog and search dial
- Frame trim for simple revision of edit in and out points
- Auto-promoting illuminated switches
- Preview of programmed edit prior to actual editing
- Easy, automatic review
- LED frame counter (green) readout in hours, minutes, seconds and frames
- Free choice of editing mode
- Preroll for both source machine and editor
- Lap time display
- Audio monitor level adjustment for both source machine and editor
- Trigger output
- On-line connection of up to 3 machines (using optional NV-J500 Multi-Source Switcher and NV-A505 Remote Search Controller)
AG-A750 ................................................................. $1950.00

Accessories
AG-A600 Remote control unit with search dial, 10' .... $200.00
AG-A800 A/B roll, multi-event editing controller ........ $4100.00
AG-C65 7-pin dubbing cable (10') ......................... 45.00
AG-C70A S-Video (Y/C) cable (10') ...................... 16.00
AG-C71A S-Video (Y/C) cable (16.6') ................. 20.00
AG-I81 34-pin interface board for AG-A800 (16.6') with TCG, TCR $1000.00
AG-I82 9-pin interface board for AG-A800 (16.6') .... 300.00
NV-A505 Full-function remote search controller with LED readout and dial (16.4') ....... $990.00
NV-C15 8-pin monitor/VCR cable (6') .................. 28.00
NV-C215 8-pin extension cable (10') .................. 33.00
NV-C80 Remote control extension cable (16.4') .... 120.00
NV-J500 Multi-source audio/video switcher ........... 600.00
WV-CA38 Conversion cable for desktop VCR (use with WV-CA32A/14) ........ $170.00

Prices and Specifications Subject to Change Without Notice.
AG-A800 Multi-Event Editing Controller

* For AG-7750/7650/7500A/7510/AU-65 * 128-event memory using control track or SMPTE time code * 2 source VCRs can be alternated for multi-source editing * Use of an A/V switcher (AG-SW800, optional) enables simultaneous playback from 2 source machines for creation of special effects in multi-event editing * A/B roll editing * Single jog/shuttle search dial * Optional interface boards for 34-pin parallel/9-pin serial remote control * External capstan override * Audio split editing * Aux control for remote control of playback start/stop of external equipment * RS-232C 25-pin D-Sub connector * Separate control panel and interface unit * Digital edit point memory * Remote selection of time code generator modes * Switchable pre-roll time settings: 3/5/7/10/15 seconds

Standard Accessories
* 19" rackmount adaptor * 15-pin to 15-pin cable

Specifications
- **Power Requirement:** 120VAC, 50/60Hz
- **Power Consumption:** 3W (With interface board)
- **Editing Functions**
  - **System:** Micro computer
  - **Controls:** Play, Stop, Rew, FF, Ready, Search, Jog, Shuttle, Rec., Edit
  - **Editing Controls:** Preview, Review, Auto, Edit, Go To, Edit Stop, TCG Set, Event, Dur, Total
  - **Editing Modes:** Assem, Ins V/A1/A2/TC (Insert), A/B Roll (A/B Roll Editing Mode), Audio Split (Audio Split Editing Mode)
- **Counter Display Event No.**
  - **Display Indication:** Event No.
- **Switcher Control Display**
  - **Transition:** Transition max. 999 frames
  - **Pattern:** Dis, Wipe, Key
  - **Connections**
    - **Ref Video**
    - **In/Out:** BNC x 2, 75 ohm on/off loopthrough

AG-SW800 Audio/Video Switcher
* 3-input/1-output * Y/C and composite video input and output * 4 channels * Balanced and unbalanced audio input and output * Can be connected to the 9-pin serial interface for automatic editing using AG-A800 control over AG-SW800 functions, and for A/B roll editing using special effects * Fade in/out * Dissolve * 8 wipe patterns * DSK * Manual control of special effects with optional AG-RM800 A/V switcher remote controller (15-pin terminal) * Audio split editing * Blackburst out (BNC) * 19" rackmountable * Includes: 9P-9P cable for editing controller and 19" rackmountable

AG-A800 Multi-Event Editing Controller

AG-C70A S-Video (Y/C) cable, 10' ............................................ $16.00
AG-C71A S-Video (Y/C) cable, 16.6' ........................................ 20.00

AG-RM800 Switcher Remote Controller for AG-SW800
* Allows manual operation of the fader for special effects * Video fader * Independent audio fader controls (4-channel) * Video fader H/V separation * Select buttons for wipe/dissolve and wipe pattern and transition memory * 8 wipe patterns * Normal, reverse and normal/reverse wipe * Key control * Multiple input select—Player 1, Player 2, Aux, Black/White, for both A and B bus

Prices and Specifications Subject to Change Without Notice.
S-VHS RECORDERS/PLAYERS/VIDEOTAPE

AG-7000 Series S-VHS/VHS Recorders/Players
Common features:
• 2 hour • High performance digital servo circuit • External sync in
• Random auto repeat (zero stop/set rewind/repeat) • Sub-loading system
• 5-digit real time counter with remaining-time indication • Edit switch • Virtually noiseless forward slow/reverse slow and frame shift
• 34-pin remote control connector • Switchable audio monitoring:
  CH1/CH2/Mix • Headphone level control • 3 video modes: Color/ 
  Auto/B/W • 19" rackmountable (with optional adaptor) • Built-in RF converter

AG-7710 S-VHS/VHS Hi-Fi Player
• Includes common features • 14-step shuttle dial • Loopthrough playback • SMpte time code playback • 4-channel audio: 2 channels of Hi-Fi with dynamic range greater than 90dB; 2 linear audio channels with Dolby NR • Audio out select switch: Hi-Fi/Normal • External timer playback capability ................................................................. $2400.00

AG-7300 S-VHS/VHS Recorder/Player
• Includes common features • 2-channel audio with Dolby NR • Rotary erase head • Audio recording levels adjusted independently • Audio limiter • Audio dubbing on channel 2 • SC input terminal • 17-step shuttle dial • Video sensor recording switch • Loopthrough recording for dubbing • SMpte time code record/playback .................................................. $3000.00

AG-7330E S-VHS/VHS Hi-Fi Multi-Standard Recorder/Player
• S-VHS picture quality (in PAL) • Multi-standard record/playback, PAL: S-VHS/VHS, record/playback; CCIR: VHS record/playback; NTSC 4.43: VHS playback • Auto repeat playback • External sync input • On-screen mode set-up • Hi-Fi audio with 90dB dynamic range • Laminated amorphous video heads • Jog/shuttle search • Time code record/playback • Video sensor recording • Linear audio with Dolby NR • Heads, Video: 4 rotary heads; Audio: 2 rotary heads (Hi-Fi 2 channels); Audio/control: 1 stationary head (normal audio); Erase: 1 full track erase, 2 selectable audio erase tracks for editing, 1 rotary erase head • Video Horizontal Resolution, VHS: Color, 240 lines, B/W 300 lines; S-VHS: More than 400 lines (color, B/W in PAL) • Audio frequency response: 50-12,000Hz (normal audio); 20 - 20,000Hz (Hi-Fi Sound) • Signal-to-noise ratio, video: 45dB (color), (VHS) 45dB (B/W); audio: 48dB (normal audio: Dolby NR on) • 34-pin remote ........................................... $3200.00

NV Series S-VHS Videotape*
NV-ST120P 2-hour record/play time ........................................... $10.99
NV-ST60P 1-hour record/play time ............................................. $9.99
NV-ST120M 1/2-hour record/play time ........................................ $10.99
NV-ST120M Professional 120-minute ......................................... $18.00
NV-ST60M Professional 60-minute ........................................... $16.00
NV-ST20M Professional 20-minute ........................................... $13.00

NV Series VHS Videotape*
NV-T120SHG 2-hour high grade VHS blank tape ............................ $4.99
NV-T120PSD 2-hour standard VHS blank tape ................................ $3.99
NV-T60PSD 1-hour standard VHS blank tape ................................ $3.95
NV-T30PSD 1/2-hour standard VHS blank tape ............................... $3.89

*Shipped in standard packing quantities 10 to a carton.

AG-7350 S-VHS Hi-Fi Recorder/Player
• 58µm wide laminated amorphous video heads • 4-channel audio (2 Hi-Fi/2 linear channels) with Dolby NR • 90dB dynamic range • 34-pin parallel/optional RS-232C serial interface capability • Jog/shuttle • 17-step shuttle dial with variable speeds from 1/2 to 11X • Full loading tape mechanism offers stop to play mode with picture on screen in less than 2 seconds • Soft pause • Auto repeat play/counter memory functions • Advanced chroma aperture circuit (CAC) and comb filter for outstanding color reproduction • Digital circuitry for Y/C separa-

Prices and Specifications Subject to Change Without Notice. 243
AG-7800 S-VHS/VHS Hi-Fi Duplication Recorder/Player
- Digital-servo circuitry (10-bit) for jitter correction • Y/C comb filter • 2/8-hour recording/playback (S-VHS mode) • 2-hour recording/playback (VHS mode) • 8 head design • 4-channel audio Hi-Fi • Separate S-Video input/output terminal (4-pin) • 34-pin serial remote control • Serial remote control receiver unit • Auto cassette changer connection • 19" rackmountable with optional adaptor • Durable, heavy-duty construction • Adds the flexibility of both S-VHS (2 and 6 hr.) and VHS (2 hr.) record and playback settee changer connection 19" radio (2-channel Hi-Fi, 2-channel linear with Dolby NR) 90dB audio dynamic (110-bit) for jitter correction Y/C comb filter improve performance. The result: stunning picture quality, plus the convenience of 6 full hours of programming on one tape. The VHS SP mode lets the AG-7800 duplicate conventional VHS Hi-Fi tapes.

A serial interface decoder built into the AG-7800 enables multiple VCR connection, in series or parallel, using a simple rec/remote jack. The optional AG-IA12 Serial Remote Transmitter Transmitter enables an even wider range of remote control functions. These include play, record, stop, pause, rewind, fast forward, eject, audio limiter on/off, Dolby NR on/off, video AGC on/off, and HD recording on/off. All units in your duplicating system can be controlled simultaneously (up to 500 VCRs without signal amplification).

AG-7800 offers a high 400 lines of resolution for exceptional picture quality, plus the convenience of 6 full hours of programming on a single tape. The VHS SP mode lets the AG-7800 duplicate conventional VHS Hi-Fi tapes.

The AG-7800 - a dedicated system for large-scale S-VHS duplication. The AG-7800 adds a range of improvements to basic S-VHS technology. Separate input and output of Y and C signals reduces cross-color and dot interference for finer picture clarity. Wider video heads, 10-bit digital servo-circuitry that corrects jitter, and a Y/C comb filter improve performance. The result: stunning picture quality that meets the highest professional standards. Pictures are superb even with extended 6-hour tapes, and the AG-7800 can also be used for VHS duplicating.

The AG-7800 gives you extra flexibility with 3 modes to choose from. This includes S-VHS SP mode for 2 hours of recording/playback and S-VHS SLP mode for 6 hours, as well as VHS SP mode for 2 hours of recording/playback. In S-VHS SLP mode, the AG-7800 offers a high 400 lines of resolution for exceptional picture quality, plus the convenience of 6 full hours of programming on a single tape. The VHS SP mode lets the AG-7800 duplicate conventional VHS Hi-Fi tapes.

AG-6850H VHS Duplication Recorder
- 2 hour VHS record only • High silicon head cylinder • Advanced IQ mechanism • 34-pin/serial remote • 90dB dynamic range with Hi-Fi • Auto off/standby output jacks • External test points • Ready for auto changer/audio meters
AG-6840H ................................................ $1500.00
AG-6850H VHS Duplication Recorder/Player
- Recorder/player version of AG-6840H
AG-6850H ................................................ $1800.00

AG-CL78 Automatic Cassette Changer
- Interconnects with AG-6840H and AG-6850H duplication recorders • Automatically loads and unloads cassettes • Up to 7 cassette tapes can be accommodated (4 on the top, 1 in the recorder and 2 in lower holder) • Optional AG-CH78 allows up to 4 ejected tapes • Manual loading override • Built-in self-diagnostic system, with front panel VCR error indicator
AG-CL78 ................................................ $425.00

Prices and Specifications Subject to Change Without Notice.
S-VHS/VHS SYSTEM
COMPONENTS/SWITCHERS

TBC-200 Plus S-VHS/VHS Time Base Corrector
• 16-line correction window • 8-bit digital component processing • Proc amp control with preset/lock • Separate chrominance edge enhancement and chrominance noise reduction • Horizontal and vertical Y/C delay adjustments • NTSC, Y/C 3.58MHz and Y, R-Y, B-Y outputs for MII or Betacam, NTSC and Y/C 3.58MHz inputs • 6.0MHz (-3dB) luminance bandwidth • Frame editing capability with consistent horizontal position • QIW circuit for stable pictures in jog/shuttle modes • Rackmountable, adaptor included • AC power cord included .................................................. $4950.00

UTP-2 Video Signal Transcoder
• Transcodes virtually any video signal into any other video signal • Can handle S-VHS, U-Matic, RGB and RGB with separate sync, as well as MII and Betacam • Input signals: Y/688kHz; Y/C 3.58MHz, Y, R-Y, B-Y; linear RGB w/sync • Output signals: Y/688kHz, Y/C 3.58MHz, Y, R-Y, B-Y; linear RGB w/sync, NTSC composite (monitoring) • 5.5MHz (-1dB) bandwidth, 60dB S/N ratio • Front panel level controls with preset switch, front panel NTSC monitoring point • 19" rackmountable, 1 rack unit high • Rack slides provided ................................................. $51950.00

Accessories for TBC-200 Plus/UTP-2
AG-C65 7-pin dub cable, 10' (UTP-2) ....... $45.00
AG-C70A S-Video (Y/C) cable, 10' (all models) ....... 16.00
AG-C71A S-Video (Y/C) cable, 16.6' (all models) ....... 20.00

IFP-422 Serial-to-Parallel Interface Unit
• Provides the capability of controlling Panasonic’s S-VHS VCRs (AG-7000 Series) and standard VHS VCRs (AG-6000 Series) via an RS-422 serial controller • Serial-to-parallel interface unit for edit control with selected RS-422 serial controllers and Panasonic 34-pin control professional VCRs • Controls Panasonic 34-pin control VCRs on the source side • Controls AG-7500A/AG-7500/AG-6500 on the edit side • LTC reader • Capstan override capability • No modifications required to VCRs or RS-422 serial controllers ............................................. $1850.00

IFP-45 Machine Control Interface Unit
• For editing with Sony’s RM-440/RM-450 and Panasonic 34-pin control professional VCRs • Controls Panasonic 34-pin control VCRs on the source side • Controls AG-7500A/AG-7500/AG-6500 on the edit side • No modifications required to VCRs or Sony RM-440/RM-450 • Microprocessor based design/CMOS logic • Power: Maximum of 120mA, 12VDC from VCR, maximum of 650mA, 9VDC external power supply • 1 1/2" H x 5 1/2" W x 5 1/4" D • 10' cable/34-pin connector to Panasonic VCRs • Weight: 1 lb ................................................. $860.00

IFP-232CJ PC Machine Control Interface Adaptor
• Suitable for Panasonic AG-7000 Series S-VHS VCRs and AG-6000 Series VHS VCRs with 34-pin parallel control protocol • No machine modifications and no wires or cables between the VCR and IFP-232CJ • Allows full computer control from a standard RS-232C communications port using standard 4-conductor RJ-11 phone cable and connectors • Externally selectable dip switches permit up to 32 binary interface addresses • Serial data/serial cabling (daisy chain configuration capability) • Operating power obtained for VCR • Provides full duplex serial communications commands to and from VCR • Comprehensive protocol structure • Packaged with test and applications software and basic source code, cable adaptor connectors, 10' RJ-11 cable and manuals ........................................ $300.00

WJ-220/225R Active Manual Switchers
• 5 composite video inputs that can be switched to a single video output • Switching is accomplished during the vertical interval for glitch-free results • Non-locking pushbuttons light up to show which input has been selected • Clear cover on each pushbutton snaps out for insertion of input labels • Inputs are Hi-Z looping with BNC connectors
WJ-220 Desktop ................................................. $315.00
WJ-225R 1 1/4" high EIA rackmount ...................... $315.00

WJ-220/225R Active Manual Switchers
• 6 composite video inputs that can be switched to a single video output • Switching is accomplished during the vertical interval for glitch-free results • Non-locking pushbuttons light up to show which input has been selected • Clear cover on each pushbutton snaps out for insertion of input labels • Inputs are Hi-Z looping with BNC connectors
WJ-220 Desktop ................................................. $315.00
WJ-220R 1 1/4" high EIA rackmount ...................... $315.00

WJ-300B Video Distribution Amplifier
• Selectable 1 input to 6 output or 2 channel with 1 input to 3 output each channel • BNC connectors • Use with all video cameras and system equipment ............................................. $290.00

WJ-A01 3 1/2" rackmount frame ......................... $65.00
WJ-B01 Blank panel, 3 1/2" H x 2 3/4" W (1/4" span) .......................... 30.00
WJ-B02 Blank panel, 3 1/2" H x 5 1/2" W (1/2" span) ...................... 35.00
WJ-B03 Blank panel, 3 1/2" H x 8 1/4" W (1" span) .......................... 40.00

Prices and Specifications Subject to Change Without Notice.

245
Panasonic
PROFESSIONAL/INDUSTRIAL VIDEO SYSTEMS

WJ-MX12 Y/C and Composite Audio/Video Mixer
- 2 Y/C and 2 composite inputs/outputs (switchable)
- Resolution 500 TV lines with S-Video input/output (typical)
- 5/N more than 55dB with S-Video input
- Auto take/auto fade function
- Built-in color corrector
- Negative/positive picture reversal & 8-color background selection
- Built-in audio mixer—4 audio inputs with headphone output
- Built-in digital frame synchronizer (frame memory)
- Does not require a TBC
- Special digital effects such as freeze-frame, strobe, mosaic, paint (posterize) and negative/positive picture reversal are easily achieved manually, or using the Automatic Programmable Effects Memory, which can store 4 different effects for instant activation. The convenient array of controls on the panel puts these and other effects—including superimposition, 17 wipe patterns, 8-color background selection, color correction, master AV fade-in/fade-out, and more—right at your fingertips.

WJ-MX12
$7,260.00

WJ-MX10 Digital Audio/Video Mixer
- Built-in frame memory
- Does not require a TBC
- 17 different wipe effect patterns; square or round wipe moves to any position with positioning
- 3 selectable video inputs for superimposition with reverse, key level control and color selection, plus shadow effect and edging effect
- 8-color background selection
- Create special digital effects like freeze frame, interval adjustable stroboscope, 5-level mosaics, and 7-level adjustable painting
- Built-in 4 input audio mixer with headphone output and level meter (-30dB 8 ohms 8:100 ohms), phono jack
- Fades-in and fade-out functions can be used alone or together for video, audio and video title signals
- Video signal: 3MHz, -3dB; Audio: 20Hz-20KHz frequency response
- 48dB video S/N 50dB audio S/N

WJ-MX10
$3,000.00

WJ-KB15 Character Generator for WJ-MX12 and WJ-MX10
- Random access key selections
- When the WJ-KB15 is connected with the WJ-MX10 or WJ-MX12, the following functions/operations are possible: 9 pages of character displays and a scroll feature for versatile program productions; 1 page (page A) of character display with date and time display capability; stop watch with lap time; title positioning feature.

WJ-KB15
$295.00

WJ-5600 Color Special Effects Generator
- 2 built-in mixing amplifiers allow 3-channel mixing plus 8 channel inputs
- 9 patterns
- Built-in sync generator
- 3 blackburst outputs
- Mixing in fade-in, dissolve and dissolve modes
- Switch-over in normal, normal-reverse and reverse
- Wipe waveforms in 3 stages: soft, sharp and color border
- Switchover by self-collating non-locking button during the vertical interval
- A built-in positioner circuit
- 2 color generators for the matte key and border wipe, and for downstream keying and background
- Color generators adjusted independently for hue, saturation and luminance
- The matte key has a negative/positive selection switch
- Downstream keyer has a built-in edge on/off switch
- Color matte key and RGB chroma-key are independent
- Chroma-key creates key signals in full hue, and controls key delay levels
- Downstream key signals capable of color/monochrome
- Switch-over in Input signals in both the VBS composite and VBS non-composite modes
- VBS genlock is also possible AC or 12VDC

WJ-5600
$1,000.00

WJ-4600C Color Special Effects Generator
- DC operation for EFP use
- Vertical interval switching of 6 program inputs
- Fades, dissolve, and 6 wipe patterns
- Super, external key (monochrome)
- Internal: Built-in EIA RS-170A sync generator
- HD, VD, sync, BL, BFP, SC, and blackburst outputs plus genlock capability
- Genlock circuitry for non-synchronous video signal mixing
- Subcarrier phase and horizontal phase adjustments for genlock

WJ-4600C
$7,260.00

AUDIO/VIDEO MIXERS/SPECIAL EFFECTS GENERATORS

EGP-7 Production/Post-Production A/V Switcher
- 6 external plus 2 internal (black and background) video inputs
- 6 stereo or monaural plus mic and line audio inputs
- Audio follow video capability
- 28 effects patterns, including circle and 2 rotary wipes, plus reverse joystick position with on/off control
- Manual or adjustable rate automatic transitions
- 99-event memory
- 3 external key signal inputs
- 3 digital color matte generators
- Genlocking EIA RS-170A sync generator
- 3 isolated blackburst outputs
- Built-in SMPTE color bar generator

EGP-7
$11,500.00

IFP-7 RS-422 interface
$1,000.00

CKP-1 RGB chromakeyer
$1,000.00

CKP-2 NTSC chromakeyer
$1,000.00

IMP-7 Audio intercom mixer
$500.00

Prices and Specifications Subject to Change Without Notice.
AG-1400CR VHS Player for Automobiles

- Full-function video playback inside any vehicle
- 12VDC operation
- Built to withstand heat and vibration in an automobile interior
- 4-head video system
- Clear still and slow playback at 1/6 normal speed
- Cue and review at 5X normal speed (15X SLP)
- DD cylinder motor
- 1-piece aluminum diecast chassis
- Compact and lightweight: 2¾"H x 8¾"W x 9¼"D = 4.62 lbs.
- SP/LP/SLP playback
- LCD display with tape remaining indicator
- Tracking/slow tracking control
- Soft/sharp picture sharpness control
- Counter memory
- Wired remote controller capability, optional VW-R17E

The compact AG-1400CR will bring full-function video playback capability inside any vehicle from the family auto to a limousine, motor home or tour bus. Whatever programming you regularly view on standard VHS cassettes can go “on the road” with you—from rental tapes to recorded TV programming to prerecorded tapes for business or entertainment (SP/LP/SLP mode). The AG-1400CR operates from standard 12V car batteries, and it’s built to withstand the heat and vibration in an automobile’s interior. What’s more, the video technology it features is as advanced as you’ll find in other Panasonic professional models, including the GT4s 4-head video system for clear, crisp still and slow playback, and an LCD display with tape remaining counter.

AG-5200 VHS Hi-Fi Recorder/Player

- 4-head video system
- Provides clear special effects playback including slow, still and cue/review
- Hi-Fi stereo sound with 90dB range
- Audio record level controls
- Audio output selector
- 1-piece aluminum diecast chassis
- DD cylinder motor
- Fold-up handle
- External timer recording playback
- Series playback
- Counter/audio meter display
- Quasi-S line playback
- Built-in serial interface
- Automatic power on
- Auto repeat playback
- Auto playback eject
- Wired remote control capability, optional AG-A11
- Power off/eject, mode lock
- RF converter channel selector
- Tracking/slow tracking and picture sharpness controls
- Edit switch
- Audio dubbing function (normal audio)
- Mode lock

Durable construction meets audio-video excellence in the compact AG-5200. A tough, 1-piece aluminum diecast chassis houses its advanced GT4 head system and VHS tape mechanism. This precision 4-head configuration keeps the picture clear in still and slow, as well as in other special effects modes. The extra pair of heads also provides 2-channel audio for Hi-Fi stereo or dual-language commentary. Practical controls and connection facilities help assure operational convenience and versatility.

AG-1730 VHS Hi-Fi Recorder/Player

- High response mechanism
- Jog and shuttle search
- Hi-Fi audio with 90dB dynamic range
- Digital tracking
- Auto repeat playback
- 155-channel cable compatible tuner
- VIFF
- FF/rewind time 2.5 min.
- 1-month/8-event program timer
- Super OTR (24 hr.)
- Simultaneous recording
- SP/LP/SLP record/playback
- Super 4-head video system
- Synchro edit function
- Audio dubbing capability
- BNC video connectors
- Microphone jack/headphone jack
- Automatic operations: auto power on, play, power off/eject and tape canceller
- Picture sharpness controls
- Timer programmable
- MTS/SAP I, II
- Search speed: 7X (SP), 21X (SLP)
- Time search
- Blank search
- Tape remaining indicator
- Wireless remote controller

Advanced video technology gives the AG-1730 improved picture and sound quality, plus greater ease of operation. The AG-1730 features a high-response mechanism with improved jog and shuttle search for fast, easy operation. With superb picture performance and remarkable response time, the AG-1730 sets a high standard for VCRs used in education, business and other professional applications.

Standard Accessory
- Wireless remote controller...$680.00

Prices and Specifications Subject to Change Without Notice.
Panasonic

PROFESSIONAL/INDUSTRIAL VIDEO SYSTEMS

AG-1000B VHS Player
- 3-head system • High speed search, 5X normal SP/LP, 9X SLP • 2/4/6 hour playback (SP, LP, SLP) • Built-in RF converter and RF cable supplied • Easy connection to any TV • Optional wired remote controller, AG-A10, provides easy access to 8 modes • Automatic playback • Auto repeat playback • When auto repeat feature is not used, auto eject will rewind tape and eject • External timer playback • Power off eject • Series playback • A/V in/out terminals • 1-piece aluminum die-cast chassis • Provides clear still and slow playback in SP and SLP modes • Tracking, slow tracking and picture sharpness controls • LED indicators: power, play, FF, rew, still, dew (moisture) • Front-loading mechanism • Compact design with carrying handle • RF converter channel selector (CH3/CH4) • Input selector (line/VHF)

1-piece aluminum die-cast chassis
- Provides clear still and slow playback in SP and SLP modes
- Tracking, slow tracking and picture sharpness controls
- LED indicators: power, play, FF, rew, still, dew (moisture)

Standard Accessories
- Wireless remote controller • VHF connecting cable • 75 ohm to 300 ohm transformer

$650.00

AG-1150 VHS Player
- 2/4/6 hour playback (SP, LP, SLP) • 3-head system for noiseless slow/still/still advance • Multi-function display features a 4-digit counter with memory, tape speed indicator, tape running mode, search lock, and dew/moisture • 11-function wireless remote control • DD cylinder motor with oil-film suspension contributes to the ultra-slim design and smoother operation than bearing designs • 1-piece aluminum die-cast chassis • Auto rewind • Auto power on • Auto-repeat playback • Search lock function • Power off eject • Cue and review • Tracking and slow tracking controls • Power and cassette-in LED indicators • Front-loading • Channel 3/4 RF outputs for standard receivers • BNC video connector and RCA audio connector for monitors

Standard Accessories
- Wireless remote controller • VHF connecting cable • 75 ohm to 300 ohm transformer

$550.00

AG-2510 VHS Recorder/Player
- Super 4-head video system • 2/4/6 hour recording and playback (SP, LP, SLP) featuring double fine slow • Clear field still and frame advance • Double-speed playback and reverse playback • Oil-film suspension system • 8-pin monitor out • BNC video in/out • Camera remote terminal • Auto repeat playback • Linear time counter that also doubles as a clock • Time search • Digital tracking adjustment • Monitor switch on the remote control for a quick check of concurrent TV broadcasting during video playback • 1-month, 8-program calendar timer • Wireless infrared remote control • 100-channel frequency synthesized (FS) tuner • Auto operations: auto power on, auto play, auto rewind, power off eject, tape canceller • Search lock and skip search • Picture sharpness control

Standard Accessories
- Wireless remote controller • Twin-lead cable • Coaxial cable • 300 ohm to 75 ohm transformer • AC power cord

$490.00

AG-1250 VHS Recorder/Player
- Super 4-head video system • Time search • TV/tape monitoring • Channel search • Quick play, 1 second for picture to appear when going from stop to play • 2/4/6 hour recording and playback (SP, LP, SLP) with double super fine slow in all 3 modes • All modes offer field, frame advance and double speed playback • Oil-film suspension system • On-screen display • 1-month/4-program calendar timer • Auto-repeat playback • Digital tracking adjustment • Programmable wireless remote control with 10-digit keypad • Real time counter • Remote input select • 155-channel, 155-position cable-compatible TV tuner • Standby 1-touch recording, from 30 minutes to 4 hours • Audio/video noise mute function replaces video noise with a pleasant blue background during playback of tape sections bearing no recorded signal • Auto operations: auto power on, auto play, auto rewind, power off eject, tape canceller • Search lock and skip search • Professional BNC video in/out connectors

Standard Accessories
- Wireless remote controller • 75 ohm to 300 ohm transformer • AC power cord • Coaxial cable

$350.00

AG-2510R Same as AG-2510 except includes both AG-A10 wired remote controller and a wireless remote controller

TBA

AG-1150R Same as AG-1150 except includes both AG-A10 wired remote controller and a wireless remote controller

$600.00

AG-1250R Same as AG-1250 except includes both AG-A10 wired remote controller and a wireless remote controller

$600.00

NV-C15 8-pin monitor/VCR cable, 5'

$28.00

NV-C21S 8-pin extension cable, 10'

$33.00

Prices and Specifications Subject to Change Without Notice.
AG-1960 S-VHS/VHS Hi-Fi Editing Recorder/Player
- S-VHS picture quality
- High-response mechanism
- Jog/shuttle dial
- Edit modes: assemble, insert, audio dub
- 5-pin edit terminal for AG-A95
- Synchro edit function for synchronized assemble editing with selected camcorders
- Linear time counter (in hours, minutes, seconds)
- Time search functions
- Rotary erase head
- GT4W super 4-head system
- SP/SLP recording; SP/LP/SLP playback
- Digital tracking
- Auto repeat playback
- On-screen display
- Video input terminals: BNC 1; RCA 1; S-Video 1
- Video output terminals: BNC 2; S-Video 2
- Search speed 7X (SP), 21X (SLP)
- FF/Rewind time (T1201) 2.5 min.
- Color level control
- VISS (VHS Index Search System)
- 1-month/8-program timer
- Super OTR (24 hr.)
- Mic/headphone
- Blank search
- Interval rec.
- Tape remaining indicator
- 1-month/8-program timer

AG-1960 .................................. $1300.00
AG-C70A S-Video cable, 10' .......................... 16.00
AG-C71A S-Video cable, 16.6' ........................ 20.00

AG-A95 Editing Controller
- Usable with a variety of recorders including AG-1830, AG-1960, AG-6400, AG-2400
- Direct tape search
- 8 programmable memory inset and outset points
- Assemble/insert/audio dub
- +7, -4 frame accuracy with AG-1960
- Built-in jog/shuttle search dial
- Preview and edit stop functions
- LCD multi-function display
- VHS and S-VHS editing

AG-A95 .................................. $440.00

AG-2400 VHS Portable Recorder/Player
- 2/4/6 hour playback; 2/6 hour record
- 4-head system with quartz-servo direct drive cylinder
- Multi-speed search/variable slow-motion playback
- Multi-function LCD display
- Diecast aluminum chassis
- Wired remote control enables variable slow-motion playback
- Video adding for basic insert editing
- Audio dubbing capabilities
- Memory function
- 10-pin camera connector
- Auto-rewind

Standard Accessories
- Wired remote control
- Carrying case
- Shoulder strap
- Earphone
- 300 ohm to 75 ohm transformer
- F-type plug adapter
- VHF matching box with 75 ohm to 300 ohm transformer
- V lock tool
- RCA-BNC adapter
- Audio output cord
- Coaxial cable with one touch F-type connector

AG-2400 is ideal for use with a portable video camera and is also perfect for stationary VCR applications when connected to the matching AG-V340 video tuner/timer (optional). Two heads are used for conventional recording and playback, while the other two enable clear still, frame advance, and slow playback modes. In addition, a speed search mode is included, making it easy to locate any desired point on the tape.

AG-2400 .................................. $1250.00

Optional Accessories for the AG-2400
AG-BP212 Battery pack 12VDC 2.3Ah ............................ $ 55.00
AG-B12 Plug-in AC adaptor/battery charger 12VDC 1.5A ............................ 165.00
AG-B11 AC adaptor/battery charger multiple AC power 12VDC 1.5A ............................ 195.00
AG-CR240 Car battery cable ............................ 30.00
10H-30AS 10-pin extension cable, 30' ............................ 95.00
10H-50AS 10-pin extension cable, 50' ............................ 145.00
WV-CA10 VCR cable with WV-D5000, 8' ............................ 35.00
WV-CA32/10 32-pin camera to 10-pin VCR cable, 10' ............................ 90.00

Prices and Specifications Subject to Change Without Notice.
Panasonic

PROFESSIONAL/INDUSTRIAL VIDEO SYSTEMS

AG-6300 VHS Recorder/Player
• High performance VCR perfect for use in editing systems with all the precision and connectors required for professional use * 2 hr. * 4 heads * 2 DD reel motors for smooth tape transport * Forward (noiseless) and reverse slow motion playback and frame shift * 17-step dial search * Audio dubbing selector * Audio level/tracking meter * Ext sync in * Time code in and out connectors * Dub/Normal switch select * Random auto repeat functions
• Real time counter * 2-channel audio with Dolby noise reduction system
• Audio limiter * Audio level meters * Headphone level control
• Loopthrough recording for dubbing * Intermediate loading system * Mode lock function * Optional remote control * External clock timer * 19" rack mountable * Multiple AC power sources * 34-pin remote * 8-pin connector

Standard Accessories
• Dust cover * VHF matching box with 75 ohm to 300 ohm transformer
• Coaxial cable with 1-touch F-type connector
• 300 ohm to 75 ohm transformer
• F connector

AG-6300 .......................... $2420.00

AG-6200/AG-6200E VHS Recorder/Players
• Ideal for dubbing and a wide range of other applications including education, research, medical analysis and demonstration
• 2 hr. * 4 heads
• Noiseless slow (forward) * 14-step dial search * Intermediate loading
• Audio dubbing possible on channel 2
• Headphone level control
• Audio limiter
• Audio level meters
• 2-channel audio with Dolby noise reduction system
• Real time counter with "tape remaining" time counter
• Random auto repeat
• Optional remote control
• Mode lock function
• Time code connectors
• Loopthrough recording for dubbing
• 19" rack mountable
• Multiple AC power sources
• 34-pin remote
• 8-pin connector

Standard Accessories
• Dust cover * VHF matching box with 75 ohm to 300 ohm transformer
• Coaxial cable with 1-touch F-type connector
• 300 ohm to 75 ohm transformer
• F connector

AG-6200 .................................. $2195.00
AG-6200E VHS Multi-Standard Recorder/Player
• Records/plays PAL, CCIR and plays 4.43MHz NTSC (dust cover included)

AG-6200E .............................. 2365.00

Accessories for AG-6300/AG-6200/AG-6200E
AG-A600 Remote control unit with search dial (10') .................. $ 200.00
AG-A750 Full function single event editing controller
(16.4') .................................. 1950.00
AG-M600 18" rackmounting brackets (use with chassis track C-300-S1 (XX)-B-308) .................. 77.00
NV-A505 Full function remote search controller with LED readout and dial (16.4') .................. 990.00
NV-A850 Programmable auto search controller (6.6') .................. 550.00
NV-C15 8-pin monitor/VCR cable (5') .................. 28.00
NV-C216 8-pin extension cable (10') .................. 33.00
NV-C30 34-pin remote control extension cable (16.4') .................. 120.00
NV-J500 Multi-source audio/video switcher .................. 600.00

AG-W1 VHS Universal Recorder/Player
• Record and playback in any TV broadcast system — NTSC, PAL or SECAM
• Advanced digital technology, including a field memory chip, specially developed LSIs for control and VTR sections
• Fully amorphous, laminated video heads
• Multivoltage selection capability 100-127/220-240VAC (50/60Hz)
• Hi-Fi stereo audio system with 90dB dynamic range and 20Hz to 20kHz frequency response
• Convenient front panel geographical (standard display) * Functions as a stand-alone converter * Quasi-S-VHS playback
• (VHS spec'd playback of S-VHS tape)

Standard Accessories
• Infrared remote control (includes 2 "AA" batteries)
• AC power cable
• Video cable * Audio cable

AG-W1 .......................... $2550.00

AG-2600E VHS Multisystem VHS Recorder/Player
• 5-system playback: NTSC 3.58/NTSC 4.43/PAL/SECAM/MESECAM
• 4-system recording: NTSC 3.58/PAL/SECAM/MESECAM
• NTSC playback on PAL monitor
• Built-in 29-channel synthesizer tuner: NTSC-M/PAL-D; B/G & I/SECAM D/K, B/G
• Built-in RF converter: PAL-D, B/G & I/SECAM D/K, B/G
• Auto line voltage select: 110-240VAC
• Wireless remote control
• 1-month, 8-program calendar timer (with 1-hour timer backup)
• Auto power on/play and auto repeat play
• GT4W video head system
• Digital tracking
• Auto head cleaning function (at stop mode transit)

Standard Accessories
• Infrared wireless remote control
• F-DIN connector adapter
• 300 ohm transformer
• F-DIN coaxial cable

AG-2600E .......................... $855.00

Prices and Specifications Subject to Change Without Notice.
DUPLICATION SYSTEM COMPONENTS

AG-DA700 Transcoder/S-Video Distribution Amplifier
* Switchable input terminals: component (12-pin)/composite (BNC)/S-Video (4-pin) * Simultaneous separated Y/C dubbing for 1 to 10 VCRs * Composite monitor output terminal (BNC) * Test terminal on front panel for easy maintenance * Rackmountable, adapter included
The AG-700 provides outstanding video quality by using a 3-line corrective decoder that completely separates the Y and C signals out of a composite input signal. And the encoder processes MII component signals for S-VHS recording/dubbing. The 10 Y/C output channels allow you to dub on up to 10 S-VHS VCRs simultaneously. A composite monitor output terminal (BNC) allows monitoring while dubbing is in progress.
AG-DA700 .................................................. $2400.00
AG-C70A S-Video (Y/C) cable 10' .................................. 16.00
AG-C71A S-Video (Y/C) cable 16’ .................................. 20.00

AG-DA750 S-Video Distribution Amplifier
* S-Video (4-pin) input terminal with loopthrough capability * Simultaneously separated Y/C dubbing on 1 to 10 VCRs * Composite monitor output terminal (BNC) * Test terminal on front panel for easy maintenance * Rackmountable, adapter included
The AG-DA750 provides basic S-VHS duplication from an S-VHS source. The S-Video input, with loopthrough capability, distributes the separated Y/C signals to up to 10 S-VHS VCRs.
AG-DA750 .................................................. $1000.00
AG-C70A S-Video (Y/C) cable 10' .................................. 16.00
AG-C71A S-Video (Y/C) cable 16’ .................................. 20.00

AG-DA760 Audio Distribution Amplifier
* Stereo XLR and RCA input terminals * 10 CH1/CH2 output * Switchable input levels * Monitor output (Mix) for maintenance use * Test terminal for easy maintenance * Rackmountable, adapter included
The AG-DA760 provides stereo audio distribution from either an RCA or XLR stereo input pair to as many as 10 VCRs.
AG-DA760 .................................................. $1000.00

AG-A100 Dubbing Controller
* Either 1 or 2 master VCRs can be connected * From 1 to 10 slave VCRs can be connected * Remote control of the start and stop of the playback mode of the master VCRs (1 or 2 units) * Remote control of slave VCRs recording (1 to 10 units), playback, fast forward, rewind, forward and reverse search, stop, pause/still and cassette ejection * As many as 40 slave VCRs can be connected by using the multi-connection system (with 4 dubbing controllers, AV distributors and switchers) * Remote control possible with any master VCR which has an RCA-type record remote jack * Rackmountable, bracket included
AG-A100 .................................................. $880.00
AG-C10 20 pin-20 pin multi-connection cable 4.5' .......... 65.00
AG-C11 20 pin-34 pin remote control cable 4.5' between AG-A100 and VCR .......... 65.00
AG-C12 Same as AG-C11 except 9' .................................. 100.00

AG-DA100 Audio/Video Distribution Amplifier
* 2 inputs, A and B, selectable for 2 outputs. A (1-5) and B (2-10) * Because loopthrough type input terminals are used, video/audio distribution can be further expanded by using an additional AV distributor * Video and audio output level can be adjusted while monitoring the level meter * Distribution to as many as 40 slave VCRs is possible by using the multi-connection system (with 4 dubbing controllers, AV distributors and switchers) * Rackmountable, bracket included * Stereo audio
AG-DA100 .................................................. $880.00

AG-SW100 Audio Follow Video Automatic Switcher
* Video/audio selection of one from as many as 10 input signals for monitoring * Manual and automatic modes can be selected for the output signal * Selection timing for the automatic mode ranges from about 1 second to 30 seconds * Selection timing can be set according to the external pulse * Stereo audio * Audio monitoring selectable as either audio channel 1, mixed, or audio channel 2 * Mode lock function for inhibition of remote control input (normal side) and front panel control (remote side) * Automatic skip function makes selection quicker by skipping terminals with no input signal * Interval switching function makes it possible to switch within the synchronized signal of the video signal if a video input signal is present at input terminal 1 * Rackmountable, bracket included
AG-SW100 .................................................. $990.00

Prices and Specifications Subject to Change Without Notice.

Panasonic
PROFESSIONAL/INDUSTRIAL VIDEO SYSTEMS

AG-DA700
AG-A100
AG-SW100

AG-DA100
AG-SW100

AG-DA760
AG-SW100
AG-505 5" Color LCD Monitor/VHS Recorder/Player
- A/V 9-head configuration provides 4 audio heads, 4 video heads, rotary erase head
- 5" TFT (Thin Film Transfer) LCD screen with backlighting for clear, sharp rendition and wide angular view
- SP/SLP record and playback capability, using full-size VHS cassette
- Compact and lightweight with rugged aluminum diecast chassis
- Fold-down ("clam shell") monitor design to protect screen and make carrying and storage easy
- Built-in carrying handle
- 3-way power supply: battery pack (AG-BP212) AC/car battery (using optional VW-ACM10P car battery cord)
- Hi-Fi audio record/playback capability (playback requires connection to stereo speakers, optional)
- Versatile in/out capability, including video and stereo audio terminals (phono)
- Stereo headphone jack
- Built-in speaker (monaural)
- On-screen display: battery indicator/tape counter
- Simple, convenient operation: auto play/auto rewind syncro edit and edit switch

Standard Accessories
- AC adaptor/charger
- Battery pack

AG-505 ................................................................. $1800.00

AG-550 10" Color Monitor/VHS Recorder/Player
- 4 recording heads
- 1 audio track
- 300 lines resolution
- Vertical load
- Built-in handle
- Tracking/slow tracking control
- Picture adjustment controls
- SP, LP, SLP record/play tape speeds
- Auto repeat playback, tape end/video end
- 5-digit lap timer
- Tape running display
- Memory stop, search lock and dew-moisture status display
- Wireless remote control
- Headphone/earphone jack
- Phono video in/out terminal
- 1-hour backup for clock/calender
- Black finish
- 3-prong power cord

Standard Accessories
- Wireless remote control
- 2 "AA" batteries

AG-550 ................................................................. $900.00

AG-560 Soft carrying case ........................................... 90.00

AG-560 10" Color Monitor/Receiver/VHS Recorder/Player
Same features as AG-550 plus:
- 99-channel tuner
- 8-program/1-month timer recording

Standard Accessories
- Wireless remote control
- 2 "AA" batteries

AG-560 ................................................................. $970.00

PC-560 Soft carrying case ........................................... 90.00

AG-550 13" Color Monitor/VHS Recorder/Player
- 2 recording heads
- 1 audio track
- SP, LP, SLP record/play tape speeds
- Internal timer playback
- End of program sensor and auto repeat playback
- On-screen display programming
- 4-digit time counter
- Wireless remote control
- Headphone/earphone jack
- BNC video in/out terminal
- Almond finish
- 3-prong power cord
- Special effects playback; fast search; double speed playback; still and variable slow playback

Standard Accessories
- Wireless remote control
- 2 "AA" batteries

AG-550 ................................................................. $690.00

PC-513 Soft carrying case ........................................... 95.00

AG-520 20" Color Monitor/VHS Recorder/Player
- Includes same features as AG-513 except has 20" screen

AG-520 ................................................................. $875.00

Prices and Specifications Subject to Change Without Notice.
COLOR MONITORS

BT-M1310Y/BT-D1920Y High-Grade S-Video Color Monitors

Common features:
- S-VHS compatible • Versatile In/Out connectors, including line A, line B, Ext Sync and RGB, all with automatic termination; also B-pin VCR In/Out • Line A/B/VCR/RGB selectable • Component (Y, R-Y, B-Y) input available as option • Versatile front panel controls: Preset picture On/Off; line A/B split; set-up switch; RGB cutoff; fast/slow time constant; pulse cross; normal/underscan; blue signal only; color/automo/ mono mode; comb/trap filter; degauss • Separated H/V size controls; H and V centering controls; V-hold control • Commercial UL listing; 3-prong AC power cord • Rackmountable • Front panel tally lamp • Rugged metal cabinet construction

BT-M1310Y 13" High-Grade S-Video Color Monitor
Includes common features plus:
- 0.39 dot pitch medium-grade CRT • More than 560 lines of horizontal resolution • $1600.00

BT-D1920Y 19" High-Grade S-Video Color Monitor
Includes common features plus:
- 0.55mm dot pitch data-grade CRT • More than 560 lines of horizontal resolution • Gray face screen (transparency, 70%) • More than 90L brightness and 40 ± 5L preset contrast • BA-M100 Component (Y/R-Y/B-Y) adaptor (all models) • $1900.00

BT-S1900N 19" Color Monitor
- High resolution CompuFocus picture tube with overlapping field lens gun • Line 1/2/VTR selectability • External sync switch for use with non-composite video signal • Normal/underscan switch • Chroma switch for black and white display • Blue only switch defeats red and green signals, makes hue, chrominance adjustment easier • Pulse cross switch (H-delay, V-delay) • Audio monitoring with built-in speaker • Comb filter • Rackmount kit included (slides required) • $990.00

BT-S1300N 13" Color Monitor
- High resolution CompuFocus picture tube with overlapping field lens gun • Line/VTR selectable • Normal/underscan switch allows viewing of picture corners • Blue only switch defeats red and green signals and makes hue, chrominance adjustment simpler • Pulse cross display for easy observation of sync detail • BA-130 Rackmount brackets (1 pair) • $750.00

BT-H1350Y 13" Color Monitor
- SMPTE Type C phosphor • 750 lines horizontal resolution • Line A, line B, RGB input • External sync in/out • Front mounted 1.5W speaker • Selectable color temperature (9300°K or 6500°K) • Blue-only, underscan, pulse cross • Multi-standard (PAL, SECAM, NTSC, M-NTSC) • Y, PB, PR input • Rackmountable with optional rackmount • $1300.00

BT-S1000N 10" AC/DC Color Monitor
- Built-in audio • Normal/underscan switch • Built-in pulse cross circuit • Blue only capability • 300 lines of resolution with comb filter • AC/DC operation • Line/VCR selectable • Automatic 75 ohm termination • External sync switch • Rackmountable or desk top • BA-100 Rackmount brackets (1 pair) • $650.00

BT-S901Y 9" High-Grade Color Monitor
- S-VHS compatible • Compact metal cabinet • 0.47mm dot pitch • 90° deflection angle • Underscan; pulse cross; blue signal only • Comb filter for high resolution • Rackmountable; dual rackmountable with optional heavy-duty rackmount bracket, BA-90 • Line A/line B selectable; S-Video/video selectable for line A • External sync input/output for non-composite video signals • Built-in audio amp and speaker, 1.0W audio output • Auto termination • Automatic degaussing • Headphone jack • BA-90 Rackmount (1 pair) for 2 BT-S901Y monitors • $75.00

Prices and Specifications Subject to Change Without Notice.
COLOR VIDEO MONITORS

CT-2582Y Color Video Monitor
• 450 lines horizontal resolution • Either S-Video (4-pin Y/C) or line (BNC) input/output • On-screen display .................. $585.00

CT-2010Y 20" Color Video Monitor
• Ideal for business and educational applications • Comb filter and advanced video circuitry • 450 lines resolution • 20" square-corner screen • Source selection can be made using the 3 pushbuttons located on the front panel • 2 line inputs/VCR input/S-Video input • Color, tint, brightness, contrast, sharpness, volume, and vertical hold can also be controlled via the front panel • Audio can be monitored through the built-in speaker or headphones, and up to 4 video (and audio) inputs can be connected to the rear panel facilities • Includes 2 sets of line input/output jacks, 1 set of S-Video input/output terminals and one 8-pin VCR terminal .................. $640.00

CT-2082Y 20" Color Video Monitor
• 20" flat square screen • 450 lines horizontal resolution • S-Video input/output terminals • Either line or S-Video • Comb filter • Audio/video monitor out terminal .................. $410.00

CT-1331Y 13" Color Video Monitor
• 13" tint face screen • Comb filter • Direct compatibility with the S-VHS format, for superb picture quality • Ideal for a wide variety of educational, professional and corporate applications • Interfaces with a wide variety of equipment • 8-pin VCR input, line A/B video input/output (BNC), RCA audio input/output S-Video input/output connectors with bridging capability, for direct compatibility • Input source is switch selectable from the front panel for line A/B/VCR/Y/C • Front panel controls also include color, tint, brightness, contrast, sharpness, volume, and vertical hold • >420 lines resolution for NTSC inputs • Headphone jack • Front mounted speaker • No termination switch — automatic 75 ohm termination .................. $510.00

CT-1382Y 13" Color Video Monitor
• 420 lines horizontal resolution • Either S-Video (4-pin Y/C) or line (BNC) input/output • Headphone jack • On-screen display .................. $310.00

COLOR VIDEO MONITOR/RECEIVERS

CT-3190VY 31" Color Video Monitor/Receiver
• Flat square data grade CRT • 500 lines horizontal resolution • S-Video input (4-pin mini DIN) • 155-channel cable-compatible tuner • Stereo speaker system • On-screen display from remote control including picture adjustment • Wireless remote control with learning capability .................. $1525.00

CT-2790VY 27" Color Video Monitor/Receiver
• Dome stereo speaker system • 550 lines horizontal resolution • S-Video input/output terminals • Line A/B/VCR/S-Video/TV selectable • 155-channel tuning • Programmable channel scan • Last channel/alternate channel 1-button selection • Audio/video monitor out terminal • 8-pin VCR connector • 20-function wireless remote control with off timer .................. $795.00

CT-2581VY 25" Color Video Monitor/Receiver
• 100" tint face screen • 450 lines horizontal resolution • S-Video input/output terminals • Line A/B/VCR/S-Video/TV selectable • 155-channel tuning • Programmable channel scan • Last channel/alternate channel 1-button selection • Audio/video monitor out terminal • 8-pin VCR connector • 20-function wireless remote control with off timer .................. $710.00

CT-2082VY 20" Color Video Monitor/Receiver
• 20" flat square screen • 155-channel tuning • 20-function wireless infrared remote control • On-screen display • Antenna Terminal Impedance: UHF/VHF input 75 ohm • 450 lines horizontal resolution • S-Video input/output terminals • Programmable channel scan • Either line or S-Video .................. $450.00

CT-1382VY 13" Color Video Monitor/Receiver
• 420 lines horizontal resolution • Either S-Video (4-pin Y/C) or line (BNC) input/output • 155-channel cable-compatible tuner • On-screen display • Headphone jack • Programmable channel scan • 20-function wireless infrared remote control .................. $350.00

CT-1390V 13" Color Video Monitor/Receiver
• Audio/video input • 155-channel cable-compatible tuner • 21-function wireless remote control • On-screen display .................. $288.00

Accessories
ET-100YC S-Video or BNC conversion adaptor, 2 pieces .................. $67.00
NV-C15 8-pin monitor/VCR cable .................. $28.00
NV-C21S 8-pin extension cable, 10' .................. $33.00
*Not with CT-1390V

Prices and Specifications Subject to Change Without Notice.
COLOR/B/W MONITORS

CT-2000M 19" 4-Standard Color Video Monitor
* 4-system capability enables display of CCIR or EIA standard signals in PAL/SECAM/NTSC color formats including M-NTSC videotape playback with 4.43MHz subcarrier • Video impedance switch for termination or bridging • Quick-on CRT uses no current when unit is off • Automatic AC power source compensation from 80V to 260V, 50/60Hz • Headphone jack • Built-in speaker
CT-2000M .................................. $1250.00
NV-C15 8-pin monitor/VCR cable .......................... 28.00
NV-C21S 8-pin extension cable, 10' .......................... 33.00

CT-1400MG 14" Color Video Monitor
* 2000 character capability • Designed for a wide variety of applications • 8-pin VCR connector, RGB linear (Teletext, etc.) and RGB (TTL), allows direct connection and easy switching • Composite video and audio inputs allow you to hook up your VCR or other video devices easily • Square corner data grade picture tube • Built-in speaker • IBM-PC compatible
CT-1400MG .................................. $990.00

MT-1340G 13" Color Medical Video/Data Monitor
* RGB linear and composite monitor for medical applications • Resolution more than 400 lines (RGB) • .52mm dot pitch data grade tube for crisp, fine detail • U.L.-544 rating for critical environments • 1.5V p-p linear RGB input for true rendition of subtle color tones • Built-in speaker • Audio amp
MT-1340G .................................. $990.00

CT-1030M 10" Color Video Monitor With Audio
* Solid-state IC chassis • Automatic termination • Comb filter • Metal cabinet • Front panel push controls • BNC video/8-pin VCR connectors (selectable) • RCA audio connector • Rackmountable • 300 lines resolution
CT-1030M .................................. $390.00
BA-100 Rackmount brackets .............................. pair/55.00

ST-1000M 10" Color Video Monitor
* 100% solid-state IC chassis • 300 lines resolution • BNC video in/out with automatic termination • Comb filter • Metal cabinet and magnetic shield ring (for the deflection yoke) to reduce interference • B/W color mode switch • Front panel controls • Optional rack angle brackets for rackmounting • Use in security, medical, scientific/industrial process observation, fibroscope and studio monitoring, closed circuit TV applications • No audio
ST-1000M .................................. $550.00
BA-100 Rackmount brackets .............................. pair/55.00

ST-900Y 9" Color Video Monitor
* B/W mode selectable: color/mono • S-VHS compatible • 90° deflection angle • 300 lines resolution • Compact metal-cabinet construction • Rackmountable; dual rackmountable with optional heavy-duty rackmount bracket, BA-90 • Picture sharpness control: soft/sharp • Built-in speaker (1.0W output) • Headphone jack
ST-900Y .................................. $550.00
BA-90 Dual rackmount brackets ........................ pair/75.00

WV-5200B 5" B/W Desktop Video Monitor
* More than 600 lines at center • DC restoration switchable
WV-5200B .................................. $ 350.00
WV-5203B Triple 5" monitors. Designed for 19" rackmount 1090.00

Prices and Specifications Subject to Change Without Notice.
WJ-450 Digital Color Quad System
- Allows up to four different camera or VCR outputs to be displayed on one monitor
- Suitable for use with virtually any 2:1 interlace camera without external synchronization
- Genlock input terminal allows external synchronization of different video sources, such as cameras, VCRs, video floppy disk recorders
- Advanced digital processing technology
- Remote control for selecting quad mode, individual input mode and freeze-frame
- Front panel switch calls up white borderline as a helpful quad-mode screen divider
- Sync output terminal for auxiliary equipment

The WJ-450 lets you connect as many as four separate video sources for simultaneous—or individual—display on a single monitor screen. This makes it ideal for applications like monitoring multiple studio camera outputs, viewing images from a multi-source edit machine, previewing special effects and title graphics, etc. A simple front panel switch enables quick selection of the display mode: Quad or Individual (full-screen). A built-in character generator allows alphanumeric display of up to 6 characters on each of the four screen blocks, to permit quick identification of the input. Other standard features include freeze-frame and remote control capability.

Specifications

Video Input: 2:1 interlace; composite 1V p-p/75 ohms; auto-termination or loop-through; black and white or color video signal x 4. (Each video signal is synchronized vertically for vertical interval switching)

Video Output: Video output x 2; composite 1V p-p/75 ohms; color or black and white video signal
VCR (quad) output x 2; 1V p-p/75 ohms; color or black and white video signal with composite sync and burst signal

Sync Output: Video sync; internally selectable; 4V p-p/75 ohms

Genlock Input: VBS (2:1 interlace; composite; color or black and white video signal). Or Blackburst Signal (BS). 1V p-p/75 ohms; auto-termination or loop-through x 1

Character Generator: Up to 6 characters for each block. Available characters: A-Z; 0-9; ; ; ; ; /; and blank. Built-in back-up memory for title display

Remote Input: 5 (4 Quad, 1 Single), 1, 2, 3, 4 of single picture with max. 12VDC and a make-contact for ground

Dimensions: 37/16"H x 161/2"W x 133/4"D
Weight: 14.3 lbs.

Ambient Operating Temp: 14°F to 122°F (-10°C to +50°C)

Power Source: 120VAC/60Hz

WJ-450 .................................................. $2070.00

Prices and Specifications Subject to Change Without Notice.
CAMERAS/ACCESSORIES

AK-450 Portable 2½" 3-CCD Color Video Camera
* Frame interline transfer CCD image sensor (RGB) 838H x 485V pickup element
* f/1.4 prism with quartz filter
* Dual concentric filter wheels (ND: 100% 25% 6.5% capability, CC: 3200°K 4700°K 5600°K 7500°K)
* Variable speed electronic shutter (off, 1/25, 1/50, 1/100, 1/200, 1/500 sec.)
* 2000 lux (at f/5.6) high sensitivity
* High S/N ratio of 62dB typical
* 800 TV lines resolution (Y-signal)
* 6dB black level on Y (VTR, WI, low voltage warning (LO.VI, tape footage time (5, 10, 15 min.))
* Controls: peaking on/off, tally on/off, brightness, contrast, iris override
* iris override ±1/2 f-stop
* Lens extender red/blue gain pedestal, iris, master pedestal
* Viewfinder LED indicator
* Dynamic highlight compression
* 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
* Zebra level indicator
* SMPTE color bar
* Low power consumption
* Viewfinder character display
* Viewfinder LED indicator
* Direct docking to the Panasonic MII camera recorder (AU-410) for maximum ease of handling
AK-450 Includes AK-450H camera head, AK-VF410 1.5" viewfinder, AK-470 tripod mounting adaptor, AKY-1044 shoulder strap, extender board
$25,600.00

AK-400 Portable 2½" 3-CCD Color Video Camera
* Same as AK-450 except:
* (RGB) 574H x 494V pickup element
* Variable speed electronic shutter (off, 1/25, 1/50, 1/100, 1/200, 1/500 sec.)
* S/N ratio of 60dB
* 650 TV lines resolution (Y-signal)
* 6dB black level on Y
AK-400 Includes AK-400H camera head, AK-VF410 1.5" viewfinder, AK-470 tripod mounting adaptor, AKY-1044 shoulder strap, extender board
$20,600.00

Price and Specifications Subject to Change Without Notice.

Panasonic
PROFESSIONAL/INDUSTRIAL VIDEO SYSTEMS

MC-480 Audio Technica AT-835 ENG camera mounted microphone (mono, condenser type)
Includes mounting brackets and connecting cables
$435.00

GR401 Handgrip for AK-450/AU-410 or AK-400/AU-410
$95.00

AU-B110 AC power supply
$790.00

AK-450/AK-400 Cables
CA26/26-15 Camera to VTR cable - 26-pin to 26-pin (SMPTE std)
$125.00

CA26/26-6 Camera to VTR cable - 26-pin to 26-pin
$235.00

CA26/14-6 Camera to VTR cable - 26-pin to 14-pin
$210.00

CA32R-50 50' RCU cable
$1,155.00

CA32R-200 100' RCU cable
$1,375.00

CA32R-300 300' RCU cable
$4,735.00

AK-450/AK-400 Battery Systems

SQ-13F Anton/Bauer Pro Pac 13, 4AH, 13.2V Snap-On NiCad battery
$550.00

LSFC Anton/Bauer Lifesaver fast charger. Single position, 1 hour charger for SQ-13F batteries.
$605.00

AKR-1056 Mounting bracket to mount AU-BP402 battery (for AK-4AD405/AK-4AD101)
$520.00

AU-BP402 Battery pack - 4AH (Also used with AU-500 portable VTR)
$300.00

SPS-3 Anton/Bauer 3A 13V/110VAC power supply (use with AB13)
$495.00

MFC Anton/Bauer mobile fast charger (use with SQ-13F)
$595.00

LSQ-4 Anton/Bauer Lifesaver 8 hour QUAD quick charger (use with SQ-13F)
$995.00

AK-450/AU-410 (Docked) Battery Systems

AK-AD430 Adaptor plate for mounting AU-M400 battery case or AB13
$2,840.00

AK-AD430R Mounting bracket to mount AU-BP402 battery (for AK-AD405/AK-AD401)
$520.00

AU-AD405/AK-AD401 Battery Systems

CA26/14-6 Camera to VTR cable - 26-pin to 26-pin
$235.00

CA32R-50 50' RCU cable
$1,155.00

CA32R-300 300' RCU cable
$4,735.00

Prices and Specifications Subject to Change Without Notice.

257
AQ-20 7/4" FIT 3-CCD Digital Processing Camera
* 3 7/4" frame interline transfer CCD image sensor for minimal vertical smear * 400,000 pixels, 750 TV lines resolution, 1/5.6 at 2000 lux high sensitivity, 62dB high S/N ratio * Registration in 0.05% of the whole zone * Variable speed electronic shutter (1/1000, 1/500, 1/250, 1/125, 1/60, 1/25, 1/12, 1/6) * Centralized controls * Parameter settings adjustable for digital processing * Cross color suppression (2D LFP) * High chroma aperture correction * Precise 1-touch shading correction (36H x 120V) * Digital gamma adjustment (0.35 to 0.55) * Selectable enhancement frequency control (2H enhancer) * Auto high light compression control * Auto white/black balance (A/B/Preset) * Black stretch switch * SMPTE standard color bar * Gain select (0, +9dB, +18dB) * Direct docking to MII camera recorder (AU-410) * Lightweight at 2.5kg, with a durable magnesium alloy chassis
AQ-20 includes: camera head; tripod adaptor; microphone bracket; carrying handle/handle extender; rain cover; shoulder strap 

$28,500.00

AQ-20B Directly connectable to Betacam/SP VTR 

$29,500.00

Accessories

AQ-VF1 1.5" viewfinder * Adjustable eyecup position: left/right, up/ down, diopter * Screen adjustment: zebra on/off, character on/off, tally on/off, brightness, contrast, peaking * VF indications: LED gain, battery warning, VTR warning, standby, tally, audio * Character: filter position, AWB, ABB, battery warning, VTR warning, video level, shutter speed, tape end, audio level, safe title, cross * Mode settings: detail, SP detail, level, EVF, masking, flare, shading 

$1,000.00

AQ-VF50 5" viewfinder 

$2,500.00

AQ-EC1 Camera head extension control unit for simple camera remote control CAM/Test/Bars, gain -3, 0, +9dB, AWB, ABB, R, B paint, master ped, iris auto/manual. Digital setup controls: detail, ST detail level, EVF, masking, flare, shading 

$1,300.00

AQ-C50 Multicore camera adaptor for VTR connector 26-pin 

$1,850.00

AQ-CA1 ENG camera adaptor for VTR connector 26-pin 

$3,800.00

AQ-MA1 ENG camera adaptor for betacam SP VTR connector 26-pin 

$1,200.00


$225.00

Cables

CA28/28-15 Camera to VTR cable * 26-pin to 26-pin (SMPTE std) * 15' for MII and Beta VTRs 

$300.00

CA28/28-14 Camera to VTR cable * 26-pin to 26-pin * 6' for MII and Beta VTRs 

$275.00

CA26/24-14 Camera to VTR cable * 26-pin to 24-pin * 6' for U-Matic VTRs 

$250.00

CA 4030 Multicore camera cable * 41-pin to 41-pin * 30m AQCA50 to AQ-RC50 

$395.00

CC220 Thermodyne camera carrying case holds AQ-20, AQ-CA1 or AU410, HQ-VF1 batteries, AC power supply/charger 

$450.00

Prices and Specifications Subject to Change Without Notice.
STUDIO RECORDERS/PLAYERS

MII STUDIO VTRs

Common features:
• Built-in TBC with 32 Hz-p correction capability  • 20 advanced LSIs cut total PCB area by 40% to 20% savings in weight and nearly 40% less power consumption than previous conventional MII equipment  • For quick and easy mode setting, search dial controls on-screen initial setup menu for 20 parameters that once required DIP switch changes  • 90-minute playback, or 20-minute playback without adapter, from cassettes using 1/2" metal tape  • Amorphous heads help reduce eddy (over) current loss and optimize high-frequency characteristics  • Color framing control in a 4-field sequence to prevent H-shift  • 9-pin RS-422A serial/parallel interface  • 50-pin parallel input via optional AU-K25 interface board  • Encoder remote and TBC adjustments through 15-pin external encoder connector  • Y/C (4-pin) output terminal for S-VHS dubbing  • Advanced limiter helps prevent bearding in playback  • Analog component and advanced CTCM system for excellent picture quality  • Variable memory editing during slow and reverse playback, with compatible VCRs  • High-speed search up to 32X normal in forward and reverse; jog mode for quick, accurate location of edit points  • Optional plug-in time code generator/reader, AU-F65 • 4-channel audio: 2 FM, 2 longitudinal, with independent level adjustment on VU meters for all 4 channels  • Dolby C noise reduction  • Digital hour meter  • Tape speed override (TSO) permits manual adjustment of playback speed differences between the AU-62 and a second VTR, in steps of ± 6.25% or ± 12.25%  • Front panel LED indication of reference SCH, color framing, Dolby NR, other data  • XLR connector for monitoring of mixed audio  • Universal source: 100V - 240V  • 19" rackmount capability using optional rack slides (RSK-L) and a handle adaptor kit (AU-M60)

AU-62 MII Studio Player
Shares common features plus:
• Adaptive Edge Comb Filter for improved vertical resolution  • Outstanding XLR connector for monitoring of mixed audio  • Universal source: 100V - 240V  • 19" rackmount capability using optional rack slides (RSK-L) and a handle adaptor kit (AU-M60)

Price: $9,950.00

AU-63 MII Studio Player With AT™ Auto-Tracking
Same features as AU-62 plus:
• AT auto-tracking for noiseless slow from -1X to + 2X normal speed, plus instant starts from still frames in VAR (variable) mode and program play  • Using the variable (AT) mode, playback speed can be adjusted from 80% to 120% in 0.1% steps without compromising picture quality

Price: $14,500.00

AU-65 MII Studio Editing Recorder
Shares common features plus:
• Enables 1-event assemble editing, and a full range of insert editing for Video/FM (ch3/ch4), audio (ch1/ch2) and time code  • Audio split editing  • 32-character, 2-line fluorescent display on the control panel  • Time code numerical value and type, as well as operation mode and transport speed of the VTR, can be superimposed on the screen  • Subcarrier phase can be adjusted in relation to the input reference signal  • Preview, Review, Go To, Trim, Auto Tag and other convenient editing functions  • 50-pin parallel input via optional AU-K25 interface board  • Automatic standard/non-standard selection  • Tape remaining and lap time indication  • Component input/output connectors  • Individual record inhibits for video, linear audio and time code

Price: $14,000.00

Accessories for AU-62/63/65

AU-F65 Time code generator/reader board  • 1,700.00
AU-MK25 Parallel remote kit  • 340.00
AU-MK27 Super DOC kit  • 2,000.00

AU-665 High Performance Studio Recorder With AT Auto-Tracking
Shares common features plus:
• Noiseless auto-tracking  • S-N better than 50dB  • 1-event editing function recall  • Advanced video/audio quality  • Confidence playback during editing  • S-VHS in/out terminal and input switch, XLR TC in/out terminals, field DOC, digital timer and on-screen display  • Super DOC provides for up to a full field of dropout compensation  • Standard adaptive edge comb filtering delivers outstanding horizontal resolution in slow motion and still playback in the auto-tracking mode  • Jog mode capability allows noiseless playback from -1X to + 2X normal speed (in 56 steps), plus noiseless still playback  • Equipped with dual video and audio (ch1/ch2) heads that allow real time monitoring of picture and sound during recording  • 2 FM audio tracks (ch3/ch4) enable recording and playback on 4 separate channels

Price: $36,500.00

Prices and Specifications Subject to Change Without Notice.
MII PORTABLE FIELD RECORDER/PLAYERS

AU-520 Portable MII Recorder/Player
- Compact, lightweight
- Comb filter enables recording/playback on par with 1" VTRs
- Built-in video AGC circuit
- Internal SMPTE time code generator/reader
- VITC can be recorded simultaneously in any 2 lines of the vertical blanking interval (switch selectable)
- Time code track is provided separately from the video signal track
- Time code slave lock enables the TCG to be locked to an external generator
- Provides playback heads for both audio and video in addition to the recording head
- Built-in RF filter
- 2 linear recording heads with Dolby C noise reduction, 2 FM multiplexed with the color signal
- Manual audio level control
- Sound can be recorded at minimal distortion with limiter on
- Playback signal level control
- Warning system for: tape end, tape rewind, servo system malfunction, dew condensation, battery charge depletion, head clogging, Connects with optional time base corrector, AU-TB50B 9-pin connector for RS-422A serial remote control

AU-520S ........................................... $11,500.00
AU-520S High Performance Portable Field Recorder/Player ................................... 12,800.00

AU-410 Dockable MII Recorder/Player
- Delivers high-quality pictures on par with 1" VTRs
- Records using component signals to deliver high-quality pictures from NTSC type video cameras
- Employs compact, lightweight cassettes with 20-minute recording time, usable in MII editing without an adapter
- Play-back heads for both audio and video, in addition to the recording head, to enable on-the-spot review of recording quality
- Automatic backspace of 20 frames (approx. 0.7 frame) of successive pictures are recorded by means of "assemble" type recording for a smooth, glitch-free bridge
- Built-in time code generator: VITC/LTC
- Jamsync: time code can be recorded continuously at the edit points when performing backspace editing
- Ext. time code input: 4-channel audio recording: 2 lines with Dolby C; 2 FM multiplexed with the color signal
- Warning indicator lamp for: head drum or capstan servo trouble, head clogging, tape slackening or jam, excess humidity
- LED indicators: Soft-touch operation buttons
- Phantom power (±48V) can be supplied to the audio input connectors for CH 1/CH 2
- Front panel controls: Color/chroma, phase and white balance automatically
- Any 1 line of the screen and press Auto Setup button to correctly adjust the center of the screen
- Simply position the sensor probe in the middle of the screen and press Auto Setup button to correctly adjust chroma, phase and white balance automatically
- Any 1 of 5 color-temperature setups can be selected as standard
- Choose between the built-in 9300°K, 6500°K and 5000°K presets as well as 2 additional user-defined settings
- Also possible to record the color-temperature setup of a different monitor to achieve matched color reproduction
- All operating menus and current settings appear on-screen for easy confirmation

AU-410S High Performance Dockable Recorder/Player ........................................ 10,500.00

Accessories
AU-BP420 Battery pack used with AU-520(S) (4AH) ........................................ 300.00
AU-BP220 Battery pack used with AU-410(S)/AU-520(S) (2.2 AH) ................. 140.00
AU-S400 VTR adaptor for 2-piece VTR/camera cabled operation. Used with AU-520(S) ................................ 2,750.00
AU-B420 Battery charger used with AU-BP420/AU-BP220 ........................... 800.00
AU-B110 AC adapter used with AU-410(S)/AU-520(S) .............................. 790.00
AU-M400 Battery holder used with AU-410(S) ........................................... 220.00
AU-H400 Soft case used with AU-410(S) ................................................... 300.00
AU-H500 Soft carrying case used with AU-520(S) ....................................... 300.00
AU-TB50B Component TBC used with AU-520(S) ...................................... 10,000.00

MII METAL TAPES

<table>
<thead>
<tr>
<th>Tape Type</th>
<th>Specifications</th>
<th>Price</th>
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<tr>
<td>AU-M90L</td>
<td>90-minute video cassette tape</td>
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<td>Cleaning cassette tape (small)</td>
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RECORER/PLAYERS/EDITING CONTROLLER/MONITORS

AT-H1300 AT-H1900

AU-A65 Editing Controller
- 250-event memory
- A/B roll
- Split audio editing
- Player control for up to 3 units plus auxillary
- Selectable preroll time
- Interfaces with host CPU

AU-A65 ........................................... $12,000.00
AU-SW65 Audio-video switcher ............................................................... 7,000.00

Accessories
C1391 CRT display ............................................................... $899.00
AU-IA651 34-pin interface adaptor .................................................. 1,300.00
AU-IA652 50-pin interface adaptor .................................................... 1,300.00
AU-IA653 9-pin interface adaptor ....................................................... 900.00
AU-IA655 CRT interface adaptor ....................................................... 2,700.00

AT-H1300/AT-H1900 High Resolution Color Monitors
- 600-line horizontal resolution
- NTSC chroma decoder with I and Q demodulation
- Beam current feedback system
- Wideband CCD comb filter
- Switchable comb and trap filters
- Separated Y/C signal inputs
- RGB/YPbPr inputs
- 3 selectable video inputs
- PAL capability can be added to NTSC chroma decoder
- Front panel controls
- Color/monochrome split screen display
- Residual subcarrier display switch
- NTSC correction matrix circuit
- Aperture correction circuitry (up to >10dB)
- Automatic degausser with manual switch
- Built-in AFC time constant is switchable between 0.5ms and 2ms
- Normal/underscan selection switch
- Monitoring of blanking intervals
- Horizontal scanning automatically detects and switches between 525/625 line (optional PAL decoder is needed)
- No burn in
- RGB cathode drive circuit can be switched on/off individually
- Dedicated DC power supply for CRT heater
- 145W power consumption
- Remote control capability

AT-H1300 13" high-resolution color monitor ........................................... 7,800.00
AT-H1900 19" high-resolution color monitor ........................................... 8,000.00

Auto Setup Kit
- Consists of the Auto Setup probe and a CPU circuit board
- To record brightness data simply plug the probe into the terminal and position it in the center of the screen
- Simply position the sensor probe in the middle of the screen
- Front menu appears on-screen for easy confirmation

Auto Setup Kit ........................................... $1,500.00

Accessories
ET-CH130 13" hood for AT-H1300 ....................................................... 200.00
ET-CH190 19" hood for AT-H1900 ....................................................... 250.00
ET-CK130 13" handle for AT-H1300 ...................................................... 200.00
ET-LK130 13" rackmount kit for AT-H1300 ........................................... 300.00
ET-LK190 19" rackmount kit for AT-H1900 ........................................... 300.00

Panasonic.
PROFESSIONAL/INDUSTRIAL VIDEO SYSTEMS

Prices and Specifications Subject to Change Without Notice.
MONITOR MOUNTS

Small Monitor Wall Swivel Mounts
For TV receivers and monitors 9" to 16". All of the models offer 120° of swivel and adjustable tilt and are equipped with a security tray using a key-type lock. Finished in solar black baked enamel.

- 041-307-02 Tray size: 9" x 9" D .......................... $58.00
- 041-310-02 Tray size: 9½" W x 11½" D .......................... $58.00
- 042-314-02 Tray size: 13" W x 12" D .......................... $64.00
- 042-334-02 For a 10" to 16" set, tray size: 17" W x 12" D .......................... $64.00

Single Arm Style Wall Swivel Mounts
Wall Swivel Mounts conserve valuable floor space and provide a perfect viewing angle. The universal, random perforated mounting trays and a wide range of available sizes assure you of getting the right mount for the job.

All of the single arm style wall mounts offer 120° of swivel. Tilt can be specified to meet your requirements: flat tray (no tilt); fixed 10° tilt; or adjustable tilt, up to 15°. Locking security trays allow for easy removal of the set for servicing, as well as adding security. Brackets are finished in solar black baked enamel.

- 042-354-02 For a 20" cube style set, tray size: 20" W x 11" D, flat, locking .......................... $70.00
- 042-356-02 Same as 042-354-02 except has adj. tilt .......................... $77.00
- 043-530-02 For a 16" to 19" set, tray size: 22" W x 13" D, flat, locking .......................... $70.00
- 043-531-02 Same as 043-530-02 except has adj. tilt .......................... $77.00
- 043-532-02 Same as 043-530-02 except has fixed 10° tilt .......................... $72.00
- 2171-000 For a large 19"-20" set, tray size: 24" W x 13½" D, flat, non-locking .......................... $52.00
- 2172-000 Same as 2171-000 except has fixed 10° tilt .......................... $54.00
- 2173-000 Same as 2171-000 except has adj. tilt .......................... $60.00
- 044-375-02 For large sets, tray size: 24" W x 16½" D, flat, locking .......................... $91.00
- 044-376-02 Same as 044-375-02 except has fixed 10° tilt .......................... $94.00

Double Arm Style Wall Swivel Mounts
Where maximum head clearance is an important concern, and where a locking tray is not required, the Double Arm Style Wall Swivel is an excellent choice. Almost all the bracket is hidden by the TV or monitor, giving your installation a clean, unobtrusive appearance. Finished in solar black baked enamel. Non-locking.

- 2121-000 Tray size: 24" W x 13½" D .......................... $75.00
- 2121-010 Fixed 10° tilt, tray size: 24" W x 13½" D .......................... $78.00
- 2123-000 Tray size: 25½" W x 15¾" D .......................... $94.00

Small Monitor Ceiling Mounts
052-307-02 Offers an easy, attractive way to ceiling mount a small monitor. It features both swivel and tilt, with a universal locking security tray measuring 9" x 9". Standard clearance to ceiling is 12". If additional clearance is required, order extension column 1445-000. This extension column replaces the bracket’s standard column and should be measured to provide the total desired clearance.

- 052-307-02 .......................................................... $71.00
- 052-310-02 Provides a tray measuring 11½" W x 9½" D, or 9½" W x 11½" D. Standard clearance to ceiling is 15". .......................................................... $71.00

Jumbo® Mount for Jumbo Monitors
The Jumbo Mount is engineered to handle oversized wall or ceiling monitors from 20" to 35" screen size. Manufactured of heavy gauge steel and MIG welded, this mount offers greater load bearing strength and more stability than other mounts on today's market.

Each Jumbo Mount features bottom mounting plates adjustable in 2 directions. These give users the flexibility to fine tune the mount's center of gravity against the degree of tilt. The result is a finished monitor installation with maximum stability. In addition to providing solid support, the Jumbo Mount is eye pleasing with its sleek design and satin black finish that blends into virtually any decor.

Jumbo Mount .......................................................... $170.00

Prices and Specifications Subject to Change Without Notice.
Pan and Tilts
Pelco offers a complete line of pan/tilt units for light-, medium- and heavy-duty applications in both indoor and outdoor models. A variety of models with preset positioning and 360° pan setting (SL) options are also available. We recommend our PT280-24P series for use in discreet surveillance domes. Mounting hole patterns on spindle base and tilt tabletop on heavy-duty models are compatible with other manufacturers' enclosures and mounts. (Pictured: PT570P medium-duty pan/tilt with EH5520 environmental enclosure)

Enclosures
Indoor/outdoor enclosures for a wide range of applications including explosion-proof, dust-proof, corrosion-proof, high security, decorative, fixed or dropped ceiling and environmental are available. In addition, our complete line of discreet surveillance domes (hemisphere or full sphere) are available with factory installed integral pan/tilts; environmental dome options include pre-wired pan/tilt and/or receiver/driver which simplify installation. (Pictured: EH4010 indoor/outdoor enclosure)

Switchers
Manual passive and sequential video switchers are available with numerous options. Manual switchers for 4-40 inputs/1 output and sequential switchers for 4-20 inputs/1-2 outputs, with or without alarm functions, are desktop units; rackmounting is available for all models except VS5104/VS5108. Dwell time is adjustable on sequential units. Pelco's unique microprocessor based CompuSwitch® System 700 is equipped with modular "building block" system expansion modules and is user programmable. (Pictured: VS5008 sequential switcher)

Controls
Pelco offers a wide variety of controls from single function operation of scanners, pan/tilts, enclosures and motorized lenses to multiple function controls for full system needs. Pelco's unique Coaxitron® family of control systems features "up-the-coax" control for simplified installation and significant cost savings ranging from our basic System 2000 to the full Matrix 7500 series for more complex systems. (Pictured: CM7502 rack-mounted card cage with integral keyboard)
CHARACTER GENERATORS

CG-4711N Character Generator
- Desktop 2RU size
- Instant access to all functions for real time operation
- Working palette of 120 true colors can be displayed on screen simultaneously and used for foreground, background, and edge
- Full horizontal and vertical movement control of individual characters
- Built-in DSK with cut and fade control
- Font and logo compose
- 8 levels on quadrants of shadow, border, and edge
- 8 resident fonts
- Ultra fast page retrieval from diskette
- Multiple language facility
- RAM for downloading 8 fonts from disk
- NTSC, PAL or RGB/component video versions
- 35ns resolution
- Built-in genlocking SPG requires only a reference video for system timing
- Dual 3.5" disk drives
- Full diagnostics
- Includes keyboard unit with cable
- Set of accessories including:
  - 2 3.5" disks, each with 8 character fonts
  - 1 extender board and cable
  - 1 operator's and service manual
  - 1 blank 3.5" disk
- $7,995.00

CG-4722 Single Channel Character Generator
- Includes all features of CG4711N plus:
  - Subtitling facilities and software
  - Titles may be automatically positioned on any part of the screen using SMPTE/EBU longitudinal timecode information
  - Can also accept information from PC assembled disks
  - Maximum capacity is 2048 titles of 4 rows each
  - Electronics mainframe, 19" 2RU, PAL or NTSC encoder, DSK, SPG, RAM for downloading 8 fonts from disk
  - Data management unit with dual 3.5" disk drives, desk mounted (1RU rackmounted version available by special order)
  - Keyboard unit with cable
  - Standard length 15" interconnecting cable, DMU to mainframe
  - Set of accessories including:
    - 2 3.5" disks, each with 8 character fonts
    - 1 extender board and cable
    - 1 operator's and service manual
    - 1 blank 3.5" disk
- $11,272.00

CG-4722 Dual Channel Character Generator
- Same as CG-4722 single channel except includes 2 mainframes, 2 interconnector cables and 2 extender boards and cables
- $17,839.00

CG-4733 Character Generator
- Full range of font styles, sizes, and effects
- Instant character sizing from 8 to 512 lines
- Character edge effects including: border, outline, block and drop shadow, plus combinations
- 4M byte font memory—provides virtually unlimited number of fonts on-line
- High resolution vector format licensed typeface masters readily accessible from hard disk, over 1500 in library
- 16 levels of antialiasing
- 4.6ns effective resolution
- Ergonomically designed keyboard with dedicated keys—no menus on main functions
- Instant font rendering
- Full range of display modes including: cut, roll, reveal and crawl, all to fully adjustable times/speeds
- Ethernet high speed serial port for local area networking
- GPI for contact closure actuation of sequences
- RS-232/422/485 serial lines for: local and remote keyboards, remote floppy disk drives, external computer/printers, graphic tablet
- SCSI port for interfacing to external Winchester or magneto optical drives
- Longitudinal SMPTE time code; input for auto subtitling
- Compact, ideal for OB Van applications
- Mainframe only 3RU (5.25") high 19" rackmounting
- Keyboard fits into sliding 19" rack
- 32K colors on-screen for foreground, background or edges
- 32 levels of transparency
- Coloring: character by character FGND/BKGND and edge and line by line FGND/BKGND
- High capacity disk storage
- Built-in 1.2M byte floppy and 4OM byte hard disk drives
- Remote floppy drives (optional)
- External Winchester drive for extra storage (optional)
- Full system incorporates 2 fast 32-bit processors with separate dedicated high speed digital signal processor (DSP) for font rendering
- Real time, multi-tasking software operating system
- Versatile color logos
- Built-in logo composer
- Easy manipulation—treated same as characters
- Sizes from 8 to 512 lines
- Coloring pixel by pixel
- Internal 4:4:4:4 architecture with RGB/YPbPr inputs and outputs or optional CCIR 656 board for CCIR 601 compatibility
- High resolution (15K x 15K) typeface masters
- Precision font rendering and composing
- Typeface masters supplied with full range of characters and accents
- Easily reconfigurable for different languages
- Dedicated graphic processor
- Real time frame grab
- Integral digital linear keyer
- Provides dual channel capability
- Full painting facilities
- Palette with choice of 16.7M colors
- $7,995.00

CG-4733

Prices and Specifications Subject to Change Without Notice.
**TB8000 Intercom/Talkback System**

**System Architecture**
- 4 central switching matrices: 8 x 8, 16 x 16, 32 x 32 and 64 x 64
- A basic panel consists of a speaker, mic, amplifiers and controls
- Control panels: 16 or 32 selector keys and expandable in blocks of 16 by adding key extension panels
- A plug-in second matrix card provides control panel access to a second matrix frame
- Belt packs or external 4 wire circuits can be added to a panel using an external line panel

**Software Configured System**

Each matrix crosspoint can be configured in 1 of 4 ways:
- Normal: Unidirectional from source to selected destination
- 2-way: Bi-directional for 2-way communication between source and selected destination
- Fixed: Permanent unidirectional
- Standby: Permanent unidirectional from source to destination with ability to temporarily override with another routing selected by an authorized source

**System Features**
- High packaging density for low cost per crosspoint
- Modular system is expandable to new areas
- Full 4-wire operation
- Balanced transformers used to interface to external equipment
- External headset connection
- Special tally functions including changing from a rehearsal to on-air operation
- Multiple calls are made from panels

**Audio/Video Conferencing System**

- Connects up to 16 conferences and up to 20 rooms per conference
- A point-to-point intercom system with video is an integral sub-system which enhances communications and conferencing effectiveness
- Video switching matrix configurable to as large as 128 x 128
- Connects up to 256 conference rooms
- Audio conferencing switching matrix configurable to a maximum of 80 x 80
- Separate audio conferencing matrix to allow 20 participants per conference to communicate with all selected conference stations
- Matrices designed so no single point failure results in system failure
- Central controller with full redundancy
- Master control CRT terminal can be used to reconfigure entire switching and control matrices and setup and connect separate mini conferences with multi-point rooms
- Levels of security for conference integrity
- Encoding and encryption compatibility

With Pesa's local area audio/video conferencing system, consisting of a 2-way audio/video switching matrix and microcontroller, information can be distributed in real time from multiple locations to multiple locations. Locations can view identical visual information while privately discussing the subject matter and selectively change the visual information. The system supports up to 16 simultaneous conferences and up to 20 participating rooms per conference. This multi-point to multi-point conferencing connectivity is made possible with Pesa's unique Core Switching and Control System hardware and software.

While the system is generally used in an audio/video intercom and conferencing configuration, it is not necessary to have 2-way video. The audio paths are bi-directional and provide 2-way audio for "talkback" type applications.

Typically, the visual information is from cameras viewing personnel, products, maps, charts, chalk-talk boards and illustrations. Also, displays/outputs from PCs or high resolution computer workstations are distributed. Graphics devices typically used include Sun Microsystems, ADP, HP, Tektronix, IBM and Apple. The video matrix can switch both RGB (or Y, B-Y, R-Y) component video and the composite output video from these devices.

Control and signal connections between viewing rooms can use coax cable and twisted audio pairs or fiber-optics. Fiber-optics is the preferred method for security reasons. Video and audio signals from multi-points can be connected by coaxial cable and twisted audio pairs using a Local Area Broadband Network, or fiber-optic cable.

**Prices and Specifications Subject to Change Without Notice.**
**TERMINAL EQUIPMENT/BROADCAST MONITORS**

**SWAT SW2000 Sync Watcher Analyzer and Timer**
SWAT automatically monitors 14 sync parameters including SCH phase relationship, sync blanking and burst measurements with out-of-tolerance alarms. Measures and provides complete analysis of sync, blanking and burst of a video signal. Auto measurement "Watcher" mode measures 14 parameters including SCH phase, front porch and horizontal blanking. Auto "Timer" mode measures between 2 video inputs SC phase and horizontal delay; confirms SC lock, horizontal lock, H, lock (PAL), vertical lock and PAL lock. Alarm indications on out-of-tolerance parameters. User programmable parameters to be measured. Alarm activation, prime values and tolerances. Manual or automatic selection of parameters. Results displayed on integral 40-character LCD panel or external picture monitor. RS-232C port interfaces to printers for hard copies of measurement results. Built-in self test routine...

**P-50 Video Processing Amplifier**
- Front panel control of 6 video signal parameters
- Accepts most sync formats
- AGC to maintain proper signal level automatically
- Generates pulse cross format with auto picture brightening so standard monitor can be used for VTR skew and tension adjustments...

**101 Series Vertical Interval Bridging Switcher**
A 10 x 1 bridging switcher with built-in video and audio DAs has vertical interval switching on all inputs, lighted pushbuttons and switch position memory. Remote control is optional...

**720 Video DA. Equalizes up to 1000'**
The 720's quality signal and reliability are ideal for studio, mobile or duplication applications.
- 3 sections: 1 x 4 outputs per section. Can loop sections for 4, 8 or 12 outputs from 1 video source. Has integral common power supply
- Front panel gain adjustments and test points...

**Video DA Models VDA-24, VDA-12, VDA-12D**
More outputs in less space... 168 in 3 RUs.
- Differential terminated or looping inputs
- Modular plug-in card design
- More than 80dB common mode rejection
- Front panel equalization adjustment up to 600Hz 25MHz bandwidth
- Power supply failure alarm connections
- A second optional backup power supply can be added for redundancy

**Options for the VDA24, VDA12, VDA12D**
- Latch kit accessory...
- Rackmount adaptor kit for unthreaded racks...
- 5-amp intake assembly...
- 214.00
- 5-fan intake assembly...
- 214.00
- PS150 dual external power supply...
- 847.00
- Power distribution panel...
- 236.00
- Power cable for power distribution panel...
- 38.00
- Power jumper cable/VDA to VDA...
- 25.00
- Air baffle plate...
- 10.00

Prices and Specifications Subject to Change Without Notice.

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**Transmission facility's routing systems, satellite and microwave links use SWAT to maintain image quality.**

Post production house use SWAT to check client's supplied video material prior to editing and to certify the quality of the finished tape.

Equipment manufacturers use SWAT to verify equipment performance by documenting values of 14 sync parameters, 1 of the more important being SCH phase relationship.

**BM4414/BM4420 Precision Broadcast Monitor Series**
- Microprocessor automatic setup and control for component RGB and YPrPb with plug-in options for NTSC or PAL, S-VHS (Y/C) and digital video (ICC8 656)
- Microprocessor automatic setup and control for YCrCb (Y/C) and digital video (ICC8 656)
- High resolution PHL tubes with SMPTE 'C' or EBU phosphors
- D1 digital (ICC8 656) plug-in decoder option for system interconnected in the 4:2:2 format
- Remote control panel for up to 64 monitors
- Aux input on front panel for monitor test generator input
- Horizontal and vertical delays for pulse cross displays with unique 3X magnification feature for detailed analysis of the vertical interval
- Split screen (A + B) display
- Automatic or manual degaussing

The microprocessor auto setup facility rapidly and accurately calibrates gray scale and white and black levels. With the NTSC or PAL decoder option, chroma gain and phase are also set automatically.

PESA's DG6250 monitor test generator is used for the auto setup function. It is 1 RU high x 1/2 RU wide and has a capacity of up to 64 patterns. It includes a TTL level RS-232 serial link and 2 composite (NTSC) outputs so it can be plugged into the front of the monitors. Software drivers are integral to the BM4420/4444 monitors to accept Minolta W2150 and Thoma TFM3 color analyzers. A second RS-232 serial link is provided to accept a variety of standard analyzers.

Calibration from a previously set up BM4400 Series monitor can be transferred to other monitors via the serial link from the DG5520 (NTSC) or DG6250 (PAL) monitor test generators.

Precison plug-in NTSC or PAL composite decoder option provides low distortion and a full bandwidth luminance output with minimal chroma crawl and ringing on vertical picture details. An analog comb filter based on current feedback filters and 1H delay are used. An active notch filter, with virtually no ringing, provides exceptionally high performance.

Unique direct acting controls and monitor memory for settings. Key switches are used for commonly selected functions. Single on-screen menus are used for other functions to minimize keystrokes. User settings can be stored in non-volatile memories and recalled at will.

**BM4414 14" monitor**...

**BM4420 20" monitor**...
2100 Series WorkStations*

2104 Video WorkStation With Entry-Level Effects
* Sequencing, transitions, variable-axis smooth compression and expansion, variable smooth placements and cropping, variable-sized borders, pushes, pulls, wipes, cuts, posterize, tints, mosaics, field strobe and acceleration

2104 ........................................... $10,990.00

2110 Video WorkStation With Software-Based Digital Effects
* Full-featured effects system that combines transparent picture quality and smooth picture movements with a unique, software-based architecture * Includes Video WorkStation chassis; control panel; effects system software; montage frame buffer; key processing channel; and 25' control cable * Pre-programmed transitions including push, wipe, compress, blinds, transposes * Variable axis smooth compression and expansion * Automatic flips and tumbles * Full manipulation of live, frozen, cropped, or bordered images * Posterization, tinting, mosaics, mirrors * Multi-image and multi-freeze * User-definable effect sequencing * Effect acceleration and deceleration * Unique "montage" storage buffer

2110 ........................................... $14,990.00

2120 WorkStation With FreezeFile
* Provides an unbeatable combination: the ability to store and retrieve images, plus all the digital effects and transitions found in the 2110 * Digital processing ensures no multi-generation loss of picture quality * FreezeFile capacity: 280 fields or 140 frames, standard * Image recall: 0.7 seconds * Stack sequencing of stills * Stores key signal along with the video

2120 ........................................... $19,990.00

2130 WorkStation With Paint, FreezeFile and Digital Effects
* Adds 32-bit paint capability to the Video WorkStation * "Painter" features full-color image capture from any video source, cut and paste, stencil, mask and embedding of text, shapes and masks * Continuous pan and zoom * 22 vector-based fonts * Custom brushes, pattern brushes, pattern fills * Airbrush, custom airbrush * Undo * Integration with FreezeFile and digital effects * 16.7 million colors * Digitizing tablet; pen with cancel button * Keyboard

2130 ........................................... $29,990.00

2140 WorkStation With 3-D Animation
* Adds 32-bit modeling and animation to digital effects, FreezeFile, and 32-bit paint * Completely integrated solution to your production challenges * Easier to use and much more affordable than a rackful of single-function products * Up to 16,000 polygons per object * Anti-aliased object intersections * Multiple view ports * 19 light sources with independent control of color, position and movement * Flat, smooth, Phong, or Gouraud shading * Key-frame-accurate animation choreography * Real time color or wireframe animation preview * Texture mapping, reflection mapping * Built-in encoder and decoder * 8 additional Bitstream fonts * Floating point processor * Extended 3-D memory package * Trajectory calculations * Serial VTR control

2140 ........................................... $49,990.00

Options (must be specified at time of system purchase)
CAO Component Analog Option (for 2100 and 3000 series) ......................................................... $950.00
HD200 200M byte hard drive (for 2100 and 3000 series) ......................................................... $2,490.00

Upgrades Ordered After System Shipment
KCA2100 Component analog upgrade (kit for 2100 series) ......................................................... $2,495.00
KHD200 200M byte disk drive kit (for 2000, 2100, 3000 series) ......................................................... $3,590.00
KAPG-3 Accelerated Graphics Processor (kit for 2000 or 2100 series) ......................................................... $4,490.00

Prices and Specifications Subject to Change Without Notice.
GRAPHIC DESIGN WORKSTATION/ DIGITAL VIDEO EFFECTS

3000E Graphic Design Video WorkStation
The Graphic Design WorkStation integrates full-color paint and 3-D modeling in a system configured especially for graphic designers and artists. The excellent price/performance characteristics of the 3000E make it possible for designers and artists working with limited budgets to perform up to their full potential.

3000E: Full-Color Paint Capability With “Painter”
• 18.7 million colors • Continuous pen and zoom • Cut and paste, stencil, mask • Airbrush • Custom brushes • Perspective and rotation of cutouts or full-screen images • Embossing of text, shapes and masks with selected depth, angle, intensity • Color dithering • Pattern brushes and pattern fills • 22 high quality vector-based fonts, including special symbols • Mosiac capability to save palettes, patterns, stencils, cutouts, custom brushes • 32-bit paint capability and full-color image capture from any video source. The 3000E’s Painter features wash capability.

3000E: 3-D Modeling With “Sculptor”
• 3-D modeling is simplified with Sculptor’s menu-based, tablet-driven modeling capabilities • Once a model is formed, Sculptor’s powerful object editor permits fine sculpting by allowing addition or deletion of points, edges, facets • Encoder and decoder are included • Modeling with lines, primitives, extrusions, surfaces of revolution, spirals • High-speed rendering • Multiple view ports • 19 light sources with independent control of color and position • Texture mapping • Flat, smooth, Gouraud, Phong shading • Reflection mapping • Variable transparencies of solids and textures • Cross-sectional modeling • Automatic wireframe outline • Anti-aliased object intersections • Up to 16,000 polygons in a model • Resolution: 768 x 484 pixels • Maximum output resolution: 4K x 4K

3000E: “Animation”
• Keyframe accurate animation choreography with automatic in-betweening • Camera” position (viewer vantage point) animation • Animation of each light source • Real time color or wireframe animation preview • Field or frame animation (user selectable) • Metamorphosis • Hierarchical grouping/ungrouping • Drill, intersect functions • Output to tape or hard disk • Internal serial machine control is included

3000E Graphic Design WorkStation
• Includes Video WorkStation chassis; Painter full-color 32-bit paint system; Sculptor 3-D modeling system; Animation; vector-based anti-aliased multiple font package; digitizing tablet; pen with cancel button; keyboard; paint memory; 3-D memory; BSM byte hard disk drive; AGP-3 accelerated central processor with accelerated floating point processor; Video WorkStation integration software ................................................................. $43,990.00

Options
3000E-10 Expandable to Digital Effects
• Variable axis smooth compressions and expansions • Full manipulation of live, frozen, cropped or bordered images • Automatic flips and tumbles • Pre-programmed transitions • Postitioning, tinting, mosaics • Multi-image and multi-freeze • Effect: acceleration and deceleration • User-definable effect sequencing • Adds real time digital effects and montage capability to 3000E WorkStation (requires 2100 Series control panel) ................................................................. $4,990.00

3000E-20 Expandable to FreezeFile™ Image Storage
• Standard capacity: 55 frames or 110 fields. Larger capacities optional • Image recall: 0.7 seconds • Stack sequencing of stills • Stores key signal along with video • Once a graphic is complete, it can be digitally transferred to FreezeFile with no image degradation ................................................................. $4,990.00

386 RapidRender Option
• Provides faster rendering time, from 12 to 20 times faster than a 386 CPU ................................................................. $8,000.00

Prizm Video WorkStation: 3-D Software-Based Digital Effects
• Includes Video WorkStation chassis; control panel; alphanumeric keyboard; 3-D effects manipulations with warps, curvilinear effects and page turns; palette functions; advanced sequencing capability with sophisticated sequence motion path (TCBW) control and unique time line functions; line key output; high resolution menu driven user interface • Full bandwidth 4:2:2:4 image processing with luminance sampling at 13.5MHz • Remote control with GPI, RS-232 and RS-422 • Standard input is YUV/RGB switchable and YUV output • Designed for future expansion • Menu monitor sold separately ................................................................. $26,990.00

Composite Option
• Adds composite input/output • Built-in input A/B switcher switches sources within a sequence • Built-in downstream linear keyer/mixer provides keying over background video ................................................................. $1,990.00

3-D Montage Option
• 3-D multi-layering creates collages • Digital trails with sparkles, motion blur and “slinkies” • Dynamic drop shadows add depth to image motion ................................................................. $6,990.00

Still Store Option
• Integrates a 200M byte still store to digitally freeze and store up to 400 images • Integrates with digital effects to allow still image layering • Easy still access via name, number or memo • Requires 3-D Montage option ................................................................. $4,990.00

“Flying” Linear Key Option
• Includes the ability to manipulate keyed characters and graphic logos • Full bandwidth (8-bit) linear key processing ................................................................. $3,990.00

DVEStor Option
• Blends the artistry of 3-D modeled animation with the power of real time digital effects • Effects include Toroids, Cylinders, Spheres, Exploding and Folding Cubes, Shards, Surface Extrusions, Intersecting Planes, Beveled Edge • Picture Framing, Shattering • Tiles and more • A whole generation of page turns and page rolls can be created in just 1 pass • Other features include Variable Light Sources, Intensity Variations, Shadows and Flares • A set of pre-programmed effects is included ................................................................. $15,990.00

DVEStor Creation Kit
• For users who want to create their own DVEStor sequences • The creation kit lets you PO model shapes offline • Requires PC with memory expansion and Vista board • Can also be used with any standard 3000 series ................................................................. $9,990.00

Additional Disk Drive—Fixed
• The Prizm Video WorkStation can accept up to 8 drives • Each additional fixed drive adds 200M bytes of memory and increases the still store capability by up to 400 images ................................................................. $3,990.00

Additional Disk Drive—Removable
• Removable disk drive adds 44M bytes of memory with a capacity to store up to 80 images • Removable diskettes are easily interchanged, allowing users to create their own libraries • Includes 1 diskette ................................................................. $3,990.00

44M Byte Removable Disk Cartridge
• For use with removable disk drives ................................................................. $190.00

Dual Channel Combiner
• Simultaneously manipulates real time video images from 2 Video WorkStation ................................................................. $4,590.00

VGA-Compatible Menu Monitor
• 13” screen size ................................................................. $690.00

Prices and Specifications Subject to Change Without Notice.
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.

- Model: Recorder Carried
  - MO-VA500 Sony VA500 Beta Playback adapter
  - MO-8220 Sony PVM-8220/SVM-8221 8” Monitor
  - MO-CT500 Panasonic CT-500 5” Monitor
  - MO-22U JVC TM22U44U41U
  - MO-5863 Leader LVM-5863A Wave Monitor
- Large Portable Monitors (remove from case to use)
  - MO-AG500 Panasonic AG-500 10” Monitor/Player
  - MO-AG508 Panasonic Monitor/Player
  - MO-1328 Panasonic PVM 1328
  - MO-AG-513 Panasonic AG-513
  - MO-PVM-749 Panasonic PVM-749
  - MO-1343Q Sony PVM 1343Q, 1540Q
  - MO-EB101 Sony PVM-810 Monitor/Player
  - MO-RSU JVC TM-RSU
  - MO-139 Panasonic CT-139 13” Monitor

Heavy-duty shoulder strap included, firm grip hardwood handle, great lightweight transport case.

- Tripod Mummy Case
  A new sort of case for professional tripods with fluid heads from Porta-Brace®. A soft, lightweight, thickly padded Cordura® Case that is waterproof and durable. There are pockets for many accessories; handles, tripod platforms, fish poles and mics. Also will carry a lighting kit with light stands. Comes with maple wooden handle and shoulder strap.
- TM (length in folded position) $237.00

Porta-Brace® Run Bags (now in 3 sizes)
Why should a run bag be cluttered? Speed is necessary, so be organized; find those spares and extras in a hurry.
- RB-1 Size: 7”W x 9”H x 18”L $120.00
- RB-2 Size: 7”W x 9”H x 21”L $125.00
- RB-3 Size: 7”W x 9”H x 25”L $130.00

Porta-Brace® “Grip”
Versatile, heavy-duty case for studio or field use, with options for Tripod Mummy Case.
- Options: available from $657.00

Porta-Brace® Waist Belt Production Pack
Basic Pack includes waist belt w/quick-release buckle and two multi-pocked, general-purpose pouches, other specialized pouches can be added. (Designed for BETACAM users and others)
- BP-2 $112.00

Porta-Brace® Rain Covers
Protection against dust as well as moisture damage with this tailored rain cover for individual three-tube models. RAIN COVERS for all popular three-tube cameras. Specify camera model number. For stand alone cameras only.
- RC-(No, your camera) ... from $142.00

Porta-Brace® Rain Slicker
Newly developed Rain Slicker is a lightweight cover for camcorders and is at home on the shoulder or a tripod. It provides dedicated protection as it covers the entire camcorder, top to bottom. All controls are accessible through covered zipper opening.
- RS ( ) for camcorders only $180.00

Porta-Brace® Carry-On Camera Case
This camera case has been designed to meet FAA suggestions for carry-on luggage: 9” x 14” x 32” for underseat storage; 10” x 14” x 36” for overhead. The Carry-On still offers protection from bumps, dust, rain and snow while in transit.
- $238.00

Porta-Brace® Audio Cases
All access openings are weather-protected, with pockets for cassettes, batteries, mics, etc., a shoulder strap and waist belt is included.
- Nagra 4.2 $219.00

Prices and Specifications Subject to Change Without Notice.
VIDEO CASES

Porta-Brace® Shoulder Cases w/Rain-Top for Camcorders.

Full-time Shoulder Case provides protection against bumps, scrapes, dust, heat and cold on your shoulder or off.
NEW 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 be sure to send camera model number...re- cord model number...and battery style. $292.00

Porta-Brace® CamCorder Special Camera Case

With the advent of the professional H8 camcorders, this case provides padded protection as well as ample room to carry cassette, batteries, and handle grip inside, with pockets on the outside for papers, notes and window pocket for identification. $175.00

Porta-Brace® Director Case

Room for Producer/Director tools of the trade plus a detachable SLR or small video camera bag to take for candid shots. $185.00

Porta-Brace® Production Cases

Large Capacity Organizer Cases
Heavy-Duty Shoulder Strap Included
PC-1 one divider, five outside pockets, two mesh pockets $295.00
PC-2 two dividers, five outside pockets, six see-through mesh pockets. $322.00
PC-3 seven outside pockets, three dividers, two extra end handles (for two-person carry), nine see-through mesh pockets. $345.00

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 $185.00
PC-202 Lights and tapes case, one divider, one clip-on pouch, one see-through mesh pocket, five outside pockets $178.00

Porta-Brace® Tech Case (2 sizes)

This newly designed carrying case is a versatile over-the-shoulder bag designed for engineers, technicians, reporters and other video professionals. This case can be used as a combination personal bag and service equipment bag.
TC-1 Dimensions 4"W x 11"H x 15"L $148.00
TC-2 Dimensions 5½"W x 12½"H x 17½"L $162.00

Porta-Brace® Tool Kit Case

As a companion to fit into the Tech Case, a small optional Engineer’s Tool Kit Case is available.
TC-T Dimensions 2½"W x 9½"H x 6¼"L $70.00

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. $275.00

Porta-Brace® Sack Pack

This new production case from Porta-Brace® is a very basic carry case for paraphernalia of all kinds and is available in three sizes. $260.00
It is as easy to use as a shopping bag, with the quality of a Porta-Brace® production case, with cinching cord security.
SP-1 1½"W x 14½"H x 15½"L $70.00
SP-2 1½"W x 16½"H x 17½"L $75.00
SP-3 1½"W x 18½"H x 19½"L $80.00

Porta-Brace® Production Vest

Porta-Brace has designed this Vest especially for ENG, EFP photographers. Pockets are provided for cassettes, batteries, cables, microphones and accessories. Provisions are made for attaching other optional Porta-Brace accessory pockets. The Vests are a generous cut for wearing over heavy clothing.
VP-1 Sizes S, M, L, XTall $185.00

Porta-Brace® Camera Strap

This strap is designed for use with camcorders and cameras. Use clips supplied by Sony, for cameras with loops, feed strap thru loop for secure hook-up or request 1" snap hooks to provide quick release.
HB-20CAM $38.00
HB-40CAM $38.00

Porta-Brace® Lightning Case

Soft-shell, padded, 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 total lights and other lighting accessories. Accommodates two lights fully assembled.
LC-1 7½"H x 10½"W x 42½"L $260.00
LC-2 10½"H x 12½"W x 47½"L $275.00

Porta-Brace Light Pack (now in 3 sizes)

This pack for lighting equipment is compact, yet carries just about any combination of lighting gear needed for ENG or EFP production work. A unique stack system of compartments with zippered-hinged doors, provide speedy access to lights, barn doors, stands, umbrellas, gels, gel frames, reflectors, cables and clamps. Designed to carry by hand or as a hands-free back pack, this case will get all your lighting equipment to the job comfortably and efficiently.
LP-1 $260.00
LP-2 $275.00
LP-3 $285.00

Prices and Specifications Subject to Change Without Notice.
PORTA-PATTERN

Test Chart System

The PORTA-PATTERN Test Chart System is a convenient, lightweight 9" x 12" chart size 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 3-point positional alignment. A spirit level is an integral part of the unit's design for horizontal alignment accuracy. Optional Microphones and Light Stand Mounting Adaptors allow the system to be stand mounted with the same alignment capabilities.

The system contains 1 each Resolution, Linearity, Registration and Logarithmic Reflectance Charts. The charts are mounted in recessed, high-impact plastic frames for chart surface protection. Charts are placed in order of usage. After use the front chart can be reversed so all chart surfaces are protected.

001-10 4-Chart System, including 001-24, -25, -26, -27 charts ...................................... $419.00
001-10E 4-Chart System, including 001-24, -25, -26, -44 charts ...................................... $429.00
001-15 Microphone Stand Adaptor .................................................................................. $42.00
001-16 Light Stand Adaptor ........................................................................................... $47.00
001-17 Aluminum Frame Assembly complete w/o adaptors ........................................ $259.00
001-20 Dual System Carrying Case .................................................................................. $108.00
001-21 Single Chart Carrying Case .................................................................................. $78.00
001-24 Resolution Chart ................................................................................................ $95.00
001-25 Linearity (Ball) Chart ......................................................................................... $95.00
001-29 Registration Chart .............................................................................................. $385.00
001-27 9-Step Log Chip Chart ........................................................................................ $125.00
001-30 BBC Zone Plate Chart 525-Line .......................................................................... $190.00
001-31 BBC Zone Plate Chart 625-Line .......................................................................... $190.00
001-32 Multi-Burst Chart ............................................................................................... $95.00
001-33 Window Chart .................................................................................................... $95.00
001-34 Chess Board Chart ............................................................................................. $95.00
001-35 Reverse Registration Chart ................................................................................ $385.00
001-36 BBC #61P Flesh Tone Reference Chart ............................................................... $199.00
001-38 CCIR Linearity Ball Chart ................................................................................... $95.00
001-39 Auto-Registration Chart ...................................................................................... $95.00
001-42 Line Resolution Chart ........................................................................................ $95.00
001-44 11-Step Log Chip Chart ..................................................................................... $140.00
001-45 Depth of Modulation Chart Revision 1984 ......................................................... $95.00
001-48 BBC #62 High-Saturation Color Bar Chart ......................................................... $229.00
001-49 Lens Back Focus Chart ....................................................................................... $95.00
001-50 Concentric Resolution Chart for CCD Camera Applications ............................ $119.00
001-51 Radial Resolution Chart for CCD Camera Applications ..................................... $119.00

Electronic Field Production (EFP) 3-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 3-Chart System which will accept any combination of 3 charts presently available in the PORTA-PATTERN catalog.

The system consists of 3 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 3 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 3-Chart System in a package 16" H x 18" W x 1½" thick.

014-10 EFP 3-Chart System with 3 Black and White Geometric Test Patterns, including case .................. $295.00
014-11 EFP 3-Chart System with 2 Black and White Geometric and 1 9-Step Log Chip Chart, including case ............................................................... $330.00
014-12 EFP 3-Chart System with 1 Black and White Geometric, 1 Log Chip and 1 other Color Bar, BBC #61P Flesh Tone or Pulse Bar Chart ........................................ $385.00

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 tight and flat seal when the system is closed. Each system includes a black vinyl case for carrying and storage. There are 3 DUOCHART systems to provide the right information for set-up and evaluation.

020-10 Resolution/Linearity ......................................................................................... $185.00
020-11 Registration/9-Step Log Chip ............................................................................. $205.00
020-12 Multi-Burst/BBC #61P Flesh Tone Reference ................................................... $235.00
020-13 Registration/11-Step Log Chip .......................................................................... $215.00

Prices and Specifications Subject to Change Without Notice.
# TBCs/SYNCHRONIZERS

## 7.5MHz Series Time Base Corrector and Synchronizer
- Designed for broadcast and cable systems true wideband applications
- Available both with and without digital effects
- Variable noise reduction up to 20dB
- Flat response out to 7.5MHz
- Allow passage of VITS and VIRS as well as closed caption data and transcode between all popular composite and component VCR formats

### HR600+ Series High Resolution Multiformat Transcoders
- Over 600 lines of resolution
- 7.5MHz bandwidth
- Available with and without digital effects
- True component Y/C, Y/688, Y/R-Y/B-Y and composite - in and out
- Transcodes between Y/C, Y/688, Y/R-Y/B-Y and composite - all outputs available with any input type
- Time base corrects: 1/2" and 3/4" VCRs (Betacam, Betacam SP, MII, U-Matic, U-Matic SP, S-VHS, ED Beta)
- Corrected outputs conform to EIA RS-170A and may be referenced to external genlock sources

### S Series Time Base Correctors/Synchronizers for S-VHS and ED Beta 1/2" and 3/4" VCRs
- Available with and without digital effects for true component processing
- All S series products work with Y/C (S-VHS) input and output; composite input and output and transcode between Y/C and composite
- Corrected outputs conform to EIA RA-170A and may be referenced to external genlock sources
- True component processing

### NTSC Composite Series for 1/2" and 3/4" VCRs
- Full 8-bit composite time base correctors and synchronizers, with and without digital effects
- Dynamic tracking
- Drop-out corrector
- 3.58 feedback
- Excellent freeze frame capabilities
- All of these products are designed to work with NTSC composite input and output
- Corrected outputs conform to EIA RS-170A and may be referenced to external genlock sources
- True component processing

### Wideband Down Link
- 700 7.5MHz without effects ........ $7,950.00
- 701 7.5MHz with effects .......... $8,950.00
- 705 7.5MHz TBC composite only .... $6,950.00
- 710 7.5MHz Synchronizer with limited effects .... $10,950.00
- 711 7.5MHz Synchronizer with full effects .. $11,950.00
- 750 7.5MHz Synchronizer composite only .... $8,950.00
- RGB Option RGB In/Out ........ $1,500.00

### Multi-Format Transcoders
- 800 HR600+ without effects (High Res.) .... $5,950.00
- 801 HR600+ with effects (High Res.) .... $6,950.00
- 810 HR600+ Freeze Frame (High Res.) limited effects .... $8,750.00
- 811 HR600+ Freeze Frame (High Res.) full effects .... $9,750.00
- RGB Option RGB In/Out ........ $1,500.00

### Y/C Component
- 150S S TBC + without effects ........ $3,590.00
- 100S S TBC + with effects ........ $4,590.00
- 250S S TBC SYNC + limited effects ........ $5,590.00
- 200S S TBC SYNC + full effects .......... $6,590.00

### Basic Functions
- 50 TBC/Freeze .......... $2,995.00
- 50S TBC/Freeze with "S" option (S495) .... $3,490.00
- 25 TBC/Timer ........ $1,995.00
- 25S TBC/Timer with "S" option (S495) .... $2,490.00

### Standard
- 150 TBC + without effects .......... $2,990.00
- 100 TBC + with effects ........ $3,990.00
- 250 TBC SYNC + limited effects ........ $4,990.00
- 200 TBC SYNC + full effects .......... $5,990.00

All products work with 525 line NTSC composite in and out and transcode to and from all signals indicated.

Prices and Specifications Subject to Change Without Notice.
Clean Cut/EFX Compact A/V Production Switcher

- 4 channels are time base corrected and synchronized
- Input non-synchronous sources, output RS-170A sync
- 4 stereo audio-follow-video switching inputs standard
- Built-in digital effects — single channel effects, dual channel transitions
- Option “S” provides 4 additional S-VHS type inputs with S output and transcoding between composite and S-VHS

The Clean Cut/EFX is a low-cost, high-performance, compact switcher for video production projects. This switcher offers extremely easy operation and quality video handling. All channels are time base corrected and synchronized, allowing for input of up to 4 non-synchronous sources, such as cameras, free running VCRs, character generators, or satellite feeds, with internal locking of all sources to RS-170A sync for broadcast quality output. Also included as standard are 4 stereo audio-follow-video switching inputs. Plus, the Clean Cut/EFX has built-in digital effects which can be applied to a single channel or used in transitions between channels. Single channel effects include field/frame freeze and strobe, mosaic, posterization and sepia. Transition effects include variable-rate wipes with 15 patterns (forward and reverse), vertical “pull-over” transitions, fade-to-black and a unique “peek-through” digital dissolve where pixels of the new video gradually replace those of the prior source.

Specifications

Video Interface
- Inputs: 4 composite, 1.0V p-p, 75 ohm, BNC
- Outputs: 1 composite/program, 1.0V p-p, 75 ohm, BNC; 1 composite/preview, 1.0V p-p, 75 ohm, BNC
- Genlock In: High impedance, looping, 2 BNCs (300mV sync)
- V-OUT: 1 BNC, 1.0V p-p, 75 ohm

Video Performance
- Window: >525 lines
- Bandwidth: 4.2MHz (composite)
- S/N Ratio: 58dB
- Differential Phase: 1.5°
- Differential Gain: 1.5%
- K-Factor: 3%
- Sampling: 8-bit Luma; 8-bit Chroma
- Residual Time Base Error: ± 15ns

Video Effects
- Between Channel: 15 wipe patterns; border on/off (2 sizes); vertical “Pull-on” and “Pull-off” (V-lock inputs for optimum results, V-out provided); normal or reverse (wipes/pulls); “Peek-Thru” pixels to next picture; 4 transitions (poster, mosaic, fade-to-black, cuts); midpoint “Hold” (transitions/wipes); selectable effects/transitions rate (1/2 to 2 sec.); GPI #1: transition, GPI #2: freeze/strobe
- Single Channel: Freeze frame/Field 1 or 2; variable strobe; variable posterization; variable sepia; variable mosaic; N.O. or N.C. contact closure switch selectable

Audio Interface
- Inputs: 4 stereo, RCA connectors
- Outputs: 1 stereo/program, RCA connectors; 1 stereo/preview, RCA connectors

Audio Performance
- Audio-follow-video or breakaway
- Frequency Response: 20Hz to 20kHz
- S/N Ratio: 80dB

Operational Controls and Indicators
- Power Switch (on/off): 2-position rear panel
- Video Level (preset switch): ± 3dB
- Color Level (preset switch): ± 3 to -60dB
- Setup Level (preset switch): ± 10 IRE units
- Hue (preset switch): ± 45°
- Video Level Indicator: 7 LEDs (4 yellow, 1 green, 2 red)
- Genlock Indicator: LED (green)
- Bypass Switch: Push-on/push-off (may be bypassed to input #1)
- Horizontal Phase Adjust: ± 1µsec, front panel trimpot
- Burst Phase Adjust: >360° front panel trimpot

Clean Cut/EFX - $5,850.00
"S" Option: Adds 4 S inputs, 1 S output and transcodes any S or composite input to S or composite output

accESS Electronic Still Store
- On-line (hard disk) 75 frames/150 fields
- Video control panel (5" x 6" x 1"): sequence generate/recall; proc. amp control; I/O type select; store; recall
- In and out transcoding types: composite; Y/3.58; Y/R-Y/B-Y; RGB
- All types in and out
- 19" rackmountable
- Access time: normal mode < 1.5 sec.; turbo mode < 0.4 sec.
- Backup (removable disk) 2 frames/4 fields
- Accepts — non time base corrected/non synchronized inputs
- Multiple preprogrammable sequences
- Digital sampling — 4:2:2
- Size: 7"H x 19"W x 17"D
- Power: 110VAC, 200W max.
- Available in NTSC and PAL

500 accESS - $10,950.00

Options
- 50ESS On-line (hard disk) 350 frames/700 fields - $1,350.00
- 51ESS Backup (removable tape cartridge) 80 frames/180 fields - $1,250.00
- 52ESS Library control system - $5,850.00

* To Be Announced
VIDEO PRODUCTION
EQUIPMENT

408 Colorbar Generator
- SMPTE colorbar generator with 8-character ID positionable within the active area
- 64 characters, numbers and symbols available for each of the 8 character positions
- Field programmable via internally mounted DIP switches
- ID flashing or constant
- 1 blackburst output
- 1000Hz audio tone
- $1895.00

424 Colorbar Generator
- Same as 408 except 24-character identification
- $1995.00

CB2440 Vertical Interval Identifier
- 24-character front panel programmable vertical interval identifier
- Stores up to 40 different 24-character IDs
- ID appears over SMPTE colorbars during setup and drops into the VBI of program feed when the bars are dropped
- Stereo 1000Hz audio tone
- 2 blackburst outputs
- $3695.00

7700 Portable Colorbar/Blackburst Generator With ID
- Fully self-contained split-field colorbar generator featuring an 8-character DIP switch programmable ID
- Can operate for more than 14 hours from 8 internal double-A alkaline batteries or will accept an external 9-15VDC
- Flip-top case allows quick access to the batteries and ID switches
- ID appears over user furnished video in setup mode
- $1395.00

2048 Message Generator
- Message generator with front panel LCD 2-line readout
- Full system control via RS-232 port or keyboard
- Uses AT type keyboard (not included)
- Stores over 6300 characters in up to 99 messages, with a maximum individual message length of 255 characters
- Sequences up to 10 messages
- Automatic crawl of messages longer than the 24-character display window
- $1995.00

2400 Video Identifier
- 24-character video identifier
- Designed for identifying satellite video uplinks, with 10-digit telephone point of contact programmable from front panel
- 12 internally programmable alphanumeric characters for FCC license number and user identification and a 2-digit user number controlled from the front panel
- ID appears in active picture area over user furnished video in setup mode
- ID can be deleted or switched to the VBI during program transmission
- $1995.00

6331 Multiple ID
- RS-232 controlled
- Microprocessor operated system produces independent IDs on 6 video sources
- Each ID may consist of up to 31 characters per line and up to 3 lines of characters
- Vertical position and size are individually adjustable
- Requires computer/terminal or QSI 2048 for control
- $1995.00

PCID-864 Portable Identifier
- Portable (ENG) camera identifier with 8 characters
- Internal selection for active picture area or VBI display
- 32-hour operation from 9V alkaline battery, or operates from external DC
- Belt/pocket clip
- Active area/vertical interval display
- Lightweight flip-top case
- External floating power supply 12-20VDC or 8-15VAC
- $625.00

VSID-24 Video Source Identifier
- Remote control of active/VBI display
- Remote display delete
- Remote display flash
- 1 rack high
- 1 to 24-character display
- Field changeable characters
- Digital vertical positioning
- Display flashing or constant
- $1695.00

*To be announced

Prices and Specifications Subject to Change Without Notice.
1500 Stereo Demodulator
• 155 channels in broadcast and CATV bands • Full system power-down memory • Fast channel change • Last tuned channel memories • Stereo, mono and SAP balanced audio • 2 RS-232 control modes • 1 rack high
1500 ........................................ $1995.00

2000 Stereo Demodulator/Processor
• 155 channels covering broadcast and CATV bands • Full sync, burst and blanking replacement • Stereo, mono and SAP balanced audio • Front panel phasing and setup controls • 2 RS-232 remote control modes • CCD Y/C separation with front panel chroma and luminance control • Fast pushbutton channel selection • Full system power-down memory • Last tuned channel memories • 1 rack high
2000 ........................................ $3495.00

3000 Safe Area Generator
• Generates 6 different safe area patterns (per SMPTE RP 27.3) plus 2 cross-hatch patterns over user’s video • Front panel adjustable marker level, plus pushbutton pattern selection and marker delete • Relay bypassing on power-down • 13/4"H x 19"W x 12"D • Rackmount • 115VAC
3000 ........................................ $995.00

3100 Portable Safe Area Generator
• Easy pushbutton selection of 4 built-in patterns, front panel pattern intensity adjustment from black to white, Hi-Z looping input and separate monitor output • Drawing only 80mA, operates for hours from most 10-15VDC battery systems found in field production, making it ideal for remote shoots • 1 1/8"H x 8"W x 5 5/8"D
3100 ........................................ $695.00

5400 Sync Processor
• Sync processor with full sync, burst and blanking replacement • Line-by-line selectable replacement in the VBl of either field • Front panel controls for video gain, burst gain, burst phase, horizontal phase and setup • Automatic bypass on loss of lock • 1 3/4"H x 19"W x 12"D • Rackmount • 115VAC
5400 ........................................ $1995.00

5700 Automatic Video Switchover
• Automatic video switchover switches to auxiliary source on program loss, low amplitude or excessive noise • Front panel indication of input and output states • Local/remote override to either program or auxiliary source • Adjustable hang and hold times • Adjustable noise and amplitude windows • Defeatable alarm on program loss • Relay bypass (program to output) on power-down • 1 3/4"H x 19"W x 12"D • Rackmount • 115VAC
5700 ........................................ $1795.00

6100 Microwave AGC Meter
• Produces variable length, vertical interval single white line in response to microwave receiver’s AGC output • Loop-through input picks up AGC flag • Selectable vertical interval flag line for multiple hops • 117VAC • 1 1/8"H x 8 1/2"W x 5 5/8"D
6100 ........................................ $695.00

VT-7 Video Leader Countdown Generator
• 10-second video leader countdown generator • 7-segment character in 8 user selectable sizes or expanding incrementally in size as countdown progresses from 10 seconds to 2 seconds • 400Hz audio tone at each second passes, then 200Hz tone at 2-second mark • Rear panel remote • 1 3/4"H x 19"W x 12"D • Rackmount • 115VAC
VT-7 ........................................ $1595.00

6X1 VDA Video Distribution Amplifier
• 1 in by 6 out utility video distribution amplifier with front panel controls for gain and equalization • Very transparent • Input is loopthrough • Gain is adjustable from less than unity to +10dB • Equalization for up to 1000' RG-59U • Output isolation 40dB • 2"H x 4 1/2"W x 4 1/2"D • Desktop enclosure • 117VAC
6X1 VDA ...................................... $350.00
INTRODUCING THE QCP MARK I COMPUTERPROMPTER

QCP Mark I Computerprompter® Program
• IBM PC, XT and AT compatibility • True variable-speed, bi-directional, smooth scrolling • 4 fonts: 2 full uppercase and lowercase fonts as well as 2 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 3 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 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.

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.

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 many 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.
Orion SE Teleproduction Titling Systems

- Anti-aliased characters
- 5ns effective resolution
- Real time operation
- 256 levels of transparency
- 30M byte hard drive
- 72 anti-aliased fonts standard
- Disk-loadable fonts
- Font caching
- On-screen status display
- Full page directories
- Keyboard macros
- Adjustable safe title area indicators
- International character sets with accents
- Automatic page sequences
- On-air functions suited for live broadcast
- Character overstrike
- Reveal by character, word or row
- 16.7 million colors
- Color spreads
- Rolls, multi-line crawls, reveals, flash—all at 99 speeds
- Fade with user-defined rate
- Built-in downstream linear keyer
- Broadcast quality encoder
- Y/C output
- 256 levels of transparency
- 30M byte hard drive
- 72 anti-aliased characters
- 5ns effective resolution
- Real time operation

Optional upgrades allow easy expansion to a Delta SX within the same chassis. 5 standard Delta master typefaces included in all models: American Typewriter, Bauhaus Medium, Bookman Medium, Futura Medium, New Helvetica Medium.

DELTA LE
- Fully compatible with all Delta pages and images.
- The single output channel provides RGB or YUV outputs, encoded and key signals along with an internal downstream keyer/fader.
- 3-button mouse
- Single 3.5" high density floppy disk drive
- 4M byte central processing unit

DELTA LX
- Incorporates all the features of the Delta LE with the inclusion of next page buffering for wipes, pushes and dissolves between pages.
- Will not support Logo Compose or Video Touch Up options.

DELTA SE
- Full featured dual channel/single user Delta with digital composite options between Preview and Program channels.
- Allows both channels to be digitally composited.
- Comes with 4M byte additional RAM for 8M byte total and 10 additional typefaces. Supports all options.

DELTA SX
- Incorporates all the features of the Delta SE with the following enhancements: DLT-CC Delta analog RGBA camera capture, 12M byte total central processing unit RAM memory, 180M byte hard disk drive, DLT-LC Delta Logo Compose software.

DELTA-KBD
- Additional remote keyboard, English standard.

LCK-ORI
- International language keycap conversion kit. Keycaps and keycap changing tool.

Prices and Specifications Subject to Change Without Notice.
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, 2 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 ¼ to 99 seconds per page
- Manual page sequencing—random or sequential, forward or reverse, 0 second dwell time
- Built-in 3½” disk drive—400 pages—second drive optional
- Built-in full terminal complement—sync/genlock RS-170, NTSC or PAL encoder full studio timing
- Graphic blocks/graphic separators—variable size and color
- Real time clock and date generator
- Full battery backup
- RS-232 data I/O port—optional
- 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 typeface 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.

QCG-38/DD/RS Dual disk drives $6,995.00

Note: The QCG-38 series is 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 3½” 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 3½” disk. The entire electronics chassis requires only 7” of vertical rack space.

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.

QCG-500/DD Dual drives $10,500.00
QCG-500/DD/RGB Same as QCG-500/DD with one ¾” rackmount, RGB/NTSC encoder $12,500.00

Prices and Specifications Subject to Change Without Notice.
ACM-1 All Channel Message System

The All Channel Message (ACM) System greatly expands the viewer communication power of a cable television system. ACM can place a static or crawling video message over the normal programming of any or all channels, at any time. It can interrupt programs with full-page text messages. Messages can be the same or different. The ACM system consists of an IBM® AT compatible computer, with ACM software that controls 1 or more ACM headend "chassis." Each ACM chassis contains 4 channels of switching and messaging in a 1½" standard rackmount configuration. Each channel contains 2 video inputs and can title over either input or act as a stand-alone character generator. Switching is stereo audio-follow-video. Each channel contains contact closure for external device control. System control is rematable.

- Multi-channel message display and switching for cable operators
- Syndex message and/or program switching
- Community emergency alert or preparedness
- Pay-per-view promotions on affiliated or selected channels—right up to show time
- Local sports scores, stock quotes, game results and graphic cable system I.D.s displayed on topical channels

ACM-1
Requires either DTU-10M or DTU-10C.
System control can be remoted...

DTU-10M Data Transfer Unit
Desktop IBM AT compatible computer, 19" rackmount chassis, separate keyboard, monochrome monitor, 640K RAM, 1.44M byte floppy 3½" drive, 30M byte hard drive, printer port for ACM control. Includes ACM-DTU software for switching schedules, text generation, video screen modes, event logs and external machine control commands. Will control up to 31 ACM chassis or 124 channels...

$3300.00

DTU-10S Data Transfer Unit Software
ACM control with customer provided computer...

$2000.00

QCG-34 Teleproduction Titling Generator
Fully self-contained, the QCG-34 provides for either stand-alone operation or may be integrated into a full television production studio. The proportionally spaced typeface styles provide 48 sizes per face style instantly on-line with Quanta's exclusive instant sizing.

- 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
- 4 styles
- 48 sizes per face
- 25ns at 32 scan lines 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 1½ to 99 seconds per page
- Manual page sequencing—random or sequential, forward or reverse, 0 second dwell time—Built-in 3½" disk drive
- 400 pages
- Second drive optional
- 49-page RAM with battery backup
- 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
- Dimensions: 4½"H x 15½"W x 14½"D

$5495.00

Microgen MG-100/PLUS Teleproduction Titler
- 50ns horizontal resolution
- Self-contained chassis
- NTSC or PAL
- Sync/color lock
- 4 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 backup
- 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
- Dimensions:

$3995.00

Prices and Specifications Subject to Change Without Notice.
SPEAKERS/AMPLIFIERS

COMPACT HIGH POWER SPEAKER SERIES

WS-A10 Compact Speaker
* Heat resistant voice coil 4 3/4" driver  * 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 (WS-A10W) or black finish  * Sold only in pairs
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 .................................................. each/$120.00

WS-A70 Compact Speaker
* 2-way design  * 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  * White (WS-A70W) or black finish

WS-SP2A Subwoofer processor (required for WS-A240) ................................................................. $275.00
WS-A70 .................................................. $240.00

WS-A80 Compact Speaker
* 2-way design  * 8" low frequency driver  * Consistent and reliable under conditions of very high input power  * Constant directivity Twin Bessel Horn  * Thermal protection circuit  * Heavy-duty construction  * Multiple mounting possibilities  * Power capacity: 80W  * Crossover frequency: 2.5kHz  * White (WS-A80W) or black finish
Housed in a virtually indestructible molded cabinet for portable service and multipurpose applications, 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, audio for video monitoring and many others.
WS-A80 .................................................. $280.00

WS-A200/WS-A240 Compact Speaker System
* 2-way design  * Maximum input power: 250W  * 12" woofer(s)  * Constant-directional Twin Bessel Horn (60° x 40°)  * Frequency range: 70Hz to 20kHz  * 1-piece molded plastic enclosures  * Unique stacking structure  * White (WS-A200/WS-A240W) or black finish

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 and 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 curve to 35Hz for greater impact in the bass frequencies.
WS-A200 .................................................. $1300.00
WS-A240 .................................................. $170.00
WS-SP2 .................................................. $510.00
WS-SP2A .................................................. $275.00

MODULAR SPEAKER SYSTEM

WS-A500/WS-A550 Speaker Systems
WS-A500 Modular 2-Way High-Frequency Speaker System Component
* Frequency Range: 100Hz to 20kHz  * Pressure Sensitivity (half space): 91dB, 2.83V, 3.3'  * Nominal Impedance: 8 ohms  * Power Capacity: 200W (EIA RS-426-A)  * Volume Displacement: 0.18lt  * Equivalent to: 125dB at 100Hz at 1m  * Reference Efficiency: 0.83% (half space)  * Component: 12" dynamic  * Inputs (21: Dual (parallel-wired) 4-pin Neutrik Speakon LF+; 2+, 2-  * Dimensions: 211/8"H x 159/16"W x 103/4"D  * Weight: 36 lbs.

WS-A500 .................................................. $1300.00
WS-A550 .................................................. $1810.00

WS-A550 Modular Low Frequency Speaker System Component
* Frequency Range: 30Hz to 100Hz  * Pressure Sensitivity: 91dB, 2.83V, 3.3'  * Nominal Impedance: 8 ohms  * Power Capacity: 400W (EIA RS-426-A)  * Volume Displacement: 0.021lt  * Equivalent to: 125dB at 100Hz at 1m  * Reference Efficiency: 0.83% (half space)  * Component: 12" dynamic  * Inputs: 1+  * Dimensions: 211/8"H x 159/16"W x 103/4"D  * Weight: 36 lbs.

Note: Typical system would use 2 WS-A500s and from 4 to 8 WS-A550s. Models WS-A500 and WS-A550 are meant to be components of a system and are not meant to be used separately.
WS-A500 Gray or white finish ........................................... $1300.00
WS-A550 Gray or white finish ........................................... $1810.00

Speaker Accessories
WS-AQW1 Speaker wall mount for WS-A500, WS-A550, WS-A200, WS-A240, WS-A80 and WS-A70  ............... pair/$170.00
WS-AQ2C Speaker ceiling mount for WS-A500, WS-A550, WS-A200, WS-A240, WS-A80 and WS-A70  ............... $150.00
WS-AQ2W Speaker wall mount for WS-A10 ........................................... $70.00
WS-AQ3C Speaker ceiling mount for WS-A10  ...................... pair/$40.00
WS-AQ124 Lean-back stand for WS-A500, WS-A200 and WS-A80 ........................................... $20.00
W2-SA14 Flexible speaker mount for WS-A10  ...................... pair/$150.00
W2-SA15 Mic stand speaker mount for WS-A10  ...................... $35.00

POWER AMPLIFIERS

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 to 20kHz (±0.5dB)  * High slew rate  * Controlled rise time  * No transient intermodulation distortion  * Dual voltage design  * Wattage ratings 8 ohms

WP-9055 2 x 50W, 1.75" rack space ........................................... $540.00
WP-9110 2 x 100W, 3.5" rack space ........................................... $699.00
WP-9220 2 x 200W, 5.25" rack space ........................................... $999.00
WP-9440 2 x 400W, 5.25" rack space ........................................... $1810.00

Prices and Specifications Subject to Change Without Notice.
RECORDING AND SOUND REINFORCEMENT MIXERS

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
- Handles multichannel 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) $3,290.00
WR-8118 (18 x 4 x 2 x 1) $3,990.00

WR-8210A Recording Console
- 10 inputs, 4 group outputs for versatile multitrack recording applications
- 48V phantom power
- Left and right stereo outputs
- 10 tape recorder sub-mix inputs
- 4 LED peak reading meters
- Direct outputs and access points on inputs
- Stereo effects returns, group outputs and monitor controls are simple to operate
- Sub-in section for tape or echo monitoring during recording and overdubbing

WR-8210A $2,550.00

SPECIAL APPLICATION MIXER

WR-450 6 x 2 Rackmountable Audio Mixer
- Excellent mate for Panasonic video equipment
- Each input has a low cut filter to help minimize low frequency noises
- Monitor circuitry can be used with mono or stereo cartridges
- VU meters track the overall volume level
- Unit has a monitor amplifier and front panel speaker
- Complies with broadcast and 2 sets 19" EIA racks
- Use with all mini-studio systems and microphones
- 15.4 lbs.

WR-450 $400.00

THEATER MIXING CONSOLES

WR-C900 Series Modular Mixing Consoles
- Available in 2 compact frame sizes
- Mono, stereo and submix inputs
- Up to 24 matrix outputs
- True Left-Center-Right panning
- Pricing varies depending on frame size and modules selected
- 64dB trim range
- Back-grounded switches
- Unity gain buffer, 6dB greater margin of stability

WR-C916SC Small size mainframe, SC type
(16-channel frame A) $16,200.00

WR-C924SC Large size mainframe, SC type
(24-channel frame A) $16,900.00

WR-C916SR Small size mainframe, SR type
(16-channel frame B) $16,200.00

WR-C924SR Large size mainframe, SR type
(24-channel frame B) $16,900.00

Optional Modules and Power Supply

WU-C901 Mono mic/line input module $2,100.00
WU-C902 Submix input module $2,300.00
WU-C904 Stereo input module $2,900.00
WU-C908 Matrix output module SC type $1,350.00
WU-C909 Matrix output module SR type $1,850.00
WU-BP901 Module blank panel (function space) for SC type $70.00
WU-BP902 Fader space blank panel for SC type (2 modules wide) $70.00
WU-BP903 Fader space blank panel for SC type (1 module wide) $60.00
WU-P9000101 Module blank panel (full module size) for SR type $100.00
WU-PS80A Power supply $1,800.00

The following optional modules are available:
- Optional modules for SR type
- Optional modules for SC type

WR-8616 Post Production/Recording Console
- 16 x 4 x 2 x 1
- Left and right stereo outputs
- XFMR balanced
- Phantom mic power, at each input
- 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 Includes four standard modules (WU-8103 x 2, WU-8104, WU-8105) and separate power supply (WU-8083). Optional modules are the WU-8101, WU-8102, WU-8106 and WU-8107.

WR-8616 $5,530.00
WU-8101 Mono mic/line input $280.00
WU-8102 Tape monitor group output $275.00
WU-8103 Master output $275.00
WU-8104 Monitor output $290.00
WU-8105 Talk-back/oscillator $170.00
WU-8106 Stereo line input $310.00
WU-8107 Basic group output $190.00
WU-8091 Blank $45.00
WU-8083 Power supply $725.00

POST PRODUCTION MIXING CONSOLES

WR-T820B Recording Console
- Extensive metering capabilities
- 20 inputs and capable of 8-track and 16-track recording
- Ability to simultaneously mix incoming signals with tape playback signals during overdubbing
- Pushbutton selection of electronically balanced mic, line or unbalanced tape signals
- 48V phantom power switchable for each channel
- Mono-solo monitoring on output signals
- Built-in talk-back
- Oscillator

WR-T820B $8,950.00

MIXER STANDS

WU-Z300 Mixer stand cross bar for WR-8616/T820B (requires WU-Z316) $370.00
WU-Z316 Mixer stand cross bar for WR-8616/T820B (requires WU-Z300) $148.00

Prices and Specifications Subject to Change Without Notice.
SOUND REINFORCEMENT MIXING CONSOLES
WR-S852/WR-S840F House and Stage Mixing Console
- House mixing configuration: WR-S852
- Stage mixing configuration: WR-S840F
- 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
- 40 inputs
- 8 bus outputs
- Many modules to choose from

Standard Modules:
WU-S84 group output module; WU-S85 master output module; WU-S86 effect return module; WU-S87 monitor module; WU-S88 talk-back/oscillator module

WR-S840F 40 input 8 bus stage mixing console. Mainframe, includes 5 standard modules (WU-S84 x 8, WU-S85 x 2, WR-S86 x 2, WU-S87, WU-S88) and WU-PS80A power supply
WR-S852 40 input 8 bus house console. Includes 5 standard modules (WU-S84 x 8, WU-S85 x 2, WR-S86 x 2, WU-S87, WU-S88) and WU-PS80A power supply

Optional Modules and Power Supply
WU-S81 Mono mic/line input module
WU-S82 Sub input module (2 modules wide)
WU-S83 Monitor input module for stage monitor console
WU-S89 Blank module
WU-PS80A Power supply

WR-S208/WR-S212/WR-S216 Stereo Mixers
- 2 channels on each console have stereo inputs on both line and phono/recorder inputs
- With the exception of the 2 inputs, all inputs are mono, electronically balanced mic/line inputs
- Each model offers 3 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, 8 mono mic/line inputs
WR-S212 2 stereo, 12 mono mic/line inputs
WR-S216 2 stereo, 16 mono mic/line inputs
WR-Q208 Rackmount adaptor for WR-S208

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
- 2 VU meters
- Frequency response: 20Hz to 20,000Hz
- Rugged construction
- Rackmountable

WR-133 $1,290.00
WR-Q51 Rackmount adaptor $87.00

WR-M10A Multiple Source Stereo 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-M10A $900.00

Prices and Specifications Subject to Change Without Notice.
DIGITAL AUDIO PRODUCTS

SV-255 Portable Digital Audio Tape Recorder
- High quality 13/4" H x 9" W x 5 3/8" D front to back
- 3.2 lbs.
- ADC digital filtering
- AD converter
- 64X oversampling
- 48kHz recording
- 44.1kHz/48kHz playback
- 2.2 hour continuous recording/playback
- next track number, tape counter/program step, inter-track detection level, battery indication
- Digital output terminal
- Direct access and skip search
- End search
- Auto recording mute
- Easy-to-operate L/R independent rec level control
- Headphone jack with level control

Standard Accessories
- Rechargeable battery pack (6V, 2AH)
- Battery recharger and AC adaptor
- Carrying case and carrying strap
- Digital output cable

SV-255 $2700.00

SH-DTC250 AC adaptor with battery charger $180.00

SH-DTR250 Battery charger adaptor for SH-DT8250 $70.00

SH-MC2 DC adaptor $140.00

SV-3700 PRO-DAT Recorder
- Front-panel shuttle wheel
- 0.5-15X speed range
- IR remote control
- 4 stage, 1-bit Delta-Sigma A-to-D converters
- Horizontal cassette tray
- Program, absolute and time-remaining displays
- Pushbutton selection of 44 1/4kHz sampling rates via either analog or digital inputs
- Pushbutton fade-in and fade-out functions
- Balanced inputs and outputs via XL-type connector with choice of -10dBu or +4dBm output levels
- Up to 400X fast forward/rewind and search speeds to provide high speed access to any point on a 2-hour DAT tape within 27 seconds

SV-3700 $1599.00

SSE-44 Wired remote control $400.00

SV-3900 PRO-DAT Recorder
- External computer or remote control of all transport functions
- 9-pin serial port can be switched to follow ES-Bus or P-2 protocols
- Compatible with all editing controllers and automation systems
- Full-function remote controller features a standard keypad for entering PND and Start IDs, plus all transport controls and a shuttle wheel with a speed range from 0.5X-15X play speed
- A single controller can also be assigned via the keypad to address any 1 of 32 different SV-3900 machines connected
- AES/EBU-format and S/P DIF digital I/O ports that carry start and skip ID within the sub-code area
- Horizontal cassette tray for convenient tape loading
- Program, absolute and time-remaining displays
- Pushbutton selection of 44 1/4kHz sampling rates via either analog or digital inputs
- 4-stage, 1-bit Delta-Sigma A-to-D converters
- Balanced inputs and outputs via XL-type connectors, with switchable -10/+4dBu output levels
- Up to 400X fast-forward/rewind and search speeds

SV-3900 $2100.00

SH-MK390 Wired remote control $400.00

Digital Audio Tapes
- RT-R120P Digital audio cassette tape, 120 minutes record and play
- $15.00

RT-R90P Digital audio cassette tape, 90 minutes record and play
- $13.00

RT-R60P Digital audio cassette tape, 60 minutes record and play
- $11.00

RT-RCLP Cleaning tape for digital audio tape recorder
- $13.00

WM-S1/WM-S2/WM-S5/WM-S10 Miniature Condenser Cardioid Microphones
- WM-S1 (50Hz-18kHz frequency response, 148dB maximum SPL) is specifically designed for use with cymbals and high-hats (with optional WM-Q01 mini-boom) and acoustic stringed instruments
- WM-S2 (120Hz-15kHz frequency response, 138dB maximum SPL) is designed for brass instruments, toms and percussion
- WM-S5 (70Hz-15kHz frequency response, 158dB maximum SPL) is designed for tom and snare drums, percussion and brass instruments
- WM-S10 (120Hz-15kHz frequency response, 138dB maximum SPL) is a headset-mounted microphone that allows hands-free vocals in addition to use with harmonica and flute

WM-S1 High SPL (phantom powered only) $210.00

WM-S2 Batteries or phantom powered $170.00

WM-S5 High SPL (batteries or phantom powered) $280.00

WM-S10 Headset mic (batteries or phantom powered) $220.00

WM-Q01 Telescoping mini-boom (for WM-S1, WM-S2 and WM-S5) $60.00

Prices and Specifications Subject to Change Without Notice.
**PRODUCTION SWITCHERS**

**RVS 424 Production Switcher**
- 24 inputs
- Complete switcher set-up storage
- Rotary and matrix wipe patterns
- Linear keys + RGB, component and encoded chroma keys
- Stores up to 50 complete effects set-ups
- Separate control of MLE1, MLE2 and downstream keyer
- Storage of memory and personality on 3.5" diskettes
- Main panel controls assignable to four fully timed buses
- Five independent auto transitions (six with DSK)
- Modify button
- Two completely independent pattern generators
- Four user assignable buttons have access to a library of additional patterns
- Pattern edges and colored borders can be hard or soft
- Rate-controlled positioner gives smooth pattern movement
- 12 mask generators
- Either RGB or component chroma key is available for each MLE

**Options**
- Editor serial interface
- Extended effects memory system
- RGB/component chroma keyer
- Chroma key switcher
- Linear key border generator
- Rotary, star wipe and pointer generator
- Matrix wipe generator
- Auxiliary buses
- Safe title area generator
- Redundant power supply

M424-001 ....................................... $39,950.00

**RVS 416 Production Switcher**
- Two 4-bus Multi-Level Effects (MLE) systems permit manipulation of eight sources simultaneously
- 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
- 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
- Modify button 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
- 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
- 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
- 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
- Key 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
- Event memory
- Pulse regenerator
- Combination RGB/encoded + Chroma keyer (216A only)

M416-001 Video production switcher, operator, technical and installation manuals, extender board, connector kit, mask generator on MLE1 and MLE2 10m cable ........................................... $29,950.00

**RVS 210A/216A Production Switchers**
- Three bus Multi-Level Effects (MLE) system lets you change backgrounds and titles without ever locking up the switcher
- Transition Preview system enables you to see every effect or wipe before you take it, even with the switcher on the air
- The Program and Preset buses operate in a flip/flop manner after a transition
- Independent auto transition for fade-to-black with post-fade preview system
- The fade can be stopped and reversed
- GPI inputs can start each of the three auto transitions. A fourth input can be assigned from the panel to control any one of the three
- Three matte generators provide color for MLE key and wipe borders, downstream key and background input
- All keyers offer video or matte fill, key invert and key masking using the pattern generator
- Key Memory. Both keyers "remember" key level and softness, fill, borders, etc., for each source
- Pulse processor inserts fresh sync and burst at switcher output for improved signal stability
- Three completely independent auto transition units, programmable from 1 to 999 frames
- Modify button gives access to a wide range of useful operational and diagnostic aids as well as many ways to "personalize" the switcher
- Edit button selects serial input from editing system
- 12 complete switcher set-ups can be stored and recalled including key levels, patterns, matte levels, transition information, etc. Shares the pattern selector control
- Offers 53 bordered wipe patterns providing excellent effects with the wide adjustment range of the colored soft border
- Pattern positioning is very smooth, thanks to the rate-controlled pattern positioner

**Options**
- Linear key border generator
- RGB chroma key
- Event memory
- Linear key border generator
- RGB/encoded + Chroma keyer

M210A-001 Video Production Switcher, tabletop model including 10m control cable, operator, installation and technical manuals ........................................... $9,995.00

M210A-002 Same as above except in-desk model ........................................... $9,995.00

**RVS 216A**
- Video Production Switcher, tabletop model including 10m control cable, operator, installation and technical manuals ........................................... $11,950.00

M216A-001 Same as above except in-desk model ........................................... $11,950.00

**Prices and Specifications Subject to Change Without Notice.**

283
TW Intercom System

- Over 25 different components and accessories
- Operates in full duplex mode, simultaneous talk and listen to and from each user station

**BP300 Belt Pack User Station**
This lightweight user station provides 2-channel operation and may be used in portable, semi-portable and fixed position applications...

**MRT327 User Station**
This modular package, 2-channel station features call signaling and remote talk/off. It can be used in a portable or permanent application, as a headset or speaker station...

**MCE325 Programmable User Station**
This modular package station features user programming, 2- or 4-channel operation, headset or speaker operation, call signaling, 4-wire mode, IFB and more...

**WM300 Wall Mount User Station**
This 2-channel, headset user station fits into a 2-gang electrical box or can be installed in a desk top as a low profile console mount station...

**MCS325 Modular Speaker**
This unique low profile loudspeaker serves as a matching package to the MRT327 and MCE325 User Stations. It can also be used with any other user station or as a program audio monitor...

**WM6300 Wall Mount Speaker Station**
Designed to fit into a standard 4-gang electrical box, this station augments headset/handset operation with a loudspeaker for monitoring the line...

**SAP612 Source Align Panel**
This multiple switch assembly assigns any 1 of 6 intercom channels and/or 2 program audio channels to 12 separate intercom 2-channel user stations...

**PS15 Power Supply**
A single PS15 (2 channels) can power 6 to 30 user stations, depending on model and combinations. Typically, a combination of 15 headset and speaker stations can be powered from a single PS15...

**BP325 Portable User Station**
This new generation 2-channel unit features user programmable operational functions. It is a stereo/mono unit with program input and call light...

**BP317 Portable User Station**
This single channel belt pack is small, lightweight and easy to use with only 2 controls: headset volume and mic on/off...

**TWI222, TWI224 System Interfaces**
These units are designed to provide the best possible coupling between the TW intercom system and other types of intercom and communications systems.

**VIE306, VCP6A, VCP12A Station ISO System**
These components provide control, switching and interface (4-wire or 2-wire) functions for private communications between 3 control stations and 6 user stations.

**CIF612, VCP12B Station ISO System**
These components provide control, switching and interface (4-wire only) functions for private communications between 6 control stations and 12 user stations...

**TW5W Splitter**
A completely passive 1 x 5 connector splitter assembly...

**CPX62 Circuit Card Kit**
A small-size user station plug-in circuit (CC62) is provided with all external controls and connectors...

**SAP1626 Source Assignment**
This multiple switch assembly assigns any 1 of 12 intercom channels and/or 3 program audio channels to 26 separate intercom 2-channel user stations...

**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 1 of the 3 channels...

*Price On Request*
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 6 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, 1-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. 6 programmable, non-committed relays can be activated by any 1 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.

Options

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Price</th>
</tr>
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<tbody>
<tr>
<td>802-A1</td>
<td>Option base</td>
<td>$350.00</td>
</tr>
<tr>
<td>802-B3</td>
<td>Talk, channels 7-12</td>
<td>$495.00</td>
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<tr>
<td>802-C2</td>
<td>4-wire receive, channels 1-6</td>
<td>$315.00</td>
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<tr>
<td>802-C3</td>
<td>4-wire receive, channels 7-12</td>
<td>$315.00</td>
</tr>
<tr>
<td>802-D2</td>
<td>Call signal, channels 1-6</td>
<td>$315.00</td>
</tr>
<tr>
<td>802-D3</td>
<td>Call signal, channels 7-12</td>
<td>$315.00</td>
</tr>
<tr>
<td>802-E1</td>
<td>Chime signal</td>
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<tr>
<td>802-F1</td>
<td>Squawk/dedicated address, 6 channels</td>
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<td>802-F5</td>
<td>Squawk/dedicated address, additional 4 channels</td>
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<td>802-G5</td>
<td>IFB/4002 emulate</td>
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<td>ISO/VC6A emulate</td>
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<td>ISO/VC12A emulate</td>
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<td>802-F8</td>
<td>Master station field spare parts kit</td>
<td>$1350.00</td>
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<td>802-D5</td>
<td>Master station depot spare parts kit</td>
<td>$1600.00</td>
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<tr>
<td>EPROMS</td>
<td>Master station updated software</td>
<td>$250.00</td>
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Note: Option A1 is required for options D, E, F, G, H. Option E1 requires options D2 or D3. Option F5 requires option F1.
SERIES 400 PROFESSIONAL AUDIO PRODUCTS

405 Professional Phono Preamplifier
High performance 2-channel phono preamplifier designed for use in demanding professional applications. It features adjustable cartridge termination, 2 selectable sets of level controls, 2 output formats and a switchable rumble filter. ........................................ $470.00

410 10W Modular Amplifier
Single-channel monophonic 10W audiopower amplifier designed to power loudspeakers and headphones. It offers a sensible, cost-effective, high-performance alternative to a 2-channel amplifier in almost all monophonic applications. .................. $395.00

416 Distribution Amplifier
High performance 1 x 6 audio distribution amplifier with a single electronically-balanced input and 6 transformer-balanced outputs. ................................. $695.00

424 Distribution Amplifier
High performance 1 x 4 audio distribution amplifier with a single electronically-balanced input and 4 transformer-balanced outputs ........................................ $485.00

444 Dual 2-Channel Buffer Amplifier
Dual 2-channel audio buffer amplifier designed especially to interface professional "balanced, line-level" equipment with various types of industrial semi-pro consumer high-fidelity equipment ..... $395.00

465 Microphone Preamplifier
Single channel, wideband microphone preamplifier designed for professional use in broadcast operations, television production, sound reinforcement, commercial and industrial applications .......... $535.00

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 2 power supplies can fit into the 3 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 20kHz, -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 ................................ $595.00

2503 Extender Card Assembly
Designed to allow any 1 of the 2500 amplifier circuit cards to extend out from the card frame for servicing or adjustment .................................................. $200.00

2505 Power Supply Assembly
Designed to work in the 2501 Card Frame assembly. It is a dual output unregulated power supply with nominal output voltages of ±28V and a maximum output current of 2A ........................................ $430.00

2510 1 x 6 Audio Distribution Amplifier
High-performance audio distribution amplifier with a single electronically-balanced input and 6 amplifier/transformer-balanced outputs ........................................ $550.00

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 ........................................ $485.00

2514 Quad Line Amplifier
Can be used as 4 discrete amplifiers or 2 stereo pairs. Optional remote gain VCA circuitry is available ........................................ $550.00

2516 Quad Buffer Amplifier
4-channel audio buffer amplifier designed especially to interface professional "balanced, line-level" equipment with various types of industrial, semi-pro and consumer high-fidelity equipment ........................................ $575.00

2522 Universal Relay Card
Comprises 10 individual DPDT relays with buffered logic inputs ........................................ $350.00

2524 Dual 8 x 1 Summing Amplifier
Dual 8 x 1 audio summing amplifier with 16 actively balanced inputs and 2 actively balanced outputs ........................................ $395.00

2528 Dual Microphone Preamplifier
Designed to eliminate the problems caused by long cable runs at microphone level ........................................ $850.00

Prices and Specifications Subject to Change Without Notice.
CAMERA SUPPORT EQUIPMENT

**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 system. 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 .................................................. $ 9,975.00
5196 Combi Pedestal/154 Dolly with twin wheels of 6" (154mm) diameter .................................................. $10,395.00

**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

6200 OB 2 Tripod ................................................................ $4,795.00
7080 OB Dolly ................................................................ $3,555.00
8202 OB Elevation column .................................................. $2,995.00

**Video 80 II 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: ± 60°

8086 Video 80 II ................................................................. $8,695.00

**Video 25 II ENG/EFP Fluid Head**
* 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 support systems * Balancing momentum adjustable in 7 steps * Positive operational pan and tilt lock * Safety lock * 150mm ball, Mitchel intermediate tripod interface * 30kg capacity * 6.9kg

2500 Video 25 II ................................................................. $5,995.00

**Video 16 II/17 II/18 II/20 II ENG/EFP Fluid Heads**
* Powerful counterbalancing spring * Positive operational pan and tilt lock * Safety lock * 100mm ball * Medium sized ENG/EFP fluid heads for the ultimate in mobility * Lightweight but stable enough to accept ENG camera with EFP accessories

1600 Video 16 II 1 step on/off drag control for pan + tilt ........................................... $2,695.00
1700 Video 17 II 3 step on/off drag control for pan + tilt ........................................... $3,295.00
1800 Video 18 II 7 step on/off drag control for pan + tilt ........................................... $3,800.00
2000 Video 20 II 7 step on/off drag control for pan + tilt ........................................... $4,680.00

**Video 30 II EFP Fluid Head**
* Heavy-duty 7 position dynamic counterbalancing system * 2 EFP pan arms * 150mm ball * 40kg capacity * 9kg * For studio and field production using small studio or O.B. cameras

3000 Video 30 II ................................................................. $7,345.00

Prices and Specifications Subject to Change Without Notice.

287
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

Tripods for Fluid Heads Video 20 II, Video 18 II, Video 17 II, Video 16 I and Panorama

CAMERA SUPPORT EQUIPMENT

Pedestal 14 II
- 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 camera’s weight. Camera thus floats 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 runs on ball bearings
- Using the extendable tripod the stroke range of the center column can be adapted to 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.
4191 Pedestal 14 II .......................................................... $1550.00

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 platform 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 (while tilting the camera), 2 adjustable pull-back springs are used
- Built-in counterbalance 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 .............................................................. $1595.00

Dolly 14 II 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
7051 Dolly 14 II ............................................................. $350.00

Tripods 14
- Work with a height of 15cm off the ground up to a height of approx. 1.50m
- 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”
4151 Medium ................................................................. $370.00
4182 Long ................................................................. $390.00

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
7001 Spreader 14 .......................................................... $150.00

System Packages
1410 System 14 II—Video 14 II + S14 long + SP14 + Cover 14 II ...... $2309.00
1420 System 14 II Pedestal—Video 14 II + Pedestal 14 + Dolly 14 .... $3495.00

Prices and Specifications Subject to Change Without Notice.
Modular Electret Microphone Systems

Separate capsules and powering modules can be combined to produce a wide variety of microphones. A single powering module plus a few capsules can provide the user with a flexibility that would otherwise require investing in a number of individual microphones. Convert quickly from one type of microphone to another by simply threading together various system components. All capsules use back-electret technology for optimum quality. Output of all powering modules is balanced, low impedance (200 ohms) and terminates in a standard 3-pin XLR type connector.

K3U Powering Module

"Universal" powering module for the system. Operates from internal 5.6V mercury battery (PX23, life approximately 600 hours) or external phantom power 110V - 52V. On/off switch with LED indication of battery condition, 3-position bass rolloff switch (flat, -7dB, -20dB at 50Hz). Use with: ME20, ME40, ME80, ME88, MKE2, MKE10-3, MKE40. Black finish.

K3U $245.00

Microphone Capsules

ME 20 Omnidirectional


ME 20 $135.00

ME 40 Supercardioid

Tight directional pattern helps isolate desired source from surrounding noise and reverberation, and in sound reinforcement provides high gain before feedback. Use with K3U. Frequency range: 50-15,000Hz. Black finish.

ME 40 $185.00

ME 80 Short Shotgun

Combination of supercardioid at low frequencies and shotgun above 2000Hz. Excellent on-camera mic or handheld interview mic for ENG/EFP. Increased gain before feedback by using as a podium mic in sound reinforcement. Use with K3U. Frequency range: 50-15,000Hz. Black finish.

ME 80 $269.00

ME 88 Spot Shotgun


ME 88 $350.00

Lavalier/Clip-On Microphones

MKE 2 Subminiature Omnidirectional Lavalier

Open, natural sound plus extremely small size (less than 1/4" dia., approximately 7/16" long). May also be used as a clip-on instrument mic. Stranded steel cable. Frequency Range: 40-20,000Hz. Standard color: matte black. Shipping weight: 1 oz.

MKE 2 $479.00

MKE 2-3/ K3U Combination $479.00

MKE 2-3 Use with K3U. 10' cable. Black $285.00

MKE 2-3-3 Use with K3U. 10' cable. Buff $285.00

MKE 2-PT Stripped, tinned leads. 10' cable. Black $255.00

MKE 2-PT-3 Stripped, tinned leads. 10' cable. Buff $255.00

MKE 10-3 Omnidirectional Lavalier

Unique, button-shaped design with slip-on clothing clip and cable strain relief which automatically dresses the microphone cable behind the clothing. Gently rolled-off low frequency response plus presence boost above 4kHz produce a bright, clean sound quality, especially in environments with low-frequency ambient noise. Stranded steel cable. Use with K3U. Frequency range: 50-20,000Hz. Matte black finish. Shipping weight: 1 oz.

MKE 10-3 $289.00

MKE 40 Cardioid Lavalier

For those applications where isolation from ambient noise is needed and/or for increased gain before feedback. Also well suited as instrumental clip-on microphone, where advantages of isolation and proximity effect are desired. Swivel mount for easy positioning. Stranded steel cable. Frequency range: 50-20,000Hz. Matte black finish. Shipping weight: 1 oz.

MKE 40/K3U Combination $510.00

MKE 40-3 Use with K3U. 10' cable $330.00

MKE 40-PT Stripped, tinned leads. 10' cable $305.00

Prices and Specifications Subject to Change Without Notice.
MICROPHONES

DIGITAL RECORDING SERIES RF
CONDENSER MICROPHONES

MKH 20 P48U3 Omnidirectional Microphone
- Low distortion
- Transformerless
- Flat frequency response
- High frequency switch (6dB boost at 10kHz)
- Switchable 10dB pad to prevent overmodulation
- Handles 142dB/SPL
- High output level
- Ideal for concert, mid-side (M-S) acoustic strings, brass and wind instrument recordings
- 20-20,000Hz frequency response
- 48V phantom powering
- Matte black finish
- 22 oz. shipping weight
- Supplied accessories: MZQ40 stand adaptor; MZW41 windscren

MKH 20 P48U3 .......................... $1195.00

MKH 30 P48U3 Bi-Directional (Figure Eight) Microphone
- Symmetrical bi-directional characteristic
- Low distortion
- Transformerless
- Flat frequency response
- Switchable bass attenuation (4dB at 50Hz)
- Switchable 10dB pad
- Handles 142dB/SPL
- High output level
- Primarily used for live strings, up-close dialogue, mid-side (M-S) and Blumlein stereo (X-Y) recording
- 40-20,000Hz frequency response
- 48V phantom powering
- Matte black finish
- 24 oz. shipping weight
- Supplied accessories: MZQ40 stand adaptor, MZW41 windscreen

MKH 30 P48U3 .......................... $1295.00

MKH 40 P48U3 Cardioid Microphone
- Highly versatile
- Low distortion
- Transformerless
- High output level
- Transparent response
- Switchable bass attenuation
- Pre-attenuation of 10dB to prevent overmodulation
- Recommended for most situations, digital sampling, over dubbing vocals, percussive sound, acoustic guitars, piano, brass and string instruments
- 40-20,000Hz frequency response
- 48V phantom powering
- Matte black finish
- 22 oz. shipping weight
- Supplied accessories: MZQ40 stand adaptor, MZW41 windscreen

MKH 40 P48U3 .......................... $1195.00

MKH 50 P48U3 Supercardioid Microphone
- Narrower pickup pattern than cardioid
- Low distortion
- Transformerless
- High output level
- Switchable bass attenuation (4dB at 50Hz)
- Pre-attenuation of 10dB to prevent overmodulation
- Recommended for most situations, digital sampling, over dubbing vocals, percussive sound, acoustic guitars, piano, brass and string instruments
- 40-20,000Hz frequency response
- 48V phantom powering
- Matte black finish
- 23 oz. shipping weight
- Supplied accessories: MZQ40 stand adaptor, MZW41 windscreen

MKH 50 P48U3 .......................... $1195.00

MKH 60 P48U3 Supercardioid/Lobe
(Short Shotgun) Microphone
- Short interference tube RF condenser
- Lightweight metal alloy
- Transformerless
- Low noise
- Symmetrical capsule design
- Smooth off-axis frequency response
- Switchable low cut filter (5dB at 100Hz)
- High frequency boost (5dB at 10kHz)
- 128dB/SPL
- Rugged and resistant to climate conditions
- Ideal for boom, fishpole and camera mountings
- A long distance microphone for recording and video/film studios
- Podium or lecture microphone
- Excellent for interviewing by reporters
- 40-20,000Hz frequency response
- 48V phantom powering
- Matte black finish
- 23 oz. shipping weight
- Supplied accessories: MZQ40 stand adaptor, MZW41 windscreen

MKH 60 P48U3 .......................... $1395.00

MKH 70 P48U3 Supercardioid/Lobe
(Shotgun) Microphone
- Extremely lightweight, rugged, long shotgun
- Low distortion
- Transformerless
- Low noise
- Switchable presence (±5dB at 10kHz)
- Low cut filter (-5dB at 50Hz)
- 10dB pre-attenuation
- Handles 132dB/SPL with high sensitivity and output level
- Ideal for video/film studios, theatre, sporting events and nature recordings
- 50-20,000Hz frequency response
- 48V phantom powering
- Matte black finish
- 28 oz. shipping weight

MKH 70 P48U3 .......................... $1895.00

MKH 816 P48U3 Ultra-Directional/Lobe
(Shotgun) Microphone
- Narrow-beam pattern, transformerless RF condenser microphone
- Handles 124dB/SPL and has high output voltage
- Perfect for crowded news conferences, movie sets, TV stages, sporting events and nature recordings
- 40-20,000Hz frequency response
- 48V phantom powering
- Matte black finish
- 46 oz. shipping weight

MKH 816 P48U3 .......................... $1395.00

MKH 816 TU3 Same as MKH 816 P48U3, but designed to use audio wire (A-B) powering and handles
124dB/SPL; 12V-A-B powering .......................... $1150.00

Prices and Specifications Subject to Change Without Notice.
HMD 224 Enclosed Headphone/Microphone Combination
- Frequency response of headphones: 16-20,000Hz
- 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 form the basis of the HMD 224 headphone/microphone combination
- Combination of headphones and microphone weighs 360g
HMD 224 ........................................... $315.00

HMD 410-8 Headphone/Microphone Combination
- HD 410 Open-Aire® headphone combined with studio quality supercardioid microphone
- Swiveling earphone system permits "1-ear" listening
- Microphone boom rotates 360° to allow for left or right side positioning
- Frequency response (headphone): 20-18,000Hz
- Frequency response (microphone): 50-12,000Hz
- Headphone impedance: 600 ohms
- Microphone impedance: 200 ohms
HMD 410-8 ........................................... $295.00

HD 560 Ovation Headphones
- Neodymium ferrous magnets
- Diaphragm design utilizing high grade silk
- Lightweight aluminum driver coils
- Circumaural cushions dampen any interfering resonance
- Frequency response: 16-30,000Hz
- Impedance: 600 ohms
- Sensitivity (SPL at 1mW/1kHz): 94dB
- Weight without cable: 8.8 oz.
- Supplied with 10' steel stranded cable with 1/4" stereo phone plug
HD 560 ........................................... $279.00

HD 540 Reference™ Stereo Headphones
- Frequency response: 16-25,000Hz
- Nominal impedance 600 ohms 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 ........................................... $279.00

HD 520 Open Stereo Headphones
- Neodymium ferrous magnet structure
- Housing design prevents standing waves found in many circumaural headsets
- Excellent transient response and low distortion making it ideal for reproducing even the most demanding musical passages
- Frequency response: 18-22,000Hz
- Impedance: 600 ohms
- Sensitivity (SPL at 1mW/1kHz): 94dB
- Weight without cable: 7.5 oz.
- Supplied with 10' stranded steel cable with 1/4" stereo phone plug
HD 520 ........................................... $199.00

HD 450 Open Stereo Headphones
- Neodymium magnets
- Frequency response: 20-20,000Hz
- 70 ohms impedance
- Supplied with 10' stranded steel cable ending in stereo mini plug with a 1/4" phone adaptor
HD 450 ........................................... $99.00

HD 450 Studio Open Stereo Headphones
- Studio version of Sennheiser's HD 450
- Digitally compatible
- Frequency response: 20-20,000Hz
- Ideal when high load impedance headphones are necessary
- Neodymium ferrous magnets provide a stronger magnetic field than conventional magnet structures
- Supplied with an attractive canvas carrying case
- Uses all field replaceable parts (including driver elements, headband, ear cushions and cable). Supplied with a durable steel stranded 10' cable terminated in a strain relief 1/4" stereo phone plug
HD 450 Studio ..................................... $109.00

HD 25 Monitoring Headphones
- Neodymium magnets
- Frequency response: 30-16,000Hz
- Impedance: 600 ohms
- Sensitivity (SPL at 1mW/1kHz): 94dB
- Weight without cable: 8.8 oz.
- Supplied with 10' stranded steel cable ending in a strain relief 1/4" stereo phone plug
HD 25 ........................................... $295.00

HD 250 Reference Monitor Headphones
- Designed to meet the stringent demands of the studio profession as well as the Hi-Fi connoisseur
- Incorporates the same driver element technology and material as the HD 440 Reference, including an aluminum voice coil and neodymium ferrous magnet
- Frequency response: 10-25,000Hz
- Impedance: 600 ohms
- Sensitivity (SPL at 1mW/1kHz): 94dB
- Weight without cable: 8.8 oz.
HD 250 ........................................... $239.00

Prices and Specifications Subject to Change Without Notice.
WIRELESS MICROPHONE SYSTEMS

VHF Wireless Systems
All Sennheiser VHF wireless systems operate on 1 VHF carrier frequency between 165 and 216MHz.

VHF Camera Mount Systems

VHF 1H
Handheld transmitter system with bodypack receiver for camera and/or portable use. The transmitter is a rugged, cordless, handheld condenser microphone with a supercardioid pickup pattern capable of handling high SPLs (145dB). Excellent for MCs, field broadcasts and portable interviewing applications. The system uses a slim, small and lightweight bodypack receiver. Each unit is powered by 3 "AAA" batteries (approximately 5 hours). System includes: 1 SKM4031-90 handheld transmitter, 1 EK2012-90 bodypack receiver. Shipping weight: 3 1/4 lbs. $3245.00

VHF 1B
Bodypack transmitter system with bodypack receiver for camera mounting and/or portable use. The transmitter has a switchable audio limiter, is extremely compact, lightweight and can be easily concealed under clothing. The receiver is also slim, compact and lightweight. For use in ENG and EFP applications. Each unit is powered by 3 "AAA" batteries (approximately 4 1/2 hours). System includes: 1 SK2012-90 bodypack transmitter, 1 EK2012-90 bodypack receiver, 1 MKE2-2-R RD omnidirectional lavalier microphone. Shipping weight: 4 lbs. $3920.00

VHF Diversity Systems

VHF 2H
Handheld transmitter system and single frequency switching diversity receiver. The transmitter is a rugged, wireless, handheld condenser microphone designed for vocalists, MCs and interviewing where high quality is a must. The diversity receiver has adjustable balanced audio output and squelch, LED indicators for RF and AF levels and a built-in antenna splitter. Suitable for rackmounting with optional panel. System includes: 1 SKM4031-90 handheld transmitter, 1 EM2003-90 diversity receiver, 1 VGP-SET ground plane antenna, 2 PLB25 antenna cables (25'). Shipping weight: 10 lbs. $4351.00

VHF 2B
Bodypack transmitter system and single frequency switching diversity receiver. The transmitter is extremely compact, lightweight and can easily be concealed under clothing or attached to a belt with a removable clip. The diversity receiver has an adjustable squelch, adjustable balanced audio output, LED indicators for RF and AF levels and a built-in antenna splitter. Suitable for rackmounting with optional panel. System includes: 1 SK2012-90 bodypack transmitter, 1 EM2003-90 diversity receiver, 1 MKE2-2-R RD omnidirectional lavalier microphone, 1 VGP-SET ground plane antenna, 2 PLB25 antenna cables (25'). Shipping weight: 10 1/4 lbs. $4311.00

VHF 2G
Guitar transmitter system and switching diversity receiver. System comes complete with 1/4" guitar interface cable and rugged, compact, lightweight transmitter which can be mounted on the guitar strap. The diversity receiver has adjustable squelch and adjustable audio output LED for RF and AF levels. Suitable for rackmounting with optional panel. System includes: 1 SK2012-90 bodypack transmitter, 1 EM2003-90 diversity receiver, 1 GC2012-1 guitar interface cable, 1 VGP-SET ground plane antenna, 2 PLB25 antenna cables (25'). Shipping weight: 10 1/4 lbs. $4070.00

VHF Transmitters

SKM4031-90 Single channel handheld microphone/transmitter $1450.00
SK2012-90 Single channel bodypack transmitter $1750.00

VHF Receivers

EK2012-90 Portable bodypack receiver (DC powered) $1795.00
EK2003-90 Single channel diversity receiver $1975.00

VHF Modular Rack Systems

EMC1036 Multi-channel chassis, 19" rackmount receiver frame for up to 3 diversity channels or 6 non-diversity channels. Contains complete wiring harness, gold plated multi-pin edge connectors for modules, 6 balanced audio outputs, 2 antenna inputs, built-in antenna splitter, power supply, switchable main transformer $3290.00
EMM1036 Monitor module. Makes it possible to monitor AF signals from the receiver modules and completes the routing of signals. Has built-in headphone amplifier switch bank for monitoring each receiver module or the sum of all channels. LED indicator for antenna power supply and main power $1095.00
EME1036-90 VHF receiver module. Contains electronics for a single channel crystal controlled receiver. Diversity reception is possible by installing 2 modules with the same frequency in the adjacent slot without additional electronics. Each module has adjustable squelch, LED indicators for RF and AF levels, diversity on/off switch and frequency drift indicators $2890.00

Prices and Specifications Subject to Change Without Notice.
XA-300 VHS Recorder with HQ/Double Comb Filter
- Quartz servo controlled direct drive head cylinder and capstan
- Fine edit (automatic backspace)
- Simple record timer with auto return function
- 14-day/4-event programmable timer with automatic daily or weekly repeat function
- 3-speed recording/playback
- Voltage-synthesized 16-position 111-channel cable-compatible tuner with AFT
- Multi-function mode display (VCR status display) including 4-digit tape counter with memory function
- 15-function wireless remote control
- Automatic power on/playback/rewind/eject/power off (works for tapes with erase protective tab removed)
- Rec tab override—cassettes with the erasure protection tabs removed can be recorded in the override position
- Remote pause in/out jacks allow pause command to be looped from VCR to VCR for duplicator use
- Controls on VCR can be locked via tamperproof button on remote control

XA-300 .................................................. $430.00

XA-305 VHS Recorder
with Double Azimuth 4-Head Video System
- Auto repeat
- Noiseless still picture (field-still), frame advance and variable speed slow motion
- Remote pause in/out jacks allow pause command to be looped from VCR to VCR for duplicator use
- Controls on VCR can be locked via tamperproof button on remote control
- 3-wire (grounded) AC line cord
- Automatic power on/playback/rewind/eject/power off for enhanced ease of operation (works for tapes with erase protective tab removed)
- Quartz-servo controlled direct drive head cylinder and capstan
- Fine edit (automatic backspace)
- Simple record timer with auto return function
- Auto return function returns the tape to the start after completing the recording
- 14-day/6-event programmable timer with automatic daily or weekly repeat function
- 3-speed recording/playback
- Voltage-synthesized 16-position 111-channel cable-compatible tuner with AFT
- Multi-function mode display (VCR status display) including 4-digit tape counter with memory function
- 19-function wireless remote control

XA-305 .................................................. $450.00

XA-310 VHS Recorder
with Double Azimuth 4-Head Video System
- BNC type video in/out connectors
- EIAJ 8-pin TV connector
- PLL (Phase-Locked Loop) 111-position 111-channel cable-compatible tuner
- Auto repeat function
- Controls on VCR can be locked via tamperproof button on remote control
- Remote pause in/out jacks allow pause command to be looped from VCR to VCR for duplicator use
- Blue screen noise elimination system eliminates noise and mutes sound in playback of unrecorded tape
- 3-wire (grounded) AC line cord
- Quartz-servo controlled direct drive head cylinder and capstan
- Fine edits (automatic backspace)
- Simple record timer with auto return function
- Auto return function returns the tape to the start after completing the recording
- Multi-function mode display (VCR status display) including 4-digit tape counter with memory function
- 14-day/6-event programmable timer with automatic daily or weekly repeat function
- 3-speed recording/playback

XA-310 .................................................. $510.00

GZ-P21U S-VHS Compatible Color Video Printer
- High resolution
- Inputs for S-VHS, composite and RGB analog video sources
- 600 x 478 dot format
- Digital "freeze frame" memory
- Multi-image print mode allows 2, 4 or 25 reduced size images to be reproduced on a single print sheet
- Grounded (3-wire) AC power cord

GZ-P21U .................................................. $1795.00

Optional Printer Accessories
GZ-Y100U Color Print Ink/Paper Set
Each set includes 100 sheets and ink cassette ........................................ $95.00
GZ-Z20U Color Transparency Ink/Film Set
Each set includes 20 sheets and ink cassette ........................................ $40.00
GZ-W100U Monochrome Print Sheets
Each set includes 100 sheets thermal paper ........................................ $20.00

Prices and Specifications Subject to Change Without Notice.
VIDEO PROJECTORS/SCANNER/MONITORS

XV-101TWP/XV-101TGP Ceiling Mount
100" LCD Color Video Projectors

- Unique projector system separates the source beam into red, green and blue components using three 3" twin-TFT (Thin Film Transistor) Active Matrix LCD panels.
- High performance panels and delta pixel arrangement combine to deliver a total 268,515 pixels, achieving superb resolution and sharp contrast.
- High-mount type with lightweight design utilizing LCD panels.
- Easily mounted on the ceiling or wall with an optional mounting bracket.
- Built-in zoom lens lets you adjust viewing to any size from 20" to 100" according to the available space.
- Greatly simplified set-up eliminates tedious convergence adjustments. Simply focus once for perfect image reproduction.
- Removable control unit incorporates back lights to illuminate the touch panel and provides control during darkroom operation (for power on/off, input signal select, etc.).
- Equipped with an S-Video (YC) input terminal to connect with an S-VHS VCR, and 2 RCA phono jack input terminals to connect with up to 2 video units.

XV-101TWP Light gray "office white" cabinet finish...
XV-101TGP Darker metallic gray cabinet finish...

XV-120P High-Brightness 100" Portable LCD Color Video Projector

- Utilizes 3 solid-state, convergence-free LCD panels.
- High-brightness, long-life metal halide lamp.
- Crisp and clear projected images from any viewing angle.
- Built-in 20" to 100" zoom lens.
- Standard composite and S-Video (YC) inputs.
- Extremely compact and lightweight (approx. 27 lbs.).
- Built-in carrying handle.

Optional Accessories for LCD Projectors

AN-1000P 50W powered loudspeaker system...
XG-1100CC Durable molded carrying case for XV-120P...
XG-1500SC Heavy-duty shipping case for XV-101TWP or XV-101TGP...
AN-LM102P Ceiling mounting bracket for use with XV-101TWP or XV-101TGP. Metallic gray finish...
AN-EP101P Optional adjustable extension tube for AN-LM102P. Chrome plated finish...
AN-HM101P "Extended" ceiling mounting bracket package. Includes 1 AN-LM102P and 1 AN-EP101P...
AN-WM103WP Wall mounting bracket in light gray ("office white") finish for use with XV-101TWP projector...
AN-WM103GP Wall mounting bracket in metallic gray finish for use with XV-101TGP projector...
XS-100SPP 100" wall or ceiling mount screen...
XS-80SPP 80" wall or ceiling mount screen...
XS-100HTP 100" tripod/freestanding screen...
XS-80HTP 80" tripod/freestanding screen...

XG-50 Video Scanner Presentation System

- Easily connects to video projectors and TV monitors, and allows documents and full-color photographs to be presented to a large audience.
- 400 TV lines resolution.
- 1/2" CCD with 750,000 pixels (250,000 x RGB) reproduces clear and bright images.
- 8X power zoom and focus lens enlarges small and hard to read print.
- Built-in video frame image memory.
- Wide size capacity, handles everything from 35mm film to B4 paper.
- Unique positive/negative reverse function.
- Composite, S-Video (YC) and analog RGB outputs.
- Flicker-less fluorescent lamp included.
- Dimensions: setup 26"h x 29"w x 23¾"d; folded 7½"h x 16½"w x 23¾"d; 22 lbs.
- Included accessories: AC cord, video cable (2m RCA-RA), audio cable (2m RCA-RA), dust cover.

XM-2701 (27")/XM-2001 (20") Color Monitor/Receivers

- Built-in multi-channel TV sound circuit allows reception of stereo or bilingual sound.
- Flat, square, tinted, high contrast picture tube reduces distortion.
- 209-channel cable-compatible tuner.
- Phase-locked loop quartz synthesized electronic tuning.
- On-screen digital display.
- Multi-function TV/VCR remote control.
- S-Video input connector (separated Y/C) allows connection to a video device equipped with an S-Video output connector.
- Video/audio output jacks.
- Favorite channel function.
- Auto search channel memory.
- Channel scan function.
- Channel flash back.
- Auto shut-off timer.

XM-2701 600 lines resolution...
XM-2001 400 lines resolution...

25RT59-P 25" Color Television

- 22-function infrared remote control.
- 10-key phase locked loop quartz electronic tuning.
- 140-channel cable-compatible tuner.
- LED digital channel display.
- Sleep timer (30/60/90 min.).
- AFT + ACS.
- Rapid-on picture and sound.
- SAW filter reduces ghosts and phase distortion.
- Simulated woodgrain finish.

Prices and Specifications Subject to Change Without Notice.
SHARP
FROM SHARP MINDS
COME SHARP PRODUCTS

XG-1100U High-Brightness Professional LCD Color Video Projector
- Compact, lightweight and ultra reliable
- Built-in 20" to 100" zoom lens
- Industrial type BNC video inputs, plus S-Video connector
- Reverse image switch (for rear projection)
- Extremely bright images, with long-life metal halide lamp
- Three 3" solid state active matrix twin-TFT LCD panels

Utilizing advanced convergence-free LCD projection technology, the XG-1100 offers incomparable performance, flexibility and reliability. Weighing only 22 lbs. and with a built-in carrying handle, it is lightweight, portable and space-efficient.

With the XG-1100U’s built-in 1:2 zoom lens, it is incredibly easy to vary the image size from 20" up to 100" (or more).

The XG-1100U incorporates 2 locking-type industrial BNC video inputs, plus an S-Video (Y/C) connector. These multiple inputs let you change instantly among a broad range of sources including VCRs, video disc players, TV tuners and many PCs.

With the XG-1100U, all that is necessary for rear projection is to simply press the "Reverse Image" switch. No special mirror attachment or internal modification is required.

The XG-1100U incorporates a special design metal halide lamp capable of providing extremely bright images from any viewing angle. This lamp is enormously efficient, with an average life of more than 2000 hours. An easy-change lamp module is further incorporated into the XG-1100U to ensure quick lamp replacement by a local authorized servicing dealer or service center.

The XG-1100U incorporates 3 convergence-free active matrix twin-TFT LCD panels with over 268,515 total pixels to produce a picture with superb clarity, colorimetry and definition.

XG-1100U ....................................................... $4495.00

XG-1500U Professional Ceiling Mount LCD Video Projector
- Extremely small and compact ceiling mountable design
- Built-in 20" to 100" zoom lens
- Multiple inputs including composite, S-Video and analog RGB
- Convenient reverse image switch for rear projection
- Back-lit wireless remote control
- Three 3" solid state active matrix twin-TFT LCD panels
- High brightness, long-life metal halide lamp with easy change module

The XG-1500U incorporates advanced convergence-free LCD projection technology for incomparable performance, flexibility and reliability. Because the XG-1500U is both lightweight and space-efficient, in addition to being ceiling or wall mountable, it also may be situated on projection stands or shelves.

With the XG-1500U’s built-in 1:2 zoom lens, it is incredibly easy to vary the image size from 20" up to 100" (or more).

The XG-1500U includes a wide range of inputs including 2 BNC type composite video connectors, an S-Video terminal and analog (15.75kHz) RGB. These multiple inputs let you change instantly among a broad range of sources including VCRs, video disc players, TV tuners and even many PCs.

With the XG-1500U, all that is necessary for rear projection is to simply press the "Reverse Image" switch. No special mirror attachment or internal modification is required.

To simplify operation of the XG-1500U, even from across a dark room, a unique back-lit wireless remote control is included.

The XG-1500U incorporates 3 convergence-free active matrix twin-TFT LCD panels with over 268,515 total pixels to produce a picture with superb clarity, colorimetry and definition.

The XG-1500U incorporates a special design metal halide lamp capable of providing extremely bright images from any viewing angle. This lamp is enormously efficient, with an average life of more than 2000 hours. An easy-change lamp module is incorporated into the XG-1500U to ensure quick lamp replacement.

XG-1500U ....................................................... $4895.00

Optional Accessories for XG-1100U and XG-1500U

<table>
<thead>
<tr>
<th>Accessory</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>AN-1000P</td>
<td>50W powered loudspeaker system</td>
<td>$325.00</td>
</tr>
<tr>
<td>XG-1100CC</td>
<td>Durable molded carrying case</td>
<td></td>
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<tr>
<td>XG-1100SC</td>
<td>Heavy-duty shipping case</td>
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<tr>
<td>XG-1500SC</td>
<td>Heavy-duty shipping case</td>
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</tr>
<tr>
<td>XG-1500U</td>
<td>Ceiling mounting bracket</td>
<td></td>
</tr>
<tr>
<td>AN-LM102P</td>
<td>Optional adjustable extension tube for</td>
<td></td>
</tr>
<tr>
<td>AN-EP101P</td>
<td>&quot;Extended&quot; ceiling mounting bracket</td>
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<tr>
<td>AN-HM101P</td>
<td>&quot;Extended&quot; ceiling mounting brake</td>
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<tr>
<td>AN-WM103WP</td>
<td>Wall mounting bracket for</td>
<td></td>
</tr>
<tr>
<td>XG-100SPP</td>
<td>100&quot; wall or ceiling mount screen</td>
<td></td>
</tr>
<tr>
<td>XG-80SPP</td>
<td>80&quot; wall or ceiling mount screen</td>
<td></td>
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<tr>
<td>XG-100HTP</td>
<td>100&quot; tripod/freestanding screen</td>
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<td>80&quot; tripod/freestanding screen</td>
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</table>

Prices and Specifications Subject to Change Without Notice.
PROFESSIONAL MICROPHONES

SM10A/SM12A Headset Dynamic Microphones
- Professional head-worn microphones for remote broadcasting, intercommunications systems and vocal performance for drummers and keyboard players
- Noise-cancelling, unidirectional and close-talking with a strong professional sound quality
- Lightweight dual headbands eliminate user fatigue
- Adjustable boom maintains proper mouth-to-microphone distance
- Frequency response of 50-15,000Hz
SM10A-CN  Boom microphone only .......................... $149.00
SM12A-CN  Microphone and single monitor earphone ....... 206.00

SM57 Unidirectional Dynamic Microphone
- Slender dynamic microphone built to provide wide range reproduction of music and voice
- Exceptionally uniform and effective unidirectional pickup pattern
- Bright, clean sound
- Cartridge shock-mounted for quiet operation
- Frequency response of 40-15,000Hz
SM57-CN  With 25’ cable .................................. 165.00
SM57-LC  Without cable .................................... 141.25

SM58 Unidirectional Dynamic Microphone
- Professional stage microphone, with a self-contained spherical filter to control explosive breath sounds and wind noise
- Uniform cardioid pickup pattern minimizes off-axis coloration and rejects background noise
- Effective presence rise in mid-frequencies and a fixed low-frequency rolloff to minimize boominess
- Black finish
- Frequency response of 50-15,000Hz
SM58-CN  With 25’ cable .................................. 205.00
SM58-LC  Without cable .................................... 181.50
SM58S  Without cable, includes on/off switch ............. 190.75

SM77EB/SM78EB Unidirectional Dynamic Microphones
- Lightweight and rugged
- Fixed low-frequency rolloff plus a slight mid-frequency presence rise in their 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
- Black finish
- Frequency response of 50-15,000Hz
SM77EB  Without cable ..................................... 130.50
SM78EB  Without cable ..................................... 153.25

SM85 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
- Constructed with a lightweight, extremely tough aluminum case and a Teflon-costed all steel grille
- Elastomer “spaceframe” isolates the condenser element from virtually all mechanical vibration
- Frequency response of 50-15,000Hz
SM85  Without cable ....................................... 305.00

SM87 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, for fewer potentially troublesome response peaks
- Tighter pickup pattern results in greater gain-before-feedback and less microphone “bleed” (unwanted pickup of other voices, instruments or room noise)
- Especially useful in multiple-miking situations or single-miking in a noisy or reverberant environment
- Frequency response of 50-18,000Hz
SM87  Without cable ....................................... 329.00

Prices and Specifications Subject to Change Without Notice.
SM48 Unidirectional Dynamic Microphone
- Equipped with its own specially designed cartridge
- Utilizes a highly efficient cartridge shock mount, which reduces handling and stand noise dramatically
- Extremely smooth peak-free frequency response with a slight midrange 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
SM48-LC Supplied without cable only .......................... $130.80

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 makes it practically immune to handling noise, hum and RF interference
- 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 .......................... $260.00

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
- Elastomer "space frame" system isolates the transducer element from the roughest handling
- Wide dynamic range gives it the ability to take extremely high sound pressure levels without "breaking up"
- Can be powered by virtually any phantom power source, or by an internal 1.5V AA battery
- Swivel adaptor and zippered vinyl storage bag are included
SM96-LC Supplied without cable only .......................... $260.00

SM98 Miniature Musical Instrument Microphone
- Wide, extremely smooth frequency response for accurate, faithful reproduction of acoustic instruments
- Nearly perfect cardioid polar pattern at all frequencies for superior source isolation
- Detachable cable
- Low noise preamp is powered by 2 standard 9V batteries or an 11 to 52VDC phantom supply
- Battery on/off switch and a 12dB/octave low-end cutoff switch
- Included is a swivel adaptor, windscreen and zippered vinyl storage bag
SM98 ............................................................... $250.00

SM98 Accessories
A98KCS Universal horn clamp. Fully adjustable to suit any horn, built-in shock mount .......................... $60.00
A98G18 18" gooseneck for SM98 ................................ $50.50
A98GM Mounting flange ........................................... $13.00
A98HA Hanging adaptor for SM98 .............................. $15.00
A98KC-1 Soprano saxophone clamp for SM98 ........... $18.25
A98KC-2 Alto saxophone, trumpet clamp for SM98 ...... $18.25
A98KC-3 Tenor saxophone clamp for SM98 ................ $18.25
A98KC-4 Baritone saxophone clamp for SM98 .......... $18.25
A98MK Drum mount kit for SM98 .............................. $44.00
A98PF Pop filter and locking collar for SM98 .......... $13.50
A98SPM Polar modifier ........................................... $49.00

SM99 Miniature Gooseneck-Mounted Supercardioid Condenser Microphone
- Designed primarily for speech and vocal pickup
- Also provides excellent reproduction of acoustic instruments
- Can be surface, flange or stand mounted
- Integrated preamplifier
- Satin black finish
- Only 7/16" diameter
- 12" gooseneck flexes only over the top and bottom portions
- Frequency response: 80-20,000Hz
- Includes pop filter and mounting hardware
SM99 ............................................................... $240.00
SM99E Similar to SM99. Offers side exit of cable at base of gooseneck for mounting above surface on standard 5/8"-27 flange. In-line preamplifier with mounting bracket supplied .................................................. $260.00
A99SM Recessed "Shock-Stopper" rubber isolation mount for SM99. Supplied adaptor also permits use with SM99E, SM98/A98-G18 ................................. $45.00

SM102 Series Miniature Condenser Microphones
- Designed to be hung from overhead
- Permanently mounted to a slim 6" gooseneck which allows the user to aim the microphone at various angles
- 30' cable connects to an included preamplifier
SM102B Black, includes in-line (tubular) preamplifier .... $230.00
SM102W Same as above, in white ................................ $260.00
SM102PB Black, includes wall plate preamplifier designed for permanent mounting in standard electrical wall box .................................................. $215.00
SM102PW Same as above, in white ................................ $240.00

298 Prices and Specifications Subject to Change Without Notice.
GENERAL PURPOSE MICROPHONES

SM11 Lavalier Microphone
Tiny, rugged, with a frequency response of 50-15,000Hz—the SM11 is the world’s smallest dynamic element lavalier microphone. Less than half the size of a standard microphone connector, it is ideal for on-camera TV and motion picture applications. It has a smooth, natural sound quality that’s optimized for lavalier use. Its dynamic cartridge and aluminum case are rugged and reliable with excellent humidity and heat resistance. The SM11 comes with 2 mounting options: tie bar and tie tack. A special clip secures the cable connector to the performer’s belt or clothing.

SM11 $113.00

SM18 Surface-Mounted Microphone
The SM18 is a dynamic microphone with color-coordinated foam enclosures and matching cables. The palm-size microphone "disappears" by blending into its surroundings in conference rooms, auditoriums and churches. The SM18 is ideal for use on altars or on conference tables where ordinary stand-mounted microphones might be visually distracting. The voice-range frequency response minimizes low frequency boominess and rolls off high frequencies above 10kHz, thus minimizing pickup of spurious noise from undesirable sources such as rustling papers. The SM18 offers a unique solution to the problem of sound pickup near a hard surface such as a desk, tabletop, lectern or altar. The microphone is mounted in the foam enclosure at an angle that places the cartridge about 1/8" from the hard surface. This minimizes the influence of sound reflections from the hard surface, thereby eliminating the uneven frequency and "hollow" sound which reduces intelligibility. As the reflected and direct sound waves are combined, the microphone output is increased by about 6dB. Frequency response is 150-10,000Hz.

SM18B Brown foam enclosure, 9' attached brown cable with 3-pin professional audio connector $111.25

RK205F White foam enclosure $11 30

SM59 Unidirectional Dynamic Microphone
The SM59 is widely used for distinguished TV studio productions, especially musical shows, where sound quality is a major consideration. Its wide, ultra-flat response is enhanced by a controlled low-frequency rolloff, providing a clean, natural sound for voice or instruments. In addition, the performer can control the amount of bass increase by moving toward or away from the microphone. The tightly controlled cardioid pickup pattern minimizes feedback and unwanted background noise. It’s superb for miking horns, drums and vocalists. The design of the SM59 makes this microphone virtually immune to extraneous noise. Shure-patented mechano-pneumatic shock mount shields the cartridge from rumble and other mechanically transmitted noise, whether on a stand or handheld. An integral windscreens provide excellent pop protection, and a built-in humbucking coil minimizes hum due to nearby electromagnetic interference, even strong RF fields found near TV studios. These features make the SM59 the choice for permanent installations such as legislative chambers and court houses where minimum handling noise is essential. The slim profile and elegant champagne finish give the SM59 a distinctive, sleek appearance. Although it weighs less than 8 oz., the microphone is remarkably rugged.

SM59 Supplied without cable only $236.50

SM62 Unidirectional Dynamic Microphone
Use the SM62 wherever a high-quality compact microphone is needed—on stage, in interviews, on podiums. Less than 5" long and weighing only 4 oz., it’s unobtrusive in both handheld and stand-mounted use. The SM62’s flat, uncolored frequency response and uniform cardioid pickup pattern provide excellent performance as well as control of feedback and unwanted background noise. A carefully controlled low-frequency rolloff prevents the “boominess” associated with close miking. A rubber cartridge shock mount keeps handling noise low, and the integral windscreen minimizes breath pop. The SM62 is finished in durable champagne enamel and comes with a matching swivel adaptor.

SM62 Supplied without cable only $165.50

Prices and Specifications Subject to Change Without Notice.
ST3000 Teleconferencing System
There are only 2 components in the ST3000 System. The round audio module contains 3 unidirectional microphones and a specially designed loudspeaker. The control console houses master controls, power and connections.

Both audio and control units are compact and lightweight. You can quickly hook them into any standard analog telephone line.

The ST3000 makes top quality group communications possible in virtually any room, eliminating the need for expensive acoustic treatment.

The advanced electronic circuitry of the ST3000 also allows interactive, interruptible conversations.

We've eliminated the tinny "bottom-of-a-barrel" sound normally associated with long distance conferencing. Voices are perfectly intelligible, tones are warm and clear.

The ST3000 also automatically compensates for the difference in sound levels found when teleconferencing between 2 or more remote locations. And it automatically adjusts for different voice levels and the varying locations of participants in a room. Once volume is set, no readjustment is required.

Because of its unique integrated microphone/loudspeaker design, the ST3000 will provide superior audio performance in ordinary conference rooms and offices that previously could not be used for teleconferencing. And no acoustical room treatment is normally necessary.

To install the ST3000, place the audio module in the approximate center of the conversation area and plug into the control console mounted nearby. Then connect standard single line phone to the control console and the control console to the telephone jack and an electric outlet. In most cases, that's all there is to it. It can be ready for its first teleconference in minutes. For larger conferences, additional audio modules can be easily added.

For on the air operation of the ST3000, telephone the desired location and push "Conference" on the control console. To disconnect, simply hang up the telephone and press "Telephone" on the control console.

Both the audio module and control console fit into an optional heavy-duty carrying case. It's compact and lockable so teleconferencing capabilities can travel to important meetings out of the office. Or move the ST3000 from the regular conference room into an executive office whenever it's necessary.

When any of 3 lighted "mute" bars on the audio console is pressed, all mics are disconnected, and a red "status" light on each bar turns on. A second press reactivates all mics and turns the "status" lights to green.

The ST3000 control console provides master control of all audio modules. "Mute" turns off the mics on all audio modules in use. "Listen Only" locks all microphones in "mute" and is ideal for long distance training sessions where actual conversation is at a minimum. "Talk Only" suppresses incoming sounds so that a presentation can be made without interruption.

The control module also contains an auxiliary input to bring an outside audio program into the conference and an auxiliary output for tape recording.

<table>
<thead>
<tr>
<th>Individual Components and Optional Accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>STC64A</strong> Controller (Oak finish) ...................</td>
</tr>
<tr>
<td><strong>STC64W</strong> Controller (Walnut finish) ...............</td>
</tr>
<tr>
<td><strong>STC64A-SPLB</strong> Controller (Oak finish) with adjustable suppression .......................</td>
</tr>
<tr>
<td><strong>STC64W-SPLB</strong> Controller (Walnut finish) with adjustable suppression .......................</td>
</tr>
<tr>
<td><strong>STC64A-AR</strong> Controller (Oak finish) ..................</td>
</tr>
<tr>
<td><strong>STC64W-AR</strong> Controller (Walnut finish) .............</td>
</tr>
<tr>
<td><strong>STLM32A</strong> Audio Module (Oak finish) ...............</td>
</tr>
<tr>
<td><strong>STLM32W</strong> Audio Module (Walnut finish) ............</td>
</tr>
<tr>
<td><strong>STLM32A-HI</strong> Audio Module (Oak finish) ..........</td>
</tr>
<tr>
<td><strong>STLM32W-HI</strong> Audio Module (Walnut finish) ........</td>
</tr>
<tr>
<td><strong>RKC201</strong> Controller-to-Module Cable (10') ...........</td>
</tr>
<tr>
<td><strong>RKC202</strong> Controller-to-Module Cable (20') ..........</td>
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<tr>
<td><strong>RKC203</strong> Module-to-Module Cable (4') ...............</td>
</tr>
<tr>
<td><strong>RKC204</strong> Module-to-Module Cable (10') .......... ...</td>
</tr>
<tr>
<td><strong>RKC205</strong> Module-to-Module Cable (7') ...............</td>
</tr>
<tr>
<td><strong>RKC207</strong> Extension Cable (25') .......................</td>
</tr>
<tr>
<td><strong>A300W</strong> Carrying Case ................................</td>
</tr>
<tr>
<td><strong>A300S</strong> Shipping Case ................................</td>
</tr>
<tr>
<td><strong>A300SM</strong> SupraMount Audio Module Suspension System.......................</td>
</tr>
</tbody>
</table>

*Replacement only—one cable included with each ST3000 System at no extra charge.

Prices and Specifications Subject to Change Without Notice.
TELECONFERENCING SYSTEM

ST6000 Type 2 Teleconference System
The basic ST6000 Type 2 System comprises a console with remote control, wooden cabinet, up to six microphones, and up to three loudspeakers.

The heart of this teleconferencing system is housed in a single console. Once the microphone levels are set you never have to adjust them again.

Without the cabinet you can mount the ST6000 console into a standard 19" electronic equipment rack. This enables you to place it out of sight with your other electronic equipment. The simple touch of a button on the remote control unit engages the teleconferencing system. The remote also lets you control loudspeaker volume and mutes outgoing or incoming conversation.

This system successfully integrates unique microphones with a 6 input mixer and logic technology for the best sound performance possible. Without your lifting a finger, this system constantly analyzes the acoustic environment of the meeting room and automatically adjusts as audio conditions change. The ST6000 Console takes up to 6 microphones and can accommodate as many 8-channel expansion units (ST6008) as necessary for large meeting situations.

This system is completely ready to use with standard 2-wire telephone lines, dedicated 2- or 4-wire lines, or satellite links. The ST6000 System is totally compatible with audio graphic, facsimile and video systems. If your meeting requires video conferencing, this system can accept a Shure Video Switcher Interface (STV680), which is compatible with most video switchers. This provides the convenience of automatic switching of cameras.

With the use of the STB624 and the ST2AC accessories, it is possible to add a 2-wire, telephone line into your 4-wire video conference, or switch from 2-way video/satellite transmission to uplink or downlink configuration with the push of a button. All sites can achieve full duplex if one set of equipment is used, switched audio if a different mix of equipment is used.

The PA output of the system gives you the ability to provide “send and receive” audio to a large audience through a public address system. In addition, this output offers the capability of recording your teleconference.

The ST6000 System also allows for expanded capabilities including:
- **Chairman Override**
  - To provide for a designated microphone to override all others.
- **Channel Priority**
  - To let one microphone override another in a predetermined order.
- **Fillbuster Capability**
  - To allow only one microphone on at a time.
- **Zone Loudspeaker Muting**
  - To prevent feedback by turning off appropriate loudspeakers as nearby microphones turn on.
- **Remote Channel Indicators**
  - To give visual indication when microphones are on.

### Prices and Specifications Subject to Change Without Notice.
ST6300 Type 2 Teleconferencing System

- Optimized, natural voice quality without echo, “boominess” or listener fatigue
- Reliable, quick-acting, noise-free microphone selection—automatically adjusts to changes in background room noise
- Wideband (to 15kHz), low-distortion echo reduction circuitry provides echo-free, high-fidelity teleconferencing
- Remote control with conference on/off, speaker volume and mute switches
- Frequency response modifiable for various bandwidth systems by switch or logic terminal
- Automatic level adjustment for weak far-end talkers
- No threshold settings to misadjust
- Logic inputs and outputs enhance system versatility
- Front-panel-accessible local and 4-wire loopback modes for ease in setup and checking
- Interrupt capability switch improves control in difficult conference situations
- Linking capability for as many as 200 microphones
- Accepts insertion of Shure STC64-SPLB Controller and external telephone line echo canceller to bring telephone line into videoconference
- Accepts insertion of external audio delay unit
- LED indications of system operation
- 3 microphone inputs use standard 2-conductor shielded cables and 3-pin connectors
- Front- and rear-panel PA outputs and aux inputs
- Headphone monitor jack

The ST6300 Type 2 Teleconferencing System (ST) is a complete 4-wire audio system providing high-quality, wideband (to 15 kHz), echo-free speech communication in a videoconferencing environment. By automatically selecting and turning on (“gating through”) the most appropriate microphone or microphones for conference room speech pickup, the reverberant sound quality, feedback problems, echo and distortion often associated with the use of conventional microphone techniques is greatly reduced. The system combines superlative acoustical design with advanced electronic signal processing to provide clear, natural and effortless teleconferencing without the typical “boomy” or “muddy” sound, echoes, difficulty in “getting through,” insufficient sound levels (because of feedback or “howling”) and operator errors. The system can be used in a wide variety of conference environments without complicated setup or adjustment procedures. Operation for the user is as easy as a simple desktop speakerphone, yet the capability for fully interactive conversation with high-quality sound is not sacrificed.

The resulting sound is clearer than that of conventional microphone teleconferencing systems—and free of the clipped and missed words, clicks and pops, noise “pumping” and distortion often associated with similar systems. The ST6300 Type 2 operates over an extremely wide dynamic range without the possibility of threshold-setting misadjustments.

In addition, the ST6300 Type 2’s echo reduction circuit virtually eliminates annoying residual echo which may be present in audio-delayed systems. This means full-duplex, echo-free satellite and compressed video conferencing can be achieved without the fidelity compromises—distortion, noise, restricted bandwidth—of many conference systems.

The ST6300 Type 2 also incorporates the necessary bridging circuitry to establish, using Shure’s STC64-SPLB controller and ST2AC Canceller, a fully interactive teleconference site communicating with both a 4-wire video-conference link and the 2-wire public telephone network. For example, a telephone line can be brought into a 2-way satellite videoconference or be used for downlink site return audio in a 1-way broadcast satellite conference.

The ST6300 Type 2 is supplied in a 3-microphone-channel configuration housed in a single 3½” rackmount package with a detachable oak-finish (STR63A) or walnut-finish (STR63W) remote control unit, screws and washers for rackmounting, and an alternate line fuse for 240V operation. In addition to microphone, loudspeaker and 3-pin XLR (transformer-balanced, 600 ohm terminated, at OdBm level) connectors, the ST6300 Type 2 contains logic terminals for microphone gating indicators and muting control, link circuitry for expansion to as many as 200 microphones, and connectors for an ST2AC Telephone Line Echo Canceller, telephone line audio lip-synchronization delay unit, and headphone and monitor outputs. Connection to a 2-wire telephone line is made through a STC64-SPLB Controller (not supplied) which is normally a part of the ST3000 Teleconference System.

### Prices and Specifications Subject to Change Without Notice.
AUTOMATIC MICROPHONE SYSTEMS

AMS Automatic Microphone System

The Automatic Microphone System (AMS) is a unique, totally integrated combination of microphone, mixer and logic technology which operates as one to provide the clearest, smoothest, most reliable automatic sound performance in the industry. Each microphone and mixer channel in the AMS contains logic circuitry. This enables every microphone to act independently in the system when turning on or turning off. Each microphone continuously analyzes its own local acoustic environment, allowing each channel to adjust itself independently as audio conditions change. Four microphone styles include the AMS22 low-profile microphone, the AMS24 Gooseneck microphone, the AMS26 Probe microphone and the AMS28 Lavalier microphone. Special capabilities available for the AMS include: Privacy or cough button, chairman muting, channel priority, filibuster capability, zone loudspeaker muting and remote channel indicators. The AMS system can be connected to a computer programmed for even more sophisticated control operations. In addition, when connected with the optional microcomputer-based AMS880 Video Switcher Interface component, the AMS will control commercially available video switchers. In doing so, television cameras will automatically follow the microphone channel activity to visually monitor prescribed areas.

Specifications

AMS4000 and AMS8000 Mixer

Frequency Response: Aux input to outputs: 30 to 20,000Hz ± 2dB Mic input to outputs: 70 to 20,000Hz ± 2dB (controlled low-frequency rolloff below 50Hz)

Distortion: THD 0.35% or less, 30 to 20,000Hz at +15dBm output; IMD 0.5% or less up to +15dBm output

Operating Voltage: 105-132VAC, 50/60Hz, 20W. Can be rewired for 210-264VAC, 50/60Hz, 20W

Dimensions: 31/2"H x 19"W x 113/4"D

Weight: AMS8000: 14 lbs. 8 oz. AMS4000: 12 lbs. 13 oz.

AMS22 Low-Profile Microphone

Type: Condenser (Electret Bias)

Polar Pattern: Hemi-Cardioid

Output: (at 1000Hz) -47dB typical (OdB = 1V/µbar)

Noise: 20dB equivalent SPL typical, A-weighted: 25.6dB equivalent SPL typical, weighted per DIN 45405

Dimensions: 11/4"H x 31/2"W x 3"D

Weight: 6.1 oz. including cable

AMS24 Gooseneck Mounted Microphone

Type: Condenser (electret bias)

Polar Pattern: Cardioid

Output: (at 1000Hz) -56dB typical (0dB = 1V/µbar)

Noise: 27dB equivalent SPL typical; A-weighted: 32.5dB equivalent SPL typical, weighted per DIN 45405

Dimensions: Length: 15" Diameter: 1 3/8"

Weight: 5.6 oz.

AMS26 Probe Microphone

Type: Condenser (electret bias)

Polar Pattern: Cardioid

Output: (at 1000Hz) -54dB typical (0dB = 1V/µbar)

Noise: 27dB equivalent SPL typical, A-weighted: 32.5dB equivalent SPL typical, weighted per DIN 45405

Dimensions: Length: 5 27/32" Diameter: 1 3/8"

Weight: 4.4 oz.

AMS28 Condenser Microphone

Type: Condenser (electret bias)

Polar Pattern: Cardioid (unidirectional)

Output: (at 1000Hz open circuit voltage: 54dB typical (0dB = 1V/µbar)

Noise: 27.0dB equivalent SPL typical, A-weighted: 32.5dB equivalent SPL typical, weighted per DIN 45405

Dimensions: Length: 13/16" Diameter: 2 1/8"

Weight: 5.5 oz. with cable and connectors

AMS880 Video Switcher Interface

Input: Open circuit voltage + 5V; resistance: 1K ohm

Output: Off resistance: > 300 megohms; On resistance: < 200 ohms

Power: External power transformer: 120VAC ± 10%, 60Hz, 6W

Dimensions: 1 3/4"H x 19"W x 5"D

Weight: 2.5 lbs. including transformer

Prices and Specifications Subject to Change Without Notice.

AMS8000 ................................. $1800.00
AMS8000 ................................. $2800.00
AMS22 ................................. 210.00
AMS24 ................................. 245.00
AMS26 ................................. 210.00
AMS28 ................................. 235.00
AMS880 ................................. 1850.00
FP410 Portable Microphone Mixer
- Reliable, quick-acting, noise-free microphone selection—automatically adjusts to changes in background room noise • Front-panel channel gain and master controls operate as in conventional mixers • Selectable hold time keeps microphones on during short pauses in speech • Selectable off-attenuation control for seamless operation • Automatic gain adjustment as additional microphones are activated • Defeatable "Last Mic Lock-On" circuit keeps at least 1 microphone on at all times, maintains acoustic ambiance and prevents confusing background sound changes • Wide, flat frequency response and low distortion up +18dBm output

FP410 .................. $1595.00

M66A Universal Stereo Preamplifier
- 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 switch for selecting Phono, Tape, or Flat frequency compensation

M66A .................. $130.00

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 .............. $240.00
M68FCA 3-socket female XLR input connectors ...... $235.00

M267 Professional Mixer With Limiter
- For recording or broadcast use • 4 low-impedance balanced inputs switchable to mic or line level • 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 • Mic and line level outputs • Master volume control • 120/240VAC, 50/60Hz, 9.5W; battery power • 2³/₄"H x 11₃/₄"W x 7½"D

M267 .................. $520.00

M268 Microphone Mixer With Phantom Power
- 5 channels • Ideal for public address and recording applications • Mix bus, phantom power • Active gain controls and electronic power supply regulation • 120VAC, 50/60Hz, 5W • 2³/₄"H x 11₃/₄"W x 7½"D

M268 .................. $315.00

FP11 Microphone-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 1 standard 9V battery

FP11 .................. $275.00

FP12 Headphone Bridging Amplifier
- 1-input, 2-output • Designed to provide headphone feeds from any type of audio input • 2 XLR in/out connectors and 2 ¼" in/out jacks • Mic/Line input switch • Hi-Z/Lo-Z headphones switch • Headphone level control, powered by 1 standard 9V battery

FP12 .................. $260.00

FP16A Distribution Amplifier
- Mic/Line switchable • 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 • 120/240VAC or battery power, 3 x 9VDC

FP16A .................. $585.00

FP31 Microphone Mixer
- Designed for electronic news gathering (ENG) and electronic field production (EFP) use, including film, video and remote broadcast applications • Measures just 6½"W x 5½"H x 1½"D • 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 • With carrying case

FP31 Battery power .................. $1085.00

FP32 Stereo Microphone Mixer
- 2 transformer balanced outputs (1 for each stereo channel) and 3 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 and A-BIT power for condenser microphones • Phantom jack permitting use of an external microphone power supply (up to 48VDC) • With carrying case

FP32 Battery power .................. $1450.00

FP42 Stereo Microphone Mixer
- Handles remote mixing jobs with its 2 outputs (1 for each stereo channel) and 4 balanced inputs, each switchable for line or mic level operation • Each input channel also has a low-frequency rolloff switch and a center-detented stereo pan pot for conventional 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 ¼" stereo headphone jacks with level control included

FP42 120/240VAC or battery power .................. $1020.00

FP51 Compressor/Mixer for Microphone or Line Input
- 4 mic/line inputs • Cue on each input • Separate headphone amplifier • ¼" and mini headphone jacks • Compressor and memory switch on front panel • AC/DC powered with battery check • Phantom power for mics • Rack mountable • Peak light on VU meter • Outputs at line mic and mix bus levels

FP51 .................. $965.00

Prices and Specifications Subject to Change Without Notice.
COMPONENT VIDEO PRODUCTS

CIK-1 Component Video Keyer
A stand-alone system that can be used by itself or to add an additional key level to an existing component video production suite. Functions on the remote panel include a key source selector which can choose any combination of the insert video’s red, green, blue, luminance, chroma key and/or an external video as the source cutting the key hole. The hole can be filled with either the insert video or the CIK-1’s internal colorizer. There are 3 types of remote control panels: A console mount panel with lever arm control of the transition and both rack and console mount panels which feature an auto transition system in place of the lever arm. The auto transition can also be initiated by a GPI closure from an editing system.

CIK-1 Systems Including Frame and Control Panel

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>902011YUVC</td>
<td>Console mount auto transition control panel</td>
<td>$3195.00</td>
</tr>
<tr>
<td>902011YUVR</td>
<td>Rackmount auto transition control panel</td>
<td>$3195.00</td>
</tr>
<tr>
<td>902011YVCL</td>
<td>Console mount lever arm control panel</td>
<td>$3195.00</td>
</tr>
<tr>
<td>902011RBC</td>
<td>Console mount auto transition control panel</td>
<td>$3195.00</td>
</tr>
<tr>
<td>902011RGR</td>
<td>Rackmount auto transition control panel</td>
<td>$3195.00</td>
</tr>
<tr>
<td>902011RCL</td>
<td>Console mount lever arm control panel</td>
<td>$3195.00</td>
</tr>
</tbody>
</table>

Delta Series Format Converters
- Looping inputs * 3 outputs per output channel + Mounting frame will accept any combination of 1 or 2 modules in this family + Frame includes a built-in power supply with a second (backup) supply available as an option.

Delta CB
- 502006BETA RGB to Betacam converter module | $695.00 |
- 502005MII RGB to MIll converter module | $695.00 |

Delta BC
- 502027BETA Beta to RGB + sync converter module | $695.00 |
- 502027MII MIll to RGB + sync converter module | $695.00 |

Delta Miscellaneous Modules
- 502007 3-channel component DA with 3 outputs per channel | $495.00 |
- DELTA-X Extender module | $85.00 |
- 802008/117 Delta rack frame for 2 modules 117V | $395.00 |
- 802001/117 Delta tabletop frame for 1 module 117V | $395.00 |

Break-Out Boxes (BOBs)
- BOBs allow easy connection with standard BNC cables to the component video 12-pin connectors on Betacam and MIll tape machines. BOBs use a diecast aluminum box with a 24” cable and dub connector.
- BOB-PB Betacam playback | 99.00 |
- BOB-RB Betacam record | 99.00 |
- BOB-RM MIll playback | 109.00 |
- BOB-RM MIll record | 109.00 |

SMALL ROUTERS

Model 161 Routing Switcher
A 16 x 1 video with stereo audio follow packaged in a 1RU frame and less than 8” deep.

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>903135</td>
<td>16 x 1 VAA switcher and PS</td>
<td>$995.00</td>
</tr>
<tr>
<td>803138</td>
<td>Local panel LED</td>
<td>$250.00</td>
</tr>
<tr>
<td>803368</td>
<td>Remote panel LED*</td>
<td>$300.00</td>
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<tr>
<td>903139</td>
<td>Remote panel incandescent*</td>
<td>$400.00</td>
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<tr>
<td>903340</td>
<td>Serial control RS-232 or RS-422</td>
<td>$350.00</td>
</tr>
<tr>
<td>503141</td>
<td>Extender module</td>
<td>$100.00</td>
</tr>
</tbody>
</table>

Model 44 Routing Switcher
A 4 x 4 video with stereo audio follow packaged in a 1RU frame. This small matrix router features low cost and built-in serial control. Video bandwidth is 40MHz.

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>903146</td>
<td>4 x 4 VAA switcher and PS</td>
<td>$11595.00</td>
</tr>
<tr>
<td>803151</td>
<td>Local panel, 4-bus LED</td>
<td>$350.00</td>
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<tr>
<td>803651</td>
<td>Remote panel, 4-bus LED*</td>
<td>$400.00</td>
</tr>
<tr>
<td>503141</td>
<td>Extender module</td>
<td>$100.00</td>
</tr>
</tbody>
</table>

Model 44C Component Video Routing Switcher
A 4 x 4 component video (RGB or YUV) packaged in a 1RU frame. This small matrix router features low cost and built-in serial control. Video bandwidth is 40MHz.

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>903143</td>
<td>4 x 4 VVV switcher and PS</td>
<td>$1895.00</td>
</tr>
<tr>
<td>803151</td>
<td>Local panel, 4-bus LED</td>
<td>$350.00</td>
</tr>
<tr>
<td>803651</td>
<td>Remote panel, 4-bus LED*</td>
<td>$400.00</td>
</tr>
<tr>
<td>503141</td>
<td>Extender module</td>
<td>$100.00</td>
</tr>
</tbody>
</table>

Model 5 Component Video Routing Switcher
3-channel, 5-input router designed to fill the need for a small signal selector in a component video facility. The Model 5 is a modular design with all electronics on a single plug-in circuit module. The module includes local control by means of 5 illuminated re-legendable pushbutton switches, which form part of the front panel. The router has looping inputs and 2 outputs per bus. The system is packaged in a 1RU frame including power supply.

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>903035</td>
<td>Complete series 5 system including frame, power supply and local control panel</td>
<td>$1345.00</td>
</tr>
<tr>
<td>903031</td>
<td>Remote control panel for series 5 including 25m cable</td>
<td>$295.00</td>
</tr>
</tbody>
</table>

*Includes a 15m cable

Prices and Specifications Subject to Change Without Notice.
Sierra Video Systems

MEDIUM SIZE ROUTERS

Series 8 and 16 Routing Switchers

The Series 8 and 16 are a line of audio, video, time code and pulse switches. The Series 8 is limited to 8 inputs and is based on an 8 x 8 module. The Series 16 is limited to 16 inputs and is based on a 16 x 4 building block for video and pulses. Series 16 audio and time code use a 16 x 8 module. Each module is a complete switching system with input buffers, switching matrices, output amplifiers, control circuits and power supply on the same module.

The video crosspoint modules have a bandwidth of more than 40MHz. The use of multilayered boards and "T" crosspoint design results in a worst case crosstalk of 60dB at 5MHz. The audio crosspoint is a balanced high level MOS switch that is click-free and has a total system S/N ratio of > 100dB.

Performance

The video crosspoint modules have a bandwidth of more than 40MHz. The output amplifiers, control circuits and power supply on the same module is a complete switching system with input buffers, switching matrices, output amplifiers, control circuits and power supply on the same module.

Control

Control is via a simple but flexible multiwire party line system. Control panels can be either single bus or X-Y pushbutton types or a keypad panel. These can be used in any combination with or without the optional serial control computer, which provides an ASCII protocol RS-232 port for either a simple terminal or external computer. The serial control module features a 10-year nonvolatile crosspoint memory system that restores the system to its last setup when power is turned on.

Routing Switchers 8 and 16 Input

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>503001</td>
<td>16 x 4 video crosspoint module</td>
<td>$1545.00</td>
</tr>
<tr>
<td>503009</td>
<td>16 x 8 video crosspoint module</td>
<td>$1545.00</td>
</tr>
<tr>
<td>503016</td>
<td>16 x 4 pulse (sync) crosspoint module</td>
<td>$1245.00</td>
</tr>
<tr>
<td>503039</td>
<td>Stereo 8 x 8 audio crosspoint module</td>
<td>$1245.00</td>
</tr>
<tr>
<td>503044</td>
<td>8 x 8 pulse (sync) crosspoint module</td>
<td>$1245.00</td>
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<tr>
<td>503008</td>
<td>8/16 serial control module</td>
<td>$745.00</td>
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</tbody>
</table>

Control Panels

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>803022</td>
<td>8-button single bus control panel</td>
<td>$350.00</td>
</tr>
<tr>
<td>803022</td>
<td>8-button single bus control panel</td>
<td>$350.00</td>
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<tr>
<td>803042</td>
<td>8 x 8 X-Y control panel (16 buttons)</td>
<td>$550.00</td>
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<tr>
<td>803055</td>
<td>16 x 8 X-Y control panel (24 buttons)</td>
<td>$750.00</td>
</tr>
<tr>
<td>803542</td>
<td>8 x 16 X-Y control panel (24 buttons)</td>
<td>$750.00</td>
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<tr>
<td>803505</td>
<td>16 x 16 X-Y control panel (32 buttons)</td>
<td>$950.00</td>
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<tr>
<td>803063</td>
<td>16 x 16 X-Y control panel (16 buttons)</td>
<td>$950.00</td>
</tr>
<tr>
<td>803063</td>
<td>6 x 8 thumbwheel panel (thumbwheel plus 8 buttons)</td>
<td>$950.00</td>
</tr>
</tbody>
</table>

Series 8/16 Options

Order modules separately. Include 1 per power supply and provision for plug-in serial control module unless noted otherwise.

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>801003</td>
<td>1RU frame 16 x 4 video switcher, looping inputs and dual outputs, no serial control</td>
<td>$950.00</td>
</tr>
<tr>
<td>801019</td>
<td>1RU frame 8 x 8 video switcher, looping inputs and single outputs, no serial control</td>
<td>$595.00</td>
</tr>
<tr>
<td>803041-16</td>
<td>1RU frame 16 x 8 audio switcher, &quot;D&quot; connectors for inputs and outputs, dual audio outputs, no serial control</td>
<td>$595.00</td>
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<tr>
<td>803041-88</td>
<td>1RU frame 8 x 8 audio switcher, &quot;D&quot; connectors for inputs and outputs, single audio outputs, no serial control</td>
<td>$595.00</td>
</tr>
<tr>
<td>803041</td>
<td>1RU frame 16 x 4 video switcher, supply, terminating inputs, dual outputs</td>
<td>$695.00</td>
</tr>
<tr>
<td>803064</td>
<td>1RU frame 8 x 8 video switcher, looping inputs, single outputs</td>
<td>$695.00</td>
</tr>
<tr>
<td>803069</td>
<td>1RU frame 16 x 8 audio switcher, supply, terminal strips, dual outputs</td>
<td>$695.00</td>
</tr>
<tr>
<td>803067</td>
<td>1RU frame 8 x 8 audio switcher, terminal strips, single output</td>
<td>$695.00</td>
</tr>
<tr>
<td>803006</td>
<td>3RU frame video crosspoint module 16 x 8, terminating inputs, dual outputs</td>
<td>$1145.00</td>
</tr>
<tr>
<td>803011</td>
<td>3RU frame 16 x 24 video switcher, looping inputs, dual outputs</td>
<td>$1145.00</td>
</tr>
<tr>
<td>803013</td>
<td>3RU frame stereo 16 x 24 audio switcher, terminal strips, dual outputs</td>
<td>$1145.00</td>
</tr>
<tr>
<td>803017</td>
<td>3RU frame composite video 16 x 8, looping inputs, single outputs</td>
<td>$1145.00</td>
</tr>
</tbody>
</table>

Medium Size Routers

503035 | 3RU frame, 11 x 8 video channel and up to 4 independent 16 x 8 audio channels. Terminating video inputs, dual video outputs. "D" connectors for audio, dual audio outputs | $1145.00 |

803037 | 3RU frame, 1 x 16 video channel and up to 2 stereo 8 x 16 audio channels, looping video inputs, single video outputs. "D" connectors for audio, single audio outputs | $1145.00 |

803061 | 3RU frame, up to 4 x 8 video channels and up to 2 stereo 8 x 8 audio channels. Terminating video inputs, single video output. "D" connectors for audio, single audio output | $1145.00 |

Series 32 Large Routers

504003 | 32 x 8 video crosspoint | $3495.00 |
| 504020 | 32 x 8 D1/D2 serial crosspoint | $4495.00 |
| 504021 | 32 x 8 pulse (sync) crosspoint | $2495.00 |
| 504004 | 32 x 16 audio crosspoint | $3495.00 |

These modules plug into several mounting frames:

804006 | 3RU frame x 32 video frame with PS | $1245.00 |
| 804007 | 3RU frame x 32 stereo audio frame with PS | $1245.00 |
| 804008 | 3RU frame x 32 video plus stereo audio | $1245.00 |
| 804012 | 3RU frame x 32 component video frame with PS | $1245.00 |

Series 32 systems require a system control module to drive the router's crosspoint modules and provide 2 serial channels. The first serial channel is an RS-485 party line up to 5000' for SVS control panels (up to 64 panels per system). The second serial channel is an RS-232 port for a simple terminal to provide overall system control and lockout assignments for all SVS panels in the system. The last port is for a host computer RS-232/RS-422.

504001 | System control module | $1345.00 |

Control Panels

804002 | Desktop keypad controller | $950.00 |
| 804011 | 1RU keypad controller | $795.00 |
| 804014 | 32-button single bus controller | $995.00 |
| 804016 | 32 x 32 pushbutton X/Y controller | $995.00 |

Video and Audio Distribution Amplifiers

801014 | 1RU frame for 3 Series 10 video modules with PS | $495.00 |
| 801016 | 1RU frame for 10 Series 10 video modules with PS | $795.00 |
| 801018 | 1RU frame for 10 Series 10 audio modules with PS | $895.00 |

Series 10 Modules

501011 | 10 output 60MHz video amplifier module | $175.00 |
| 501021 | 10 output subcarrier distribution amplifier module | $195.00 |
| 501022 | 10 output pulse (sync) distribution amplifier module | $195.00 |
| 501019 | 10 output differential input video amplifier module | $225.00 |
| 501019 | 10 output equalizing video amplifier (1000' 8281) | $255.00 |

Prices and Specifications Subject to Change Without Notice.
### Color System Sync, Timing and Testing Products

**TSG-440 Test and Sync Generator**
- Master RS-170A or genlock, 8 patterns, source ID (10), countdown, real time clock, audio tone
- Price: $2395.00

**TSG-375A Test Signal and Sync Generator**
- Stable, accurate and versatile, 24 patterns, all sync outputs plus 3 blackbursts, audio tone, countdown generator, 20 character source ID, genlock or master RS-170A operation.
- Dimensions: 1.75" H x 19" W x 14" D
- Price: $2995.00

**VBP-480 Video Blanking Processor**
- Locks to either incoming video or external reference. Inserts a new blanking interval with regenerated sync and burst.
- Dimensions: 1.75" H x 19" W x 14" D
- Price: $1750.00

**CSG-465 Master or Genlock Sync Generator**
- Complete RS-170A generator with additional 3 blackbursts, audio tone and selectable SMPTE bars, red field, crosshatch or safe areas outputs.
- Dimensions: 1.75" H x 19" W x 14" D
- Price: $1900.00

**CSG-460 Master or Genlock Sync Generator**
- Same as CSG-465 except without selectable test signals.
- Price: $1500.00

**CSG-455 Master Sync Generator**
- Same as CSG-465 without genlocking capability.
- Price: $1600.00

**CSG-450 Master Sync Generator**
- Basic RS-170A master sync generator.
- Price: $1200.00

**BTS-414 Blackburst Timing System**
- Genlockable with 4 independently adjustable channels. Each channel includes 1 each of: sync, subcarrier, blanking and blackburst.
- Dimensions: 1.75" H x 19" W x 14" D
- Price: $1995.00

**TSG-2000 Test Signal Generator**
- For portable or bench applications, 4 patterns, programmable front panel, 2 audio tone outputs, 115VAC or 12VDC operation.
- Price: $1150.00

**SLI-2000 Source Line Identifier**
- For remote line monitoring, provides colorbars with I.D. when a valid source is not present. Automatically switches to source when present. 115VAC or 12VDC operation.
- Price: $650.00

**PPP-2000 Power Pack Box**
- For battery power applications of the TSG-2000 and SLI-2000. Unit holds 1 NP-1 type battery.
- Price: $150.00

### Series 2100 Switching, Distribution and Timing Products

**Frames**

**SS-2100-2 Stand-Alone Desktop Module Mounting Frame**
- For any 2 plug-in modules. Includes power adaptor.
- Price: $250.00

**SS-2100-6 Rackmount (1 RU) Module Mounting Frame**
- For any 6 plug-in modules. Includes power adaptor.
- Price: $450.00

**SS-2100-16 Rackmount (3 RU) Module Mounting Frame**
- For any 16 plug-in modules. Includes power supply.
- Price: $650.00

**Modules**

**VDA-2100 Wide Band Video Distribution Amplifier**
- 1 input/6 outputs, for any application requiring up to 80MHz of bandwidth.
- Price: $325.00

**VDA-2106 General Purpose Video Distribution Amplifier**
- 1 input/6 outputs, for any application including HDTV (30MHz).
- Price: $200.00

**VEO-2105 Video Equalizing Amplifier**
- 1 x 6 cable compensation for 1100' cable.
- Price: $225.00

**Controls and Accessories**

**RCP-2100 6-Button Control Panel**
- For parallel control of any 6x1 switch module.
- Price: $100.00

**SBC-2100 Single Bus Controller**
- For 6x1 coaxial "comm-line" remote control, requires SCI-2125.
- Price: $350.00

**SYC-2100 System Controller**
- For input/output comm-line control of up to 8 6x1 switch modules, requires SCI-2125.
- Price: $425.00

**RMT-2100-2 Rackmount Tray**
- For rackmounting 2 SS-2100-2 frames.
- Price: $70.00

**SBP-2102 Blank Panel**
- For unused space on RMT-2100-2.
- Price: $15.00

**IAM-2100 Inservice Alignment Module**
- For alignment and service of any Series 2100 plug-in module.
- Price: $50.00
SIGMA ELECTRONICS INC.

Series 100 Self-Contained Distribution, Timing and Test Equipment

VDA-100A Video Distribution Amplifier
1 input/6 output, DC coupled, 10MHz, adjustable gain, 110/220VAC desktop or rackmount. $310.00

VDA-110 Video Distribution Amplifier, With Sync Add
1 input/4 output version of VDA-100A, with sync add capability. $340.00

VDA-115 Video Equalizing Amplifier
Continuous adjustment of Hi and Lo response can compensate for up to 1100' of coaxial cable. Can eliminate as much as 10V of hum. $360.00

ADA-108 Audio Distribution Amplifier
1 input/6 output, with .01dB response to 30kHz, adjustable gain of -8 to +23.5dB. Balanced or unbalanced in and out, ideal for SMPTE time code. $310.00

PDA-100A Pulse Distribution Amplifier
1 input/6 output pulse regenerative DA, looping input, 110/220VAC. $310.00

SDA-110 Phase Adjustable Subcarrier DA
Regenerative subcarrier with 2 independently adjustable (360°) outputs. $390.00

APF-100 Passive Audio-Follow-Video Switcher
6 inputs to 1 output switching, RCA jacks for audio. $185.00

CSG-160 Color Sync Generator
Provides complete complement of RS-170 pulse outputs, plus subcarrier and blackburst. $480.00

SAG-100 Safe Area Generator
Superimposes safe title and safe action areas over video input. 2 outputs. $495.00

CBI-155 Color Bar/ID Generator
Provides dual outputs of SMPTE Bars, with front panel selectable numeric display of 1 through 9, also provides audio tone. $695.00

BSG-100A Black Signal Generator
2 RS-170A blackburst outputs. $495.00

CGM-100A Color Genlock Module
Used to provide genlock for associated CBG-100A and BTM-100A modules. $495.00

CBG-100A Color Bar Generator
Front panel selectable SMPTE bars, red field, crosshatch or safe areas out. Must have BSG-100A or CGM-100A for reference. $495.00

BTM-100A Blackburst Timing Module
Advance or delay timing adjustment of sync, subcarrier, blanking and blackburst signals. Must have BSG-100A or CGM-100A. $495.00

FR3-100 Rackmount Frame
19" rackmount for up to 3 Series 100 modules, all are 4.875"W. $70.00

BP3-100 Blank Panel
For unused positions in FR3-100. $16.00

Graphics Systems Products

IGM 1.0 Encoder/Sync Generator
Encodes RGB into NTSC and S-VHS (Y and C). Includes a master RS-170A sync generator, with genlock mode and an independently variable sync output. $2950.00

IGM 2.0 Decoder/Sync Generator/Encoder
For a complete system of decoding from NTSC or S-VHS to RGB, synchronization of system and graphics source, then encoding back to NTSC and S-VHS. Includes same master sync generator, genlock, and variable sync output. $3695.00

DEC 1.0 Decoder
Decodes NTSC/YC inputs into RGBS output. For graphics and video applications. $2250.00

8 x 8 Routing Switcher Systems

2188 VO Video only with system control panel. $2300.00
2188 AO Audio only with system control panel. $2100.00
2188 AV Audio and video with system control panel. $3100.00
2188 SV Stereo and video with system control panel. $4100.00
2188 SC RGB/component with system control panel. $4500.00

SBC-2188 Single bus control panel (8 x 1) $400.00
SYC-2188 System control panel (8 x 8) with each of the above systems. $425.00

Prices and Specifications Subject to Change Without Notice.
SYNC/DISTRIBUTION

EQUIPMENT

Video, Audio and Stereo-Audio Switching and Distribution

ADA-110/ADA-210 Audio Distribution Amplifiers
1 input x 10 outputs for ADA-110 and dual 1 x 10 for ADA-210; with 0.1dB response to 30kHz, gain range -8 to +23dB, balanced or unbalanced. 1.75”H x 19”W x 14.5”D

ADA-110 ............... $405.00 ADA-210 ............... $610.00

VAS-120/VSS-120 Passive Audio-Follow-Video Switchers
12 inputs x 1 output; unselected inputs are terminated. 1.75”H x 19”W x 14”D (VSS-120 is stereo-audio follow)

VAS-120 ............... $275.00 VSS-120 ............... $295.00

VAD-200/VSD-200 Video-Audio and Video-Stereo Audio DAs
One 1 x 6 video and one 1 x 6 audio DA (or 2 for stereo). 1.75”H x 19”W x 14”D

VAD-200 .................. $650.00 VSD-200 ............... $900.00

VDA-510 Video Distribution Amplifier
1 input/6 output, DC coupled, 10MHz, adjustable gain (Sync Add version, VDA-511, at $250.00)

VDA-510 .................. $240.00

VDA-515 Video Distribution Amplifier
Differential input, can compensate for up to 1100’ of coaxial cable, 1 input/6 output

VDA-515 .................. $280.00

CTG-100A Component Test Generator
4 front-panel selectable output signals: bars, reverse bars, black with plunge,

CTG-100A .................. $650.00

CTG-115 Component Test Generator
Same as CTG-100A, except in stand-alone, no genlock version

CTG-115 .................. $655.00

SVM-100 Sequential Video Multiplexer
Extends the function of a conventional WFM to display component video

SVM-100 .................. $380.00

Audio Switching Option 10 x 1 Audio Switching
For either the SVC-212 or SVC-213; specify mono or stereo

Audio Switching Option 10 x 1 Audio Switching
For either the SVC-212 or SVC-213; specify mono or stereo

SVM-100 .................. $375.00 Stereo .................. $750.00

System 500 Modular Distribution, Timing and Test Equipment

FR-500 Module Mounting Frame
Holds 1 power supply and any combination of 10 modules. 3.5”H high with hinged door. Power supply must be ordered separately

FR-500 .................. $400.00

Prices and Specifications Subject to Change Without Notice.
K2R-A 1800W Quartz Location Kit
A complete location lighting kit in an attaché case. The most compact 3-light kit on the market with a price to match.

<table>
<thead>
<tr>
<th>Item</th>
<th>Code</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>700-5G</td>
<td>600W quartz units</td>
<td>$360.00</td>
</tr>
<tr>
<td>3</td>
<td>DYH</td>
<td>600W 3200°K quartz lamps</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>S6R</td>
<td>6ft Steel Stands</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>634L</td>
<td>Carrying case</td>
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</tr>
</tbody>
</table>

Size: 18" x 12" x 6" Weight: 15 lbs.

K2R-A Accessories
- 701 401301 Barn doors for 700 quartz unit $49.50
- G5 401264 Gaffer Grip - portable light mount $19.00

K33-A 1800W Quartz Location Kit
A complete lighting system at a popular price; contains everything needed for professional results.

<table>
<thead>
<tr>
<th>Item</th>
<th>Code</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>700-5G</td>
<td>600W quartz units</td>
<td>$735.00</td>
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<tr>
<td>3</td>
<td>DYH</td>
<td>600W 3200°K quartz lamps</td>
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<tr>
<td>3</td>
<td>S5</td>
<td>8ft steel stands</td>
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</tr>
<tr>
<td>1</td>
<td>650</td>
<td>Carrying case</td>
<td></td>
</tr>
</tbody>
</table>

Size: 24 1/2" x 14 1/2" x 6 3/4" Weight: 17 lbs.

K33-A Accessories
- G5 401264 Gaffer Grip - portable light mount $19.00

K50 1800W Quartz Location Kit
Excellent versatility with professional results is offered in this 3-light kit featuring a 600W key and 2 600W broad fill lights.

<table>
<thead>
<tr>
<th>Item</th>
<th>Code</th>
<th>Description</th>
<th>Price</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>760</td>
<td>600W quartz key unit</td>
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<tr>
<td>2</td>
<td>770</td>
<td>600W quartz broad units</td>
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<tr>
<td>3</td>
<td>DYH</td>
<td>600W 3200°K quartz lamps</td>
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<tr>
<td>3</td>
<td>771</td>
<td>Barn doors</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>712</td>
<td>Single scims</td>
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</tr>
<tr>
<td>3</td>
<td>SA28</td>
<td>8ft aluminum stands</td>
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</tr>
<tr>
<td>1</td>
<td>650</td>
<td>Carrying case</td>
<td></td>
</tr>
</tbody>
</table>

Size: 24 1/2" x 14 1/2" x 6 3/4" Weight: 22 lbs.

K50 Accessories
- G5 401264 Gaffer Grip - portable light mount $19.00
- 712 401312 Single scrim $19.00

Prices and Specifications Subject to Change Without Notice.
K71-A 1800W Professional Focusing Quartz Location Kit
This professional quartz lighting kit features the flexibility of 3 focusing units which allow smooth transition from spot to flood.

- 600W focusing unit
- 2 650W broad units

K72-A 1900W Professional Quartz Location Kit
This professional kit features a 600W focusing unit and 2 650W broad units.

- 650W quartz broad units
- 2 650W quartz lamps

K73-A 3000W Professional Focusing Quartz Location Kit
Extra coverage and versatility are provided in this kit featuring 3 1000W focusing units.

- 1000W focusing unit
- 2 1000W broad units

K74-A 3000W Professional Quartz Location Kit
Our most powerful 3-unit lighting kit offers the versatility and flexibility of 2 1000W broad units and a 1000W focusing unit.

- 2 1000W quartz broad units
- 1 1000W quartz lamp
- 1 1000W focusing unit

K75-A 2500W Professional Quartz Location Kit
2 each focusing and broad units provide excellent lighting for both studio and location use in photographic and video applications.

- 600W quartz focusing units
- 2 600W quartz lamps

K76-A 4000W Professional Quartz Location Kit
The pairing of 2 1000W focusing and 2 1000W broad units makes this our most versatile and powerful kit.

- 2 1000W quartz focusing units
- 2 1000W quartz lamps

Prices and Specifications Subject to Change Without Notice.
DXC-537 3-HAD CCD Color Camera

- 2/3" IT (Interline Transfer) Hyper HAD image sensor
- 380,000 picture elements
- 62dB S/N ratio
- 700 TV lines horizontal resolution
- HAD sensor structure uses a vertical overflow drain which enables a larger light sensitive area to be used
- Use in camcorder, stand-alone or studio configurations
- High sensitivity of f/8.0 at 2000 lux
- No registration adjustments
- Virtually no registration errors
- No geometric distortion
- No electric/magnetic field interference
- High resistance to vibration and shock
- No blooming
- No comet-tails
- Variable speed electronic shutter
- Shutter speeds: off, 1/100, 1/250, 1/500, 1/1000, 1/2000 second
- "Clear Scan" function enables a precise shutter speed to be selected so that it can be matched with the computer display scanning frequency, eliminating the horizontal streak that occurs with conventional cameras
- Designed to directly dock with the PVV-1 or EVV-9000 via the pro 50-pin connector
- Quick start viewfinder
- Generator displays a safety zone and center marker in the viewfinder
- Built-in character generator
- Low power consumption
- Built-in microphone
- Zebra video level indication
- White balance, black balance and black setup can be adjusted automatically for easy operation
- SMPTE type color bars
- Gain up switch: 0, +9, +18dB
- Automatic warning system
- Automatic iris
- Genlock capability
- ABL (Automatic Black Level) function
- 2-line image enhancer
- External DC input
- Audio monitor jack
- Intercom jack
- VTR select switch

**Specifications**

- **Image Device:** IT CCD, 3-chip
- **Optics:** f/1.4 medium index prism system
- **Picture Elements:** 768(H) x 493(V)
- **Sensing Area:** 8.8 x 6.6mm (equivalent to a 2/3" pickup tube)
- **Built-in Filters:** 1: 3200°K; 2: 5600°K +1/4 ND; 3: 5600°K; 4: 5600°K +1/8 ND
- **Lens Mount:** Bayonet mount
- **Signal System:** EIA standards, NTSC color system
- **Scanning System:** 2:1 interlaced, 525 lines, 60 fields/sec.
- **Horizontal Frequency:** 15.734kHz
- **Vertical Frequency:** 59.94Hz
- **Sync System:** Internal or external with the VBS or BS signal
- **Horizontal Resolution:** 700 TV lines
- **Minimum Illumination:** 13 lux with f/1.8, +18dB; 7.5 lux with f/1.4, +18dB
- **Sensitivity:** f/8.0 at 2000 lux (3200°K, 89.9% reflectance) (typical)
- **Gain Selection:** 0dB, +9dB, +18dB
- **Shutter Speed Selection:** Off, 1/100, 1/250, 1/500, 1/1000, 1/2000 sec.
- **Clear Scan Selection:** 60.4 to 101.1Hz (106 steps)
- **Video Output:** VBS: 1.0V p-p, sync negative; Y: 1.0V p-p, sync negative; R-Y/B-Y: 0.7V p-p; R/G/B: 1.4V p-p; V/C: (Y) 1.0V p-p, sync negative, (C) 0.286V p-p (burst level)
- **S/N Ratio:** 62dB (typical)
- **Registration:** 0.05% (all zone, without lens)
- **Geometric Distortion:** Below measurable level
- **Inputs/Outputs:** Interface: DIN 50-pin; Video Out: BNC type;
- **Lens:** 12-pin; VF: DIN 8-pin; Remote: 10-pin
- **Power Requirements:** 12VDC
- **Power Consumption:** 9.5W (without VF/CA-537)
- **Temperature:** +14°F to +113°F
- **Storage Temperature:** -4°F to +140°F
- **Weight:** 4 lbs., 14 oz. for camera head only; 7 lbs., 11 oz. with the CA-537

**DXC-537H**

Dockable camera head only. Requires 1 of the following: CA-537/327/325 series adaptor, EVV-9000, BVV-5/CA-511 and lens

- **Price:** $6,500.00

**DXC-537L**

Dockable lightweight camera system with three 2/3" Hyper HAD sensor CCDs featuring on-chip lens technology. Includes: DXC-537H camera head, DXF-501 quick start viewfinder, VCT-14 tripod plate, CCZQ-A2 camera cable, LC-421 carrying case.

Requires 1 of the following: CA-537/327/325 series adaptor, EVV-9000, PVV-1, BVV-5/CA-511 and lens

- **Price:** $7,950.00

**PAC-537L**

Includes: DXC-537L and CA-537 without lens (assembly required)

- **Price:** $8,850.00

**PACP-VW537L**

Camcorder configuration consisting of DXC-537L and PVV-1, Betacam SP dockable recorder without lens (assembly required)

- **Price:** $11,050.00

**PAC-EVW537L**

Camcorder configuration of DXC-537L and EVV-9000 without lens (assembly required)

- **Price:** $11,050.00

*To Be Announced*
### CCD CAMERAS

#### DXC-M7 3-HAD* CCD Color Camera
- CCD production camera
- 768 HAD sensor CCDs
- Horizontal resolution: > 700 lines
- S/N: > 60dB
- Variable electronic shutter
- Linear matrix: On-line: knee, pedestal
- Detail and WB adjustments
- Composite and component outputs

#### Specifications

<table>
<thead>
<tr>
<th>Image Device</th>
<th>Interline-transfer CCD, 3-chip</th>
</tr>
</thead>
<tbody>
<tr>
<td>Picture Elements</td>
<td>768H x 493V</td>
</tr>
<tr>
<td>Sensing Area</td>
<td>8.8mm x 6.6mm (equivalent to a 2/3&quot; pickup tube)</td>
</tr>
<tr>
<td>Built-in Filters</td>
<td>1: 3200°K, 2: 5800°K + 1/4ND, 3: 5800°K, 4: 5600°K + 1/16ND</td>
</tr>
<tr>
<td>Lens Mount</td>
<td>Bayonet mount</td>
</tr>
<tr>
<td>Sync System</td>
<td>Internal or genlock</td>
</tr>
<tr>
<td>Min. Illumination</td>
<td>26 lux with f/1.8, + 18dB</td>
</tr>
<tr>
<td>Sensitivity</td>
<td>2000 lux with f/5.6 at 3200°K</td>
</tr>
<tr>
<td>Gain Selection</td>
<td>0dB, 9dB, or 18dB</td>
</tr>
<tr>
<td>Video Outputs</td>
<td>Composite video: 1.0V, 75 ohms, unbal. Y/R-Y/B-Y component: Y: 1.0V, 75 ohms, unbal. R-Y-B-Y: 0.7V, 75 ohms, unbal., RGB, sync-on-green: 0.7V, 75 ohms, unbal., Y/C separate: Y: 1.0V, 75 ohms, unbal., C: Burst level 0.286V, 75 ohms, unbal.</td>
</tr>
<tr>
<td>Registration</td>
<td>0.05% for Zone 1, 2, 3</td>
</tr>
<tr>
<td>Inputs/Outputs</td>
<td>26-pin connector: Sony Z-type; DC In: XLR-type, male, 4-pin, balanced; Video Out: BNC-type, 75 ohms, unbalanced; Lens: 12-pin; VF: 8-pin; Lens Remote: 6-pin; Remote: 10-pin; Earphone: miniature jack; Intercom: mini intercom jack</td>
</tr>
<tr>
<td>Power</td>
<td>12VDC, 14W</td>
</tr>
<tr>
<td>Weight</td>
<td>7 lbs., 15 oz.</td>
</tr>
<tr>
<td>Dimensions</td>
<td>10.5&quot;H x 7.5&quot;W x 14&quot;D</td>
</tr>
</tbody>
</table>

---

#### Optional Accessories
- **CCU-M7 Camera Control Unit**
  - Up to 300 meters operation; 4 scene files; shutter speed selector; full range of control
  - $3,500.00
- **RM-M7G Handheld Remote Control**
  - For DXC-M7 or CCU-M7; provides remote setup with or without CCU
  - $800.00
- **CA-M7 Full Studio Adaptor for DXC-M7**
  - Provides adjustable safe picture and title areas and center cross; RM-M7G docking facility; enhanced tally and mechanical functions
  - $1,950.00

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#### DXC-750 3-HAD CCD Color Camera
- 2-piece design (camera head/CCU) combines flexibility and high quality into 1 system
- Compact (27/8" x 3" x 43/8") and lightweight (1.32 lbs.) camera head can be installed up to 330' away from the CCU using optional CCZ-A cables
- Aluminum diecast body
- All functions operated from the rackmountable CCU
- 768 HAD sensor CCDs provide low noise stability and resistance to environmental stresses in addition to conventional CCD features
- High density CCD image sensors deliver 700 TV lines (luminance) of horizontal resolution
- Improved preamplifier reduces noise-causing dark current, resulting in an excellent S/N of 60dB
- Red linearity: 0.05% for Zone 1, 2, 3
- Detail control, linear Matrix and Gamma selection for high precision color reproduction
- Variable speed electronic shutter (1/500, 1/1000, 1/2000, 1/4000, or 1/8000 of a second) for motion analysis and scientific observation
- Automatic or manual white/black balance with memory
- Low light and gain selection status indicators on CCU
- Camera head accepts bayonet mount lenses with 6-pin connectors
- Genlockable for synchronization to other video systems

#### Specifications

<table>
<thead>
<tr>
<th>Pickup Device</th>
<th>Interline-transfer CCD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Picture Elements</td>
<td>768H x 493V</td>
</tr>
<tr>
<td>Sensing Area</td>
<td>8.8mm x 6.6mm</td>
</tr>
<tr>
<td>Min. Illumination</td>
<td>20 lux</td>
</tr>
<tr>
<td>Gain Selection</td>
<td>0., + 9., + 18dB</td>
</tr>
<tr>
<td>Detail Control</td>
<td>Continuously variable</td>
</tr>
<tr>
<td>Linear Matrix Circuit</td>
<td>On/off selectable</td>
</tr>
</tbody>
</table>

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### Prices and Specifications Subject to Change Without Notice.
SONY

Business and Professional Group

DXC-325 3-HAD™ CCD Color Camera
- 1/2" interline-transfer CCD • Integration of over 250,000 picture elements within an image sensing area that is only 6.4 x 4.8mm • 58dB signal-to-noise ratio is maintained even in high temperatures • 530 TV lines horizontal resolution • Wide aperture ratio in the photo sensing area due to Vertical Over Flow Drain (VOFD) structure and therefore provides a high sensitivity of f/5 at 2000 lux • Virtually no registration error • No geometric distortion • High image burning resistance • No blooming and no comet-tails • Smear phenomenon has been considerably reduced due to the HAD sensor and the double P-well structure • Variable speed electronic shutter—shutter speeds of Off, 1/60, 1/100, 1/250, 1/500, 1/1000, 1/2000 sec. • Quick start 1.5" viewfinder (DXF-325) • Built-in character generator • Built-in microphone • Auto white and black balance • Gain-up switch: 0, +9, +18dB • Zebra video level indication • Automatic warning system • Built-in color bar generator • Color temperature conversion filters • Automatic Black Level (ABL) function • Can be a stand-alone camera, a computer image input camera or an ITV camera

DXC-325H Camera head only ................................................... $4650.00
DXC-325L Includes: DXC-325H camera head, LC-325 carrying case, CCQ-2BRS camera cable, DXF-325 viewfinder, CA-325 camera adaptor and VCT-12 tripod adaptor .............................. 5850.00
EVW-325L Hi8 Camcorder Configuration Without Lens. Includes: DXC-325H camera head; EVV-9000 Hi8 dockable recorder; DXF-325 viewfinder; VCT-12 tripod adaptor and LC-420 carrying case ........................... $6950.00

DXC-327 3-HAD™ CCD Color Camera
- 700 TV lines horizontal resolution • S/N ratio of 60dB • 3 interline-transfer CCD chips featuring On-Chip-Lens (OCL) array accurately mounted on a prism optical block by Sony’s spatial offset mounting technology • Over 380,000 picture elements packed within a tiny area (6.4 x 4.8mm) on each chip, corresponding to red, green and blue • HAD (Hole Accumulated Diode) sensor offers ideal colorimetry, minimizes dark current noise level and reduces vertical smear level • Wide aperture ratio in the photo sensing area due to VOFD structure • High sensitivity of f/5.6 at 2000 lux • Extremely low lag • Virtually no registration error • 2 white balance memories • No geometric distortion • High image burning resistance • No blooming or comet-tails • Variable speed electronic shutter—shutter speeds of Off, 1/100, 1/250, 1/500, 1/1000, 1/2000 sec. • Ergonomic design is well balanced for operation with the EVV-9000 Hi8 videocassette recorder • Built-in character generator • Built-in microphone • Safety zone and center marker generator • Zebra video level indication • Equipped with a 10-pin remote connector for interface with the RM-M7G remote control unit • White balance, black balance and black setup level can be adjusted automatically for easy operation • Gain-up switch: 0, +9, +18dB • Automatic warning system • Automatic iris control • Genlock capability • External microphone input connector • Built-in color bar generator • 2-line image enhancer • External DC input • Audio monitor jack • Intercom jack • VTR select switch

CA-325 Camera Adaptor
Stand-alone camera adaptor for DXC-325 and DXC-327 .......................... $820.00

Optional Accessories for DXC-325 and DXC-327

CA-327 Camera Adaptor
The CA-327 is a standard camera adaptor designed for the DXC-327/325. It is connected to the DXC-327/325 via a 50-pin interface. A 14-pin connector is provided to enable a single cable link to a camera control unit or various portable VTRs, including 1", 2/3" U-Matic and 1/2" format VTRs. The CA-327 also comes equipped with an S-connector and audio output connector for further operational re-venience. The configuration of the DXC-327/325 with the CA-327 is appropriate for field or studio applications as a stand-alone camera or studio camera system .......................................................... $900.00

Prices and Specifications Subject to Change Without Notice.
### Fujinon Lenses (3 Pick-Up Use)

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>A7x7B</td>
<td>7:1 servo zoom lens, 7-50mm, f/1.7</td>
<td>$6,810.00</td>
</tr>
<tr>
<td>A7x7BRM/B</td>
<td>Same as A7x7B with 12-pin connector for DXC-577 series. 7-50mm, f/1.7</td>
<td>$6,810.00</td>
</tr>
<tr>
<td>A8.5x5.5BERM/B</td>
<td>5.5-46.75mm wide angle zoom lens for DXC-M7 series (with 2X extender)</td>
<td>$11,750.00</td>
</tr>
<tr>
<td>A9x10BERM/B</td>
<td>9.5-105mm, f/1.7 with 2X extender</td>
<td>$2,500.00</td>
</tr>
<tr>
<td>A12x9BERM/B</td>
<td>12:1 servo zoom lens, 9-108mm, f/1.7 with 2X extender</td>
<td>$2,850.00</td>
</tr>
<tr>
<td>A12x10BRM/B</td>
<td>12:1 servo zoom lens, 10-120mm, f/1.7 with 2X extender</td>
<td>$2,850.00</td>
</tr>
<tr>
<td>A14x8.5BERM</td>
<td>Fujinon 14X zoom lens with built-in 2X extender, servo zoom, and macro focus</td>
<td>$6,900.00</td>
</tr>
<tr>
<td>A16x9.5BERM/B</td>
<td>9.5-152mm, f/1.8 with 2X extender, 77mm dia. filter threading, 6-pin</td>
<td>$4,200.00</td>
</tr>
<tr>
<td>A18x9.5BERM/B</td>
<td>9.5-152mm, f/1.8 with 2X extender, 77mm dia. filter threading, 12-pin</td>
<td>$4,200.00</td>
</tr>
<tr>
<td>A22x7.5BERM/B</td>
<td>7.5-90mm, f/1.7 with 2X extender, 77mm dia. filter threading, 12-pin connector for DXC-M7 series</td>
<td>$1,800.00</td>
</tr>
<tr>
<td>A25x9B</td>
<td>18:1 servo zoom lens, 9.5-152mm, f/1.8, 77mm dia. filter threading, 12-pin connector for DXC-M7 series</td>
<td>$1,800.00</td>
</tr>
<tr>
<td>A35x5.6BERM</td>
<td>3.15X wide angle servo zoom lens, 6.5-22.75mm</td>
<td>$5,275.00</td>
</tr>
<tr>
<td>VCL-10128Y</td>
<td>12:1 servo zoom lens, 10-120mm, f/1.7</td>
<td>$1,265.00</td>
</tr>
</tbody>
</table>

### Fujinon Lenses: 3 Pick-Up Use (1/2"")

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>S16x7B</td>
<td>Hot shoe (cableless) 18:1 servo zoom lens for DXC-326/327 Series, 7-712mm, f/1.4, hot shoe, 77mm dia. filter threading</td>
<td>$1,950.00</td>
</tr>
<tr>
<td>S12x7.5B</td>
<td>Hot shoe (cableless) 12:1 servo zoom lens for DXC-326/327 Series, 7-712mm, f/1.4, hot shoe, 77mm dia. filter threading</td>
<td>$1,250.00</td>
</tr>
</tbody>
</table>

### Fujinon Lens for Teleconferencing: 3 Pick-Up Use (1/2"")

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>S16x7BMD-D8</td>
<td>16:1 zoom lens, 7-112mm for DXC-325/327 Series. 7-712mm, f/1.4, hot shoe, 77mm dia. filter threading</td>
<td>$2,470.00</td>
</tr>
</tbody>
</table>

### Fujinon Close-Up Lenses

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECL-8072</td>
<td>Close-up lens for A10x108MD-D8</td>
<td>$170.00</td>
</tr>
<tr>
<td>ECL-8077</td>
<td>Close-up lens for A18x8.5BMD-D8</td>
<td>$175.00</td>
</tr>
<tr>
<td>ECL-11062</td>
<td>Close-up lens for A4x7.5BMD-D8 and A8x12BMD-D8.52mm thread</td>
<td>$110.00</td>
</tr>
</tbody>
</table>

### Remote Controls for Fujinon Lenses

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>FMM-8A</td>
<td>Focus module for A12x9BERM-88, A14x9BERM, A16x9.5BMD, A18x9.5BEM, RMM-8A</td>
<td>$180.00</td>
</tr>
<tr>
<td>LO-1011</td>
<td>Studio remote control kit for Fujinon Lenses: A12x9BERM-88, 12x9BEM, A16x9.5BMD, A18x9.5BMD, VCL-10128Y (A12x9BERM)</td>
<td>$1,000.00</td>
</tr>
</tbody>
</table>

### Extension Cables for Fujinon Lenses

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECM-025F</td>
<td>Between A10x108MD-D8, A16x9.5BMD-D8 and RMD-2, 25'</td>
<td>$340.00</td>
</tr>
<tr>
<td>ECM-050F</td>
<td>Between A10x108MD-D8, A16x9.5BMD-D8 and RMD-2, 50'</td>
<td>$440.00</td>
</tr>
<tr>
<td>ECM-100F</td>
<td>Between A10x108MD-D8, A16x9.5BMD-D8 and RMD-2, 100'</td>
<td>$675.00</td>
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</table>

### Canon Lenses: 3 Pick-Up Use (1/2"")

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>J6x8B</td>
<td>8:1 wide angle zoom lens, 6-48mm, f/1.7</td>
<td>$9,240.00</td>
</tr>
<tr>
<td>J6x8B/B</td>
<td>Same as J6x8B with 12-pin connector for DXC-M7 series</td>
<td>$9,240.00</td>
</tr>
<tr>
<td>J6x8BIE</td>
<td>8:1 wide angle zoom lens, 6-48mm, f/1.7 with 2X extender</td>
<td>$11,500.00</td>
</tr>
<tr>
<td>J6x8B/E</td>
<td>Same as J6x8B with 12-pin connector for DXC-M7 series</td>
<td>$11,500.00</td>
</tr>
<tr>
<td>J12x10BRS</td>
<td>f/1.7 servo zoom lens, manual focus, 6-pin Canon SX8 for DXC 3000 and EDP-10F</td>
<td>$1,280.00</td>
</tr>
<tr>
<td>J14x8B/E</td>
<td>Same as J14x8B with 12-pin connector for DXC-M7 series</td>
<td>$13,680.00</td>
</tr>
<tr>
<td>J16x9.5BRS</td>
<td>9.5-143mm f/1.8 servo zoom lens with 2X extender</td>
<td>$4,200.00</td>
</tr>
<tr>
<td>J16x9.5BKR</td>
<td>9.5-143mm f/1.8 servo zoom lens for DXC-M7 series</td>
<td>$1,800.00</td>
</tr>
<tr>
<td>J16x8.5BIE/B</td>
<td>Same as J16x8.5BIE with 12-pin connector for DXC-M7 series</td>
<td>$11,100.00</td>
</tr>
</tbody>
</table>

### Canon Lenses for Teleconferencing: 3 Pick-Up Use (1/2"")

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>J12x10BTSA</td>
<td>12X, 10-120mm, f/1.7 remote control servo zoom lens. Requires TCR-10, TCR-20 or equivalent for operation</td>
<td>$2,120.00</td>
</tr>
<tr>
<td>J15x9.5TSA</td>
<td>15X, 9.5-143mm, f/1.8 remote control servo zoom lens. Requires TCR-10, TCR-20 or equivalent for operation</td>
<td>$2,470.00</td>
</tr>
</tbody>
</table>

**Prices and Specifications Subject to Change Without Notice.**
### Camera Accessories

#### Canon Lenses: 3 Pick-Up Use (1/2"")

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>PH12x7.5BKRS</td>
<td>Hot shoe (cableless) 12:1 servo zoom lens for DXC-325/327 Series, 7.5-90mm, f/1.4, hot shoe, 82mm dia. filter threading</td>
<td>$1,365.00</td>
</tr>
<tr>
<td>PH15x7BKRS</td>
<td>Hot shoe (cableless) 15:1 servo zoom lens for DXC-325/327 Series, 7-105mm, f/1.4, hot shoe, 82mm dia. filter threading</td>
<td>$1,800.00</td>
</tr>
<tr>
<td>VCL-810BX</td>
<td>Hot shoe (cableless) 10:1 servo zoom lens for DXC-325/327 Series, 8-80mm, f/1.4, hot shoe, 62mm dia. filter threading. Same as PH10x8BKRS</td>
<td>$1,180.00</td>
</tr>
</tbody>
</table>

#### Canon Lenses for Teleconferencing: 3 Pick-Up Use (1/2"")

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>PH12x7.5BKTS</td>
<td>Hot shoe (cableless) 12:1 zoom lens, 7.5-90mm for DXC-325/327 Series</td>
<td>$2,120.00</td>
</tr>
<tr>
<td>PH15x7BKTS</td>
<td>Hot shoe (cableless) 15:1 zoom lens, 7-105mm for DXC-325/327 Series</td>
<td>$2,470.00</td>
</tr>
<tr>
<td>PH15x7BIRS</td>
<td>Hot shoe (cableless) 12:1 zoom lens, for DXC-325/327 Series, 7-105mm, f/1.4 with 2X extender</td>
<td>$4,200.00</td>
</tr>
</tbody>
</table>

#### Canon Fixed Focal Length Lenses: 3 Pick-Up Use (1/2"")

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>J6MM</td>
<td>6mm fixed focal length lens for DXC-750, DXC-M7 and DXC-3000A Series</td>
<td>$2,700.00</td>
</tr>
<tr>
<td>J8MM</td>
<td>8mm fixed focal length lens for DXC-750, DXC-M7 and DXC-3000A Series</td>
<td>$3,360.00</td>
</tr>
<tr>
<td>J10MM</td>
<td>10mm fixed focal length lens for DXC-750, DXC-M7 and DXC-3000A Series</td>
<td>$6,400.00</td>
</tr>
<tr>
<td>J24MM</td>
<td>24mm fixed focal length lens for DXC-750, DXC-M7 and DXC-3000A Series</td>
<td>$5,800.00</td>
</tr>
<tr>
<td>J35MM</td>
<td>35mm fixed focal length lens for DXC-750, DXC-M7 and DXC-3000A Series</td>
<td>$5,800.00</td>
</tr>
</tbody>
</table>

#### Remote Control for Canon Lenses

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>LO-1309</td>
<td>Studio remote control kit for J15x9.5B, J13x9.85B, J12x10.5B</td>
<td>$1,610.00</td>
</tr>
<tr>
<td>LO-26</td>
<td>Studio remote control kit for PH12x7.5BKRS, PH15x7BKRS</td>
<td>$960.00</td>
</tr>
<tr>
<td>LO-27</td>
<td>Studio remote control kit for VCL-810BX (PH10x8BKRS)</td>
<td>$960.00</td>
</tr>
<tr>
<td>TCR-101</td>
<td>Remote control box for J12x10KTS and J15x9.5BKS</td>
<td>$600.00</td>
</tr>
<tr>
<td>TCR-201</td>
<td>Remote control box for J12x10KTS and J15x9.5BKS</td>
<td>$730.00</td>
</tr>
</tbody>
</table>

#### 12 Pin Connection Cables for Canon Lenses

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>TCC-0005M</td>
<td>Between J12x10KTS, J15x9.5BKS and TCR-10/TCR-20, 6m/16.4'</td>
<td>$240.00</td>
</tr>
<tr>
<td>TCC-010M</td>
<td>Between J12x10KTS, J15x9.5BKS and TCR-10/TCR-20, 10m/32.8'</td>
<td>$320.00</td>
</tr>
<tr>
<td>TCC-020M</td>
<td>Between J12x10KTS, J15x9.5BKS and TCR-10/TCR-20, 20m/6.6'</td>
<td>$520.00</td>
</tr>
<tr>
<td>TCC-050M</td>
<td>Between J12x10KTS, J15x9.5BKS and TCR-10/TCR-20, 50m/16.4'</td>
<td>$1,220.00</td>
</tr>
</tbody>
</table>

#### Other Color Camera Lenses

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>H6AMD38/1</td>
<td>Remote control 6:1 zoom lens, 12.5-75mm, f/1.2, C-mount, requires CRD-18 (Fujinon)</td>
<td>$1,010.00</td>
</tr>
<tr>
<td>H6SN0438/1</td>
<td>Remote control 6:1 zoom lens, 12.5-75mm, f/1.2, C-mount, requires CRD-18 (Fujinon)</td>
<td>$1,070.00</td>
</tr>
</tbody>
</table>

#### Nikon Servo Zoom Lenses: 3 Pick-Up Use

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>S13x9B1/B</td>
<td>9-117mm for DMC-M7 Series (with 2X extender)</td>
<td>$6,800.00</td>
</tr>
<tr>
<td>S18x8.5B1/B</td>
<td>8.5-127.5mm with 2X extender for DMC-M7 Series</td>
<td>$7,400.00</td>
</tr>
</tbody>
</table>

#### Nikon Accessories

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>RLCN1</td>
<td>EFP/Studio Rear Control Kit. Provides servo zoom and manual focus. Requires TF-RM2 or TF-RM3</td>
<td>$1,600.00</td>
</tr>
<tr>
<td>TF-RM2</td>
<td>Focus control module for Nikon S13x9B1/B lens</td>
<td>$210.00</td>
</tr>
<tr>
<td>TF-RM3</td>
<td>Focus control module for Nikon S18x8.5B1/B lens</td>
<td>$210.00</td>
</tr>
<tr>
<td>TRA-1</td>
<td>Mounting adaptor ring, allows the use of wide angle converter and telephoto converter with S13x9B1/B</td>
<td>$70.00</td>
</tr>
<tr>
<td>WFC80-B5</td>
<td>Wide angle conversion lens (0.8X) for S13x9B1/B and S18x8.5B1/B lenses. Requires TRA-1</td>
<td>$2,100.00</td>
</tr>
</tbody>
</table>

#### Viewfinders

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>DXF-M7</td>
<td>1.5&quot; high quality viewfinder for DMC-M7 Series</td>
<td>$875.00</td>
</tr>
<tr>
<td>DXF-40A</td>
<td>4&quot; viewfinder, can be used as a rackmountable monitor with MM-1800 for use with DMC-3000 Series, DMC-M7 Series, DMC-1800 Series, DMC-M7 Series and DMC-325 Series</td>
<td>$645.00</td>
</tr>
<tr>
<td>DXF-50</td>
<td>5&quot; high resolution viewfinder for use with DMC-3000 Series, DMC-M3A Series and DMC-M7 Series</td>
<td>$1,070.00</td>
</tr>
<tr>
<td>DXF-32B</td>
<td>1.5&quot; Quick Start viewfinder for DMC-325 Series</td>
<td>$580.00</td>
</tr>
<tr>
<td>DXF-501</td>
<td>1.5&quot; Quick Start viewfinder for DMC-327 Series</td>
<td>$660.00</td>
</tr>
</tbody>
</table>

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Prices and Specifications Subject to Change Without Notice.
CAMERA ACCESSORIES

Camera Control Units and Related Accessories

<table>
<thead>
<tr>
<th>Product</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>CA-326</td>
<td>Stand-alone camera changer for DXC-325 Series. Included with DXC-325K and DXC-325L packages</td>
<td>$820.00</td>
</tr>
<tr>
<td>CCU-M3</td>
<td>CCU for DXC-3000/M2/M3/M3A/Mark II, DXC-77 Series. Requires CMA-8 AC adaptor</td>
<td>$1,650.00</td>
</tr>
<tr>
<td>CCU-M7</td>
<td>Full camera control unit for DXC-77 Series, includes AC power supply. Requires optional ( \text{CCU-M7} \times 2 )</td>
<td>$3,500.00</td>
</tr>
<tr>
<td>CA-M3</td>
<td>CCU cable extension adapter for 1000' control for DXC-3000/2/3/M3A/Mark II. Requires CMA-9AC adaptor and CCZ-M10/20 cable</td>
<td>$2,355.00</td>
</tr>
<tr>
<td>CA-M7</td>
<td>Studio adapter (enclosure) for DXC-77 Series. Adds adjustable safe picture, title, center and cursor functions plus mechanical advantages for full studio operation</td>
<td>$1,950.00</td>
</tr>
<tr>
<td>RM-M7G</td>
<td>Miniature remote control for DXC-77 Series and CCM-M7. Controls all basic functions. Also docks to CA-M7 studio adapter, 2 meter cable supplied. Optional cables extend operation to 100m</td>
<td>$800.00</td>
</tr>
</tbody>
</table>

Switcher Systems and Accessories

<table>
<thead>
<tr>
<th>Product</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRK-2000</td>
<td>Universal color keyer with RGB/composite chroma key, built-in sync generator</td>
<td>$3,090.00</td>
</tr>
<tr>
<td>SEG-2000A</td>
<td>Portable color special effects generator, AC power/external DC/battery, built-in NTSC sync generator with VBS genlock, 6 video inputs</td>
<td>$6,065.00</td>
</tr>
<tr>
<td>SEG/WEX PAC</td>
<td>Contains: SEG-2000A, WEX-2000, CCF-5</td>
<td>$8,990.00</td>
</tr>
<tr>
<td>WEX-2000</td>
<td>Wipe pattern extender, 84 wipe patterns</td>
<td>$3,050.00</td>
</tr>
<tr>
<td>LC-2006</td>
<td>Carrying case for SEG-2000A</td>
<td>$380.00</td>
</tr>
</tbody>
</table>

AC Adaptors/Batteries (cont’d)

<table>
<thead>
<tr>
<th>Product</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMA-9</td>
<td>AC adaptor for CA-M3</td>
<td>$1,070.00</td>
</tr>
<tr>
<td>CMA-D1</td>
<td>AC adaptor for 2 AVC-D1 and DXC-101</td>
<td>$290.00</td>
</tr>
<tr>
<td>AVC-D7/ DXC-107</td>
<td>Phantom power plus sync (single wire video/DC/sync)</td>
<td>$320.00</td>
</tr>
<tr>
<td>DC-311AN</td>
<td>Battery adaptor bracket for BP-65AN to DXC-3000 Series and DXC-M7 Series</td>
<td>$130.00</td>
</tr>
<tr>
<td>DC-8G</td>
<td>Battery adaptor for 2 NP-1A</td>
<td>$430.00</td>
</tr>
<tr>
<td>NP-1A</td>
<td>NiCad battery, 1.7Ah</td>
<td>$85.00</td>
</tr>
<tr>
<td>NP-1B</td>
<td>NiCad battery, 12V, 2.3Ah</td>
<td>$85.00</td>
</tr>
</tbody>
</table>

Other Accessories

<table>
<thead>
<tr>
<th>Product</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-74</td>
<td>Shotgun type microphone</td>
<td>$925.00</td>
</tr>
<tr>
<td>CA-325A</td>
<td>Docking AC adaptor for DXC-325 Series with RGB, composite, Y/C, Sync, and VBS outputs. Permits control of many camera functions with optional RM-M7G</td>
<td>$810.00</td>
</tr>
<tr>
<td>CA-325B</td>
<td>Docking adaptor (12VDC only) for DXC-325 Series with RGB, composite, Y/C, Sync, and VBS outputs. Permits control of many camera functions with optional RM-M7G</td>
<td>$490.00</td>
</tr>
<tr>
<td>CA-327</td>
<td>Camera adaptor for DXC-327</td>
<td>$900.00</td>
</tr>
<tr>
<td>CAC-1</td>
<td>Microphone holder for DXC-M3A/MK II</td>
<td>$50.00</td>
</tr>
<tr>
<td>CAC-4</td>
<td>Chest rest for DXC-325/327/Mark II</td>
<td>$180.00</td>
</tr>
<tr>
<td>CAC-12</td>
<td>Chest rest for DXC-325/327 and BVP cameras</td>
<td>$120.00</td>
</tr>
<tr>
<td>CAC-11A</td>
<td>Microphone holder for DXC-3000</td>
<td>$120.00</td>
</tr>
<tr>
<td>DR-100</td>
<td>Lightweight headset for intercommunication</td>
<td>$130.00</td>
</tr>
<tr>
<td>ECL-12LC</td>
<td>Step-down cable</td>
<td>$100.00</td>
</tr>
<tr>
<td>ECL-6L12C</td>
<td>Step-up cable</td>
<td>$100.00</td>
</tr>
<tr>
<td>ECM-1270</td>
<td>Shotgun type microphone</td>
<td>$485.00</td>
</tr>
<tr>
<td>LC-326</td>
<td>Carrying case for DXC-325 Series</td>
<td>$150.00</td>
</tr>
<tr>
<td>LC-420</td>
<td>Carrying case for DXC-325/327 Series</td>
<td>$430.00</td>
</tr>
<tr>
<td>LC-420TH</td>
<td>Thermodyne carrying case for EVW-325/327</td>
<td>$250.00</td>
</tr>
<tr>
<td>LC-2003</td>
<td>Carrying case for RMH-1800, CUC-1820, CMA-8, DXF-40</td>
<td>$335.00</td>
</tr>
<tr>
<td>LO-32BM</td>
<td>Lens mount adaptor for use of 1/4&quot; 3 pick-up lenses (6-pin) with DXC-325/327 Series</td>
<td>$580.00</td>
</tr>
<tr>
<td>MVA-12</td>
<td>Microscope attachment with C mount</td>
<td>$705.00</td>
</tr>
<tr>
<td>MVA-31</td>
<td>Microscope adaptor with bayonet mount</td>
<td>$995.00</td>
</tr>
<tr>
<td>MVA-33</td>
<td>High quality microscope adaptor with ( \frac{1}{4} )&quot; bayonet mount</td>
<td>$1,400.00</td>
</tr>
<tr>
<td>RMM-1800</td>
<td>18&quot; metal rammount for CUC-1820, CMA-8, DXF-40</td>
<td>$180.00</td>
</tr>
<tr>
<td>TGR-326</td>
<td>Title generator with clock, stopwatch and pointer functions for DXC-325 Series. 9 pages with maximum of 24 characters on each of the 9 lines. Color, blink, background, size and roll functions</td>
<td>$400.00</td>
</tr>
<tr>
<td>VCT-12</td>
<td>Tripod adaptor for DXC-3000 Series and DXC-1820</td>
<td>$120.00</td>
</tr>
<tr>
<td>VCT-14</td>
<td>Tripod adaptor for DXC-M7</td>
<td>$200.00</td>
</tr>
<tr>
<td>VCT-M3</td>
<td>Tripod adaptor for DXC-M2/M3/M3A/Mark II</td>
<td>$170.00</td>
</tr>
</tbody>
</table>

Prices and Specifications Subject to Change Without Notice.
Betacam® SP 2000 Pro Series
PVW-2800 Recorder/Player

- More than 90 minutes of recording/playback time using L-size metal (for both recording and playback) or oxide (for playback only) cassettes
- High speed picture search provides recognizable color pictures at up to 10 times normal speed in forward and reverse (24 times in monochrome)
- 2 longitudinal audio channels with Dolby® C-type NR (Noise Reduction) system
- Direct RS-422 9-pin interface with other RS-422 equipped Sony machines (Betacam/Betacam SP VTRs, BVU series U-Matics)
- Built-in comprehensive editing facilities
- Dynamic Motion Control with memory provides slow-motion editing capability (when used with a player VTR equipped with DT™ function)
- Built-in time base corrector with advanced high quality digital dropout compensator
- TBC remote control from an optional BVR-50
- Built-in LTC/VITC/user bits generator and reader
- Built-in character generator
- Enhanced serviceability with built-in self-diagnostics
- User friendly dial menu operation
- Y/R-Y/B-Y component signal inputs and outputs via BNC or 12-pin Betacam DUB connectors
- S-Video (Y/C separate) input/output connectors
- 7-pin U-Matic DUB output capability (option)
- Compact and lightweight (5 unit high, 19" rackmountable, approximately 55 lbs.)
- Low power consumption (130W)
PVW-2800 .................................................... $15,000.00

PVW-2600 Player

- More than 90 minutes of playback time using L-size cassettes with metal or oxide tape
- High speed picture search provides recognizable color pictures at up to 10 times normal speed in forward and reverse (24 times in monochrome)
- 2 longitudinal audio channels with Dolby C-type NR system
- Direct RS-422 9-pin interface with other RS-422 equipped Sony machines (Betacam, Betacam SP VTRs, BVU series U-Matics)
- Built-in time base corrector with advanced high quality digital dropout compensator
- TBC remote control from an optional BVR-50
- Built-in character generator
- Enhanced serviceability with built-in self-diagnostics
- User friendly dial menu operation
- Y/R-Y/B-Y component signal outputs via BNC or 12-pin Betacam DUB connectors
- S-Video (Y/C separate) output connector
- 7-pin U-Matic DUB output capability (option)
- Compact and lightweight (5 unit high, 19" rackmountable, approximately 54 lbs.)
- Low power consumption (110W)
PVW-2600 .................................................... $10,000.00

PVV-1 Dockable Recorder

- Designed to dock directly to the DXC-537 camera to make the PVW-537 camcorder
- More than 30 minutes of recording time using S-size cassettes (metal particle tape only)
- 2 longitudinal audio channels with Dolby C-type NR system
- Luminance or CTDM viewfinder playback
- Recognizable fast forward/rewind pictures in viewfinder
- Full range of machine control provided (fast forward/rewind/play/stop/eject)
- Record review function
- Built-in LTC/VITC/user bits generator and LTC reader with external time code lock capability
- Frame accurate backspace editing without time code discontinuity at the editing points
- 8-digit display
- Built-in loudspeaker
- Digital hours meter
- Phantom power supply (+48V, CH-1/2)
- Built-in self-diagnostics with character display on TV monitor
PVV-1 ........................................................... $9,000.00

318 Prices and Specifications Subject to Change Without Notice.
SP U-MATIC
RECORDERS/PLAYERS

BVU-950 SP U-Matic® Videocassette Recorder/Player
- Sendust heads
- 340 TV lines
- Type-C Dolby NR
- 62dB S/N with Dolby NR off
- Dolby NR auto detection system
- Accurate audio insert editing
- Built-in editing facility
- Speeds of still to 10 times high speed picture search
- RS-422 serial interface
- TBC remote connector
- 24-pin parallel interface
- Two monitor output connectors
- REF video in and out connectors
- Anti-clog facility
- 19" EIA rackmountable

BVU-950 Digital Noise Reduction (DNR) Package
Includes: (1) BVU-950, (1) BKU-901A Time Base Corrector, (1) BKU-902 Noise Reducer

$14,500.00

BVU-920 Digital Noise Reduction (DNR) Package
Includes: (1) BVU-920 SP U-Matic Videocassette Player, (1) BKU-901A Time Base Corrector, (1) BKU-902 Noise Reducer

$14,000.00

BVU-900 SP U-Matic Videocassette Player
- Compact, lightweight, and rugged design
- Improved picture quality employing Y/C separator, chroma enhancer, and noise canceller, etc.
- SP tape activates SP mode for the highest possible video and audio quality

BVU-900 Digital Noise Reduction (DNR) Package
Includes: (1) BVU-900, (1) BKU-901A Time Base Corrector, (1) BKU-902 Noise Reducer

$6,500.00

Supplied Accessories
- AC power cord
- VDC-5 dubbing cable (5m)
- RCC-5G remote control cable (9-pin—9-pin)
- Extension board
- Operation and maintenance manual

BVU-950 .................................................. $10,500.00
BVU-950 Digital Noise Reduction (DNR) Package
Includes: (1) BVU-950, (1) BKU-901A Time Base Corrector, (1) BKU-902 Noise Reducer .................. $14,500.00

BVU-920 Digital Noise Reduction (DNR) Package
Includes: (1) BVU-920 SP U-Matic Videocassette Player, (1) BKU-901A Time Base Corrector, (1) BKU-902 Noise Reducer

$14,000.00

BVU-900 SP U-Matic Videocassette Player
- Sendust heads and playback circuitry extends frequency response to 15kHz ± 3dB and provides an S/N ratio of 72dB, 52dB with Dolby NR switched off
- Built-in time code reader
- Dial operation
- Built-in character generator for titling and T/C burn-in
- All DC motor transport
- Full Bidirex control jog and shuttle
- Independent audio playback level control
- Video dub-out connector
- Professional audio/video connectors
- Remote control capability
- RS-422 integral and simple 24-pin parallel
- Self-diagnostics
- Rackmountable; 5 rack units high

BVU-900 .................................................. $6,500.00

BVU-900 Digital Noise Reduction (DNR) Package
Includes: (1) BVU-900, (1) BKU-901A Time Base Corrector, (1) BKU-902 Noise Reducer

$10,000.00

Supplied Accessories
- AC power cord
- VDC-5 dubbing cable (5m)
- RCC-5G remote control cable
- Carrying case
- Shoulder strap
- Carrying handle
- Level control knob
- Operation and maintenance manual

Supplied Accessories
- AC power cord
- VDC-5 dubbing cable (5m)
- RCC-5G remote control cable
- Carrying case
- Shoulder strap
- Carrying handle
- Level control knob
- Operation and maintenance manual

Supplied Accessories
- AC power cord
- VDC-5 dubbing cable (5m)
- RCC-5G remote control cable
- Carrying case
- Shoulder strap
- Carrying handle
- Level control knob
- Operation and maintenance manual

Supplied Accessories
- AC power cord
- VDC-5 dubbing cable (5m)
- RCC-5G remote control cable
- Carrying case
- Shoulder strap
- Carrying handle
- Level control knob
- Operation and maintenance manual

Supplied Accessories
- AC power cord
- VDC-5 dubbing cable (5m)
- RCC-5G remote control cable
- Carrying case
- Shoulder strap
- Carrying handle
- Level control knob
- Operation and maintenance manual

Prices and Specifications Subject to Change Without Notice.

319
SONY
Business and Professional Group

VO-8800 SP U-Matic® Portable Videocassette Recorder/Player
- Type C Dolby noise reduction
- Separate Y/C interface with camera
- Optional plug-in Time Code Generator capability with BKU-706
- Video confidence
- Remaining tape time display
- Continuous battery operation
- Backspace editing
- Picture search
- 3-way warning system
- Built-in RF modulator
- Headphone jack
- Remote control
- Self diagnostics
- 13 lbs., 10 oz.

VO-8800
PAC TC VO-8800 plus BKU-706 plug-in time code generator .................. $4845.00
BKU-706 Plug-in time code generator for VO-8800.
Features regeneration to external time code, drop frame/non-drop frame, free run/record run, user bits entry, reader capability .......... $1200.00
CMA-8 AC adaptor for VO-8800 and camera ............... 535.00
LC-8800 Carrying case for VO-8800 ................ 285.00
AH-8800 Carrying handle for the VO-8800 .............. 90.00

VO-9800/VO-9850 SP U-Matic Videocassette Recorder/Players
- Type C Dolby noise reduction
- 9-pin RS-422 serial interface
- TBC connection
- Jog/Shuttle dial operation ± x1/30 to x8
- Dial menu operation
- Dubbing connectors
- Balanced audio with XLR connectors
- 8-digit LED counter
- Front panel can be slanted at a 0°, 30°, 60°, or 90° angle for operational convenience
- 8 rack units high • 47 lbs., 2 oz.

VO-9800 Without full automatic assemble and insert editing .................. $5800.00
VO-9850 With full automatic assemble and insert editing .................. 8850.00
BKU-703A 33-pin editing interface board for VO-9800/9850 .................. 450.00
BKU-704 Time code reader for VO-9800/9850 .................. 1000.00
BKU-705 Time code generator/reader for VO-9850.
Features regeneration to external time code, drop frame/non-drop frame, free run/record run, user bits enter .................. $1300.00

VO-9600 SP U-Matic Videocassette Recorder/Player
- Type C Dolby noise reduction with auto detection
- XLR connectors for balanced audio input/output
- Audio dubbing on channel 1
- System versatility
- Sendust Head for improved signal-to-noise ratio
- TBC connection facilities
- Rotary 2-head helical scan system
- RS-232C interface capability
- 33-pin parallel remote control interface
- Real time counter
- Timer operation
- RF modulator
- 4-unit height/rackmountable
- Still picture
- Quick start
- Self-diagnostic functions
- 7.6"H x 16.7"W x 19.3"D
- 37.5 lbs.

VO-9600 .......................... $4100.00

VP-9000 SP U-Matic Videocassette Player
- Automatic SP mode detection system
- Type C Dolby noise reduction with auto detection
- XLR balanced audio connectors
- System versatility
- TBC connection facilities
- RS-232C interface capability
- 33-pin parallel remote control interface
- Real time counter
- Timer operation
- Programmed operation
- RF modulator
- 4-unit height/rackmountable
- Still picture
- Quick start
- Self-diagnostic functions
- 7.6"H x 16.7"W x 19.3"D
- 37.5 lbs.

VP-9000 ................................ 2950.00

Prices and Specifications Subject to Change Without Notice.
U-MATIC RECORDER/PLAYERS

VO-5850 U-Matic Editing Videocassette Recorder/Player
- Front loading tape transport
- Drum and capstan direct drive
- Digital servo LSI with "Phi Square Servo"
- DC motor reel servo
- Sophisticated editing with full RM-450 interface
- Bidirex dial search 1/2 to 5X, 15 different speeds
- High speed picture search (with RM-450 and KCS tape)
- LED tape timer with mark-in function
- Built-in preroll editing capability
- Noiseless still
- Accurate editing 2 frames with 1 preview
- Power supply with switching regulator, wide range of voltage, frequency and low power consumption
- 75W
- 19" rackmountable
- Loopthrough video input with 75 ohm termination switch
- 2 video output connectors - BNC
- Tilt-out control panel
- Rotary erase head
- Vertical interval switching and framing servo
- Dub-in/dub-out connector
- End - of - tape automatic rewind
- Audio limit function
- Random access/interactive capability

VO-5850 $6700.00

VO-5800 U-Matic Editing Videocassette Recorder/Player
- Designed for flexible editing, camera-to-VTR and VTR-to-VTR
- Bidirex search dial 1/30 to 5X normal, in either direction
- Phi Square Servo with digital LSI prevents picture "whipping" at edit points
- Editing interface with optional Sony RM-450 automatic editing control unit
- Special editing features include backspace edits, virtually noiseless still picture, long-term pause, special framing servo and rotary erase head for cleaner edits
- U-Scan ultra-high-speed picture search with optional RM-450 and KCS tape
- Advanced circuitry with 2 video inputs, vertical interval switching, choice of internal or external sync and luminance dropout compensator
- Audio dubbing adds new sound to previous recordings
- Accurate readout of elapsed tape time in minutes and seconds, mark-in function lets you note specific tape points
- Programmed operation repeats a selected segment of the tape
- Random access and auto play with optional RX-353 or RX-303 auto search control units
- Tracking control, skew control

VO-5800 $4500.00

VO-7630 U-Matic Videocassette Recorder/Player
- Same features as the VO-7600 plus:
- Dub in and out connectors for high quality picture duplication
- PAL and SECAM recording
- PAL, SECAM and NTSC playback in low band mode
- 37.5 lbs.

VO-7630 $4000.00

VO-7600 U-Matic Videocassette Recorder/Player
- Frame code and RS-232C interface capability
- 33-pin parallel remote control interface
- External sync
- Timer operation
- Optional wired/wireless remote control (RM-890 or RM-770)
- Picture search
- Still picture
- Long pause with tape protection
- Programmed operation
- 4 unit high rackmountable
- Digital hour meter
- Self diagnostics
- RF modulator
- Audio dubbing on channel 1
- 7.6"H x 16.7"W x 19.4"D
- 37.5 lbs.

VO-7600 $3100.00

VP-7040 U-Matic Videocassette Player
- PAL/SECAM/modified NTSC
- Picture search 5X f/wd/rev
- Wireless/wired remote control (optional)
- Still picture
- LED real time counter
- External sync input
- Optional frame code and RS-232C capability
- Picture search
- Still picture
- Digital hour meter
- Self diagnostic functions
- 7.6"H x 16.7"W x 19.3"D
- 35.3 lbs.

VP-7040 $2540.00

Accessories

BKU-701 Computer interface board which reads frame code and provides an RS-232C interface for Type 7 and 9 U-Matics

BKU-702 33-pin parallel interface board for Type 7 and 9 U-Matics

IF-500 Multiple interface box, enables interfacing between Sony VO/VP, SLO, BVH

RFK-634 Switchable CH3/CH4 RF modulator for Type 7 and 9 U-Matics

$410.00

$520.00

$1365.00

$140.00

Prices and Specifications Subject to Change Without Notice.
SONY

Business and Professional Group

EVW-325L Hi8 Camcorder Configuration Without Lens
- Includes: DXC-325H camera head; EVV-9000 Hi8 dockable recorder; DXF-325 viewfinder; VCT-12 tripod adaptor and LC-420 carrying case

$6950.00

EVO-9100 Hi8™ Camcorder
- Built-in 8mm time code generator/reader
- Automatic or manual white balance
- Auto/manual iris
- Macro
- Power zoom
- Variable shutter speeds 1/60, 1/100, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000 second
- Detachable shoulder brace
- Date, time or time code/tape counter and battery, moisture warning and videocassette mode can all be displayed on LCD window

$2950.00

EVO-9800A Hi8 Feeder/Recorder
- SMPTE compatible time code out via 9-pin remote, built-in chroma noise reducer
- Time code after recording capability
- U-Matic dub out
- Gentle tape tension regulation system ensures longer tape life

$5200.00

EVV-9000 Hi8 Dockable Recorder
- Directly dockable with the DXC-325 camera
- 400 TV lines horizontal resolution
- Built-in 8mm time code generator
- Y/C separate video input
- PCM and AFM audio
- Built-in earspeaker
- Rec Review function
- Warnings of Servo/Humid/Slack/Tape End/Battery/RF are indicated both on the LCD display and camera viewfinder
- An alarm tone is audible either on an earspeaker or earphone
- 4 lbs., 7 oz.

$3100.00

VA-90 VTR adaptor for EVV-9000

$900.00

EVO-9500 Hi8 Recorder/Player
- Built-in time code generator/reader
- 2-channel PCM audio
- 2-channel AFM audio
- Auto repeat, clean still and slow external sync

$2800.00

EVO-9700 Hi8 Recorder/Player
- Designed for ease of operation as a stand-alone desktop editing machine to meet a wide range of applications
- Higher luminance FM carrier and wider frequency deviation provide 400 TV lines resolution and high quality picture
- Built-in digital chrominance noise reducer (digital CNR)
- Can memorize up to 99 program segments of time code data
- Separate Y (luminance) and C (chrominance) signal processing from player to recorder
- Built-in 8mm time code generator/reader
- Video/audio insertion capability
- Slow edit function
- 1 monitor editing capability
- Feeding capability to other VTRs
- S-Video (separate Y/C) in/out connectors

$7600.00

EVV-9000 Shown Docked to DXC-325 Camera

EVM-8010R 8" Color Monitor/8mm VCR Combination
- 8" black face Trinitron
- 230 TVL resolution
- DC audio/video/headphone outputs
- Audio/video inputs
- 8mm format front loading VCR
- Optional infrared remote control
- Record SP mode
- Playback SP or LP mode

$1400.00

SVP-120 VHS Hi-Fi Player
- Double azimuth 4-head design
- Tape stabilizer
- VHS Hi-Fi stereo audio
- Rapid access tape transport system
- High speed rewind button
- On-screen menu
- Auto tracking
- Auto repeat
- Control S terminals

$470.00

SVO-140 VHS Recorder/Player
- Double azimuth 4-head design
- Tape stabilizer
- Rapid access tape transport system
- Auto repeat
- High speed rewind button
- On-screen menu
- Control S terminals
- 8-pin TV connector

$500.00

SVO-160 VHS Hi-Fi Recorder/Player
- All the features of the SVO-140 plus:
- VHS Hi-Fi stereo audio
- Key inhibit
- Power on and playback
- Control S (in/out), Control P (in) and Control L (in)

$860.00

Hi8/8mm/VHS EQUIPMENT

Prices and Specifications Subject to Change Without Notice.
VTR CONTROLLERS/ ACCESSORIES

RM-450 Editing Control Unit
- Interfaces between Betamax®, U-Matic®, U-Matic-SP, Betacam® and 1" VTR formats
- 33-pin and 9-pin connectors for various VTRs
- Time code or relative time code (RTC) reference options
- Variable pre-roll lengths
- Shuttle/jog modes
- Dynamic Tracking functions
- Error indicators
- Assemble or Insert editing
- Split Editing
- Butt editing
- Quick editing
- Trim functions
- Tape protection function
- Cue out connector
- 3-position synchronization selector
- VTR time delay pinch learning capability
- Easy data pre-setting

RM-450 $2300.00

RM-500 Remote Control Unit
- Functions: Stop, FF, Play, Rew, Pause, Rec, Dub, X5 Search Forward, X5 Search Reverse
- DC operation (power supplied from VTR)
- Cable length: 10' can be extended to 60'

RM-500 $275.00

RM-555 Multi-Unit Remote Controller
- Simultaneous control with RM-500 or RM-580: Up to 5 VTRs can be controlled simultaneously
- Cable length: 10' can be extended to 60'

RM-555 $2413.00

RM-580 Remote Control Unit
- Bidirex search dial
- Stop, FF, Play, Rew, Pause, Search (Bidirex Dial), Rec, Edit, Pre-Roll, LED tape timer, includes frame counts, DC operation
- Pre-roll start jack for remote start
- 10' cable length can be extended to 60'

RM-580 $880.00

RM-690 Remote Control Unit
- For VO-8800, Type VII U-Matic, VP-9000, VO-9600 and BVU-150
- Handheld
- Wired operation
- Controls FF, Rew, Rec, Play, Pause, Stop and Search

RM-690 $155.00

RM-770 Remote Control Unit
- For VO-8800, Type VII U-Matic, VP-9000, VO-9600 and BVU-150
- Handheld
- Wired or wireless operation
- Controls FF, Rew, Rec, Play, Pause, Stop and Search

RM-770 $175.00

RM-V5 VTR Selector
- Up to 5 VTRs can be selected
- Selection can be expanded to 1 out of 4-1 or 1 out of 5-9 using VCS-500 group selector switch
- Remote cable length 10' with 20 pin connector can be extended up to 180'

RM-V5 $305.00

DA-500 Video and Audio Distribution Amplifier
- 1 video input, 2 channel audio input RCA and 1 dub input (7 pin)
- 5 outputs of each input
- Individual direct outputs of each input
- Single input can be expanded to a maximum of 20 outputs with up to 4 DA-500s
- Power requirements: 120VAC ± 10%, 20W

DA-500 $955.00

VCS-500 Video and Audio Switcher
- 5 video inputs, 2 channel audio (RCA) and 2 dub-in inputs (7 pin)
- 1 video output, 2 channel audio output (RCA) and dub-out (7 pin)
- 1 sync input and 5 sync outputs (BNC) for external sync-lock operation
- Vertical interval switching
- Interface with RM-V5 or RM-555
- Dual VCS-500s can be used for control of up to 9 inputs
- Power consumption: 20W

VCS-500 $1635.00
DME-450 Digital Multi-Effects Switcher
- May be used as a switcher with digital effects with an edit controller for 2 machine or A/B roll editing, or as the digital effects source for the BVS-3000 switcher series
- Control panel layout designed for simple transition speed, color matte and effect pattern selection
- 3 primary video inputs plus color background
- 5 transition speeds
- 3 sync outputs for system reference
- Over 280 effects stored in ROM
- Pre-assigned buttons for Flip, Tumble, Slide, Scroll and 5 wipes
- Other available DME effects include mosaic, posterization, drop shadow, stream, squeeze, doors and 3-D rotations
- All effects easily executed with minimum number of keystrokes
- 2 built-in field memories allow use of non-time base corrected inputs such as VO-9800/9850 U-Matic

SEG-2550A Color Special Effects Generator
- Compact and cost effective special effects generator for program production and post production
- The E-File function, which memorizes and reproduces the setting of switches and buttons and the movement of the controls, levers and sticks, is adopted
- Interface capability with the BVE-910 automatic editing control unit and an external computer
- A total of 137 versatile wipe patterns
- Wipe pattern modifiers such as the positioner, the border wipe, softness border edge, echo/pairing wipe and mosaic wipe are provided
- Perfect interface capability with the CRK-2000 universal chroma keyer and the WEX-2000 wipe pattern extender
- 8 video inputs and 4 bus lines (A, B, PGM and PST) for special effects (Mix, Wipe and External Key)
- Built-in background color
- Built-in downstream keyer (DSK)
- Independent color generation for the DSK
- Shadow and edge adjustment for the key signal
- Built-in sync generator
- 4 blackburst signal outputs for synchronization of video equipment
- SC and H phase indicators
- Wipe operation versatility - Mosaic, Pattern Modulation, pairing, symmetry, which can help you create an almost limitless number of special effect functions such as pattern modulation, pairing wipe and mosaic wipe are provided
- Perfect interface capability with the BVE-910 automatic editing control unit and an external computer

SEG-2000A Color Special Effects Generator
- A portable special effects generator for EFP applications
- Can be operated by either AC or DC power
- Perfect interface capability with the WEX-2000 wipe pattern extender and the CRK-2000 universal chroma keyer
- Contains a sync generator
- 4 blackburst outputs are provided for synchronization of video equipment
- Genlock function with a VBS or BS signal
- SC and H phase indicators
- Built-in color generation for the DSK
- Shadow and edge adjustment for the key signal
- Built-in sync generator
- 4 blackburst signal outputs for synchronization of video equipment
- SC and H phase indicators
- Wipe operation versatility - Mosaic, Pattern Modulation, pairing, symmetry, positioner and border line
- AC/DC operation
- Can be mounted into a 19" EIA standard rack
- Optional carrying case for EFP use

WEX-2000 Wipe Pattern Extender
- Extends the wipe pattern versatility of the SEG-2000A and SEG-2550/2550A
- Provides 84 kinds of wipe patterns with various other special effect functions such as pattern modulation, pairing wipe and symmetry, which can help you create an almost limitless number of special effects
- Wipe operation versatility - Mosaic, Pattern Modulation, Pairing, Symmetry, Positioner and Border Line
- AC/DC operation
- Can be mounted into a 19" EIA standard rack

CRK-2000 Universal Chroma Keyer
- Both RGB and encoded chroma key functions
- Effect amplifier, background color generator, sync generator, external key input for telop, SC/H phase indicator for genlock
- Works as a switcher (3-input) without an external SEG, and as a chroma keyer. Also, in combination with SEG-2000, SEG-2000A, SEG-2550/2550A and WEX-2000, more artistic special effects operations can be performed
- RGB/line input (video 1 and 2, R, G, B) + Hard/natural mode
- Background color generator
- Sync generator
- SC/H phase indicator
- Can be mounted into a 19" EIA standard rack

BVE-600 Automatic Edit Control Unit
- A/B roll editing with Type C, Betacam®, BVU and VO Series VTRs
- Serial remote control of 3 VTRs (2 playback, 1 record)
- Reads VTR time code and CTL pulses
- Split audio/video edits
- Automatic audio mixer control for audio/video coordination
- Dynamic Motion Control with Sony Dynamic Tracking® VTRs
- Plug-in video switcher options with wipe, dissolve, superimpose
- Assembly and insert edits
- 2-channel audio control
- Easy, 2 search dial operation for record, playback VTRs, similar to the familiar cuts-only edit units
- Convenient editing with Go To, Last X and Fast Mark In features

Prices and Specifications Subject to Change Without Notice.
EDIT CONTROLLER/SWITCHERS

BVE-910 Automatic Edit Controller

- A/B roll editing with up to 4 VTRs controlled simultaneously
- Compatible with Sony BVH, BVW, BVU, VO and EVO series VTRs
- Intelligent switcher control for Sony SEG-2550, BVS-3100/3200, DME-450 or Grass Valley Group Model 100/1680 protocol
- Automatic audio mixer control for up to 4 audio outputs
- Compatible with Sony VSP-A600, MXP-29 or MXP-2000 audio mixer
- Audio monitor and preview switcher control capability
- 3.5" floppy disk control
- Free assignment of recorder
- Edit decision list memory for 998 events
- On-board list management including ripple through edits
- 10 programmable macro function keys with 20 steps each
- Dynamic Motion Control with Sony Dynamic Tracking VTRs, 4 GPIs

Supplied Accessories

- Extension board for card file unit
- 8-pin keyboard cable (5m)
- 15-pin D-sub connector (male)
- AC power cord
- Operation and maintenance manual

Optional Accessories

- BKE-904 dual RS-422 VTR interface
- BKE-912A/913/915A serial switcher interfaces
- BKE-916A audio mixer interface
- BKE-9500 3.5" dual disk drive for EDL storage
- BKE-901 NTSC color framing detector
- BKE-903 cue tone generator

BVE-910 Packages

BVE-910 PAC 1
Complete BVE-910 Package consisting of: BVE-910 Electronics and Keyboard, BKE-904 (x2), choice of BKE-912A or BKE-913A or BKE-915A, BKE-916A, CPD-121

BVE-910 PAC 1 ........................................ $7,875.00

BVE-910 PAC 2
Complete BVE-910 Package with additional list management capabilities provided by external software. Package consists of: BVE-910 Electronics and Keyboard, BKE-904 (x2), choice of BKE-912A or BKE-913A or BKE-915A, BKE-916A, CPD-121, BZE-2001 or BZE-2501

BVE-910 PAC 2 ........................................ $12,500.00

BVE-910 PAC 3
Complete BVE-910 Package with dual 3.5" disk drive unit consisting of: BVE-910 Electronics and Keyboard, BKE-904 (x2), choice of BKE-912A or BKE-913A or BKE-915A, BKE-916A, CPD-121, BKE-9500

BVE-910 PAC 3 ........................................ $14,300.00

BVE-910 PAC 4
Complete BVE-910 Package with additional list management capabilities and dual 3.5" disk drive unit consisting of: BVE-910 Electronics and Keyboard, BKE-904 (x2), choice of BKE-912A or BKE-913A or BKE-915A, BKE-916A, CPD-121, BKE-9500, BZE-2001 or BZE-2501

BVE-910 PAC 4 ........................................ $15,200.00

BVS-3100/3200 Video Switcher Series

Full featured production switchers for total "shooting to editing" system
- Provides maximum interface with other Sony system products
- 1 or 2 linear keyers and standard E-FILE switcher memory
- Multiple layer mix/effects architecture for both live and post production
- Linear downstream keyer (DSK) Master fade to black
- Linear keying provides component chroma key, key/fill selection, key mask, key priority and DSK border controls as standard
- 8 loopthrough primary inputs plus black and color background
- 2 program outputs, 1 preview output
- 2 external key sources and fills for use by the M/E keyer(s)
- Chroma key input with 3 BNC connectors for both RGB and Betacam signals
- 1 composite external key mask input
- Downstream keyer features separate external key source and fill
- Built-in sync generator for peripheral equipment
- RS-422 interface through 9-pin D-sub connector
- Standard DME-450 interface through separate 9-pin D-sub connector
- General purpose interface for Auto Transition, Fade to Black and DSK
- Tally connector assignable to Primary inputs, External Key source/fills and DSK source/fill
- Auto or manual transition of background effects
- Transition rate adjustable from 0 to 999 frames in single steps
- 10 basic patterns for Wipe transitions, plus 8 matrix patterns stored in ROM
- "Flip-flop" transitions for automatic transfer of input in Preset Bus to Program Bus
- Look ahead preview function for background and key transitions
- 1 linear ME keyer (BVS-3100) and 2 independent linear M/E keyers (BVS-3200)
- Internal effects matte generators available as key fills
- Standard component video chroma keyer accepts both RGB and Betacam format signals
- Adjustable box mask and external key mask available to both M/E and downstream keyers
- Standard Border Line, Drop Shadow and Outline features on DSK
- External video and DSK matte available as key fill
- E-FILE storage of switcher settings such as matte color, border width and border softness

Supplied Accessories

- AC power cord
- Control panel cable (5m)
- Extension board

BVS-3100 ........................................ $13,000.00
BVS-3200 Same as BVS-3100 except addition of a key bus, permitting 2 effects to be performed simultaneously, and also has a key priority function ........................................ $17,500.00

Prices and Specifications Subject to Change Without Notice.
SONY

Business and Professional Group

Personal Video Conference System
- Wireless, icon-based remote control
- Single 32" professional "Cubic" monitor for clear simultaneous viewing of people and graphic images
- Single CCD camera with pan/tilt and zoom lens, and 4 pre-set positions
- Mobile, roll-about design
- Remote, menu-driven diagnostics
- Remote control of distant locations
- "Video mail" function for remote activation of video recording for "time-shift" conferences

Designed for the executive office or small conference room, the Personal System is a complete turnkey system in a black, contemporary roll-about design. It can even operate as a "video mail system," where messages can be delivered to unattended conference systems, stored and viewed later.

Prices and Specifications Subject to Change Without Notice.

Compact Video Conference System
- Wireless, icon-based remote control
- "Continuous Presence" viewing for panoramic or stacked image display
- Dual 25" professional "Cubic" monitors for clear viewing of people and graphic images
- 3 CCD cameras, 1 with pan/tilt, zoom lens and 6 pre-set positions for flexible audience coverage
- Mobile, roll-about design
- Remote, menu-driven diagnostics
- The Compact System gives you all the communications power of a large conference room system in a compact, roll-about system.

The Compact System is a full-featured video conference system in a black, contemporary, roll-about design. It allows both pan/tilt and "Continuous Presence" video display so that meetings with multiple participants at each location can be clearly viewed. All system functions can also be accessed through an RS-232 port. 3 CCD cameras, 1 with zoom, pan and tilt functions, provide flexibility for close-up or wide-angle subject positioning.

Businessman 1232/1 "Personal" System
PCS-S1200 system controller, single 32" cubic monitor, single CCD camera with pan/tilt, custom black steel cabinetry
NEC AEC-700 Echo canceller with 2 mics
CLI Rembrandt II-06 Codec

Businessman 1232/2 Dual 32" System
PCS-S1200 system controller, dual 32" cubic monitors, single CCD camera with pan/tilt, custom black steel cabinetry
NEC AEC-700 Echo canceller with 2 mics
CLI Rembrandt II-06 Codec

Businessman 1125/2 "Compact" System
PCS-S1100 system controller, dual 25" cubic monitors, 3 single CCD cameras (1 pan/tilt), custom black steel cabinetry
NEC AEC-700 Echo canceller with 2 mics
CLI Rembrandt II-06 Codec

Businessman 1225/2 "Compact" System
PCS-S1200 system controller, dual 25" cubic monitors, single CCD camera with pan/tilt, custom black steel cabinetry
NEC AEC-700 Echo canceller with 2 mics
CLI Rembrandt II-06 Codec

Prices and Specifications Subject to Change Without Notice.
COLOR MONITORS

PVM-1340/1341/1342Q/1344Q
13" Trinitron® Color Monitors
• 100% DC restoration + 90°-i-Q decoder + SMPTE type "C" phosphors incorporated for PVM-1344Q and PVM-1342Q to match the color of most broadcast quality monitors + Super Fine Pitch™ Trinitron CRT (0.25 AG pitch) for PVM-1344Q and 1342Q + Component input for PVM-1344Q + Digital/analog RGB input for PVM-1342Q and 1341 + Beam current feedback circuit + Blue only + 2 composite video inputs + EIA B-pin/S-Video input + Metal cabinet for better durability + Built-in speaker for audio monitoring + Removable screen frame/shield + AFC switch (fast/slow) + Built-in speaker for audio input and controls to adjust the horizontal and vertical shift and size of the picture + Visible picture size 13" measured diagonally + Horizontal resolution: 250 TV lines at center + 25 lbs. 15 oz. + 14.4"H x 14"W x 16.1"D

Prices: $2,800.00

PVM-1340 ............................................ $785.00
PVM-1341 ............................................ $900.00
PVM-1342Q ........................................... $1,165.00
PVM-1344Q ........................................... $1,300.00

PVM-1380 13" Trinitron Color Monitor
• Picture tube: black face Trinitron 14", visible picture size 13" measured diagonally + Horizontal resolution: 250 TV lines at center + 25 lbs., 8 oz. + 14.4"H x 14"W x 16.1"D

Prices: $399.00

PVM-1390 13" Fine Pitch Trinitron Color Monitor
• 450 lines resolution + S-Video connector + Analog/digital RGB input allows microcomputer connection + Dual video inputs (BNC, 8-pin/S-Video) + Computer input (9-pin, 25-pin) + Sound monitoring capability + NTSC color system

Prices: $615.00

PVM-1910 19" Trinitron Color Monitor
• Line A (tuner)/Line B/ VTR/RGB/CMTR + Built-in interface for IBM-PC + Accepts analog/digital RGB + RGB loopthrough + RGB/NTSC superimposition + Comb filter select switch (comb/trap) + AFC switch (fast/slow) + Built-in speaker + Removable screen frame/shield + 63 lbs., 15 oz. + 18’/4"H x 19’/4"W x 21’/4"D

Prices: $880.00

PVM-1910Q 19" Trinitron Color Monitor
• PAL/SECAM/NTSC/NTSC 4.43 switches automatically + Line A (Tuner)/Line B/ VTR/RGB/CMTR + Built-in interface for IBM-PC + Accepts analog/digital RGB + RGB loopthrough + RGB/NTSC superimposition + Comb filter select switch (comb/trap) + AFC switch (fast/slow) + Built-in speaker + Removable screen frame/shield + 63 lbs., 15 oz. + 18’/4"H x 19’/4"W x 21’/4"D

Prices: $1,355.00

PVM-1944Q/PVM-1942Q 19" Trinitron Color Monitors
• PVM-1942Q has Line A, Line B, VTR/RGB/CMTR + Built-in interface for IBM-PC + Accepts analog/digital RGB + RGB loopthrough + RGB/NTSC superimposition + Comb filter select switch (comb/trap) + AFC switch (fast/slow) + Built-in speaker + Removable screen frame/shield + 63 lbs., 15 oz. + 18’/4"H x 19’/4"W x 21’/4"D

Prices: $2,250.00

GVM-1300 (13")/GVM-2000 (20")
Triniton Graphics Monitors
• Accept composite video from VTRAs as well as high-resolution color graphics from personal computers + Operate over a wide range of horizontal and vertical synchronization frequencies, enabling users to view video images from VTRAs and graphics from various types of computers on a single screen + 2 composite video inputs accommodate the various recording formats + High-resolution video image of 600 TVL (GVM-1300) and 560 TVL (GVM-2000) + 2 RGB computer inputs + Computer resolution is 720 x 480 pixels (GVM-2000) and 900 x 560 pixels (GVM-1300) + Stable automatic white balance facility + Built-in speaker for audio input and controls to adjust the horizontal and vertical shift and size of the picture + Visible picture size 13" measured diagonally + Horizontal resolution: 250 TV lines at center + 25 lbs. 6 oz. + 18’/4"H x 19’/4"W x 21’/4"D

Prices: $1,485.00

GVM-1300 ............................................. $2,300.00

GVM-1305TS 13" Multiscan Touchscreen Monitor
• Provides automatic detection of input signal line frequency + Multiscan capability allows the monitor to automatically adjust its scanning rate to a wide variety of input signals, and to accurately display a picture on its anti-glare screen + Accepts most computer sync signals, in addition to composite video, Y/C and analog/TTL video signals + Provides multiple audio and video inputs with loop-through, which facilitates its use in a multipurpose workstation environment + Includes FLODEV 1.4c software for interrupt-driven, RS-232C touchscreen support, along with language bindings for compilers manufactured by Borland International, Microsoft Corp. and IBM Corp.

Prices: $2,300.00

Prices and Specifications Subject to Change Without Notice.
SONY
Business and Professional Group

PVM-411 4" Quadruple Monochrome Monitor
• Four independently controlled 4" screens (measured diagonally)
• Fits EIA standard 19" rack • Individual unit shielding • Loopthrough capability • Individual front-mounted contrast, brightness • V-hold and H-hold controls • 35 lbs., 4 oz. • 5¼"H x 19"W x 12½"D
PVM-411 ........................................... $1540.00

PVM-91/5 9" Monochrome Monitor
• Ideal for computer display • Color temperature of 9300°K • CCTV applications or studio control room monitor • 800 lines of horizontal resolution at center • Selectable scanning systems: Normal/Underscan • DC clamp switch provides a stable reference for the black level • Accepts an external sync • Loopthrough BNC connectors for video and sync • Can be installed/rackmounted as a dual video monitor with the MB-504 optional mounting bracket monitor • 12 lbs., 12 oz. • 8¾"H x 9"W x 12½"D
PVM-91/5 ........................................... $495.00

PVM-122 12" Monochrome Monitor
• 1000 lines of horizontal resolution at center • Selectable scanning systems: Normal/Underscan • DC clamp switch provides a stable reference for black level • External sync input • Selectable A/B line inputs with front switch • Loopthrough BNC connectors for line, A/B and sync • Built-in speaker for audio monitoring • Tally lamp • 21 lbs., 11 oz. • 13¼"H x 12"W x 12½"D
PVM-122 ........................................... $560.00

PVM-5310 5" Trinitron® Triple Color Monitor
• Suitable for multiple camera/VTR monitoring • Employs a beam feedback control circuit for stabilized color reproduction • 6500°K reference color temperature • 220TVL resolution • Accepts external sync • Loopthrough video and sync inputs • 19" EIA standard rackmountable • Controls include: chroma, phase, brightness and contrast • Separate power control • Automatic vertical hold control • Automatic white balance • 85W power consumption • 37 lbs., 15 oz. • 7¼"H x 19"W x 16¾"D
PVM-5310 ........................................... $2625.00

PVM-8020 8" Portable Color Monitor
• Microblack™ Trinitron tube • 3-way AC/DC operation • Built-in stand • Supplied hood • Push-to-lock controls • 2 video input/output • 6-pin DIN connector for optional TU-1110 TV tuner • Blue-only, normal/underscan and HV-delay
PVM-8020 ........................................... $770.00

PVM-8220 8" Trinitron Color Monitor
• Can be mounted in a 19" EIA standard rack together with a second PVM-8220 for use as a dual monitor by using the optional mounting bracket (MB-504) • Underscan, HV-delay, blue only mode select switches • Accepts an external sync • Two video inputs can be selected: Video A or Video B • Microblack Trinitron tube • Horizontal resolution: 250 TV lines at center • 16 lbs., 8 oz. • 8.6"H x 8.5"W x 12.6"D
PVM-8220 ........................................... $660.00

PVM-8221 8" Trinitron Super Fine Pitch Color Monitor
• Microblack Trinitron tube • High resolution of 400 TV lines at center • Can be mounted in a 19" EIA standard rack together with a second PVM-8221 for use as a dual monitor by using the optional mounting bracket (MB-504) • Underscan, HV-delay, blue only mode select switches • Accepts an external sync • Two video inputs can be selected: Video A or Video B • 16 lbs., 9 oz. • 8.6"H x 8.5"W x 12.6"D
PVM-8221 ........................................... $930.00

PVM-1220 12" Super Fine Pitch Trinitron Color Monitor
• More than 550 lines resolution • Comb filter • Three sets of video inputs (Channel A/B and TEST) • Normal/underscan selection • Interval check or horizontal and vertical separately and horizontal plus vertical (cross pulse) in delayed scanning mode • Accepts external sync • Auto/color/monochrome selection • White-balance control inside quick-access slide-out drawer • Aperture control adjusts frequency response • Front panel tally lamp • Loopthrough connectors for both video and sync allow multiple bridging • EIA standard 19" rackmountable • 55 lbs., 2 oz. • 11½"H x 19"W x 20¼"D
PVM-1220 ........................................... $2410.00

CVM-1271 12" Super Fine Pitch Trinitron Color TV Receiver/Monitor
• High resolution—more than 500 lines resolution • Comb filter • Three sets of video inputs (Channel A/B and TEST) • Filter switch • Sequential or up/down channel selector and LED channel indicator • Line/VTR/TV input selector • Monitor/line/TV video outputs • AFC slow/fast switch • Comb filter improves picture quality—no color spill or noise distortion • Up/down volume plus sub-volume control for presetting initial sound level • Color temperature selector • 32 lbs., 2 oz. • 13½"H x 19½"W x 15¾"D
CVM-1271 ........................................... $1000.00
MB-502 Rackmount bracket ........................................... $165.00
SLR-102 Slide rail ........................................... $145.00

Prices and Specifications Subject to Change Without Notice.
COLOR MONITORS

BVM-1912 19" 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 input available
- Optional component (Y, R-Y, B-Y) and G and B outputs are available with the BKM-1440
- Stabilized color temperature is obtained by employing a 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 model) + VITC display (with optional BKM-1480)
- 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
- Lockable pull-out drawer
- Comb filter
- Over drive protection circuit
- Provided with D-sub 9-pin RS-422 interface for future available remote control unit
- 19" rackmountable with optional BKM-2000

BVM-1912..............................................$12,000.00

BVM-1910 19" 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-1480)
- Safe area display facility (with optional BKM-1470)
- Pulse cross function 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
- Lockable pull-out drawer
- Over drive protection circuit
- 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

BVM-1910.............................................$7,500.00

BVM-1915 19" Color Monitor
- Auto setup capability (with the optional BKM-2056)
- Stabilized color temperature obtained by employing a beam current feedback
- Component (Y/R-Y/B-Y) and R, G, B input standard
- Optional decoder boards (plug-in type) available for different TV standards
- NTSC, PAL, SECAM, or PAL-M can be selected using the optional decoder boards
- 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
- Pulse cross function for simultaneous checking of horizontal and vertical syncs
- Provides US standard phosphors
- Over drive protection circuit
- 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
- 2 lockable pull-out drawers

BVM-1915.............................................$5,200.00

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
- 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 syncs
- Provides US standard phosphors
- Over drive protection circuit
- 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
- 2 lockable pull-out drawers

BVM-1310.............................................$5,200.00

BVM-8021 8" Portable Color Monitor
- Suitable for ENG/EFP applications
- High resolution of 400 TV lines at center (composite input)
- Operates with 1 or 2 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/underscan select 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

BVM-8021.............................................$1,150.00

Prices and Specifications Subject to Change Without Notice.
SONY
Business and Professional Group

BVW-400 PAC 1 Betacam SP® Camcorder
- High performance single piece (inseparable) type camcorder
- Incorporates advanced 768 FIT "Hyper HAD" sensor CCD technology in the camera section and Betacam SP recording technology in the VTR section to cover from ENG to the most complex and quality conscious EFP applications. Effectively doubles sensitivity to f/8.0 at 2000 lux and 89.9% reflectance. Ultra compact mechanical deck allows the smallest body in Betacam SP lineup. Approx. 15 lbs., 7 oz. including battery, cassette and latest 13x9 lens with extender. Low power consumption of 22W. Up to 50 minutes of operation with a single NP-1 A battery. More than 30 minutes of recording time using the S-cassette. 26-pin VTR interface capability with optional BKW-402 VTR Connector Unit. (Parallel component recording with the external VTR is possible.) Interface capability with the BVW-35 via optional CCRZ-5 cable for emergency recording needs. Electronic shutter provided. Shutter speeds: 1/100, 1/125, 1/250, 1/500, 1/1000, 1/2000 seconds. Full color genlock capability. High resolution viewfinder with quick start CRT. Center marker, safety zone marker (80% or 90%) and VTR save mode indication provided. Viewfinder rotation function with optional BKW-401 Viewfinder Rotation Bracket. Various automatic functions in camera section. 2 AFM audio channels in addition to 2 longitudinal channels with Dolby C-type NR (Noise Reduction) system. Audio confidence playback (longitudinal). Viewfinder playback (luminance or CTDM selectable). Color playback in the field with optional VA-500 Playback Adaptor. Full range of machine control provided (Fast Forward/Rewind/Play/Stop/Eject). Recording review function. Built-in LTC/VITC/User Bit generator and LTC reader with external time code lock capability. Frame accurate back space editing. 8-digit LCD display. Bar graph meter for audio level and battery status. Built-in loudspeaker. Phantom power supply (+48V, Ch-1/2). External DC out for Sony wireless microphone receiver.

Supplied Accessories
- Tripod adaptor VCT-14 (1)
- Extension board (1)
- Rain cover (1)
- Shoulder belt (1)
- Operation and maintenance manual (1)

BVW-400 PAC 1 .............................................$45,000.00

BVW-300A PAC 1 Betacam SP Camcorder
- High performance single piece (inseparable) type camcorder
- Shares most features of BVW-400 differing only in imager type. Incorporates 768 IT (Interline Transfer) "Hyper HAD" CCD imager with 380,000 active pixels. 700 TV lines resolution. Signal-to-noise ratio 62dB. Sensitivity f/8.0 at 2000 lux. 1.5" viewfinder with removable eyepiece. Emergency backup capability using CCRZ-5 cable to external BVW-35 VTR. Viewfinder playback and VTR status indications. Small, maneuverable and low power consumption.

BVW-300A PAC 1 .............................................$35,000.00

BVV-5 Betacam SP Recorder Unit
- Simultaneous playback of video and audio. Can be operated as a combo camcorder when connected to BVP Series 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. Backspace edit. 7 lbs., 3 oz.

BVV-5 .........................................................$12,600.00

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 VA-5 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 VA-500 or VHF RF signals. Also works with BVW-400/300A/200. .........................................................$2,700.00

Prices and Specifications Subject to Change Without Notice.
CCD CAMERAS/BETACAM SP CAMCORDERS

BVP-7000HS 3-CCD Portable Color Camera
- Incorporates image intensifiers capable of capturing color images in virtual darkness
- Utilizes the 768 Interline-Transfer Chip Array
- When coupled with the image intensifiers, the BVP-7000HS becomes 10 times more sensitive, enabling the camera to capture color images in virtual darkness
- Although designed for use in extremely low light applications, the camera yields impressive performance characteristics including horizontal resolution of 370 lines with almost no lag and a signal-to-noise ratio of 59dB
- To perform as a full-function camcorder, the BVP-7000HS can be used with a Betacam SP® recorder
- Ideal tool for news crews for a variety of functions including surveillance of crime scenes or capturing discreet news stories where the circumstances make it impossible to use lighting to supplement existing light sources
- Use of the image-intensified camera makes it unnecessary to turn on bright lights when they would be inappropriate

BVP-7000HS ................................................. $95,000.00

BVP-7 IS 3-CCD Portable Color Camera
- Features the latest advancements in CCD technology
- "Hyper HAD" 768 Frame Interline Transfer (FIT) CCD imager effectively doubles the camera’s sensitivity to f/8.0 at 2000 lux and 89.9% reflectance
- 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, 1/1000, 1/2000 second shutter speeds) captures clear images of high speed objects
- Dynamic contrast control (auto knee control) extends highlight dynamic range by 600%, enabling a clear picture in high contrast environments (switchable)
- Vertical smear resulting from intense highlights is eliminated by the FIT system
- The ability to handle intense highlights makes the BVP-7 excellent for EFP applications such as rock concerts and documentaries where lighting conditions can vary from extreme darkness to brightness
- Automatic W/B balance system includes 2 white balance memories for each optical filter
- 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 2 direction position adjustment
- 2H image enhancer produces crisp pictures
- Can be coupled with a Betacam SP VTR to configure a camcorder unit for EFP
- Includes a microphone that electrically cancels vibration noise, allowing vibration-free recording even when the camera is combined with a Betacam® recorder unit in a difficult shooting environment

BVP-7 IS ...................................................... $37,500.00

BVP-7A 3-CCD Portable Color Camera
- Shares most features of BVP-7 IS except highlight handling capability is lower
- Incorporates 768 IT (Interline Transfer) CCD imager with 380,000 active pixels
- Sensitivity is f/8.0 at 2000 lux and 89.9% reflectance

BVP-7A ....................................................... $24,000.00

BVW-507A/BVW-570 IS Betacam SP Camera/VTR Combinations
- 3-chip CCD camera/recorder unit combinations meet virtually any field production applications
- Compact and lightweight (approx. 19 lbs., 13 oz. including the battery, cassette and zoom lens)
- Low power consumption (approx. 27W for BVW-507A, 28W for BVW-570 IS with viewfinder)
- Supplied Accessories
  - Tripod adaptor VCT-14 (1)  
  - Extension board (1)  
  - Extractor (1)  
  - Chest pad (1)  
  - 50-pin connector cap (2)  
  - Rain cover (1)  
  - Microphone connector cover (1)  
  - Handle hole cap (1)  
  - Carrying handle (1)  
  - Carrying case LC-555 (1)  
  - Shoulder belt (1)  
  - L-wrench (1)  
  - Operation and maintenance manual (1)

BVW-507A BVP-7/BVW-5 combination for high quality ENG and EFP applications requiring high resolution ........................................ $36,500.00
BVW-570 IS BVP-70 IS/BVW-5 combination with high resolution FIT CCD to cover practically all ENG/EFP applications even in the most difficult shooting environment ........................................ $50,000.00

Prices and Specifications Subject to Change Without Notice.
BVP-370/BVP-270 CCD Color Studio Cameras

Common Features
- Designed with many technical features and operational benefits that give the cameras the ability to meet the broadcaster’s most demanding studio and field assignments
- High sensitivity (f/5.6 at 2000 lux)
- Soft detail
- S/N ratio of 62dB
- Superb color reproduction
- Unaffected by shock or vibration
- Electronic shutter provides multiple speeds from 1/100 to 1/2000 sec.
- Automatic setup of all color balance aspects and flexible file system
- In multiple-camera production applications, portable CCD cameras like Sony BVP-70, BVP-50 and BVP-7 can be easily integrated with BVP-370 or BVP-270 systems
- Choice of remote control panels (either joystick or rotary control)
- Choice of viewfinder (either color or black and white)
- Prompter video and AC power are provided at the head of each unit

BVP-370
- 768 "FIT" CCD imager utilizes an HAD sensor, provides 700 lines of horizontal resolution and increased dynamic range
- 768 "FIT" virtually eliminates vertical smear, lag and image burn

BVP-270
- 768 "IT" CCD imager
- Like the 768 "FIT," the 768 "IT" utilizes an HAD sensor for high image resolution, increased dynamic range and low dark current

BVP-370 ............................... $59,900.00
BVP-270 ............................... 45,000.00

CCU-370 Camera Control Unit
The CCU-370 Camera Control Unit, designed for the BVP-370/270, provides wideband component (Y, R-Y, B-Y) video transmission via the triax cable and offers superior video/audio performance characteristics. An operating range of up to 3000 meters (2400 meters for return video) is possible by using the 14.541mm triax cable. Mic audio level control and intercom switching control can be executed via each 9-pin remote connector provided on the CCU rear panel. Serviceability is also improved by the adoption of integral printed circuit boards including the triax board. This unit is 19" wide, 3 rack units high and has very low power consumption.

CCU-370 .................................. POR*

MSU-350 Master Setup Unit
The MSU-350 system consists of the MSU-350 and the VCS-350 Video Selector. 1 MSU-350 unit allows central control of up to a maximum of 8 camera/CCU units when used together with 1 VCS-350 unit. By connecting 1 more VCS-350 unit, the MSU-350 can set up a total of 15 camera/CCU units. A variety of Sony Camera Control Units including the CCU-350/355 can be controlled by this system as well as the CCU-370. These units provide easy and fast matching of cameras.

MSU-350 .................................. POR*

RCP Remote Control Panels
3 types of remote video operational control panels address a wide range of production needs from the very basic to the more sophisticated. Type I (RCP-3710/3711) for simple control, Type II (RCP-3720/3721) for advanced control and Type III (RCP-3730/3731) for full function control. Each have a choice of joystick or dial type for iris/master-black control.

RCP ........................................... POR*

*Price On Request

Prices and Specifications Subject to Change Without Notice.
**VIEWFINDERS/ACCESSORIES**

**BVF-7000AQ 7" Color Viewfinder**
- Specially designed for use with BVP-360AT
- 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-7000AQ .................................................. $8500.00

**BVF-70A 7" B/W Viewfinder**
- Specially designed for use with BVP-360AT for direct camera installation
- High resolution, 800 TV lines at center
- Various camera indications provided in viewfinder
- Wide range of mechanical positioning

BVF-70A .......................................................... $4950.00

**BVF-50/1 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-50/1 .......................................................... $2250.00

**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 .......................................................... $9000.00

**AC-500 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; Mic 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 RS, 75 ohms; 9 lbs., 8 oz.; 3.6"H x 8.5"W x 12.9"D ........................................... $620.00

**BC-210 Battery Charger for BP-90A**
Battery charger for BP-90A battery packs; up to 4 BP-90A 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-90A; 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 4 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 ........................................... $435.00

**DC-100 Battery Case for NP-1A**
Battery case for 1 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

**DCU-300 Battery Case for BP-90A**
BP-90A battery case (1 BP-90A) for BVP-350 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 ........................................... $959.00

**DCU-301 Battery Case for NP-1A**
Battery case for BVP series 3-tube cameras and CA-3/CA-30/CA-300 equipped cameras; Up to 2 NP-1A 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-90A Rechargeable Battery Pack**
Type of Battery: NiCad rechargeable; Voltage: 12V; Current Capacity: 3.5AH; 3 lbs., 12 oz.; 6.9"H x 4.6"W x 15.1"D ........................................... $375.00

**NP-1A Rechargeable Battery Pack**
Type of Battery: NiCad rechargeable; Voltage: 12V; Current Capacity: 1.5AH; 1 lb., 8 oz.; 1"H x 2.6"W x 7.3"D ........................................... $85.00

**Prices and Specifications Subject to Change Without Notice.**
BUSINESS AND PROFESSIONAL GROUP

BETACAM SP RECORDERS/PLAYERS

BVW-60 Betacam® SP Studio Player
- Maximum playback time of over 90 minutes
- In addition to the 2 conventional longitudinal audio channels, 2 AFM audio channels are added, making a total of 4 channels available
- 180W 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
- RS-422 serial interface and 36-pin parallel interface
- 59 lbs., 8 oz.; 5 rack units high

BVW-65 Betacam SP Studio Player
With Dynamic Tracking (DT)
- Maximum playback time of over 90 minutes
- In addition to the 2 conventional longitudinal audio channels, 2 AFM audio channels are added, making a total of 4 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
- 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

BVW-70 Betacam SP Studio Recorder/Player
- Maximum playback time of over 90 minutes
- In addition to the 2 conventional longitudinal audio channels, 2 AFM audio channels are added, making a total of 4 channels available
- High speed picture search
- 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
- 61 lbs., 11 oz.; 5 rack units high

BVW-D75 Betacam SP Recorder/Player
- 1 component digital video serial input (active loopthrough) and 4 component digital video serial outputs—Each handles 4:2:2 component digital video signals
- 4 channels of digital audio are transmitted along with the digital video signal on 1 single coaxial cable
- Simplifying system connections and enabling long distance transmission of the digital video and audio signal with virtually no signal degradation
- In addition to 4 channels of digital audio embedded in the component digital video serial interface via BNC connectors, 4 channels of digital audio inputs and outputs which conform to the AES/EBU format are provided through XLR connectors
- Capable of producing a component analog monitor output (Y/R-Y/B-Y, 3 BNCs), allowing the unit to provide easy picture monitoring with the superimposed characters such as time code data
- Dynamic tracking capability provides noiseless, broadcast-quality playback range of -1 to +3 times normal speed
- High speed picture search provides recognizable color pictures at up to 10 times normal speed in forward and reverse
- RS-422 9-pin remote interface
- 36-pin parallel interface
- Audio/video confidence playback
- Built-in, full-scale editing functions
- Sophisticated built-in time base corrector with advanced high quality digital dropout compensator, and processing controls for video, chroma setup levels, 4/C delay and system sync phase
- Built-in time code generator/reader
- More than 90 minutes of playing time with L-size cassette
- Built-in, sophisticated self-diagnostics

BVW-50 Portable Betacam SP Recorder/Player
- 90-minute recording/playback time and a 50% reduction in power consumption
- Accepts L-size and S-size cassettes, achieving more than 90 minutes of recording/playback time
- While power consumption has been dramatically reduced by 50% (to 18W of power in normal recording mode) features have been added
- Built-in time base corrector for synchronous field playback
- Continuous operation for up to 200 minutes on 1 fully charged BP-90A battery or up to 180 minutes on 2 fully charged NP-1B batteries
- When used with metal particle tape cassettes, the BVW-50 conforms to the Betacam SP recording format with its wide luminance and bandwidth and high signal-to-noise-ratio
- When used with oxide tape, recordings conform to the conventional Betacam format. Any existing Betacam VTR can play back metal particle tape recorded by the BVW-50
- 4 audio channels consisting of 2 longitudinal and 2 AFM channels available
- Longitudinal audio provided with Dolby C-type noise reduction system
- FM modulated audio simultaneously recorded with video information by rotary video head
- Front loading tape mechanism
- Audio/video confidence playback during recording
- 9-pin remote control interface which allows connections to Betacam SP studio decks for use as an editing source VTR
- Built-in time code generator/reader; time code genlock capability
- Input using component or composite signals
- Automatic backspace editing with instant start gives sequential recording without picture breakup at transition points
- Built-in character generator

BVW-50 Portable Betacam SP Recorder/Player
- $32,000.00

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 range of -1 to +2 times normal speed
- Variable memory for DT editing
- 4-channel audio
- Capstan override ± 16%
- Time code reader/generator for LTC, VITC, U-bits
- Video/audio confidence
- Character display
- High speed picture search
- 2 independent SC-H phase indicators
- Built-in TBC with remote control
- Color framing
- Simple audio mixing

BVW-75 Betacam SP Studio Editing Recorder/Player
- $39,500.00

BVW-70 Betacam SP Studio Recorder/Player
- $436,000.00

BVW-65 Betacam SP Studio Player
- $29,500.00

BVW-60 Betacam® SP Studio Player
- $25,000.00

 Prices and Specifications Subject to Change Without Notice.
DVR-2100 D-1 Component Digital Video Tape Recorder

The DVR-2100 is a 8 rack units high, weighs 154.5 lbs. and has a power consumption of 450W. The DVR-2100 accepts small, medium and large size cassettes with a maximum recording time of 94 minutes.

The DVR-2100 offers Dynamic Tracking Heads. This feature permits broadcast quality, variable speed playback from -1 to 2 times normal speed, including still and slow motion modes.

To integrate the DVR-2100 effectively into a component digital system, the VTR is equipped with only the digital input and output ports for video and audio. Both parallel and serial A/V digital I/O ports are provided for the DVR-2100, optimizing use of the product in both digital video interface environments. Serial operation, based on the SMPTE Draft T 14.224, provides convenient handling of digital video, audio (4 channels), digital VITC and video index information on a single, low-cost coaxial cable.

The DVR-2100 incorporates various enhanced editing functions, greatly expanding the scope of video applications. Special editing modes are provided for animation recording, for pin-recorded film-to-tape transfer and for sequential playback using 2 DVR-2100s. By using the optional BKDV-4224AD and BKDV-4224DA D-2 Signal Converters, extended signal formats such as 4:2:2:4, 4:4:4 and 8:4:4H or 8:6:4 can be recorded and replayed. In addition, these signal converters provide A/D and D/A interface to analog equipment.

Additional features of the DVR-2100 include: * Automatic Playback Equalization: Automatically detects and compensates for playback equalizing errors * Automatic CTL System: Eliminates the need to manually optimize tracking adjustments during normal playback and during use of the Dynamic Tracking feature * Channel Condition Checking and Logging: Capability to check the condition of each channel during normal playback and confidence playback modes for easy monitoring of audio/video channel condition * Built-In Test Signal Generator: 5 video test signals and 2 audio test signals built-in and selectable from a control panel menu

Additional features shared by the 2 machines include: * Serial digital interface of audio and video: By installing the optional BKDV-105/205 serial digital interface board into the DVR-20/28 series, serial transmission of digital video, digital audio and vertical interval time code (VITC) signals can be carried out via the serial input/output ports. Long distance transmission of up to 200 meters for digital video and audio signals can be performed via a single coaxial cable * Dynamic Tracking Heads: * The 2 units are equipped with DT heads, which extend the high quality video applications for these recorders. Using this feature, broadcast quality video can be reproduced within the range of -1 to 3 times normal speed playback including still and slow motion * Audio Program Play: With the addition of the optional BKDV-110 audio program play board, the DVR-28 can offer broadcast quality playback of all 4 digital audio channels within the range of ±15% normal speed in increments of 0.1%.

Rounding out the desirable features is the high serviceability of the 2 units. All 3 types of control panels can be angled or completely removed to allow quick and easy access to any electric board within the VTRs.

### Additional Features

- **DVR-2100**
  - 8 rack units high
  - Weighs 154.5 lbs.
  - Power consumption: 450W
  - Accepts: small, medium, and large size cassettes
  - Maximum recording time: 94 minutes
  - Dynamic Tracking Heads
  - Digital input and output ports
  - Parallel and serial A/V digital I/O ports
  - Animation recording
  - Film-to-tape transfer
  - Sequential playback
- **DVR-20/DVR-28**
  - 94-minute recorder
  - Accepts small and medium size cassettes
  - 208-minute VTR
  - Includes advanced tape transport features
  - Ultrasonic (US) guides
  - Dynamic Tracking Heads
  - Channel Condition Checking and Logging

### Specifications

- **DVR-2100**
  - Price: $115,000.00
- **DVR-20/DVR-28**
  - Price: $22,000.00
  - Battery life: 335 minutes
- **DVR-2**
  - Price: $37,000.00
  - Battery life: 100 minutes

Prices and Specifications Subject to Change Without Notice.
SONY
Business and Professional Group

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
- 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 .............................................. $50,000.00
BVH-3100 .............................................. 42,000.00

BVE-9000 Editing Control System
- Can be configured in its basic form to control four 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 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

BVE-9000 .............................................. $15,000.00
DIGITAL AUDIO TAPE
RECORDERS

PCM-7000 Series Digital Audio Tape Recorders

PCM-7000 Series DAT recorders enable high-quality digital recording on compact, easy-to-handle low-cost cassettes. This DAT Series includes 3 recorders and a range of options to meet the diverse needs of TV/radio broadcasting stations and post-production houses. The customer has the flexibility to choose the best combination for his particular requirements. All recorders conform to the standard DAT format, providing compatibility regardless of the brand. They are also compatible with consumer DAT recorders.

For applications ranging from audio-follow-video editing to broadcasting, multi-recorder sound effects library and simple recording/playback, the PCM-7000 Series does much more than simply provide an economical, space-saving alternative to 1/4" open-reel tape recorders. Combining flexible interfacing and external synchronization capabilities with memory start and DAT-unique high-speed search, it is also suitable for applications such as computer-controlled automation.

PCM-7050/7030

As the top-of-the-line professional DAT recorder, the PCM-7050 is designed with the first priority given to editing precision and flexibility. The PCM-7030 cost-effectively performs as the player in an editing system. When appropriate options are added, its capabilities almost match those of the PCM-7050 except in the area of editing.

The DAT editing system, composed of the PCM-7060 (with the DABK-7030/7056), PCM-7030 (with the DABK-7030/7031) and RM-D7300 editing controller, allows fully electronic editing with the convenience of memory search/rehearsal. A 16M-bit stereo digital memory controlled by a search dial enables speedy and precise determination of the edit In/Out points. Memory rehearsal can be repeated any number of times for fine adjustments of the edit points before executing automatic editing.

Each edit point can be electronically crossfaded. The crossfade time is variable in 1ms steps in a range up to 999ms. The preroll time (5-59 sec.) and postroll time (2-59 sec.) can be adjusted in 1 sec. steps.

The 1ms (1/10 frame) editing accuracy of this system is higher than that of analog splice editing. Alternatively, the high editing accuracy of this system can be combined with the crossfade capability, making spot erase possible for removing noise. In addition, editing efficiency is dramatically improved by the DAT recorder's extraordinary search speed.

RM-D7300
The RM-D7300 provides comprehensive editing control including audio editing, ID editing and spot erase operations of the PCM-7050. The time code address, as well as various other time parameters such as start ID, skip ID, program number and end ID, can be entered quickly using the numeric keys, while up to 100 edit or locate points can be stored in the built-in memory. When 2 PCM-7030 recorders are remote controlled from the RM-D7300, the editing accuracy is 1 frame and cross-fading is unavailable.

PCM-7010

Compatibility comes first with the PCM-7010. In addition to 44.1 and 48kHz, the PCM-7010 can record and play back the digital audio data sampled at 32kHz. It can also play tapes recorded in the long play mode of consumer DAT recorders.

With the use of the DABK-7011A/B, the PCM-7010 can be interfaced with consumer DAT recorders and CD players through unbalanced digital I/O (IEC-958) connectors. Interfacing with professional equipment is made via AES/EBU connectors. When the DABK-7011B is used, the PCM-7010 additionally offers Sony's SDIF-2 interfaces, providing the widest possible compatibility with studio digital equipment.

Given its 32kHz capability and memory start/high-speed search functions, the PCM-7010 is particularly well suited to program transmission at broadcasting stations. The wide compatibility and superior sound quality of this recorder also make it ideal for a variety of recording/playback applications. Editing can be performed at the no-signal portion between individual pieces of music, with the RM-D7200 dual remote controller providing control over 2 PCM-7010 recorders.

SONY

Business and Professional Group

Prices and Specifications Subject to Change Without Notice.

337
## MIXERS/DIGITAL AUDIO RECORDERS

### MXP-290 8-Channel Audio Mixer
- Equipped with 8 mic/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 Sony BVE-900 edit controller
- Improved channel crosstalk (more than 70dB at 10kHz)
- 2 individual master faders for CH-1 and CH-2 PGM outputs
- Preview switcher function
- 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 mic/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
- 6 1/8"H x 19"W x 17 3/4"D
- 28 lbs. 11 oz.

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
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</thead>
<tbody>
<tr>
<td>MXP-290</td>
<td>$3820.00</td>
</tr>
</tbody>
</table>

### MXP-210 8-Channel Audio Mixer
- Compact audio mixer with 8 channel inputs and 2 channel outputs, especially suitable for audio/video production
- Improved channel crosstalk (more than 70dB at 10kHz)
- 2 individual master faders for CH-1 and CH-2 PGM outputs
- Balanced type line inputs added
- Balanced type monitor input (changed from unbalanced type of the MX-P21)
- 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 jack for return audio monitoring
- Built-in 3-band graphic equalizer and low cut filter
- 5 1/8"H x 19"W x 17 3/4"D
- 27 lbs. 13 oz.

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
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</thead>
<tbody>
<tr>
<td>MXP-210</td>
<td>$1995.00</td>
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</table>

### MX-P61VU 12-Channel Audio Mixer
- Equipped with 12 mic/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
- 5 1/8"H x 19"W x 22 1/6"D
- 40 lbs.

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<td>MX-P61VU</td>
<td>$9286.00</td>
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<tr>
<td>MX-P61PK</td>
<td>Same as above, but with LED metering</td>
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</table>

### TC-D5PROII 2-Channel Stereo Cassette Recorder
- Reliable mechanisms including a disc-drive capstan-servo tape transport with a coreless motor
- Microphone inputs: Cannon connector
- XLR-3-31 (female) type
- Approx. 5.5 hours of operation are possible with 2 "D" size alkaline batteries
- Can also be operated on 12VDC with the addition of an optional AC adaptor (AC-D48B) or a car battery (DCC-127A)
- Employs Sony's F&F head for outstanding performance and long-term reliability
- Dolby "B" noise reduction system
- Twin VU meters and LED Peak level indicator
- Built-in monitor speaker and earphone jack let you check your recording results immediately.

<table>
<thead>
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<th>Price</th>
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<tbody>
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<td>TC-D5PROII</td>
<td>$1689.00</td>
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### TCD-D10 PRO Digital Audio Recorder
- 2 hours of digital recording on a miniature DAT cassette
- Weighs only 4 lbs., 7 oz.
- LCD multi-display and various safety/warning systems for failsafe operation
- Scan search at 100 times normal speed
- Wired remote controller supplied
- Headphone monitoring: built-in speaker
- AC/DC operation
- Limiter/mic attenuator eliminates noise caused by unexpected peaks

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
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</thead>
<tbody>
<tr>
<td>TCD-D10 PRO</td>
<td>$2900.00</td>
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</table>

### PCM-2000 Portable Digital Audio Recorder
- Recording can be made at any 1 of 4 sampling frequencies: 48kHz, 44.1kHz, 44.056kHz, or 32kHz
- Analog inputs are disabled when recording at the 32kHz rate
- Uses 1 of the DAT format's auxiliary longitudinal tracks for the recording and playback of SMPTE/EBU time code
- External synchronizing capability
- An AES/EBU digital input and output are provided for easy interface with a variety of digital studio equipment
- 2x oversampling A/D, D/A converters and digital filter
- Balanced, XLR-type inputs can be switched for +4dBs line or -70dBs/-50dBs/-30dBs microphone sources
- Multi-function LCD and digital direct drive motor
- ATF/CTL tracking system
- Subcode capability
- CH/CH-2 locking individual rec volume
- Individual/tandem rec level setting

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<th>Model</th>
<th>Price</th>
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<tr>
<td>PCM-2000</td>
<td>$5000.00</td>
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</table>

### TG-200 Time Code Generator
- Developed specifically for expending the time code capabilities of the PCM-2000
- Mounted onto the bottom of the PCM-2000, this unit makes it possible to operate the PCM-2000 in perfect synchronization with a variety of time codes and word sync signals

<table>
<thead>
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<th>Model</th>
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<tbody>
<tr>
<td>TG-200</td>
<td>$2500.00</td>
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</tbody>
</table>

### 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 48kHz 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/Os correspond to AES/EBU, SDIF-2, and S/P DIF, to allow easy interfacing with other digital equipment
- 2-box construction consisting of the recorder and the interface unit which has the professional analog audio digital I/Os
- Built-in error indicator, indicates the error conditions by 2 types of LEDs
- Emphasis on/off
- Wireless/wired remote control capability
- 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

<table>
<thead>
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<th>Model</th>
<th>Price</th>
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</thead>
<tbody>
<tr>
<td>PCM-2500</td>
<td>$3550.00</td>
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</tbody>
</table>
MICROPHONES

ECM-MS5 Electret Condenser Stereo Microphone
- Frequency Response: 70-20,000Hz
- Sensitivity of -40dB
- S/N ratio of 74dB
- Dynamic range of more than 108dB
- Supplied with cable and urethane windscreen
- Designed primarily for ENG/EFP
- Low cut switch rolls off low frequencies to achieve optimum recording by reducing unwanted noise or vibration pickup
- ECM-MS5 ........................................... $1260.00

ECM-23FII 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-23FII ........................................... $195.00

ECM-44B Omni-Directional Lavalier Electret Condenser Microphone
- Miniature "1/8" x "1/16" 0.07 oz. microphone head
- Operation on AA-size battery
- Supplied holder clip and urethane wind screen
- ECM-44B Black anodized finish ........................................... $205.00

ECM-55B Omni-Directional Lavalier Electret Condenser Microphone
- Omni-directional electret condenser design
- Designed for miking musical instruments and voice pickup
- Frequency response range of 30-18,000Hz
- ECM-55B Black anodized finish ........................................... $315.00

ECM-66B Uni-Directional Lavalier Electret Microphone
- Wide-range, uni-directional back electret capsule
- Clean, natural reproduction of musical instruments
- Power supply includes a battery on-off switch
- LED battery condition indicator
- Frequency range of 70-14,000Hz
- ECM-66B Black anodized finish ........................................... $349.00

ECM-77B Omni-Directional Lavalier Microphone
- Fingernail-size - 5.6mm
- Frequency response range of 40-20,000Hz
- Enables unobtrusive miking but reduces glare
- Permits intelligible voice reproduction even if the microphone is hidden inside a costume
- ECM-77B Black anodized finish ........................................... $355.00

ECM-672 Unidirectional Back Electret Condenser Microphone
- Frequency range of 50-16,000Hz
- Operates on one AA size battery for 3,000 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 ........................................... $485.00

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

C-74/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
- Simply aimed at the sound source
- High sensitivity
- Broad frequency response
- Discriminate against background noise and unwanted sounds
- The C-74 is shorter than the C-76 and therefore slightly more maneuverable
- C-74 ........................................... $ 925.00
- C-76 ........................................... $1025.00

C-535P/C-536P Uni-Directional Condenser Microphones
- Inconspicuous
- C-535P is designed for on-axis sound pickup
- C-536P is designed for applications requiring minimum clearance and right angle pickup
- Frequency response of 30-16,000Hz
- 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 Cannon XLR-3-12C type connector
- C-535P/C-536P ........................................... $495.00

Prices and Specifications Subject to Change Without Notice.

339
VHF Synthesized Wireless Microphone System

The VHF Synthesized Wireless Microphone System is designed to be an affordable yet equally super-performing counterpart to UHF systems. The compact, fully compatible units operate on the 200MHz TV band, offering a total of 168 potentially usable channels.

VHF COMPONENTS

Transmitters

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>WRT-410</td>
<td>Microphone transmitter: 48 channel synthesis; cardioid, dynamic capsule; audio muting switch</td>
<td>$999.00</td>
</tr>
<tr>
<td>WRT-420</td>
<td>Pack transmitter with lavalier microphone: 48 channel synthesis; Snap-On battery pack; audio muting switch</td>
<td>$1049.00</td>
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</tbody>
</table>

Receivers

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>WRR-410</td>
<td>Synthesized receiver: 168 channel synthesis; 9VDC or internal battery operation</td>
<td>$1119.00</td>
</tr>
<tr>
<td>WRR-420</td>
<td>Synthesized diversity receiver: 168 channel synthesis; 9VDC operation</td>
<td>$1919.00</td>
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</table>

Power Supply, Cases and Antenna Dividers

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC-P210</td>
<td>Power supply for multiple WRR-410/420 receiver operation</td>
<td>$299.00</td>
</tr>
<tr>
<td>WD-210</td>
<td>Antenna divider</td>
<td>$719.00</td>
</tr>
</tbody>
</table>

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 COMPONENTS

Transmitters

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>WRT-28</td>
<td>Miniature pack transmitter with lavalier microphone (ECM-77B)</td>
<td>$1549.00</td>
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<tr>
<td>WRT-57</td>
<td>Microphone transmitter with back electret condenser capsule</td>
<td>$1159.00</td>
</tr>
<tr>
<td>WRT-67</td>
<td>Microphone transmitter with dynamic capsule</td>
<td>$1499.00</td>
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UHF Transmitter Accessories

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
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<tbody>
<tr>
<td>AD-27</td>
<td>12VDC adaptor for 500mW system</td>
<td>$159.00</td>
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<tr>
<td>AN-17</td>
<td>Headset mount transmitting antenna</td>
<td>$219.00</td>
</tr>
<tr>
<td>WP-27</td>
<td>500mW power amplifier</td>
<td>$929.00</td>
</tr>
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</table>

Receivers

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>WRR-28</td>
<td>Miniature portable receiver</td>
<td>$2449.00</td>
</tr>
<tr>
<td>WRR-37</td>
<td>Diversity receiver</td>
<td>$4879.00</td>
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Racks, Cases and Attachments

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
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<tbody>
<tr>
<td>BTA-37</td>
<td>Betacam attachment for WRR-37</td>
<td>$269.00</td>
</tr>
<tr>
<td>SC-38</td>
<td>Carrying case for 28 Series</td>
<td>$139.00</td>
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</tbody>
</table>

Antenna Systems

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
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<tbody>
<tr>
<td>AN-57</td>
<td>Ground plane antenna</td>
<td>$169.00</td>
</tr>
<tr>
<td>WB-57A</td>
<td>Antenna booster</td>
<td>$949.00</td>
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Adaptors and Battery

<table>
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<tbody>
<tr>
<td>AC-D468</td>
<td>DC power supply for K-1108</td>
<td>$50.00</td>
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<tr>
<td>K-1108</td>
<td>DC adaptor for WRR-27/37</td>
<td>$89.00</td>
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<tr>
<td>7MR9</td>
<td>9.45V cell for WRT-57</td>
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**U-Matic BRS Series**

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**U-Matic XBR Series**

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**U-Matic In Shippers**

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**U-Matic SP Series**

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**U-Matic Bulk Cassettes**

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**Betacam Oxide Series**

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**Betacam Metal Particle Bulk Cassettes**

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**Betacam Oxide Bulk Cassettes**

<table>
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Prices and Specifications Subject to Change Without Notice.
Series 200 Delta Mixing Consoles

- Individual output connectors on each module
- Can be specified with any combination of input modules - standard, deluxe, stereo and dual line - within any of the 4 frame sizes (8, 16, 24 or 32 channels)
- Both the standard and deluxe inputs incorporate the proprietary padless microphone amplifier, with a single control providing a sensitivity range of -2dBu to -70dBu
- Both modules feature a patented active panpot design which generates precise stereo imaging and allows the safe use of group outputs as individual mono sends
- The advanced EQ featured on the deluxe input module includes HF (12kHz) and LF (60Hz hybrid peak/peak) sections, which are capable of accurately controlling high and low frequency content without reducing headroom or increasing loudspeaker distortion
- Sweepable Hi Mid and Lo Mid sections give precise control over the vital midrange bands, together covering 150Hz to 10kHz
- The stereo input module offers an RIAA preamp option on the "B" inputs for direct input from magnetic phono cartridges, as well as the facility to provide either stereo line sources (for broadcast and A/V) or stereo effects returns (for PA or studio recording)
- Illuminated switches provide clear status indication
- 20 segment wide-range bar graph meters display either the group outputs or lower return levels
- Removable scribble strips which conceal individual modules’ fixing screws

Series 200 Delta Standard
- 8 channel console ................................................. $3,650.00
- 8 channel rackmount console ................................. $3,650.00
- 16 channel console ............................................... $5,450.00
- 24 channel console ............................................. $7,150.00
- 32 channel console ............................................ $9,100.00

Series 200 Delta Deluxe
- 8 channel console with SEQ ..................................... $4,250.00
- 8 channel rackmount console with SEQ .................. $4,250.00
- 16 channel console with SEQ ................................. $6,850.00
- 24 channel console with SEQ .................................. $8,950.00
- 32 channel console with SEQ .................................. $11,500.00

Delta AVE Mixing Console

Configured to interface with virtually any type of edit controller, the Delta AVE offers a variety of modules and frame sizes to suit all applications. When stereo modules are needed, the stereo option frame must be specified.

The Delta AVE shares all the features of the 200 Delta. This includes the Active Pan Pot design, ensuring greater isolation between left and right buses. An advanced EQ is complemented by exceptionally low noise and crosstalk performance. The simplicity of the modular construction enables you to specify a console with any combination of standard Delta or AVE modules. This flexibility allows the console to be tailored to your application, whether it be A-B roll, ENG or the sophistication of the full D2 format.

With Delta AVE, automatic control of audio is further enhanced by the Depth fader. This controls the extent to which the edit controller can attenuate the signal by presetting the maximum fade depth from your audio console. To avoid unnecessary degradation of the audio signal, high quality, industry standard DBX VCA's are used in the main signal paths.

With the possibilities of direct control, eavesdrop or automatic triggering of preset audio effects, the Delta AVE is designed for creative, quality conscious video editing. The additional capabilities of the serial interface have been extended with an independent audio switcher that can be triggered locally or from GPIs, with its own variable crossover type and duration.

Delta AVE incorporates sophisticated solid-state controls, which when supported by the edit controller switch between listening to the stereo master output and the replay signal from the video recorder.

4 illuminated switches on the master module indicate the current control status - whether the console is under AVE control, the output is dimmed (either locally or automatically by the edit controller) and the monitor source selection (record or playback).

Delta AVE Stereo Consoles
- 8 stereo inputs ...................................................... $8,325.00
- 8 stereo inputs in rackmount ................................. $8,325.00
- 16 stereo inputs ................................................... $14,350.00
- 24, includes 8 stereo inputs and 16 mono inputs ........ $16,675.00

Delta 8 Mixing Console

Designed for both 8 and 16 track recording, Delta 8 offers a compact, high performance package for home recording, broadcast and post production facilities.

The circuitry design gives exceptionally low crosstalk and distortion figures, making the Delta 8 the ideal choice for studios using digital recording formats.

The classic split format is completely modular and offers 8 groups with a choice of 20, 28 or 36 input channels. Mono input facilities include 6 independent auxiliary sends, 4-band sweep EQ as well as a direct output facility — enabling any signal to be recorded directly to tape.

Comprehensive Master module facilities include 2 2-track returns for use with stereo machines and 2 control room monitor speaker outputs for selecting between main and nearfield speakers.

The multitrack tape returns are normalised to both the monitor section and the channel line inputs, enabling the 16 monitor returns to be used as extra inputs during mixdown.

Delta Monitor Mixing Console

Delta Monitor uses a single-piece steel frame for reliability. The unique padless mic amp design yields advanced performance specifications at maximum and normal operating gains, while low noise summing and proven grounding techniques give further assurance of technical excellence.

Available in 3 frame sizes (with 24, 32 or 40 input channels), Delta Monitor gives access to a total of 12 sends; 10 monitor feeds and a stereo send which can serve as a monitor mix for the engineer, a feed for sidefill speakers or as another pair of monitor buses.

The 4-band equalizer with 2 swept mid-bands provides a powerful tool for tailoring individual inputs, with further refinements made possible with both the high pass filter and phase reverse facilities.

Delta Monitor has 2 variable notch filters fitted to each output, with a "panic" dim switch for inserting a pad across the monitor output so any feedback can be handled with precision and ease .............. TBA* *To Be Announced

Prices and Specifications Subject to Change Without Notice.
Star Cases

STARCASE specializes in both customized case exteriors as well as customized case interiors. We can cradle and protect even the most fragile equipment. We work with numerous densities and grades of polyester and polyethylene foams, anti-statics, cubed foams, special cotton and synthetic material lining, hidden compartments, roll-out desk surfaces, roll-in ramps, and special partitioning devices for all types of audio, video, and computer magnetic media. Where permissible by design, all interior treatments and customizations are available on all STARCASE types.

**CLOSURE STYLES**

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<th>Design Features</th>
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</tr>
<tr>
<td>'B-3'</td>
<td>Clamp-on 3&quot; lid</td>
<td>**</td>
</tr>
<tr>
<td>'B-4'</td>
<td>Clamp-on 3&quot; lid</td>
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<tr>
<td>'CM'</td>
<td>Clamp-on lid</td>
<td>**</td>
</tr>
<tr>
<td>'CS-3'</td>
<td>Clamshell lid</td>
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<tr>
<td>'CS-4'</td>
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<tr>
<td>'D-3'</td>
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<td>'D-4'</td>
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</tr>
<tr>
<td>'E-3'</td>
<td>Roll-in 3&quot; lid</td>
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<tr>
<td>'E-4'</td>
<td>Roll-in 4&quot; lid</td>
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</tr>
<tr>
<td>'FF'</td>
<td>Removable front &amp; rear lid</td>
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</tr>
<tr>
<td>'X'</td>
<td>Telescopic lid</td>
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**RACK STYLES**

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**STARCASE TYPE**

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<th>STYLES AVAILABLE</th>
<th>ATA* COMPLIANCE</th>
<th>COLOR CHOICES**</th>
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* AIR TRANSPORT ASSOCIATION OF AMERICA

** 1) BLACK, 2) BLUE, 3) LIGHT GREY, 4) BOURDEAUX, 5) RED, 6) WHITE, 7) ORANGE, 8) YELLOW, 9) DARK GREY, 10) TWO-TONE

Prices and Specifications Subject to Change Without Notice.
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 grip 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.

Lighting Kit I (1051)
Includes:
3-4501MP lanebeam 650 1-1217 Single Scrim
3-4503MP lanebeam 1000 1-1217 Single Scrim
2-4503MP lanebeam 1000 1-1217 Single Scrim
2-4523 MP ladi Fill 1-1217 Single Scrim
3-4524 MP ladi Fill 1-1217 Single Scrim
2-4532 MP ladi Fill 1-1217 Single Scrim

Lighting Kit II (1052)
Includes:
4-4501MP lanebeam 650 1-1228 Half Single Scrim
3-4510 MP Pulsar 1-1228 Half Single Scrim
1-1226 Full Double Scrim 3-1529 Stand
1-1226 Full Single Scrim 1-1977 Case 1200.00
1-1227 Half Double Scrim

Lighting Kit III (1053)
Includes:
3-4501MP lanebeam 650 1-1217 Single Scrim
3-4510 MP Pulsar 1-1228 Half Single Scrim
1-1226 Full Double Scrim 3-1529 Stand
1-1226 Full Single Scrim 1-1977 Case 1000.00
1-1227 Half Double Scrim

Lighting Kit IV (1054)
Includes:
2-4501MP lanebeam 650 1-1217 Single Scrim
2-1230 Accessory Holder 2-4523 ladi Fill
2-1234 4-leafl Barndoor 4-1535 Stand
1-1216 Double Scrim 1-1978 Case 1460.00

Lighting Kit V (1055)
Includes:
2-4502MP lanebeam 1000 3-4523 ladi Fill
2-1230 Accessory Holder 1-1963 Gaffer Grip with
2-1234 4-leafl Barndoor 4-1535 %" stud
1-1216 Double Scrim 4-1535 Stand
1-1217 Single Scrim 1-1978 Case 1875.00

Lighting Kit VI (1056)
Includes:
4-4501MP lanebeam 650 2-1217 Single Scrim
4-1230 Accessory Holder 4-1535 Stand
4-1224 4-leafl Barndoor 1-1978 Case 1800.00
2-1216 Double Scrim

Lighting Kit VII (1057)
Includes:
4-4503MP lanebeam 1000 2-1217 Single Scrim
4-1230 Accessory Holder 4-1535 Stand
4-1324 4-leafl Barndoor 1-1978 Case 1800.00
2-1216 Double Scrim

Lighting Kit VIII (1058)
Includes:
3-4503MP lanebeam 1000 1-1217 Single Scrim
3-4523 MP ladi Fill 1-1217 Single Scrim
3-4524 MP ladi Fill 1-1217 Single Scrim
3-4532 MP ladi Fill 1-1217 Single Scrim
3-1324 4-leafl Barndoor 1-1978 Case 1375.00
1-1216 Double Scrim

Lighting Kit IX (1059)
Includes:
2-4503MP lanebeam 1000 1-1217 Single Scrim
2-1230 Accessory Holder 2-1535 Stand
2-1234 4-leafl Barndoor 4-1535 Stand
1-1216 Double Scrim 1-1979 Case 1000.00

Lighting Kit X (1060)
Includes:
2-4505MP lanebeam 2000 1-1217 Single Scrim
2-1235 4-leafl Barndoor 1-1224 Half Single Scrim
1-1221 Full Double Scrim 2-1535 Stand
1-1222 Full Single Scrim 1-1979 Case 1625.00

Kit Cases 1-1978 and 1-1979 Are Fitted With Casters

Kit V

Kit VII

Prices and Specifications Subject to Change Without Notice.
**DIMMING**

**PORTABLE DIMMING SYSTEMS**

**CD80 Dimmer Packs with Digital Pack Control Module**

Accepts DMX512, AMX 192, SMX and fiber optic protocols.

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
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<tr>
<td>8324</td>
<td>120V with 24 1.2kW dimmers, 24 GTL receptacles</td>
<td>$8250.00</td>
</tr>
<tr>
<td>8325</td>
<td>120V with 24 1.2kW dimmers, 24 GP receptacles</td>
<td>$7960.00</td>
</tr>
<tr>
<td>8326</td>
<td>120V with 24 1.2kW dimmers, 24 GR receptacles</td>
<td>$8050.00</td>
</tr>
<tr>
<td>8327</td>
<td>120V with 24 1.2kW dimmers, terminal strip for hard wiring</td>
<td>$7650.00</td>
</tr>
<tr>
<td>8524</td>
<td>120V with 12 2.4kW dimmers, two 20A GTL receptacles per dimmer, 65 lb.</td>
<td>$4550.00</td>
</tr>
<tr>
<td>8525</td>
<td>120V with 12 2.4kW dimmers, two 20A GP receptacles per dimmer, 65 lb.</td>
<td>$4550.00</td>
</tr>
<tr>
<td>8526</td>
<td>120V with 12 2.4kW dimmers, two 20A GR receptacles per dimmer, 65 lb.</td>
<td>$4550.00</td>
</tr>
<tr>
<td>8527</td>
<td>120V with 12 2.4kW dimmers, terminal strip for hard wiring, 65 lb.</td>
<td>$4550.00</td>
</tr>
<tr>
<td>8528</td>
<td>120V with six 6kW dimmers, one 50A GTL receptacle per dimmer, one 50A test outlet, 65 lb.</td>
<td>$4950.00</td>
</tr>
<tr>
<td>8529</td>
<td>120V with six 6kW dimmers, one 50A GP receptacle per dimmer, one 50A test outlet, 65 lb.</td>
<td>$4950.00</td>
</tr>
<tr>
<td>8530</td>
<td>120V with six 6kW dimmers, terminal strip for hard wiring, 65 lb.</td>
<td>$4900.00</td>
</tr>
</tbody>
</table>

**CD80 Digital Pack Control Module**

For retrofit to CD80 packs (excluding 1.2kW CD80 packs) without pack modifications.

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>8216</td>
<td>For all 2.4kW CD80 packs</td>
<td>P.O.A.*</td>
</tr>
<tr>
<td>8217</td>
<td>For all 6.0kW and 12.0kW CD80 packs</td>
<td>P.O.A.*</td>
</tr>
</tbody>
</table>

**AMX 192 Dimmer Packs**

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>8124</td>
<td>120V with 12 2.4kW dimmers, two 20A GTL receptacles per dimmer, 65 lb.</td>
<td>$4325.00</td>
</tr>
<tr>
<td>8125</td>
<td>120V with 12 2.4kW dimmers, two 20A GP receptacles per dimmer, 65 lb.</td>
<td>$4325.00</td>
</tr>
<tr>
<td>8126</td>
<td>120V with 12 2.4kW dimmers, two 20A GR receptacles per dimmer, 65 lb.</td>
<td>$4325.00</td>
</tr>
<tr>
<td>8127</td>
<td>120V with 12 2.4kW dimmers, terminal strip for hard wiring, 65 lb.</td>
<td>$4325.00</td>
</tr>
<tr>
<td>8066</td>
<td>120V with six 6kW dimmers, one 50A GTL receptacle per dimmer, one 50A test outlet, camlock plugs, 85 lb.</td>
<td>$4700.00</td>
</tr>
<tr>
<td>8067</td>
<td>120V with six 6kW dimmers, one 50A GP receptacle per dimmer, one 50A test outlet, camlock plugs, 85 lb.</td>
<td>$4650.00</td>
</tr>
<tr>
<td>8068</td>
<td>120V with six 6kW dimmers, terminal strip for hard wiring, 65 lb.</td>
<td>$4600.00</td>
</tr>
<tr>
<td>8069</td>
<td>120V with six 12kW dimmers, one 100A GP receptacle per dimmer, one 100A test outlet, camlock plugs, 85 lb.</td>
<td>$5700.00</td>
</tr>
<tr>
<td>8064</td>
<td>120V with six 12kW dimmers, terminal strip for hard wiring, 85 lb.</td>
<td>$5500.00</td>
</tr>
<tr>
<td>8224</td>
<td>120V with 24 1.2kW dimmers, 24 GTL receptacles</td>
<td>$6665.00</td>
</tr>
<tr>
<td>8225</td>
<td>120V with 24 1.2kW dimmers, 24 GP receptacles</td>
<td>$6425.00</td>
</tr>
<tr>
<td>8226</td>
<td>120V with 24 1.2kW dimmers, 24 GR receptacles</td>
<td>$6560.00</td>
</tr>
<tr>
<td>8227</td>
<td>120V with 24 1.2kW dimmers, terminal strip for hard wiring</td>
<td>$6180.00</td>
</tr>
</tbody>
</table>

**AMX 192/0-10V (Analog) Selectable**

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>8234</td>
<td>120V with 24 1.2kW dimmers, 24 GTL receptacles</td>
<td>$7705.00</td>
</tr>
<tr>
<td>8235</td>
<td>120V with 24 1.2kW dimmers, 24GP receptacles</td>
<td>$7420.00</td>
</tr>
<tr>
<td>8236</td>
<td>120V with 24 1.2kW dimmers, 24 GR receptacles</td>
<td>$7535.00</td>
</tr>
<tr>
<td>8237</td>
<td>120V with 24 1.2kW dimmers, terminal strip for hard wiring</td>
<td>$7130.00</td>
</tr>
</tbody>
</table>

**Also available in dimming systems are:**

**CD80 Dimmer Racks**
Compact, reliable dimming with dual 2.4kW, single 6.0kW and 12.0kW modules...
P.O.A.*

**CD80 Rolling Racks**
CD80 in a heavy-duty touring rack...
P.O.A.*

**CD80/8 Dimmers**
High-performance dimmers for increased filtering of electrical noise...
P.O.A.*

*Prices on Application

Prices and Specifications Subject to Change Without Notice.

345
Symetrix

501 Peak-RMS Compressor/Limiter
- Separate processors for both compression and peak limiting
- Balanced in/out XLR • Unbalanced in/out 1/4" • Sidechain in/out 1/4" • Stereo connect 1/4"
501 $349.00
501 Option 01—Transformed coupled output $389.00

511A Noise Reduction System
- No encoding required • Dynamic filter and downward expander
- Subsonic filter • Up to 30dB S/N improvement • Stereo/2-channel switch • Balanced in/out XLR • Unbalanced in/out 1/4" $599.00

525 Dual Gated Compressor/Limiter
- 2-channel or true stereo • Program controlled attack/release times • Simultaneous expansion and compression on each channel • Balanced in/out TRS 1/4" • Sidechain in/out TRS 1/4" $539.00

528 Voice Processor
- Mic to line level • Preamp, de-esser, downward expander, compressor/limiter, parametric EQ/notch filter, +48 phantom power, switchable metering • Single rack space • Mic input XLR • Unbalanced in/out on 1/4" • Line level in/out on #6 barrier $679.00

564 Quad Expander/Gate
- Hipass/lowpass controls for frequency conscious gating • XLR balanced inputs and outputs plus control loop/key input • 6 LED gain reduction meter per channel • Balanced inputs/outputs XLR • Control loop/key input in/out TRS 1/4" $989.00

571 SPL Computer™
- Senses ambient noise, automatically adjusts levels • Music input, paging controller • Semi-automatic calibration • Sensing mic inputs XLR • Page mic XLR • Balanced/unbalanced in/out connections on #6 barrier $849.00
571S SPL computer slave $349.00

572 SPL Computer
- Senses ambient noise, automatically adjusts levels • Uses the system's loudspeakers as input transducers for ambient noise sensing • Page mic XLR • Balanced/unbalanced in/out connections on #6 barrier $699.00

A-220 Stereo Amplifier
- 20W/channel, 50W bridged • Mono, 2-channel or true stereo • 0.05% THD • Balanced/unbalanced inputs, XLR 1/4" • Speaker outputs on barrier strip $349.00
A-220 SC-1 Security cover $30.00

SX201 Parametric EQ Preamplifier
- Studio quality • +15dB boost, -30dB cut • High headroom • Unbalanced in/TRS 1/4" • Balanced in/out TRS 1/4" $279.00

SX202 Dual Microphone Preamplifier
- Variable gain with 15dB pad • Polarity switch on 1 channel • +48V phantom power • Mic inputs XLR • Outputs TRS 1/4" $299.00

SX203 Telephone Interface
- Fast hookup • High quality audio transfer • Desk set, phone line RJ-11 modular jack • Balanced/unbalanced in/out TRS 1/4" $389.00

SX204 Headphone Amplifier
- 4 channels • Stereo operation • All headphone impedances • Balanced/unbalanced in TRS 1/4" • Outputs TS 1/4" $299.00

SX205 Precision Audio Meter
- Displays VU or watts • Variable peak hold time • Greater than 45dB range • Stereo balanced inputs TRS 1/4" • Speaker inputs, #6 barrier $339.00

SX206 Multi Dynamics Processor
- Versatile multi-mode operation • Exceptional sonic performance • Selectable mode at power-up • Master or slave designation • Balanced/unbalanced input TRS 1/4" • Unbalanced output TS 1/4" • Balanced output TRS 1/4" • Stereo link TRS 1/4" • Control loop TRS 1/4" (return), TS 1/4" (send) $329.00

SX208 Stereo Compressor/Limiter
- Exceptionally low noise and distortion • Simple, straightforward operating controls • LED indicators for input level, compression and clipping • Balanced or unbalanced signal connection • UL approved power supply $299.00

Prices and Specifications Subject to Change Without Notice.
TELECOMMUNICATION EQUIPMENT

104A Multi-Line Telephone Interface
- Consists of 2 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 4 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 104A is designed specifically for broadcast and teleconferencing applications. The 104A is essentially a stand-alone electronic telephone system which connects to up to 4 incoming telephone lines via standard RJ-11 ("modular") connectors. No additional telephone line equipment is necessary. The 104A is FCC approved and may be installed by non-technical personnel.

104A .................................................. $2395.00
104 CTRL Extra console for 2-station operation of the 104A. Includes 25/25 cables ................................ .495.00

111 Adaptive Hybrid
- Up to 40dB nulling of any phone line
- Digital signal processing
- Selectable line or mic level host in, and caller out on XLR
- Telephone line, desk set on RJ-11 modular jacks
- Remote in, relays, key system and conference on #6 barrier

The 111 is a digital hybrid that "learns" signal characteristics, adapts to maintain maximum trans-hybrid loss even as conferenced lines are added and removed. May be connected directly to CO line, or used with any PBX, key, electronic key system, or any 2-wire audio line. Delivers more gain before feedback in systems where live loudspeaker monitoring is used.

111 .................................................. $1695.00

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
- 2-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 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 .................................................. $549.00
TASCAM
TEAC Professional Division

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 permalloy 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 operates at tape speeds of 15 ips (38cm/s) and 71/2 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.

Series 30 Recorder/Reproducers
- Use 1/4" tape and have selectable 15 or 71/2 ips tape speeds
- Durable FG servo DC capstan motor and 2 slotless DC reel motors
- Microprocessor-controlled full-logic transport
- Precision digital tape counter with zero return function
- ± 12% pitch control
- Bipolar power supply for stable operation and high sound quality
- Direct-coupled amplifiers for minimum distortion
- Dump edit function
- Cueing lever
- Microphone inputs
- Input and output level controls
- Frequency response: 40Hz-22kHz, ± 3dB at 15 ips

The Series 30 Recorder/Reproducers are 3-head tape machines with 101/2" reel capability that are ideally suited to all music and sound production applications.

The motors and servo control systems are made for unfaltering precision, power and reliability. The transport is a shining example of smooth, sure tape handling.

Series 20 Recorder/Reproducers
- The 22-4 and 22-2 use 1/4" tape and have selectable 15 or 71/2 ips tape speeds
- Durable FG servo DC capstan motor and 2 AC reel motors
- Memory (zero return) function on the 22-4
- ± 6% pitch control on the 22-4
- Bipolar power supply for stable operation and high sound quality
- Cueing lever on the 22-4
- The 22-2 features front-panel microphone inputs with level controls
- Input and output level controls on each channel

Both the 22-4 and 22-2 feature 3-head transports and use 7" reels of 1/4" tape, offering plenty of recording/playback time for most music and sound production applications. A choice of 15 or 71/2 ips tape speeds lets you make the choice between maximum time or maximum sound quality.

BR-20T 1/4", 2-Track Recorder/Reproducer
With Center-Track Time Code
- Ideally suited for 2-track mastering and audio-for-video applications
- Servo-controlled motors for accurate transport response, gentle tape handling while under SMPTE outboard control, gapless and seamless punch in/out for transparent editing, independent real size selection for handling dissimilar reel sizes and separate record functions for the left and right channels
- Equipped with an in-line coincident center track time code head configuration, material recorded on the BR-20T can also be blade-edited because there are no additional compensating delay circuits or offsets

Prices and Specifications Subject to Change Without Notice.
MIXERS

M-06/M-06ST Compact Mixers

M-06
- 6 input channel stereo mixer
- Effects system includes an effect output and stereo returns
- Phono input on channels 5 and 6
- Mic inputs for each channel accept a wide signal range from microphone, instrument and audio components
- Access send/receive jacks on channels 5 and 6
- Hi and Low EQ on each channel
- 2 M-06s can be stacked to double inputs

M-06ST
- 6 stereo input channels (channels 1 and 2 have stereo phono inputs for direct connection of record players, while channels 3-6 have stereo line inputs)
- Mic inputs on each channel accept a wide range of signals from microphones, musical instruments and audio equipment
- Stereo Aux inputs with level control provide an extra stereo input
- Insert patch points on channels 5 and 6
- Cue send level controls on each channel
- Balance controls

The M-06 and M-06ST offer an excellent blend of simplicity, flexibility and affordability. The M-06 is a 6-in/2-out design, while the M-06ST features 6 stereo input channels feeding stereo outputs. When you need a convenient, high-performance small mixer for keyboard mixing, PA or recording applications, the M-06 is the ideal choice. For discos, commercial sound installations or other applications which require mixing and processing of a number of stereo sources—including instruments with stereo outputs—the M-06ST can make the job smooth and simple.

M-06 .............................................. $369.00
M-06ST ........................................... $499.00

M-106 6-In/4 PGM Out Mixer
- ± 15V bipolar power supply provides extra headroom and optimum circuit stability
- All 6 input channels feature microphone and line input connectors
- 4 phono inputs for use in A/V production or club applications
- Trim and pad controls on each input provide broad level matching from -70 to +4dB
- 2-band shelving EQ on each channel allow up to 15dB boost or cut at 10kHz and 100Hz
- 2 auxiliary mix systems (Aux and Eff) with effect return
- Monitor select switches provide convenient monitor access to all buses
- Phones output delivers 1.5W of power per channel, and can also be used to directly drive a small pair of speakers

In spite of its compact exterior, the M-106 is a remarkably flexible mixing system. In fact, it functions like 5 mixers in 1 with its main mix, monitor mix, auxiliary mix, effects mix and return mix. This approach to mixer design allows the M-106 to adapt easily to an extremely wide range of applications, giving the operator maximum flexibility at the same time. It offers comprehensive input and output facilities—including direct phono inputs, a convenient, practical layout, and solid construction that means stubborn reliability even under demanding on-the-road conditions.

M-106 ............................................. $699.00

MM-1 Midi-Equipped Keyboard Mixer
- 4 stereo input channels
- 16 mono input channels
- 4 effect sends
- 4 stereo effect returns
- Mic level inputs on all channels
- MIDI controlled muting

- Direct outputs for optimum flexibility in multichannel recording and patching options
- 4 effect sends allow individual contouring of different inputs
- Can be used rackmounted or tabletop

For live applications, MIDI muting is controllable through switches on a master keyboard or a footswitch.

The MM-1 also features 3-segment LED input meters for easy trim setting and tracking of input assignments. Mic level inputs on all channels provide easy line level matching for quieter operation and maximum input flexibility. -10dB RCA output jacks allow connection of the MM-1 as a MIDI expander to recording products such as the TASCAM 238 and 388 without special adaptors or level-matching problems.

Solo function lets you focus on 1 instrument to adjust its sound without changing or muting other channels individually.

MM-1 ............................................. $1099.00

Prices and Specifications Subject to Change Without Notice.
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 2-head, high stability, w/rack ears ............... $679.00
112B Same as 112 w/balanced XLR inputs and outputs .... $749.00
112R 3-head, auto reverse, w/rack ears ............... $859.00

122 MK II Studio Cassette Deck
- Three 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

133B Stereo Plus Cue Cassette Recorder/Reproducer with Auto Present Features

Recorder Features:
- +4 balanced XLR/-10 unbalanced inputs and outputs
- Two speeds: 1 7/8-3 3/4 ips
- Dolby NR System
- Simul-sync recording or multitrack recording

Auto Present Features:
- Cue pulse generates a 25 Hz tone on the cue channel (does not affect the projector operations but triggers the auto present)
- Automatic shutoff or rewind at cue tone

133B ........................................ $1349.00

102/103 Stereo Mastering Cassette Decks
- Dolby HX Pro
- Auto tape type automatically adjusts recording electronics to any standard tape formulation
- A Rec/Mute auto spacer puts a four second space between songs
- Electronic tape counter with real time display
- Auto monitor function switches for flawless matching of record levels to tape levels, and Dolby B and C noise reduction systems
- Both units include bi-polar power supply and direct-coupled circuitry
- Proprietary Permalloy record/playback heads

102 2-head design ................................ $299.00
103 3-head design ................................ $449.00

202WR Double Stereo Cassette Deck
- Records demo tapes compatible with any standard Hi-Fi cassette player
- Sync dubbing capability allows both decks to start simultaneously at the touch of a record button
- A unique sync reverse capability allows and adjusts for varying tape lengths
- Capable of both normal and high speed dubbing
- A rotary head reverse system provides accurate azimuth correction for continuous bi-directional playback and recording

202WR ........................................ $329.00

Prices and Specifications Subject to Change Without Notice.
COMPACT DISC PLAYERS/
DIGITAL RECORDER

CD-301 Compact Disc Player
- Balanced XLR and unbalanced RCA audio outputs
- Hard-wired 10-key remote control
- 20-program memory
- Single-play function
- Link function
- Center-drawer design
- Standard 19" rackmountable
- Weight: 11 7/8 lbs.
- Dimensions: 4 9/16" H x 19" W x 10 11/16" D
- Ideal for use in studio, radio and disco environments
CD-301 ........................................... $549.00

CD-401 Compact Disc Player
- 18-bit 4-times oversampling in conjunction with our Zero Distortion (ZD) circuitry to provide excellent sonic characteristics
- Employs a digital output section with on/off switching
- 10-key direct entry of track and index numbers provides instant easy access to tracks
- Optional remote can be operated wired or wireless
- XLR balanced outputs
- Rackmount chassis
- Accessory jack for remote start
CD-401 ........................................... $799.00
RC-401 Remote control unit ....................... 75.00

CD-701 Compact Disc Player/
RC-701 Multi-Player Control Unit
- Integrates instant start-up, automatic cueing and error-free tracking to provide production and broadcast professionals with ultimate precision performance and no dead air
- CD-701 CD Player/RC-701 Control Unit combination features an auto cue function, event play, link play, and an optional BU-1 RAM buffer which enables immediate play performance
- By doing away with rise time, the RAM buffer enables continuous looping between any 2 points
- The CD-701 and the RC-701 were specifically designed to complement each other and to form the basis of an exceptionally powerful professional CD reproduction system aimed at broadcast and audio production applications
- In order to eliminate tracking errors common to other CD players, the CD-701 features a unique clamping system which uses a rigid free disc clamping device to ensure precise disc rotation and faultless tracking
- ZD circuits provide full CD sound while guaranteeing minimal noise occurrence
- The CD-701 features oversampling digital filters, 16-bit D/A converters and an internally switchable monitor-mode line output
- 98dB S/N
- Frequency response of 20Hz-20kHz ± 0.5dB
- Total harmonic distortion is 0.008%
- The player unit measures 8 7/16" x 4 3/4" x 19 5/8" and weighs 20.9 lbs.
- RC-701 Control Unit controls up to 4 CD player units
- The control unit features ±6% pitch control with frame-accurate search using an easy-to-handle dial or numeric keys
- The RC-701 is 4-event programmable, measures 14 9/16" x 4 3/8" x 9 7/8" and weighs 11 1/4 lbs.
CD-701 Compact disc player .......................... $2199.00
RC-7 Remote control unit .......................... 199.00
RC-701 Multi-player control unit ..................... 1249.00
BU-1 Ram buffer .................................. 399.00
PW-5CD Connection cable .......................... 100.00

DA-30 Digital Audio Recorder
- Analog to digital converters use Delta-Sigma modulation and 64-times oversampling
- S/N ratio in excess of 94dB
- AES/EBU digital I/O
- Full-function programmable remote control
- Start ID positioning
- Headroom margin display
- +4dBm balanced inputs and outputs
- Ability to interact with other professional digital equipment via the AES/EBU interface
- 48kHz, 44.1kHz and 32kHz sampling frequencies
DA-30 ............................................. $1499.00

Prices and Specifications Subject to Change Without Notice.
351
PVC-Model 6 Programmable Video Controller
The Model 6 is microprocessor-based and can be programmed for up to 100 memory locations with 7-day operation per location. It can be programmed for single or dual channel operation. VCR or video sources can be routed to either or both outputs. The Model 6 is capable of switching mono or stereo audio and is compatible with stereo TV or for use in bilingual applications that use separate audio tracks for different languages. The Model 6 has a Video Sensing Circuit (VSC) that constantly monitors the signal from the source. Whenever the VSC detects a loss of signal the character generator is switched to the appropriate channel. The Model 6 allows for single or dual CG inputs with stereo audio for each input.

The Model 6 incorporates a 2-line LCD display for information. When programming, the operator is lead through the steps by a series of on-screen prompts. Programming is so easy that virtually anyone can enter commands with little or no instruction. Adding, deleting or editing a program is simple and fast. If a mistake is made, correction can be done instantly.

If control of switching or changing of program needs to be done remotely, an RS-232 interface is standard. A complete PC remote program is available for the PVC-Model 6.

You have the option of restricting access to your PVC-Model 6. Access is an operator programmable function.

PVC-Model 6 ......................................................... $1495.00

Expander
The Expander is designed as a companion unit for and operates in conjunction with the Model 6, for use in applications that require additional machine control or additional audio and video sources.

The Expander allows for the control of up to 16 VCRs and with the included software upgrade increases the events per day from 100 to 500 with 7 days of programming for each event. Audio and video can be routed to A, B or A and B outputs, both of which have defaults back to character generators. Signals can also be routed to the Preview output; there is no automatic default assigned to this output.

Remote interface software is available for remote RS-232 control of all functions, both machine control and routing of signal. The remote interface software operates in an MS-DOS environment and requires VGA level graphics to operate the simulator portion of the program.

Expander ........................................................... $4000.00

Auto-Play Video Controller
• Stereo audio • Programmable in minutes or seconds • Battery back-up of program and clocks • On-screen programming with prompts • Printer port • RS-232 interface • Programmable GPI • 7-day programming

The Auto-Play is designed to automate the control of VCRs for playback in applications where no more than 2 VCRs and 1 additional default source is used. The same technology that is incorporated in the Model 6 is used in this fully automated controller.

The internal clock is used to control all VCR functions, allowing for programming of up to 700 events per week. All switching of video and audio signals is automatic without additional commands from the user. The video signal is switched in the vertical interval with audio following video.

A special Video Sensing Circuit (VSC) is used to monitor the source signal from the VCR and if sync is not present or at improper levels the VSC automatically switches back to the default input. The Auto-Play will control most industrial grade VCR functions, including record.

Auto-Play ............................................................ $1495.00

Automator Video Controller
The Automator is a general purpose controller which has applications in the video, security and exhibit fields. Although primarily designed for VCR control, the unit can control other devices with optional accessories. In addition to programmed commands based on time, the Automator accepts inputs in the form of contact closures or DTMF tones. The Automator is a console device with an LCD display and 4 prompt keys. All connections are made in the rear of the unit. Programming and manual control is accomplished through the prompt keys, an optional keypad or computer interface.

PVC-Model 6 ......................................................... $5150.00

Automator .......................................................... $4950.00

Auto-Spot Video Controller
The Auto-Spot is a single channel, single VCR controller with internal switcher designed for commercial insertion. VCR control is activated by a signal from the assigned network. The VCR is synced to the network and the internal switcher switches in the vertical interval referenced to the network.

The switcher also monitors the VCR signal and if the vertical sync level falls below 1/5 volt the Auto-Spot will automatically default back to the network. Logging and verification are stored in internal RAM. Memory has internal battery backup, thus reducing power outage problems. Logging and verification can be routed to the printer port or to the RS-232 environment.

The front mounted LCD readout displays the operating status, which is constantly updated by the microprocessor. Pre-roll time can be selected by the operator, thus allowing the Auto-Spot to easily interface with most commercially available VCRs and networks. Equipment and software are compatible with Ad Systems products.

Auto-Spot ........................................................... TBA*

VDS Video Detector Switcher
The VDS is a 2-input, 1-output video switcher with built-in video detection. The video detection circuit monitors the primary video signal and automatically switches it to the output whenever proper sync level is present. After switching, the VDS continues to monitor the primary input, and whenever the sync level falls below the preset level the VDS automatically switches back to the default input. Front mounted LED indicates when default is switched to output.

VDS ................................................................. $19.00

* To Be Announced

Prices and Specifications Subject to Change Without Notice.
VIDEO DUPLICATION/REMOTE CONTROL/SELECTOR/DISTRIBUTOR/SWITCHER

DubMaster™ Remote Control
The DubMaster is an easy and cost-effective way to control VCRs in a video duplication system. The DubMaster can control a master playback deck and as many recorders as desired. Any remote controllable VCR can be used with the DubMaster.

The DubMaster has a built-in serial port for use with JVC and Panasonic models with a serial control option. In this case, the control cables and rack boxes are not needed.

The timer feature eliminates the need to manually stop the VCRs when the recording is completed. By setting the desired recording time, you may leave the system unattended and the DubMaster will automatically stop or rewind the VCRs at the end of the recording time. The DubMaster can also be programmed to power down the system.

To prevent accidental or unauthorized use of the control buttons during recording, a lockout feature may be used to disable all controls. The master power switch also has a safety feature to prevent accidentally turning power off during a recording.

Installation is quick and easy. The master control unit connects to the first rack box with a single cable. Additional rack boxes are then daisy-chained with a single cable. Control cables connect the VCRs to the rack box. All cables are modular telephone-type which plug in—no tools needed.

Serial port connection is even easier. A single audio cable connects the DubMaster to the first recorded, then looped through all other recorders.

DubMaster ........................................ $1195.00
Rack Box RB-12 Controls 12 VCRs .................. $495.00
Control Cable 1 for each VCR—including source .... 75.00

SRS-1 Source and Recorder Selector
The SRS-1 is a 19” rackmountable selector that provides the user with the ability to select 1 of 4 possible source machines and route the control signal to any or all of the 6 groups of copy decks.

The SRS-1 control panel is divided into 2 distinct areas. The first group of switches controls the selection of the source machine. The LEDs on switches indicate which source machine is being controlled and signal is being routed to the recorders. Selection of a different source machine is as easy as pressing a button. The DubMaster then controls the various functions (rewind, stop, play, fast forward and pause).

The second group of buttons controls a recorder or bank of recorders that are to be enabled. The operator can choose any 1 or up to all 6 of the banks of recorders to be activated. This then allows the operator control of the various banks of recorders through the “recorders” control section on the DubMaster.

With the SRS-1 the operator can intermix serial, infrared or parallel control machines. Output connections are provided for 6 serial ports and 6 parallel ports; both groups are switched by the common buttons on the front of the SRS-1. Loopthrough is also provided on the signal output to allow for additional recorder selection.

SRS-1 ..................................................... $495.00

DVA-12 Audio/Video Distributor
The DVA-12 is designed for use in a duplication facility for the distribution of stereo audio and video signal.

The DVA-12 is designed in a self-contained 19” rackmount enclosure. Standard connections for video and audio distribution makes the DVA-12 quick and easy to install. Audio connectors are standard RCA phono while the video connections are standard BNC type. The DVA-12 can be used to terminate or bridge video or audio (mono or stereo). Use of multiple DVA-12 can provide video and audio signal for large duplication facilities as your needs increase.

Video level is preset at unity gain and is adjustable with 1V p-p input from .7V to 2V. The audio is preset for Zero VU in/Zero VU out/unity and adjustable to a +6dB increase.

DVA-12 ............................................... $699.00

RS-4X6 Routing Switcher
The RS-4X6 is a routing switcher for audio and video signal. Designed to allow the operator a full matrix of video and audio signal routing. 1 of up to 4 video and audio signals can be routed in combination or separately to up to 6 outputs. This routing switcher is extremely easy to operate and all routes are clearly indicated by LEDs.

Specifications
Audio Switcher
Distortion: .03%
S/N: -75dB
Crosstalk: >-65dB
Bandwidth: 20Hz-40kHz
Input Imp.: 10K min.
Output Imp.: 200 ohms

Video Switcher
Diff. Gain: < 1%
Diff. Phase: < .5°
Crosstalk: >-50dB
S/N: -70dB
Bandwidth: 10Hz-10MHz
Input Imp.: > 100K loopthrough
Output Imp.: 75 ohms
Power: 120VAC at 15W
RS-4X6 .................................................. $1495.00

Prices and Specifications Subject to Change Without Notice.

353
Tech Commander RGB-200
Computer Display Routing System
• For use in instructor-led computer classrooms
• Image transfer; instructor-to-student, student-to-instructor, student-to-student
• Output to large screen from any computer in the class
• Instructors using the system can instantly send computer generated text, graphics and sound directly to student workstations for demonstration
• Provides instructors with ability to monitor student work in progress
• More than 100MHz bandwidth per RGB video component; workstation compatible
• RS-232 interface for custom software applications
• Instructor call with audible tone
• Can be configured to allow students to request assistance
• Expandable up to 64 student computers
• Instructor override of student keyboard, mouse and/or digitizer
• Modified bus configuration
• 4-line LCD display shows status, help menus in English
• All-digital control
• Fully integrated 2-way intercom
• Real-time transmission of full-motion video or animated graphics at full resolution/color with audio follow
• Student screen blanking and keyboard lockout
• No LAN required
• Works with any software or application
• No software drivers to install; no RAM or disk space needed
Tech Commander RGB-200 .................................. POR

CVI Computer-VCR Interface
The CVI interface module is designed to allow computer remote control of any industrial grade VCR that has external control capabilities. Communications (ASCII) from the computer's RS-232 port are translated by the CVI and with the use of standard TECH Electronic CC control cables functions are remotely controlled by the computer keyboard.
Each CVI is addressable with up to 128 different addresses assignable by the end user. Multiple machines may be assigned the same address if the user needs the machines to work in groups.
CVI .............................................................. $125.00

ProFlex-S1 Video Projector Remote Control
The ProFlex-S1 is designed to enhance versatility of Sony® video projectors by providing multiple input source selection as well as full control of all projector functions. The ProFlex-S1 can easily be integrated with wired and wireless remote control systems.
The ProFlex-S1 directly interfaces to most existing Sony video projectors, allowing remote control of picture, power, blue mode and volume as well as selecting input source.
Input selection includes 4 RGBS and 4 composite video. 2 of the composite selections can be switched to either composite video or S-VHS. Projector outputs are standard RGBS and 14-pin (standard Sony projector cable). The projector control "memory" will retain the last setting even if power to the system is interrupted.
Additional flexibility is provided through remote input, allowing the ProFlex-S1 to be controlled remotely by most remote control systems. An audio connector allows for control of an audio switch and will provide audio-follow-video control.
Directly compatible with the following models: VPH-600, 722, 1020, 1030, 1031, 1040, 1041, 1042, 2020 and 2030 video projectors. S-VHS compatible with 1041Q, 1041QM, 1042Q and 1042QM.
Control cables are available to replace CCQ.
ProFlex-S1 ...................................................... $1495.00
*Price On Request

Prices and Specifications Subject to Change Without Notice.
SP-10MK2A Turntable
- Quartz control provides virtually perfect speed accuracy (no more than ±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 1/3 rpm
- Electromechanical braking system brings platter to dead stop in 0.3 second from 33 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.) plus enormous torque result in high immunity to load-induced fluctuation (0% speed change with up to 4.3 lb.-in. load)
- Separately-housed power supply
- Quartz-controlled strobeoscope for 3 speeds: 33 1/3, 45 and 78.26 rpm
- Includes remote control for start/stop

SP-10MK2A
$1399.95
SH-1087 Base for SP-10MK2A
$949.95

SL-1200MK2 Turntable
- Quartz direct drive disco type manual turntable with tonearm
- 33 1/3 and 45 rpm speeds
- All quartz-locked variable slide type pitch control (±8%)
- Quick start-up and quick braking
- Wow and flutter 0.025% WRMS
- Pop-up stylus illuminator
- Strobe illuminator
- Gimbal-suspension tonearm with variable height adjustment
- Brushless DC motor
- Aluminum diecast cabinet
- Anti-resonant visco-elastic main base

SL-1200MK2
$549.95

SL-P1200 Compact Disc Player
- Twin class AA circuitry
- Dual high-speed D/A converters
- 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
$1499.95

SL-P1300 Professional Cueing Compact Disc Player
- 8X (352.8kHz) oversampling digital filter
- 4 digital-to-analog converters (2 per channel)
- 18-bit high resolution signal processing
- A-B repeat
- ±8% pitch control
- Optical and electrical digital outputs
- Switch for precise mixing control
- Can be cued via direct entry of CD time code
- Balanced outputs
- Wired remote control terminal on back panel for connection of momentary or sustained contact remote triggers
- 10-key pad allows direct access by time code or track
- Operator can preview in-point and then recall it
- Auto-Cue automatically positions laser pickup at the first sound of a track
- Analog and digital circuits have separate power supplies, including transformers
- High resolution laser pickup
- Skip-keys
- 2-speed audible search buttons
- Track repeat
- Disc repeat
- Program repeat
- Headphone output with level control
- Line output via unbalanced (phono) pin connectors or balanced (XLR) connectors
- Balanced output:
  +8dBm
  Sub-code output: 6.76 Hz X 16.9 W X 14.8°
  Infrared wireless remote control
- Full-function FL display includes 1/10 sec. time indication
- Cue search

SL-P1300
$1799.95

SV-DA10 Digital Audio Tape Deck
- MASH 1-bit A/D and D/A converters
- Shuttle search dial
- High speed search at up to 400 times normal tape speed
- Digital fade-in and fade-out
- Post recording and marker, start ID, program number and skip ID
- Rewritable absolute time code and program numbers
- 37-key wireless remote control
- Serial copy management system
- Optical digital input

SV-DA10
$999.95

RS-TR555 Double Quick-Reverse Cassette Deck
- Dolby HX Pro headroom extension
- 3 noise reduction systems:
  DBX, Dolby B and C
- 2-motor drive
- Dual-range FL peak level meters
- Simultaneous parallel recording
- 3-hour series recording
- 24-hour series playback
- High-speed editing
- Synchro start/stop and auto rec./mute
- Full remote control capability

RS-TR555
$439.95

RS-BR465 Quick Auto-Reverse Cassette Deck
- Dolby HX Pro headroom extension
- Dolby B and C noise reduction systems
- 2-motor drive
- Bias fine adjustment
- CD synchro editing
- Peak-hold FL meters
- Electronic counter with memory stop
- Automatic rec./mute
- Full remote control capability

RS-BR465
$229.95

Prices and Specifications Subject to Change Without Notice.

Technics

355
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 counter-weighted. 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.

909T Text Transport
The 909T provides for 2 NTSC inputs: 1 for the text camera and 1 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.

The 909T uses a pulse frequency modulation circuit to give you precise 1-touch control of script speed forward and backward. A bargraph 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.

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 microprocessing 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
- 1-IBM PC compatible keyboard
- 1-128K high capacity text file cartridge
- 2-Handheld remote controls
- Carrying case
- Tekskil Field Keyboard ($173.00) or the Tekskil 12VDC power supply ($339.00). Add $276.00 for each additional 128K high capacity cartridge and $139.00 for each additional 32K personal text file cartridge.

Speak Easy Speech Prompter
- Allows the speaker to maintain eye contact and yet have the comfort of having a complete script available at all times—which is totally invisible to the audience
- Fully integrated unit
- Heads up display (HUD) technology
- Rugged, lightweight construction (15 lbs. total weight)
- Composite video input (looping with 75 ohm termination)
- State-of-the-art projection technology
- Automatic NTSC/PAL sensing and selection
- Operates on 110/220VAC and 12VDC

ValuPrompt Computer Prompter
- Specifically designed to meet the needs and budget of smaller in-house video production facilities
- Sister product to the 909C computer prompter
- Fully dedicated prompting microprocessor with built-in firmware
- No software to buy and no computer experience required to operate
- Edit, revise and prompt at the touch of a button
- No-risk, solid-state storage cartridges for your scripts

Prices and Specifications Subject to Change Without Notice.
17108 Waveform Monitor
* Burst phase indicator
* Low power consumption
* Dual filter display
* Half rack width
* Bright CRT display
* Internal graticule
* DC operation
* Available in NTSC and PAL standards

The 17108 Waveform Monitor provides all of the commonly used display modes. In addition, the 17108 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 monitors are mechanically compatible and retrofit into an existing system that uses half rack width, \( \frac{51}{4} \) waveforms monitors.

Because of its extreme light weight, low power consumption, and DC operation (field installable kit) the 17108 is ideal for field production, mobile operations, and any other application where space, power consumption and/or portability are prime considerations.

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.

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.

17108 NTSC ........................................ $1745.00
17118 PAL ........................................ $1745.00
Opt. 74 Substitute P4 white phosphor on CRT ........ $100.00

1720/1725 Vectorscopes
1730/1735 Waveform Monitors
* Complete line select
* Simultaneous Channel A & B display
* Dual filter display
* 1-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

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.

The 1730 D, when used with a 1720 vectorscope, offers an uncompro-
mising solution to video system testing and monitoring. The 1730 D offers the additional benefit of digital video testing via serial composite digital inputs. These wideband, high return loss loop-throughs allow the instrument to “tap” and monitor a 143M byte/sec. (177M byte/sec. PAL) Serial Composite Digital link. The 1730 D also offers an EYE Pattern display of the serial input. This provides an indication of the analog performance of the digital channel. The EYE display is formed by equivalent time sampling. A wideband sample-and-hold takes “snap shots” of the data stream’s voltage at particular instants in time and displays these values against a calibrated time axis. This allows observation of the amplitude, rise time and jitter of the serial bit stream. InterSymbol Interference (ISI) caused by bandwidth loss and improper cable termination is clearly seen, a useful tool when installing and troubleshooting serial systems.

The 1730 D includes a unique method for checking serial path integrity. This mode provides an error detection scheme when used with the TSG-170D digital video generator. The Error Detection and Handling (EDH) operation is based on the instrument calculating a check-word for the received digital video, then comparing this with the check-word sent from the generator. Further, in-service error rate monitoring is possible when used with picture sources that comply with the proposed EDH standard.

Parallel digital or serial digital inputs can be paraded side by side with an analog input on the CRT’s display.

The 1730 D, when used with a 1720 vectorscope, offers an uncompro-
mising solution to video system testing and monitoring.

1730 D NTSC ........................................ $3200.00
1731 D PAL ........................................ $3200.00
Opt. 74 Substitute P4 white phosphor on CRT ........ $100.00

1730 D Digital Waveform Monitor
* 2 analog composite inputs
* 2 serial digital composite inputs
* 1 parallel digital composite input
* Passive loopthrough for serial inputs
* Precision analog display of digital input
* Full time DAC output
* Serial digital bit stream EYE Pattern display
* Error detection and handling display mode (EDH)
* Displays D-2 servo waveforms

The 1730 D functions as a standard waveform monitor, with direct digital inputs for serial and parallel composite signals. Additionally it has 2 analog inputs for composite video signals and input for an external reference.

Prices and Specifications Subject to Change Without Notice.

TEST EQUIPMENT

The best and the brightest.
The best and the brightest.

1740 Series
Waveform/Vector Monitors
- 2 instruments in 1
- 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 528A and 1420 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, remote control of waveform vector mode for differential phase measurements, 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. Typical applications include video signal monitoring in VTR bridges, camera control units, production switcher consoles, and in mobile vans and field productions.

The bright CRT display permits use of the 1740 Series in high ambient light conditions, such as those encountered in field production applications. Brightness remains high in the 1µs and 0.5µs magnified sweep speeds, thus enhancing the 1740's use in system phasing applications. The internal waveform graticule and the external vector graticule are independently illuminated.

These instruments are configured for rackmounting and are shipped without cases or covers. Order appropriate options or optional accessories to configure for bench or portable use.

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
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<tbody>
<tr>
<td>1740 NTSC</td>
<td>$3970.00</td>
</tr>
<tr>
<td>1741 PAL</td>
<td>$3970.00</td>
</tr>
<tr>
<td>1742 PAL-M</td>
<td>$4370.00</td>
</tr>
<tr>
<td>Opt. 05 Internal waveform graticule, external vector graticule</td>
<td>$60.00</td>
</tr>
<tr>
<td>Opt. 07 Adds DC power operation capability</td>
<td>NC</td>
</tr>
<tr>
<td>Opt. 16 D-2 90/100Hz sweep</td>
<td>NC</td>
</tr>
<tr>
<td>Opt. 74 P4 white CRT phosphor</td>
<td>$100.00</td>
</tr>
</tbody>
</table>

1750 Series
Waveform/Vector Monitors
- 2 instruments in 1
- SCH phase and color framing
- R-Y (V-axis) mode
- RGB/YRGB 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.

The waveform mode vertical response is controlled by selectable flat, chroma and luminance (IRE) filters. A back-porch slow clamp is controllable from the front panel. An internal jumper reprograms the clamp timing for sync tip operation.

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
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<tbody>
<tr>
<td>1750 NTSC</td>
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<tr>
<td>1751 PAL</td>
<td>$5900.00</td>
</tr>
<tr>
<td>Opt. 74 P4 white CRT phosphor</td>
<td>$100.00</td>
</tr>
</tbody>
</table>
TEST EQUIPMENT

TSG-100 Test Signal Generator
- Transmission test signal set (option 01) • 8-bit digital generation
- Conforms to RS-170A timing specifications • 1kHz audio tone • H or V rate scope trigger signal • DC power operation

The TSG-100 is an NTSC test signal generator ideally suited for the maintenance and alignment of video equipment in most television environments.

The 8-bit digital test signal generator ensures conformance to RS-170A timing specifications while providing good, long-term signal stability.

The test signal matrix consists of equal segments of NTSC 7 composite, NTSC 7 combination, color bars, sin x/x and 50% flat field. This matrix is intended for use with automated measurement sets such as the VM700 Video Measurement Set.

A front panel scope trigger output is provided for service applications. Horizontal or vertical repetition rate is front panel selectable.

The TSG-100 includes a 1kHz audio tone generator for continuity and level checks. Level of the tone is user adjustable over a 0 to +8dBu range. The level OdBu is equivalent to OdBm in a 600 ohm environment. Output is on a rear panel XLR connector.

Prices and Specifications Subject to Change Without Notice.

TSG-120 Test Signal Generator
- Tailored for service applications • Supports S-VHS, Hi8 and NTSC formats • Y/C, NTSC and S-con ector outputs • 2 channels of audio tone with channel 1 identification • Blackburst output (option)

The TSG-120 is a Y/C, NTSC test signal generator tailored for the servicing of S-VHS, Hi8, NTSC and monochrome 525/60 video equipment. The 10-bit digital signal generation and internal architecture allow generation of signals with the accuracy and stability until now available only in higher cost generators.

With the TSG-120, you get all the signals you need to test levels, linearity, frequency response, phase response, clamp performance, chrominance noise, picture monitor alignment and more.

For servicing convenience, the TSG-120 provides the NTSC and Y/C outputs simultaneously, with the Y/C outputs available on BNC connectors and the standard 4-pin S-connector. 2 channels of 1kHz audio tone are provided on balanced XLR outputs. These phase locked tones are easily identified with the selectable ID pulse in channel 1.

TSG-130 Multiformat Test Signal Generator
- Tailored for service applications • Supports Betacam®, MII, S-VHS, Hi8 and NTSC formats • Y, Y/ C, NTSC and S-con ector outputs • 2 channels of audio tone with channel 1 identification • Black burst output (option)

The TSG-130 is a multiformat test signal generator tailored for the testing and servicing of Betacam, MII, S-VHS, Hi8, NTSC and monochrome 525/60 video equipment. The 10-bit digital signal generation and internal architecture allow generation of signals with the accuracy and stability until now available only in higher cost generators.

With the TSG-130, you get all the signals you need to test video levels, linearity, frequency response, phase response, clamp performance, chrominance noise, picture monitor alignment, inter-channel timing and more.

For convenience in servicing S-VHS VCRs, the TSG-130 provides the NTSC and Y/C outputs simultaneously, with the Y/C outputs available both from BNC connectors and the standard 4-pin S-connector. 2 channels of 1kHz audio tone are provided on balanced XLR outputs. These phase locked tones are easily identified with the selectable ID pulse in channel 1.

A dedicated blackburst output is available as an option. This output is recommended for the service bench where an external reference signal is required for equipment fault diagnosis and adjustment.

TSG-170A Test Signal Generator
- Simple, effective test signal complement • RS-170A sync pulse generator with digital genlock • Separate timing controls for sync and test signals • Tape leader countdown

The accuracy and long term stability of the TSG-170A test signals are enhanced by its precision digital to analog converter. Each converter is automatically laser trimmed to 12-bit accuracy. Color bar blanking width is 10.6µs to facilitate verification of proper blanking throughout the system.

The TSG-170A sytn generator’s stable color standard and 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 3.58MHz subcarrier reference inputs and in the absence of a reference input signal automatically switches to its own internal reference.

TSG-170A

Option 1 Adds separate SMPTE bars output with 12-character ID, audio tone output and tape leader countdown...1000.00

Option 2 Adds a dedicated blackburst output...300.00

Option 02 Adds a dedicated blackburst output...$2500.00

Prices and Specifications Subject to Change Without Notice.
TSG-170D Digital Composite Generator
- Digital and NTSC analog test signal outputs
- Digital and analog audio tone outputs
- RS-170A blackburst output for master SFP application
- Genlock with output timing offset
- 12-character identification
- Tape leader countdown

The TSG-170D uses 10-bit digital test signal generation conforming to the Proposed American National Standard for digital encoding of composite video signals (System M/NTSC). The test signal digital output is a 10-bit parallel interface clocked at 4fsc.

Character ID and tape leader countdown functions are available on both the digital and analog test signal outputs.

The TSG-170D provides a stable RS-170A blackburst output for equipment synchronization. Correct SCH phase is maintained in both internal reference and genlock operation. The digital genlock maintains proper color framing irrespective of reference signal SCH phase. In the absence of an external reference, the TSG-170D automatically switches to its own internal reference.

Front panel controls are provided for phasing TSG-170D outputs relative to the genlock source. Non-volatile memory storage of up to 4 different timing offsets is provided for applications where the picture source output is delegated to different locations.

The parallel and serial audio tone generators produce 20 and 24-bit digital streams, respectively, each representing a sine wave reference signal. Frequency of the reference signal is 800Hz or 1KHz, user selectable. The parallel digital data output is a byte-wide serial interface clocked at 768kHz. The serial digital data is output in the AES/EBU serial format.

The analog tone output frequency will be the same as that selected for the digital tone outputs. Amplitude is adjustable over a 0 to +8dBu range.

Remote selection of internal/external reference, ID preset, genlock timing preset, and test signal is provided.

TSG-170D ...............................................................$6500.00

TSG-300 Component Television Generator
- 10-bit digital signal generation
- Bowtie
- Coring
- Valid ramp
- Shallow ramp
- User configurable controls
- Digital genlock

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 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.

TSG-300 ...............................................................$6500.00

TSG-370 Television Generator
- Simultaneous and independent component and composite test signal outputs
- 10-bit signal generation in all channels
- Test signals for routine maintenance and post production operations
- High stability, correctly SCH phased internal sync generator
- Blackburst (6 outputs), comp sync and comp blanking outputs
- Full color genlock
- Betacam/NTSC and MII/NTSC versions

The TSG-370 is a test signal and sync generator designed for the operation and maintenance of facilities working in analog component and NTSC formats. The fully independent test signal generators provide continuous component and composite color bars as well as a stable, accurate reference black for post production operations. The test signal set is designed to satisfy routine equipment setup and maintenance requirements.

TSG-370 ...............................................................$4800.00

TSG-422 Digital Component Generator
- Conforms to CCIR recommendation 601, SMPTE RP 125 and EBU Tech. 3246-E • 4:2:2 format
- 8-bit signal generation
- Digital test signal outputs
- Separate Y, B-Y, R-Y clock outputs
- 525/60 and 625/50 operation
- NTSC or PAL blackburst outputs
- Genlock to 525/60 or 625/50

The TSG-422 signal generator is 8-bit in all channels and is clocked at 13.5MHz for the luminance channel and 6.75MHz for the color difference channels. Color difference samples are co-sited with the odd numbered luminance samples.

The TSG-422 signal complement contains general purpose signals plus those tailored specifically to the 4:2:2 environment.

The ramp signal extends 5% below blanking and 5% above peak white to provide indication of clipping. The limit ramp provides signal information to test the maximum dynamic range of the system, levels 1 through 254, in an 8-bit system.

Shallow ramp, shallow ramp matrix and light blue shallow ramp are provided for measurement of quantization noise and the detection of rounding and truncation errors.

The co-siting signal provides a 1 sample wide, peak white pulse on each horizontal scan line. The luminance channel pulse occurs on an odd sample and is coincident with the like pulses in the color difference channels. This signal is intended to provide an easy means of verifying correct luminance and color difference sample positioning in both the digital and analog domains.

The blanking marker's signal provides peak white words at the beginning and end of both digital and analog blanking. Analog blanking widths comply to CCIR and RS-170A recommendations. This signal is useful in determining that proper blanking width is maintained throughout the system.

The digital gray signal sets the luminance channel to word 127 and the color difference channel to word 128. This sets up a high/low sequence on each of the parallel interface lines, providing a high frequency signal for testing of the transmission medium.

The TSG-422 also provides facilities for time offsetting the clock and data information. This is useful in verifying receiver performance. In addition, the frequency of the 27MHz interface clock may be shifted by 200Hz in either direction. This provides a means for testing phase lock loops in clock regeneration circuits.

2 separate digital test signal outputs are provided.

Separate outputs of each clock signal are also provided. These outputs are useful in demultiplexing the digital test signal data for conversion to analog for further analysis.

TSG-422 ...............................................................$5000.00

Prices and Specifications Subject to Change Without Notice.
TEST EQUIPMENT

SPG-170A Sync Generator
- Digitally generated RS-170A blackburst
- Digital genlock
- High stability subcarrier
- Flexible pulse outputs
- Pulse timing independent of black
- Remote control timing presets
- Remote control ID presets

This microprocessor-based system calculates genlock input burst phase and sync timing to control output timing and color framing. 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.

SPG-170A ........................................... $3300.00
Option 1 SMPTE bars with ID and audio tone ........... 1000.00

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 provides transparent, automatic selection of sync sources. Front panel controls allow simple access to changeover functions. A 2-level front panel lockout protects these controls in critical master sync systems. 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. Manual sync source selection provides a means for periodic verification of changeover and backup sync generator operation.

ECO-170A ........................................... $2000.00

WFM300A Component/Composite Waveform Monitor
- Component and composite waveform display
- Menu selectable electronic graticules
- Lightning display for equipment setup and monitoring
- Bowtie display for system timing
- Menu selectable component format options
- Menu selected 625/50 or 525/60 configuration
- Separate GBR and composite picture monitor outputs
- Color gamut violation indication
- Front panel user recalls for fast operation

The WFM300A is designed specifically for signal evaluation and equipment alignment in production suites using RGB, Betacam® or MII component formats. In addition, composite (NTSC or PAL) waveforms existing in the facility may be monitored with the WFM300A and composite vectors displayed on a companion 1720 Series composite vectorscope.

The WFM300A provides a full set of component monitoring features. Its innovative and unique lightning display allows accurate adjustment of component equipment to replay Betacam or MII format tapes without a requirement for special test signals. Off-tape color bars provide all necessary information to quickly set the playback recorder setup, video gain, chroma and Y/C delay for accurate reproduction. All of these recorder adjustments are accomplished while viewing 1 convenient, easy-to-interpret display. Electronic graticules for the various component formats used throughout the world are selected from an on-screen menu.

The traditional parade display of the 3 component signals provides side-by-side comparison. In addition, any combination of the 3 signals can be overlaid for accurate comparison. A composite signal may also be compared to the component luminance signal. 3 sweep rates (1 line, 2 lines and 2 fields) are provided. Both horizontal and vertical magnification can be applied for detailed inspection of the signals being observed.

A component vector mode, useful for estimating color hue and saturation values, provides a familiar color bar vector display of color difference signals.

WFM300A ........................................... $3900.00
Option 05 Delete color shutter .................................. 180.00

1780R Video Measurement Set
- Full bandwidth analog video processing
- Precision waveform and vector measurements
- Polar SCH presentation, with calibration mode
- 4 loopthrough video input channels
- Front panel probe input
- Component or composite waveform evaluation
- Measurement-grade time and voltage cursors
- Precision differential phase/differential gain measurements even with noisy signals
- Stereo audio phase and amplitude display
- Digital control of all functions
- Touch screen user interface
- User definable semi-automatic setups
- Full function RS-232/RS-422 remote control
- Available for either NTSC or PAL standards

The 1780R offers features for precise evaluation of studio and transmission performance. This multi-function instrument is a wide bandwidth, multi-input waveform/vector/SCH measurement package.

The advantages of separate waveform and vector instruments are provided in a single rack wide, 51⁄4" high package. In addition, specific measurements take advantage of the 1780R shared waveform monitor and vectorscope internal processing. Separate, optimized waveform and vector display CRTs allow simultaneous monitoring of several video parameters. Routine and specialized video evaluation is easily and quickly performed in this full function measurement instrument.

1780R ........................................... $9900.00
Option 74 P4 white CRT phosphor (2 CRTs) .......... 200.00

Prices and Specifications Subject to Change Without Notice.
TELEPAK soft carrying cases provide the best in video equipment protection. Designed and constructed for the video professional—in-house or in the field—TELEPAK offers a complete line of products to satisfy virtually any requirement.

TELEPAK soft cases are made of durable water- and stain-repellent nylon packcloth for the best defense against dust and weather. Resilient high-density foam padding throughout each bag provides superior shock absorbency, life and durability. Quality components (webbing, zippers, buckles and velcro) meet or exceed today’s standards.

TELEPAK soft cases, designed to “custom fit” your gear, offer the ultimate in carrying comfort and equipment protection. Designed by video professionals for video professionals, only TELEPAK soft carrying cases give you what you want and need from a bag: workable, reliable, comfortable, portable protection for your equipment. Protect your investment with the best—TELEPAK.

### MONITOR PAKS

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
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</thead>
<tbody>
<tr>
<td>T-22</td>
<td>JVC TM-21/41 monitor pak</td>
<td>$90.00</td>
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<tr>
<td>T-80</td>
<td>Sony EVM-8010, BVM-8021, PVM-8020 monitor pak</td>
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<tr>
<td>T-80HC</td>
<td>Sony EVM-8010, BVM-8021, PVM-8020 ATA hard case</td>
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<td>T-AGM</td>
<td>Panasonic AG-500, AG-550, AG-560 monitor pak</td>
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<td>T-AG</td>
<td>Panasonic AG-813 13” monitor pak</td>
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### CAMERA PAKS

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<th>Model</th>
<th>Description</th>
<th>Price</th>
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<tr>
<td>T-CAM X-LG</td>
<td>Extra large universal carrying case 13”H x 28½”W x 9”D</td>
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<td>T-CAM LG</td>
<td>Large universal carrying case for Betacam cameras</td>
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<td>T-CAM SM</td>
<td>Small universal carrying case for cameras</td>
<td>$200.00</td>
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<tr>
<td>T-CAM Mini</td>
<td>Mini universal carrying case for camcorders, small cameras</td>
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### VCR PAKS

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<tr>
<td>T-10</td>
<td>Sony BVI-100, VO-3800</td>
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<td>T-11</td>
<td>Sony BVI-110</td>
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<td>$185.00</td>
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<td>Sony BVI-20, Thompson VT-625, Bosch BCB-23, CVR-201</td>
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<td>T-25</td>
<td>Sony BVI-21/25, Thompson VT-624/626, Bosch BCB-21/25</td>
<td>$185.00</td>
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<td>T-35</td>
<td>Sony BVI-35 Betacam SP portable recorder/player</td>
<td>$185.00</td>
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<tr>
<td>T-DVR-2</td>
<td>Sony portable DVR-2 recorder</td>
<td>$185.00</td>
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</table>

### METALIZED CAMERA RAINCOVERS

Lightweight metalized textiles for high shielding effectiveness. These conductive fabrics are ideal for solving electromagnetic compatibility problems and protecting sensitive data.

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
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<tbody>
<tr>
<td>T-RAIN II RFI</td>
<td>RCA TK-78/86, others, metalized</td>
<td>$450.00</td>
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<tr>
<td>T-RAIN III RFI</td>
<td>Sony Betacam BVW-1, 3A, 30, 105, 505, Hitachi FP-C2, Ampex CVR-200, 300, others, metalized</td>
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<tr>
<td>T-RAIN IV RFI</td>
<td>Panasonic AG-150/155/160/180, others, metalized</td>
<td>$350.00</td>
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<tr>
<td>T-RAIN V RFI</td>
<td>Panasonic AG-450 camcorder, others, raincover metalized</td>
<td>$350.00</td>
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<tr>
<td>T-RAIN VI RFI</td>
<td>Sony EVO-9100 8mm video camera, metalized</td>
<td>$350.00</td>
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</table>

Prices and Specifications Subject to Change Without Notice.
### CASES

#### CAMERA RAINCOVERS

| T-RAIN 1 | Sony DXC-M3A, DXC-3000, BVP-330/A, BVP-150, Hitachi SK-81/91/97, FP-21/22/231, JVC KY-310U, others | $60.00 |
| T-RAIN 2 | RCA TK-75/88, others | $60.00 |
| T-RAIN 3 | Sony Betacam BVW-1, 3A, 30, 105, 505, Hitachi FP-C2, Ampex CVR-200, 300, others | $60.00 |
| T-RAIN 4 | Panasonic AG-150/155/160/180, others | $60.00 |
| T-RAIN 5 | Panasonic AG-450 camcorder, others | $60.00 |
| T-RAIN 6 | Sony EVO-9100 8mm video camera | $60.00 |

#### T-RAIN

- **T-RAIN 1**: Sony DXC-M3A, DXC-3000, BVP-330/A, BVP-150, Hitachi SK-81/91/97, FP-21/22/231, JVC KY-310U, others
- **T-RAIN 2**: RCA TK-75/88, others
- **T-RAIN 3**: Sony Betacam BVW-1, 3A, 30, 105, 505, Hitachi FP-C2, Ampex CVR-200, 300, others
- **T-RAIN 4**: Panasonic AG-150/155/160/180, others
- **T-RAIN 5**: Panasonic AG-450 camcorder, others
- **T-RAIN 6**: Sony EVO-9100 8mm video camera

#### T-LENS and T-STRAP

- **T-LENS**: Lens cover
- **T-STRAP**: Lens pak with belt loop holder

#### SPECIALTY PKAS

| T-GAF | Grip/gaffer pak | $120.00 |
| T-MINIGAF | Mini grip/gaffer pak | $90.00 |
| T-UCP LG | Large universal carrying case (cutout foam) | $134.00 |
| T-UCP SM | Small universal carrying case (cutout foam) | $120.00 |
| T-MM | Comprehensive MM-3100 mic mixer case | $65.00 |
| T-V540UP-A | Sharp portable VCR with LCD color monitor compartment for Anchor speaker, tapes and cords | $150.00 |
| T-V101TU | Sharp high-mount 101” LCD projector | $155.00 |
| T-XV 100P | Sharp Vision XV-100P solid-state video projection system | $150.00 |
| T-XV 100PHC | Sharp Vision XV-100P ATA shipper hard case | $310.00 |
| T-TRIPOD-M | Tripod carrying pak for medium size tripods | $140.00 |
| T-TRIPOD-L | Tripod carrying pak for large size tripods | $160.00 |

#### VCA PAK ACCESSORIES

| T-POK 1 | Small pocket, accessory pak | $20.00 |
| T-POK 2 | Large pocket, accessory pak | $20.00 |
| T-STRAP | Padded shoulder strap (side pak to back pack conversion) | $20.00 |
| T-HIP | Hip pak for accessories and batteries | $90.00 |
| T-LENS | Lens cover | $20.00 |
| T-LENS-P | Lens pak with belt loop holder | $25.00 |
| T-BRIEF | Producer/director/soft brief organizer | $110.00 |

### Prices and Specifications Subject to Change Without Notice.
Telescript, Inc.

TV Studio Monitor Prompting Systems (MPS)

IBM & Commodore Computer Program
Controller and EGA Boards, Master Disk, 10 Pushbutton Controller, Cables, Manual
— or —
Controller and EGA Boards, Master Disk, 10 Pushbutton Controller, Cables, Manual

NOTE: The 2MPS includes 2 of each of: 17" Monitor Prompters, Monitor Lensview and Mount Assemblies. The Telepod may be substituted for the Monitor Mount Assembly for an additional $90.00.

Lightweight One Monitor Prompting System (MPS)
Includes 12" Monitor/Prompter, G/S, Monitor Lensview Assembly, Monitor Mount Assembly and 12" Workstation Monitor

With IBM and Commodore PGM .................................. $4180.00
With Commodore 64 PGM ........................................... 2790.00

Product Costs

IBM and Commodore Computer Program
Controller and EGA Boards, Master Disk, 10 Pushbutton Controller, Cables, Manual .................................. $ 2830.00

C-64 Program
ROM Cartridge, Master Disk, 10 Pushbutton Controller, Cables, Manual .................................. 1330.00
Transfer Program IBM to C-64 via RS-232 .................................. 180.00
Telecue with HC, 25" Ext. Cable and Script Assembly .................................. 2380.00
Teleprompter with HC and 25" Cable .................................. 2890.00
Table with Casters (Teleprompter) .................................. 30.00
Dual Control with HC Features (Telecue) 2 Stop-Start Foot Pedals, Ext. Cables .................................. 310.00
Contrast Enhancer (Blk./Wh.-Wh./Blk.) .................................. $410.00

Monitor Lensview (LV) Assembly
with Beamsplitter, Amb. Light Mask .................................. 285.00-395.00

Monitor Mount Assembly with Counterbalancing
Plate, Riser Block, M/P Mount, Counterweight, and Hardware .................................. 385.00-475.00

Monitor Prompter (M/P) 17" Studio .................................. 1090.00
Monitor Prompter (M/P) champion 17" P/S .................................. 790.00
Monitor Prompter (M/P) 12" Studio .................................. 870.00

Workstation Monitor .................................. 220.00

Beamsplitters 30/70 or 40/60 with 2nd
surface Low Ref. Coatings .................................. 115.00-215.00

Countertweights (Ps) and Hardware .................................. 35.00-85.00

Telepod (Off Camera M/P support)
Head, Adj., Pedestal, Base-Casters, Brackets for UV or Direct M/P Viewing .................................. 520.00

Low Boy adaptor plate and counterweights .................................. 240.00

Telepod for 12" M/P Support. Lightweight. Tripod in lieu of Base-Casters .................................. 400.00

Mirror View for Public Speaking
Grained Panels, 3 Tiered Clutch Tubes, Beamsplitter Clamp Assembly and B/st "The Presidential System" .................................. 570.00

Fluid Head, 50 lb. capacity, 2 Pro Handles, Leveling Adaptor for Center Post. Air Lift Tripod with "Sticks-Lock" Wheels. Low Boy and High Boy Positioning .................................. 2480.00

Computer prompting program for the IBM and Commodore with infinitely variable smooth scrolling, instant reformattting and 4 pushbutton fonts — upper and lower case

Monitor Prompting Systems for Public Speaking

The "Presidential System," MPS for Public Speaking, has become the ultimate tool for delivering a cohesive, dynamic speech. Hand scripted speeches, at times, result in head bobbing for note and page referrals, rambling subject discourses and disinterested audiences.

Two Monitor Prompting System (MPS) for Public Speaking

Telecue with HC and 25" Cable with Vidicon Camera and Mounting Plate Int. 2, 12.5mm f/8 1" Format Lens or IBM and Commodore Computer Program or Commodore 64 Computer Program

Two 17" Monitor Promuters (M/P)
2 Mirror Views for Public Speaking (Including Housing for M/P Panels, Adj. Bstr. Holder and Bstr.)
Work Station Monitor 4 Coax Cables 1-50', 1-25', 1-10', 1-5'

With Telecue Transport .................................. $5630.00
With IBM and Commodore 64 Program .................................. 5790.00

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). Necessary in super bright areas/out of doors. Only required with Vidicon Cameras .................................. 410.00
Lightweight Carrying Cases — Foam lined, handles, latches, 2 wide straps. Fiberglass covered .................................. 155.00-255.00
23" Monitor Promuters — For placement in key areas for walk-about type speaking or group viewing .................................. 950.00
Convertible Mode — Monitor/Prompters
Public Speaking Monitor/Prompters (M/Pa), can be ordered in the Convertible Mode for use, as well, in a TV studio operation at an additional cost of .................................. 300.00

Prices and Specifications Subject to Change Without Notice.
<table>
<thead>
<tr>
<th>Description</th>
<th>Includes</th>
<th>Catalog Numbers</th>
<th>Price</th>
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<tbody>
<tr>
<td><strong>Single Antenna—Economy Systems—165-185MHz</strong></td>
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<tr>
<td>FMR-25 Lapel Microphone System</td>
<td>WT-25 Transmitter w/attached lapel mic, FMR-25 Receiver</td>
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<td>$465.00</td>
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<tr>
<td>FMR-25 Lapel Microphone System</td>
<td>WT-25/60 Transmitter w/attached WLM-60 Unidirectional Lapel Mic,</td>
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<tr>
<td>FMR-25 Aerobics System</td>
<td>Belt Pouch, WT-25/23 Transmitter w/attached PH-23 Headband Mic,</td>
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<tr>
<td>FMR-25G Guitar Instrument System</td>
<td>WT-25G Transmitter, FMR-25G Receiver</td>
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<tr>
<td>FMR-25 Handheld Microphone System</td>
<td>HT-100/10 Mic/Transmitter, FMR-25 Receiver</td>
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<td><strong>Pos-i-Phase™ True Diversity—Economy Systems—165-185MHz</strong></td>
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<td>FMR-25TD Lapel Microphone System</td>
<td>WT-25 Transmitter w/attached lapel mic, FMR-25TD True Diversity Receiver</td>
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<td>FMR-25TD Handheld Microphone System</td>
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<td><strong>Single Antenna—Pro-Sound Systems—150-216MHz</strong></td>
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<td>FMR-50 Lapel Microphone System</td>
<td>WT-50 Transmitter, FMR-50 Receiver, WLM-50 Lapel Microphone</td>
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<td>FMR-50 Handheld Condenser Microphone System</td>
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<td>FMR-50 Headworn Microphone System</td>
<td>PH-21 Headworn Microphone, WT-50 Transmitter, FMR-50 Receiver</td>
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<td><strong>Pos-i-Phase True Diversity—Pro-Sound Systems—165-216MHz</strong></td>
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<td>FMR-2 (TE-101) ProStar Handheld System</td>
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<td>FMR-2 Headworn Mic System</td>
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<td>FMR-2 Receiver 64213-XXX</td>
<td>System Total</td>
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<tr>
<td>WT-200 Transmitter 64182-XXX</td>
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<tr>
<td>PH-22 Headworn Mic 64327-002</td>
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<td><strong>Pos-i-Phase True Diversity—Professional Broadcast Systems—165-216MHz</strong></td>
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<tr>
<td>FMR-4 Lapel System</td>
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<td>ENG-4 Receiver 64490-XXX</td>
<td>System Total</td>
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<tr>
<td>WT-400 Transmitter 70278-XXX</td>
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<tr>
<td>WLM-200 Mic 63852-001</td>
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<tr>
<td>FMR-4 (HT-400/SM-87) ProStar Handheld System</td>
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<td>ENG-4 Receiver 64490-XXX</td>
<td>System Total</td>
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<tr>
<td>HT-400/87 Handheld Mic/Transmitter 70333-XXX</td>
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<tr>
<td>Portable Single Antenna—Professional Broadcast Systems—165-216MHz</td>
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<tr>
<td>FMR-4 Lapel System</td>
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<td>ENG-4 Portable Receiver 64490-XXX</td>
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<td>WT-400 Transmitter 70278-XXX</td>
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<tr>
<td>WLM-200 Mic 63852-001</td>
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<td>FMR-4 (HT-400/SM-87) ProStar Handheld System</td>
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<td>ENG-4 Portable Receiver 64490-XXX</td>
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<tr>
<td>HT-400/88 Handheld Mic/Transmitter 70332-XXX</td>
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<td><strong>Prices and Specifications Subject to Change Without Notice.</strong></td>
<td></td>
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</table>
# HEADSETS/HEADPHONES

## PROFESSIONAL HEADPHONES

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Impedance in Ohms</th>
<th>Cord Length</th>
<th>Plug Type</th>
<th>Catalog Number</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Cushion Mono PH-7</td>
<td>Dynamic Dual</td>
<td>600</td>
<td>5'</td>
<td>1/4&quot;</td>
<td>64437-013</td>
<td>$110.00</td>
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<tr>
<td>PH-11</td>
<td>Dynamic Single</td>
<td>600</td>
<td>5'</td>
<td>1/4&quot;</td>
<td>64438-009</td>
<td>75.50</td>
</tr>
<tr>
<td>Lightweight Mono PH-38</td>
<td>Lightweight Dual</td>
<td>600</td>
<td>6'</td>
<td>1/4&quot;</td>
<td>64353-000</td>
<td>57.75</td>
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<tr>
<td>HTW-2</td>
<td>Twinset Dual</td>
<td>500</td>
<td>5'</td>
<td>1/4&quot;</td>
<td>03775-000</td>
<td>51.50</td>
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<tr>
<td>HMYV-2</td>
<td>Monoset Stethoscope</td>
<td>125</td>
<td>5'</td>
<td>1/4&quot;</td>
<td>18183-000</td>
<td>38.75</td>
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<tr>
<td>HMYY-2</td>
<td>Monoset Stethoscope</td>
<td>2000</td>
<td>5'</td>
<td>1/4&quot;</td>
<td>18184-000</td>
<td>38.75</td>
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<tr>
<td>HFR-91</td>
<td>Tele-Fi Under Chin</td>
<td>15</td>
<td>5'</td>
<td>1/4&quot;</td>
<td>18135-000</td>
<td>24.15</td>
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<tr>
<td>HFW-91</td>
<td>Tele-Fi Under Chin</td>
<td>500</td>
<td>5'</td>
<td>1/4&quot;</td>
<td>18135-005</td>
<td>24.15</td>
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<tr>
<td>HFV-91</td>
<td>Tele-Fi Under Chin</td>
<td>2000</td>
<td>5'</td>
<td>1/4&quot;</td>
<td>18135-009</td>
<td>24.15</td>
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<tr>
<td>Full Cushion Stereo PH-6</td>
<td>Dynamic Dual</td>
<td>600/side</td>
<td>15'</td>
<td>1/4&quot;</td>
<td>64437-012</td>
<td>138.60</td>
</tr>
<tr>
<td>Lightweight Stereo PH-35</td>
<td>Dynamic Dual</td>
<td>300/side</td>
<td>6.5'</td>
<td>1/4&quot;</td>
<td>64359-000</td>
<td>57.75</td>
</tr>
</tbody>
</table>

## PROFESSIONAL HEADSETS

Broadcast and Announcers Headsets (With Push-to-Cough Switch)

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Impedance in Ohms</th>
<th>Cord Length</th>
<th>Plug Type</th>
<th>Catalog Number</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Cushion (Mic 150/200 Ohms) PH-91</td>
<td>Dynamic Dual/Omnidirectional</td>
<td>300/side</td>
<td>9'</td>
<td>None</td>
<td>64390-004</td>
<td>$205.00</td>
</tr>
<tr>
<td>PH-92</td>
<td>Dynamic Dual/Omnidirectional</td>
<td>600/side</td>
<td>9'</td>
<td>None</td>
<td>64390-005</td>
<td>246.75</td>
</tr>
<tr>
<td>PH-93</td>
<td>Dynamic Dual/Omnin With Condenser</td>
<td>300/side</td>
<td>9'</td>
<td>None</td>
<td>64390-002</td>
<td>289.00</td>
</tr>
<tr>
<td>PH-94</td>
<td>Dynamic Dual/Omnidirectional</td>
<td>300/side</td>
<td>9'</td>
<td>None</td>
<td>64390-007</td>
<td>231.00</td>
</tr>
<tr>
<td>Lightweight (Mic 150/200 Ohms) PH-24</td>
<td>Dynamic Dual Noise-Cancelling Condenser</td>
<td>150</td>
<td>9'</td>
<td>None</td>
<td>64356-000</td>
<td>231.00</td>
</tr>
<tr>
<td>PH-25</td>
<td>Dynamic Binaural/Omnin With Condenser</td>
<td>300</td>
<td>9'</td>
<td>A3M/1/4&quot;</td>
<td>70425-000</td>
<td>287.75</td>
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</table>

## INTERCOM HEADSETS

Dynamic Intercom Headsets With Dynamic Noise-Cancelling Microphone (Plug Compatible With Audio/com/Radiocom, Clear Com and Other Intercom Systems)

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Impedance in Ohms</th>
<th>Cord Length</th>
<th>Plug Type</th>
<th>Catalog Number</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Cushion PH-1</td>
<td>Single</td>
<td>150</td>
<td>6'</td>
<td>A4F</td>
<td>64438-005</td>
<td>$120.00</td>
</tr>
<tr>
<td>PH-2</td>
<td>Dual</td>
<td>150</td>
<td>6'</td>
<td>A4F</td>
<td>64437-006</td>
<td>147.00</td>
</tr>
<tr>
<td>PH-3</td>
<td>Binaural</td>
<td>150</td>
<td>6'</td>
<td>A5F</td>
<td>64437-007</td>
<td>158.00</td>
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<tr>
<td>Lightweight PH-4</td>
<td>Dual</td>
<td>150</td>
<td>6'</td>
<td>A4F</td>
<td>70340-000</td>
<td>138.00</td>
</tr>
<tr>
<td>PH-5</td>
<td>Binaural</td>
<td>300/side</td>
<td>6'</td>
<td>A5F</td>
<td>70350-000</td>
<td>140.00</td>
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<tr>
<td>PH-8</td>
<td>Single</td>
<td>150</td>
<td>6'</td>
<td>A4F</td>
<td>70415-001</td>
<td>150.00</td>
</tr>
<tr>
<td>Hearing Protectors HD-3A</td>
<td>Dual 21dB NRR</td>
<td>150</td>
<td>6'</td>
<td>A4F</td>
<td>63700-011</td>
<td>147.00</td>
</tr>
<tr>
<td>PH-10</td>
<td>Dual &quot;ProAir&quot;/24dB NRR</td>
<td>150</td>
<td>6'</td>
<td>A4F</td>
<td>70470-003</td>
<td>220.00</td>
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<tr>
<td>PH-16</td>
<td>&quot;ProAir&quot;/ Under Helmet 24dB NRR</td>
<td>150</td>
<td>6'</td>
<td>A4F</td>
<td>70770-003</td>
<td>236.00</td>
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Dynamic Intercom Headsets With Dynamic Noise-Cancelling Microphone (Plug Compatible With RTS Intercom Systems)

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Impedance in Ohms</th>
<th>Cord Length</th>
<th>Plug Type</th>
<th>Catalog Number</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Cushion PH-1R</td>
<td>Single</td>
<td>150</td>
<td>6'</td>
<td>A4M</td>
<td>64438-019</td>
<td>$120.00</td>
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<tr>
<td>PH-2R</td>
<td>Dual</td>
<td>150</td>
<td>6'</td>
<td>A4M</td>
<td>64437-023</td>
<td>147.00</td>
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<tr>
<td>PH-3R</td>
<td>Binaural</td>
<td>300/side</td>
<td>6'</td>
<td>A5M</td>
<td>64437-024</td>
<td>155.00</td>
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<tr>
<td>Lightweight PH-4R</td>
<td>Dual</td>
<td>150</td>
<td>6'</td>
<td>A4M</td>
<td>70340-008</td>
<td>138.00</td>
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<tr>
<td>PH-5R</td>
<td>Binaural</td>
<td>300/side</td>
<td>6'</td>
<td>A5M</td>
<td>70350-002</td>
<td>140.00</td>
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<tr>
<td>PH-8R</td>
<td>Single</td>
<td>150</td>
<td>6'</td>
<td>A4M</td>
<td>70415-009</td>
<td>150.00</td>
</tr>
<tr>
<td>Hearing Protectors PH-10R</td>
<td>Dual &quot;ProAir&quot;</td>
<td>150</td>
<td>6'</td>
<td>A4M</td>
<td>70470-017</td>
<td>220.00</td>
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</table>

Amplified Dynamic (For Use With Devid Clark Intercom Systems and Other Carbon Type Camera Systems)

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Impedance in Ohms</th>
<th>Cord Length</th>
<th>Plug Type</th>
<th>Catalog Number</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Cushion NPH-1</td>
<td>Single</td>
<td>50</td>
<td>6'</td>
<td>1/4&quot;</td>
<td>64438-006</td>
<td>$120.00</td>
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<tr>
<td>NPH-2</td>
<td>Dual</td>
<td>50</td>
<td>6'</td>
<td>1/4&quot;</td>
<td>64437-008</td>
<td>147.00</td>
</tr>
<tr>
<td>Hearing Protectors NPH-9</td>
<td>Single &quot;ProAir&quot;</td>
<td>50</td>
<td>6'</td>
<td>1/4&quot;</td>
<td>70470-004</td>
<td>190.00</td>
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<tr>
<td>NPH-10</td>
<td>Dual &quot;ProAir&quot;</td>
<td>50</td>
<td>6'</td>
<td>1/4&quot;</td>
<td>70470-005</td>
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Video Camera Intercom Headsets (For Use With Sony, JVC, Panasonic Cameras With 50 Ohm Carbon Microphone)

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Impedance in Ohms</th>
<th>Cord Length</th>
<th>Plug Type</th>
<th>Catalog Number</th>
<th>Price</th>
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</thead>
<tbody>
<tr>
<td>PH-45</td>
<td>Dynamic Dual</td>
<td>600</td>
<td>5&quot;</td>
<td>(2)1/4&quot;</td>
<td>64437-001</td>
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<tr>
<td>PH-78</td>
<td>Dynamic Single</td>
<td>600</td>
<td>5&quot;</td>
<td>(2)1/4&quot;</td>
<td>64438-002</td>
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<tr>
<td>PH-81</td>
<td>Magnetic Single</td>
<td>275</td>
<td>6&quot;</td>
<td>None</td>
<td>64438-004</td>
<td>128.00</td>
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<tr>
<td>PH-83</td>
<td>Magnetic Single With PTT</td>
<td>275</td>
<td>6&quot;</td>
<td>None</td>
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<tr>
<td>PH-85</td>
<td>Magnetic Dual</td>
<td>275/625</td>
<td>6&quot;</td>
<td>None</td>
<td>64437-005</td>
<td>199.50</td>
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<tr>
<td>PH-87</td>
<td>Magnetic Dual With PTT</td>
<td>275/625</td>
<td>6&quot;</td>
<td>None</td>
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<td>226.75</td>
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Professional Communications Headsets (With Noise-Cancelling Microphone 150 Ohms)

<table>
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<th>Model</th>
<th>Description</th>
<th>Impedance in Ohms</th>
<th>Cord Length</th>
<th>Plug Type</th>
<th>Catalog Number</th>
<th>Price</th>
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<tbody>
<tr>
<td>Full Cushion PH-81</td>
<td>Dynamic Dual</td>
<td>600</td>
<td>5&quot;</td>
<td>(2)1/4&quot;</td>
<td>64437-002</td>
<td>$141.75</td>
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<tr>
<td>PH-75</td>
<td>Dynamic Single</td>
<td>600</td>
<td>5&quot;</td>
<td>(2)1/4&quot;</td>
<td>64438-001</td>
<td>128.00</td>
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<tr>
<td>Lightweight PH-62</td>
<td>Dynamic Binaural</td>
<td>300/side</td>
<td>5'</td>
<td>None</td>
<td>70362-000</td>
<td>120.75</td>
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</table>

Prices and Specifications Subject to Change Without Notice.
INTERCOM SYSTEM

Audiocom Headset/Intercom System
Audiocom is a headset intercom system consisting of modular components that can be connected with conventional wiring to form a simple party line communication system or a more sophisticated network using "director controlled" multi-channel configurations.

Audiocom Cabled System Components

<table>
<thead>
<tr>
<th>Model #</th>
<th>Description</th>
<th>Catalog #</th>
<th>Price</th>
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<td>Power Supplies</td>
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<tr>
<td>PS-1F</td>
<td>1-Channel, flush mount</td>
<td>92890-000</td>
<td>$160.00</td>
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<tr>
<td>PS-2L</td>
<td>2 Channel with combine, isolate feature</td>
<td>96167-000</td>
<td>$400.00</td>
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<tr>
<td>Master Stations</td>
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</tr>
<tr>
<td>IC-2MAX</td>
<td>2-Channel with IFB and stage announce</td>
<td>96461-000</td>
<td>$700.00</td>
</tr>
<tr>
<td>IC-4M</td>
<td>4-Channel with IFB and stage announce</td>
<td>96185-000</td>
<td>$800.00</td>
</tr>
<tr>
<td>IC-4R</td>
<td>4-Channel remote with stage announce</td>
<td>96190-000</td>
<td>$600.00</td>
</tr>
<tr>
<td>Programmable Station Controller</td>
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<td></td>
<td></td>
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<tr>
<td>IC-4SX</td>
<td>12-Channel matrix controller, for IC-4M or IC-4R</td>
<td>96210-000</td>
<td>$710.00</td>
</tr>
<tr>
<td>Remote Belt Pack Stations</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>BP-1</td>
<td>1-Channel with call light and mic kill. Compatib</td>
<td>96600-001</td>
<td>$199.00</td>
</tr>
<tr>
<td>BP-2</td>
<td>2-Channel with call light and mic kill. Compatib</td>
<td>96600-000</td>
<td>$269.00</td>
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<tr>
<td>Remote Stations, Flush Mount</td>
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<tr>
<td>IC-1FLS</td>
<td>1-Channel flush mount with call light</td>
<td>92860-004</td>
<td>$185.00</td>
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<tr>
<td>IC-2AF</td>
<td>2-Channel flush mount with call light</td>
<td>96129-000</td>
<td>$225.00</td>
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<tr>
<td>Remote Speaker Stations</td>
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</tr>
<tr>
<td>IC-5R</td>
<td>Speaker only, for IC-4M, IC-4R, BTR-200 and IC-2</td>
<td>96225-000</td>
<td>$130.00</td>
</tr>
<tr>
<td>IC-2S</td>
<td>2-Channel portable with mic and call light</td>
<td>90480-001</td>
<td>$335.00</td>
</tr>
<tr>
<td>IC-2SF</td>
<td>2-Channel flush mount with mic and call light</td>
<td>90480-000</td>
<td>$280.00</td>
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<tr>
<td>Ticket Booth Security Intercom System</td>
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</tr>
<tr>
<td>IC-W1</td>
<td>Window mount unit with separate power supply</td>
<td>96500-002</td>
<td>$395.00</td>
</tr>
<tr>
<td>IC-W2</td>
<td>Window mount unit with separate power supply and</td>
<td>96500-001</td>
<td>$425.00</td>
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<tr>
<td>Microphones and Headsets</td>
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<tr>
<td>HS-1000</td>
<td>Handset with cradle</td>
<td>96145-000</td>
<td>$90.00</td>
</tr>
<tr>
<td>GM-1</td>
<td>Condenser gooseneck mic for IC-4M, IC-4R, IC-2AX, IC-2SP and IC-2SPF</td>
<td>60387-032</td>
<td>$65.00</td>
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<tr>
<td>Road Case</td>
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<tr>
<td>DC-100</td>
<td>Calzone road case</td>
<td>59806-000</td>
<td>$325.00</td>
</tr>
</tbody>
</table>

Prices and Specifications Subject to Change Without Notice.

367
Copyette™ 1 & 1 Series II Cassette Duplicator
- Half track, two channel • Copies tape at 30 ips (76cm/s) • Both sides of a C-60 cassette can be completed in less than 20 min. • Makes one copy at a time • AC motor drive • Resettable circuit breaker • Patented drive mechanism (Pat. #4,447,836) • End of tape sensing circuit for automatic operation • Track select—allows the user to choose between copying of a tape or copying both sides at once • Frequency response: 50Hz-10kHz • Signal-to-noise ratio: 45dB • Power consumption: 20W max. • Dimensions: 4¹/₄"H x 14¹/₂"W x 10"D • Weight: 12 lbs.
96250-000 Copyette 1 & 1 ........................................ $419.00
59860-000 Dust cover for all Copyettes .................. . . $7.25

Stereo Copyette Series II Cassette Duplicator
- Quarter track, four channel • Play only in original position • Record only in copy position • Copy speed: 21 ips (53cm/s) • Frequency response: 50Hz-10kHz • Signal-to-noise ratio: 45dB • Power consumption: 20W max. • Dimensions: 4¹/₄"H x 14¹/₄"W x 10"D • Weight: 12 lbs.
96275-000 Stereo Copyette .................................. $735.00

Copyette 1 & 3 Cassette Duplicator
- Half track, two channel • Makes three copies at a time • DC servo drive motor • Resettable circuit breaker • Patented drive mechanism • Detachable cover • Lighted indicators for each operating function • Single button activates the entire sequence of operation • Copy speed: 30 ips (76cm/s) • Frequency response: 50Hz-10kHz • Signal-to-noise ratio: 45dB • Power consumption: 50W max. • Dimensions: 4¹/₄"H x 14¹/₄"W x 10"D • Weight: 15 lbs.
92713-011 Copyette 1 & 3 ................................... $1099.00

Cassette Bulk Eraser
- Requires no electrical power • Simply push cassette through eraser slot to erase all previous recordings
90625-000 Cassette Bulk Eraser ............................... $20.00

CD Series Cassette Duplicators
- Available in mono and stereo versions • Two cassette "slave" units allow expansion • Function control panel • Audio level indicators with slide control • Original and copy cassette position • Precision tape guides • Automatic/manual mode switch • End-of-tape motion sensing • Peak LED indicators • Track select • Tilted working surface • 40-10,000Hz frequency response • 30 ips (76cm/s) tape speed

1/₄ Track — 4 Channel (Stereo)
94474-001 CD4M  Master station with one cassette ........ $1425.00
94475-000 CD4S  Two position slave unit .................. 1270.00
94706-001 CD4MS Master station with three cassette positions .................. 2615.00

1/₂ Track — 2 Channel (Monaural)
94471-001 CD2M  Master station with one cassette position .................. $1070.00
94472-000 CD2S  Two position slave unit .................. 1000.00
94706-000 CD2MS Master station with three cassette positions .................. 1840.00

Dust Covers for CD Duplicators
59842-000 Fits CD2M, CD4M, CD2S and CD4S ........ $10.00
59842-001 Fits CD2MS and CD4MS .................. 13.00

Prices and Specifications Subject to Change Without Notice.
## Tape Duplication Systems

### Cassette to Cassette Systems
**Standard Series with XL Life Heads — 16X Speed**
- **Half Track, Two Channel**
  - Complete three slave system
  - Complete seven slave system
  - Complete eleven slave system

- **Quarter Track, Four Channel**
  - Complete seven slave system
  - Complete eleven slave system

### Pro Series (XLP) with XL Life Heads — 8X Speed
- **Half Track, Two Channel**
  - Complete three slave system
  - Complete seven slave system
  - Complete eleven slave system

- **Quarter Track, Four Channel**
  - Complete seven slave system
  - Complete eleven slave system

### Components
**Standard Series With XL Life Heads — 16X Speed**
- **Half Track, Two Channel**
  - Open Reel Master
  - Open Reel Slave
  - Cassette Master/Slave Module (3 slaves)
  - Cassette Slave Module (4 slaves)
  - 2 Channel Control Module
  - 2 Channel Expansion Module

- **Quarter Track, Four Channel**
  - Open Reel Master
  - Open Reel Slave
  - Cassette Master/Slave Module (3 slaves)
  - Cassette Slave Module (4 slaves)
  - 4 Channel Control Module
  - 4 Channel Expansion Module

### Prices and Specifications
- **Pro Series (XLP) With XL Life Heads — 8X Speed**
  - **Half Track, Two Channel**
    - Open Reel Master
    - Open Reel Slave
    - Cassette Master/Slave Module (3 slaves)
    - Cassette Slave Module (4 slaves)
    - 4 Channel Control Module
    - 4 Channel Expansion Module

- **Rewind Modules**
  - 4 position rewind module with console
  - 4 position rewind module without console

### Accessories
- Reel slave extension cable
- Base console, 10.5" (267mm)
- Base console, 12" (305mm)
- Dust cover (upper unit only)
- Dust cover (lower unit only)
- Polishing tape, individual rolls
- Polishing tape, case of 48 rolls

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**Note:** Base console expander kit required if real slaves are placed horizontally in front of vertical consoles.

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**System Expansion Module Required for Systems with More than 2 Reel Slaves (Max 11 Cassette Positions)**

* Prices and Specifications Subject to Change Without Notice.*

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### Standard Series — 18X Speed
- **Half Track, Two Channel**
  - Complete one reel slave system
  - Complete two reel slave system

- **Quarter Track, Four Channel**
  - Complete one reel slave system
  - Complete two reel slave system

---

Prices and Specifications Subject to Change Without Notice.
Mini-Rack™ Cases
The Mini-Rack, a line of instant access, shock-mounted cases, offer all the protection of Thermodyne’s popular Shok-Stop™ cases as well as the convenience of the Rack-Pack™. Mini-Rack has eliminated 5" of case height and 20% of the weight from the standard Rack-Pack design for critical space and weight requirements, yet still offers accessibility and protection.

The Mini-Rack has the standard 19" EIA rack width and 20" rack depth, but the case dimensions have been reduced 5" in width and 5" in height by redesigning the shock-mount system to attach the rack frame directly to the inside of the case. The space between the rack and the inside of the case has been reduced and the Mini-Rack has eliminated the high profile exterior shock mounts of the Rack-Pack, replacing them with low profile shock-mounts.

Like the Shok-Stop and Rack-Pack cases, Mini-Rack is available in a variety of sizes, from 5.37" to 24.625" rack height and 8.75" to 18" case height. Mini-Rack has all the standard Thermodyne features, including: inner rack frame with EIA-RETMA hole pattern in front and rear rails, recessed latches and handles, interlocking ribs for ease of stacking, anodized outer valances, removable casters and custom colors.

Shok-Stop Cases
Made of high density polyethylene, the Shok-Stop case acts as a shock absorber. When an impact occurs, the case accepts all of the force. The slight shock that reaches the interior is instantly overcome by the foam, which can be custom-fitted to the exact dimensions of your equipment.

Carefully engineered channels and corner bumpers on every Shok-Stop case are designed to deliver maximum protection in high-stress conditions. Hardware includes spring-loaded handles which fit tightly during shipping, and recessed hinges and latches that are field-replaceable if necessary. By using non-invasive hardware attachment and pressure relief valves, Shok-Stop cases can be ordered completely water-tight or vapor-tight, depending upon requirements. Shok-Stop cases offer electromagnetic interference (EMI) shielding and can be panel-mounted.

Shok-Stop cases can be ordered empty, with a solid foam core, or Thermodyne can custom cut the foam to the customer’s specifications. Shok-Stop is available in a variety of shapes and sizes, from 8.0" to 89.0" in length. The standard color is gun-metal gray, but custom colors are available at no additional charge. Thermodyne stocks the most common standard sizes in inventory for quick response to orders. Shok-Stop cases are corrosion and fungus resistant, and are available with a variety of options, including: anodized outer valances, automatic pressure relief valve, removable casters and lift rings.

Rack-Pack Cases
Rack-Pack transportation/operating cases now combine permanent mounting in a standard 19" rack with easy equipment access. These instant-access, shock-mounted cases offer all the protection of Shok-Stop cases and increased accessibility.

Available in sizes from 5.37" rack height and 13.75" case height to 36.875" rack height and 45.25" case height, Rack-Pack features: inner rack frame with EIA-RETMA hole pattern in front and rear rails, recessed latches and handles, interlocking ribs for stacking and watertight gasket construction. Like other Thermodyne cases, Rack-Pack is corrosion and fungus resistant, high-density polyethylene.

When timing is critical, Rack-Pack allows you to set up and operate equipment in minutes, rather than hours. The equipment can be stacked and pre-wired in place, and you need only remove the front and back covers for immediate access. Every case features recessed ribs for shock absorption and elastometric shock-mounts for vibration protection. The inner rack is constructed of 6061-T-5 aluminum for durability and light weight and all latches and handles are mounted firmly without intrusive fasteners.

If your equipment requires access by means of slides, they are available by special order. This makes on-site maintenance or repairs easier and quicker. Rack-Pack cases are made to your specifications without expensive alterations: standard 19" rack width, 20" depth, and holes drilled to EIA-RETMA hole patterns, and rack heights to your specification from 5.37" to 36.875". Rack-Pack cases can stack on interlocking ribs to form a modular workstation that is secure in any environment.

Thermodyne has over 200 standard Shok-Stop cases: 16 standard Rack-Pack sizes, 11 standard Mini-Rack sizes and a growing library of inner foam liner cutting specs. Every Shok-Stop, Rack-Pack and Mini-Rack case meets or exceeds the toughest military specifications including ATA300-CAT 1, MIL-C-4150 and MIL-T-21200, and constructed of high-density polyethylene for flexibility and shock absorbency.

Prices and Specifications Subject to Change Without Notice.
FILTERS/LENS ACCESSORIES

-Star Effect Filters-
Create dazzling seascapes or sparkling chandeliers and candles. Highest quality engraved filters can be used individually or in combination to achieve desired effect. Supplied in direct screw-in, square and rectangular sizes. The designation 1mm, 2mm, 3mm, 4mm grid denotes the space between the engraved lines on the filter that create the Star Effect.

4 pt. in Rotating Mount 1, 2, 3 or 4mm
6 or 8 pt. in Rotating Mount 2, 3 or 4mm
12 pt. in Rotating Mount 2, 3 or 4mm

<table>
<thead>
<tr>
<th>2 x 2</th>
<th>3 x 3</th>
<th>4 x 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>$87.50</td>
<td>$87.50</td>
<td>$89.50</td>
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<tr>
<td>128.75</td>
<td>128.75</td>
<td>143.75</td>
</tr>
<tr>
<td>132.25</td>
<td>132.25</td>
<td>148.75</td>
</tr>
</tbody>
</table>

Polarizing Filters
- Penetrate haze without diluting original colors
- Eliminate surface reflections
- Screw-in, rotatable type to achieve desired effect
- Available in series, square and rectangular sizes—series sizes are mounted in anodized aluminum rim clearly engraved with axis and size

Get rich blue skies in your color shots. Simply screw the SR polarizer into your lens mount and rotate it until you see the effect you want. Available screw-in sizes.

Tiffen makes a complete line of standard filters, special effect filters and lens accessories for your TV camera filter wheel or for the front of your lens.

Video Effect Filters

| Multi-Image 49mm, 52mm, 55mm, 58mm   | Multi-Image 49mm, 52mm, 55mm, 58mm   |
| Multi-Image 49mm, 52mm, 55mm, 58mm   | Multi-Image 49mm, 52mm, 55mm, 58mm   |
| Multi-Image 49mm, 52mm, 55mm, 58mm   | Multi-Image 49mm, 52mm, 55mm, 58mm   |
| Multi-Image 49mm, 52mm, 55mm, 58mm   | Multi-Image 49mm, 52mm, 55mm, 58mm   |
| Clear 49mm, 82mm                      | Clear 49mm, 82mm                      |
| ND 0.349mm, 82mm                     | ND 0.349mm, 82mm                     |
| ND 0.649mm, 82mm                     | ND 0.649mm, 82mm                     |
| ND 0.949mm, 82mm                     | ND 0.949mm, 82mm                     |
| FLD 43mm-82mm                        | FLD 43mm-82mm                        |
| SR Polarizer 40.5mm-82mm             | SR Polarizer 40.5mm-82mm             |
| Close-Up Lens Set, 40.5mm-82mm       | Close-Up Lens Set, 40.5mm-82mm       |
| Standard Rubber Lens Shades          | Standard Rubber Lens Shades          |
| 40.5mm-77mm                          | 40.5mm-77mm                          |
| Wide Angle Rubber Lens Shade         | Wide Angle Rubber Lens Shade         |
| 49mmWA, 52mmWA, 55mmWA, 58mmWA,      | 49mmWA, 52mmWA, 55mmWA, 58mmWA,      |
| 62mmWA, 67mmWA, 72mmWA, 77mmWA       | 62mmWA, 67mmWA, 72mmWA, 77mmWA       |
| Screw-in Metal Lens Shades           | Screw-in Metal Lens Shades           |
| LS49mm, LS52mm, LS55mm, LS58mm, LS62mm, | LS49mm, LS52mm, LS55mm, LS58mm, LS62mm, |
| LS67mm, LS72mm, LS77mm               | LS67mm, LS72mm, LS77mm               |
| Metal Lens Caps                      | Metal Lens Caps                      |
| LC46mm, LC48mm, LC49mm, LC52mm, LC55mm, | LC46mm, LC48mm, LC49mm, LC52mm, LC55mm, |
| LC58mm, LC62mm, LC67mm, LC72mm, LC77mm | LC58mm, LC62mm, LC67mm, LC72mm, LC77mm |

Prices and Specifications Subject to Change Without Notice.
MIXER/POWER AMPLIFIERS

A-901A 3-Channel Mixer/Power Amplifier
- 10WRMS output power
- 20-20,000Hz frequency response, ±1dB
- Low distortion and noise level and excellent output regulation
- Bass and treble controls for Input #1 and Program Input
- Muting function and protection circuitry
- Separate output terminals for 4/8 ohms, 25/70V
- Full range of plug-in modules
- Portable or rackmounted type
A-901A 10WRMS, 2 ports (less modules) .......... $228.00

A-903A/906A/912A 6-Channel Mixer/Power Amplifiers
- 20-20,000Hz frequency response, ±1dB
- Low distortion and noise level and excellent output regulation
- Bass, treble and master gain controls
- Bridging and signal processing input and output
- Built-in protection circuitry
- Separate output terminals for 4/8 ohms, 25/70V
- Full range of plug-in modules
- Portable or rackmounted type
A-903A 30WRMS, 6 ports (less modules) ........ $457.00
A-906A 60WRMS, 6 ports (less modules) ........ $679.00
A-912A 120WRMS, 6 ports (less modules) ....... $809.00

P-906A/912A/924A Power Amplifiers
- 20-20,000Hz frequency response, ±1dB
- Low distortion and noise level, excellent output regulation
- and built-in protection circuitry
- Full range of plug-in modules
- High impedance direct input and an input port (edge connector) that can accept 1 module
- Separate output terminals for 4/8 ohms, 25/70V
- Input level switch (1000mV/100mV)
- Portable or rackmounted type
P-906A 60WRMS, 1 port (less modules) ........... $592.00
P-912A 120WRMS, 1 port (less modules) ........... $725.00
P-924A 240WRMS, 1 port (less modules) ........... $1298.00

Accessories
MB-920 Rackmount brackets (pair) for A-901A ... $29.00
MB-921A Rackmount brackets (pair) for A-903A ... $29.00
MB-931A Rackmount brackets (pair) for A-906A,
A-912A, P-906A, P-912A, P-924A .......... $29.00
PF-911 Perforated blank panel, 13/4" .......... $19.00
YA-910 Volume control cover (for basic units) ... $2.00

A-503A/A-506A/A-512A Mixer/Power Amplifiers
- Designed to bring reliable power to PA applications of all sorts in industrial plants, offices, schools, churches, etc,—anywhere there is a need for paging, announcements, intercommunications, etc.
- Simplified control layout
- 4 microphone inputs
- Record player input
- A radio tuner, tape player, chime, mixer/preamplifier, compact disc player or other high level input sources may be connected to the Aux-1, Aux-2 or Aux-3 inputs
- Inputs 3, 4 and 5 can be muted, allowing inputs 1 and 2 and Aux-3 to override them
- Remote volume control
- Link switch provides for the insertion of signal processing equipment
- A tape recorder may be driven from the tape output jack on the amplifier; the output is controlled at the tape recorder
- A booster amplifier may be driven from the booster output jack
- 24VDC operation
A-503A 30W ................. $445.00
A-506A 60W ................. $573.00
A-512A 120W ................. $650.00
U-51 Microphone input module ......... $68.00
U-52 Line matching transformer ....... $93.00
MB-21B2 Rackmount brackets, black .......... $29.00
PF-511 Perforated panel, 13/4" , black ... $19.00

Prices and Specifications Subject to Change Without Notice.
**900 SERIES MODULES**

Microphone Modules: LoZ, Balanced, 200 Ohm, Phantom Power, Gain Control and Lo/Hi Filters

Each module has been precisely designed to cover its specific function. Through the use of these modules, your amplifier becomes a custom-made unit to exactly fit your sound needs. Various types of connectors are provided with each module to facilitate matching it to the equipment with which it is to be used. Microphone preamplifier, mag, phono preamplifier, auxiliary preamplifier, bridging transformer, line matching transformer, paging input, line output and signal generator modules are included here. They are easy to install and cover a wide variety of sound needs.

<table>
<thead>
<tr>
<th>Module Code</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>M-01F</td>
<td>XLR (F)</td>
<td>$70.00</td>
</tr>
<tr>
<td>M-01M</td>
<td>XLR (M)</td>
<td>$68.00</td>
</tr>
<tr>
<td>M-01P</td>
<td>1/4&quot; phone jack (P)</td>
<td>$60.00</td>
</tr>
<tr>
<td>M-01S</td>
<td>(S)</td>
<td>$54.00</td>
</tr>
<tr>
<td>M-11S</td>
<td>Receive mute, select normally on or off (S)</td>
<td>$70.00</td>
</tr>
<tr>
<td>M-21S</td>
<td>Remote volume control (S)</td>
<td>$76.00</td>
</tr>
<tr>
<td>M-51F</td>
<td>Voice gate, XLR (F) (no high filter)</td>
<td>$87.00</td>
</tr>
<tr>
<td>M-51S</td>
<td>Voice gate (S) (no high filter)</td>
<td>$72.00</td>
</tr>
<tr>
<td>M-61F</td>
<td>Compressor, XLR (F)</td>
<td>$93.00</td>
</tr>
<tr>
<td>M-61S</td>
<td>Compressor (S)</td>
<td>$77.00</td>
</tr>
</tbody>
</table>

Note: Phantom power is defeatable by cutting jumper J-1 on circuit board.

Microphone Module: HiZ, Unbal., 10K Ohm

<table>
<thead>
<tr>
<th>Module Code</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>M-03P</td>
<td>Lo/Hi filter, gain control (P)</td>
<td>$37.00</td>
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</table>

Magnetic Phono, RIAA Equalization

<table>
<thead>
<tr>
<th>Module Code</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>R-01R</td>
<td>RIAA mag phono (R)</td>
<td>$33.00</td>
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</table>

Auxiliary Modules: HiZ, Unbal., 220K Ohm, GC

<table>
<thead>
<tr>
<th>Module Code</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>U-01F</td>
<td>XLR (F)</td>
<td>$48.00</td>
</tr>
<tr>
<td>U-01P</td>
<td>(P)</td>
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<tr>
<td>U-01R</td>
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<td>$33.00</td>
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<tr>
<td>U-01S</td>
<td>(S)</td>
<td>$33.00</td>
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<tr>
<td>U-11R</td>
<td>Receive mute (R)</td>
<td>$46.00</td>
</tr>
<tr>
<td>U-11S</td>
<td>Receive mute (S)</td>
<td>$46.00</td>
</tr>
<tr>
<td>U-21S</td>
<td>Receive mute, adjustable attenuation (S)</td>
<td>$52.00</td>
</tr>
<tr>
<td>U-21S</td>
<td>Remote volume control (S)</td>
<td>$62.00</td>
</tr>
<tr>
<td>U-61S</td>
<td>Compressor (S)</td>
<td>$85.00</td>
</tr>
</tbody>
</table>

Note: The U-61S can be used as a "Master Compressor" by cutting jumper J-2.

Balanced Line Output Module

<table>
<thead>
<tr>
<th>Module Code</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-01S</td>
<td>LoZ, 600 ohm, bal. out, signal derived from mix bus, gain control (S)</td>
<td>$79.00</td>
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</table>


Auxiliary Input — Balanced Line Out Module

<table>
<thead>
<tr>
<th>Module Code</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-02S</td>
<td>Unbal., 220K aux. input, 600 ohm bal. out, gain control for both input and output (for music-on-hold)</td>
<td>$91.00</td>
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</table>

Bridging Transformers: 10K Ohm, Bal. Input

<table>
<thead>
<tr>
<th>Module Code</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>B-01F</td>
<td>XLR (F)</td>
<td>$62.00</td>
</tr>
<tr>
<td>B-01P</td>
<td>(P)</td>
<td>$58.00</td>
</tr>
<tr>
<td>B-01S</td>
<td>(S)</td>
<td>$50.00</td>
</tr>
<tr>
<td>B-11S</td>
<td>Receive mute (S)</td>
<td>$62.00</td>
</tr>
</tbody>
</table>

Line Matching Transformer Modules: 600 Ohm, Bal.

<table>
<thead>
<tr>
<th>Module Code</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>L-01F</td>
<td>XLR (F)</td>
<td>$62.00</td>
</tr>
<tr>
<td>L-01P</td>
<td>(P)</td>
<td>$62.00</td>
</tr>
<tr>
<td>L-01S</td>
<td>(S)</td>
<td>$50.00</td>
</tr>
<tr>
<td>L-11S</td>
<td>Receive mute (S)</td>
<td>$62.00</td>
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<tr>
<td>L-41S</td>
<td>Send mute (S)</td>
<td>$75.00</td>
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</table>

Note: When used with the A-901A, the L-41S must occupy port #2.

900 Series to Exes Intercom Module

<table>
<thead>
<tr>
<th>Module Code</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>I-01S</td>
<td>Exes Intercom System 600 ohm, line matching transformer, gain control, mute delay (S)</td>
<td>$83.00</td>
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</table>

Note: I-01S module is for interface with Toa Exes Intercom Systems.

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PLUG-IN MODULES FOR AMPLIFIERS

**Signal Generator Modules**

<table>
<thead>
<tr>
<th>Module Code</th>
<th>Description</th>
<th>Price</th>
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</thead>
<tbody>
<tr>
<td>S-01S</td>
<td>1kHz, sine wave, gain control (S)</td>
<td>$62.00</td>
</tr>
<tr>
<td>S-02S</td>
<td>Buzzer/yelp, gain control (S)</td>
<td>$82.00</td>
</tr>
<tr>
<td>S-03S</td>
<td>Chime/continuous, gain control (S)</td>
<td>$70.00</td>
</tr>
</tbody>
</table>

**Signal Processor Module**

<table>
<thead>
<tr>
<th>Module Code</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>F-01R</td>
<td>BBE sonic maximizer signal processor module (R)</td>
<td>$118.00</td>
</tr>
</tbody>
</table>

Notes

Suffix Guide: F = Female XLR; M = Male XLR; P = 1/4" Phone Jack; R = RCA Pin Jack; S = 3/8 Screw Terminal

U-61S Aux. Mod: For the U-61 to function as a "Master Compressor" between mixer and amp, cut jumper J-2. Pin 1 = Line Out and Pin 3 = Line In.

Receiver Mute: Receives closure from mute bus on unit. Closure originates either from mute plug or from L-41 module.

Send Mute: Develops its own mute closure due to signal input and sends along mute bus.

Prices and Specifications Subject to Change Without Notice.
WT-840U Quad Channel Wireless
Diversity Receiver Frame
The WT-840U offers the user superior performance free from dropouts, phase and multipath distortions and operational noise. The modular concept allows the WT-840U to be equipped with up to 4 user-installable channels by the simple addition of WTU-840U receiver modules.

WTU-840U Diversity Receiver Module/
WTU-740U Non-Diversity Receiver Module
These receiver modules are the heart of our VHF high band wireless systems. These modules utilize surface mount technology and contain tone-key and compander circuits. Rejection of unwanted signals is kept to a minimum by using the latest solid-state filtering techniques.

The WTU-840U diversity module has been designed with 2 receiver sections. It instantaneously and continuously compares the 2 signals being received. It discriminates as to which is the stronger of the 2 received signals and selects this stronger signal to provide clean, distortion-free sound.

These modules provide excellent quieting, sensitivity and selectivity measurements. Ease of installation has been assured by the simplicity of their modular plug-in design.

WD-740U Wireless System Antenna Distributor
The WD-740U has been designed for use with the non-diversity wireless system. The WD-740U combines the input signal from 2 optional dipole antennas and distributes the mixed signal to 4 outputs. This ensures that multipath distortion, dropouts and operational noise are essentially eliminated. Equipped with a single power on/off switch and a power on lamp, the WD-740U provides proper signal distribution for clear, intelligible sound to be reproduced throughout the listening area.

WM-240U Handheld Wireless Transmitter
Supplied with a specially molded polymer diaphragm, this handheld transmitter offers optimized frequency response in a popular cardioid pickup pattern. The tone-key circuit design delivers excellent performance that's virtually free from external interference.

Superior compander technology has been included to provide wide frequency response against a background of vanishingly low noise. Surface mount technology provides the user with 30 hours of continuous operation from 1 AA battery. The microphone body incorporates both green power on and red low battery level LEDs.

WM-340U Wireless Lavalier Mic and Bodypack Transmitter
The WM-340U weighs 2.6 oz. and offers the user over 35 hours of continuous battery life.

The tone-key circuit eliminates external interference and its compander technology provides a wide dynamic range and an extremely high signal-to-noise ratio.

The electret condenser mic capsule has a cardioid pattern and has been designed to provide optimum performance when utilized in speech reinforcement systems.

The microphone body incorporates both green power on and red low battery level LEDs.

VHF HIGH BAND WIRELESS SYSTEMS
4-Channel Capable Diversity System
Configured for Single Channel Operation
System Components:
1 WM-240U Handheld or WM-340U Lavalier Mic/Transmitter ........ $1534.00
1 WT-840U Quad Channel Diversity Frame
1 WTU-840U Diversity Receiver Module
2 YW-460U Whip Antennas*
*(System may be purchased with 2 YW-450U Dipole Antennas in place of Whip Antennas) ........ $1883.00

Dual-Channel Capable Non-Diversity System
Configured for Single Channel Operation
System Components:
1 WM-240U Handheld or WM-340U Lavalier Mic/Transmitter ........ $979.00
1 WT-740U Dual Channel Receiver Frame
1 WTU-740U Non-Diversity Receiver Module
1 YW-460U Whip Antenna*
*(System may be purchased with 1 YW-450U Dipole Antenna in place of Whip Antenna) ........ $1054.00

Dual-Channel VHF High Band Portable Wireless
Amplifier Configured for Single-Channel Operation
System Components:
1 WM-240U Handheld or WM-340U Lavalier Mic/Transmitter ........ $1321.00
1 WTU-740U Non-Diversity Receiver Module
1 WA-640 Wireless Amplifier*
*(System also may be purchased with 1 WA-640C Wireless Amplifier with a cassette option) ........ $1683.00

VHF High Band Wireless Components
WA-640 Dual-Channel Portable Amp ....................... $ 772.00
WA-640C Dual-Channel Portable Amp With Cassette Option ....................... $1085.00
WM-240U* Handheld Mic/Transmitter ....................... $339.00
WM-340U* Lavalier Mic/Body Pack Transmitter ....................... $339.00
WT-840U 4-Channel Diversity Receiver Frame ....................... $704.00
WTU-840U* Diversity Receiver Module ....................... $406.00
WTU-740U* Dual-Channel Non-Diversity Receiver Frame ....................... $339.00
WTU-740U* Non-Diversity Receiver Module ....................... $259.00
WD-740U Non-Diversity Antenna Distribution Amplifier ....................... $350.00
YW-450U Powered Dipole Antenna Booster ....................... $116.00
YW-451 Outdoor, Splash-proof Cover for YW-450U ....................... $106.00
YW-452 Microphone Stand Mounting Hardware for YW-450U ....................... $39.00
YW-460U* Whip Antenna ....................... $43.00
IT-437 Balancing Transformer ....................... $12.00

*Add Suffix 1 through 4 for the required frequency (1 = 169.445; 2 = 170.245; 3 = 171.045; 4 = 171.905)

Prices and Specifications Subject to Change Without Notice.

375
D/Vision™ Motion Video Editor

- Easy-to-use graphical user interface (GUI)
- Simple VCR-like controls
- Precise, frame-by-frame editing (30 frames per second)
- Variable speed playback of video material
- Fully independent audio track editing
- Audio synchronization for narration, music, sound effects, etc.
- Editing from a virtually unlimited number of source (AVSS) files
- Seamless viewing of edit sequences
- FastAssembly™ creates edited AVSS in approximately real time
- Accepts stills, graphics, animation and titles from other software via the Intel standard AVSS file format
- Runs on IBM PS/2™ or PC-AT compatible with 386 under MS-DOS 3.3/4.0
- Uses Intel DVI ActionMedia™ boards and Real Time Video (RTV) compression algorithms
- Stores approximately 1 hour of video on 700M byte SCSI hard disk
- Based on proven software used to edit network television programs and Hollywood feature films

D/Vision has a GUI with simple controls that are like those on your home VCR. The "Source VCR" plays unedited material and contains icons that allow you to instantly access any frame of compressed video using scene numbers, keyword descriptions or frame numbers. The selected video can then be played back at variable speed using a trackball as the VCR "shuttle knob." You can edit any material that can be captured into standard Intel AVSS files, including stills, animation, titles and more. (Currently, D/Vision supports Intel RTV files captured at 30 frames per second.) At any point the video, audio or both can be "recorded" onto the "Record VCR" with the "VID" or "AUD" buttons. As each clip is added to the edit sequence, it is represented on a graphic time line. Just by positioning the cursor, you can insert new material or play back any part of your presentation. The D/Vision Trim function displays both sides of any cut (the last frame of the outgoing clip and the incoming clip's first frame). This makes it easy for you to choose exact edit points or match action. With the Lift function you can delete, move or copy material from 1 point on the time line to any other point. D/Vision offers simple, powerful functions so you can quickly place any single frame of video or audio next to any other. Once you've finished your editing, FastAssembly™ lets you create an edited AVSS file that can be played through an authoring package or any other application capable of playing DVI AVSS files.

D/Vision

Random access editing software package running under MS-DOS 3.3 or higher for use with Intel's ActionMedia board set. Includes manual and 5 1/4" floppy disks. $2,975.00

D/Vision-PRO

Professional version. Adds second audio channel, improved variable speed control, 5 additional EDL output formats and drop-frame time code.

D/Vision-The System

A turnkey system including D/Vision-PRO software, a 386-PC and VGA monitors, Intel DVI board set, 700M byte SCSI hard disk, speakers and time code reader card.

Intel's DVI Board Set

ActionMedia capture and delivery DVI boards for video compression and decompression. Available for IBM P/S-2 (Microchannel) and PC-AT compatibles.

Longitudinal Time Code Reader Board

Reads SMPTE time code during capture for EDL traceback. PC-AT compatible bus.

DVI Sync Converter

Required for DVI video to be recorded onto NTSC videotape.

Truevision® VIDI/O

NTSC-to-RGB and RGB-to-NTSC converter box. Required for capture and NTSC video recording.

D/Vision Support Contract

Factory support line, free software updates.

D/Vision-Pro Support Contract

Factory support line, free software updates, Intel board exchange, local dealer support.

D/Vision Demo Disk

Demonstration disk for basic version. Credited toward purchase (requires DVI-equipped computer). $95.00

Prices and Specifications Subject to Change Without Notice.
Introduction:
Trompeter Electronics' 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 type 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).

<table>
<thead>
<tr>
<th>Patch Cord</th>
<th>REAR JACKS</th>
<th>PANEL DESIGNATION AND NO. OF SINGLE JACKS ACCOMMODATED</th>
<th>VERTICAL SPACING</th>
</tr>
</thead>
<tbody>
<tr>
<td>RCA 50 ohm</td>
<td>1200 pin (RCA)</td>
<td>50, 75, 93 ohm</td>
<td>.070&quot; - .150&quot;</td>
</tr>
<tr>
<td>WE 75 ohm</td>
<td>1200 pin (WE)</td>
<td>50, 75, 93 ohm</td>
<td>.070&quot; - .150&quot;</td>
</tr>
</tbody>
</table>

These systems are available in a variety of configurations, including single or dual jacks, and can be customized to meet specific needs.

For more detailed information, please refer to the diagrams and tables provided on the page.

Prices and Specifications Subject to Change Without Notice.
Ultimatte Video Compositing Equipment

All Ultimattes 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.

<table>
<thead>
<tr>
<th>Feature</th>
<th>System-6</th>
<th>System-5</th>
<th>System-4</th>
<th>System-300</th>
<th>Forematte</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screen Correction</td>
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<tr>
<td>SMPTE Time Code Reader</td>
<td>400 cn.</td>
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<td>Computer Interface</td>
<td>RS 322 &amp; RS 422</td>
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<td>FG RGB White Controls</td>
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<tr>
<td>FG Saturation</td>
<td>To Black &amp; White</td>
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<td>Black Balance Control</td>
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<td>BG RGB Black Controls</td>
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<td>BG RGB White Controls</td>
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<td>BG Saturation</td>
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<td>Window Level Control</td>
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<td>NTSC/PAL Switchable</td>
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<td>Power Requirements</td>
<td>110V to 240V</td>
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<td>White Logic (Matting)</td>
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<td>White Logic (Keying)</td>
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<td>Black Logic (Matting)</td>
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<tr>
<td>Remote Control</td>
<td>Menu Driven</td>
<td>1 incl. Can Add 3</td>
<td>Optional</td>
<td>Kit Available</td>
<td>Kit Available</td>
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<tr>
<td>FG Matte Adjustment</td>
<td>With Manual Override</td>
<td>With Manual Override</td>
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<tr>
<td>BG Matte Adjustment</td>
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<td>BG Defocusing Control</td>
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<td>BG Field Colorer</td>
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<tr>
<td>Test Signal Select</td>
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<td>Internal</td>
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<td>Separation Matte Density Adjustment</td>
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<td>for Warm and Cool Colors</td>
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<td>Black Gloss Control</td>
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<tr>
<td>Channelizer (Structure Control)</td>
<td>Automated</td>
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<td>Clean-Up Control</td>
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<td>Glow-Input Circuit</td>
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<td>Built-in Window Generator</td>
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<td>Soft Edge Windows</td>
<td>Variable</td>
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<td>Inverted Windows</td>
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<td>Reverse Windows</td>
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<td>External Window Input</td>
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<tr>
<td>Negative Matte Output</td>
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<tr>
<td>Digital Memory of Control Systems</td>
<td>75 files</td>
<td>32 sets of values</td>
<td>One set of values</td>
<td>One set of values</td>
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<tr>
<td>Matte-In Polarity Switch</td>
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<td>Micro-Processor Controlled</td>
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<td>Requires Separate Encoder</td>
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<td>Requires Ext. Black Burst</td>
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<td>Requires Ext. Sync &amp; Blank</td>
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<tr>
<td>Remote for Ultimatte-300</td>
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<tr>
<td>Remote for Forematte</td>
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</tbody>
</table>

Ultimatte System-6HD includes 1 remote ........................................... $122,000.00
Ultimatte System-6 includes 1 remote ............................................. 46,950.00
Ultimatte-5 includes 1 remote ..................................................... 28,900.00
Remote for Ultimatte-5 .............................................................. 4,500.00
Ultimatte-4 ................................................................. 8,950.00
Ultimatte-4R Remote version, includes 10 meter cable .......... 10,950.00
Ultimatte-4 RGB .......................................................... 8,950.00
Ultimatte-4R RGB Remote version, includes 10 meter cable .......... 10,950.00
Remote for Ultimatte-4 .......................................................... 1,595.00
Ultimatte-300 .............................................................. 7,850.00
Remote for Ultimatte-300 ....................................................... 375.00
Forematte ................................................................. 6,950.00
Remote for Forematte ........................................................ 375.00

Prices and Specifications Subject to Change Without Notice.
NUMERIC CONTROL PANELS

CSP 1
SC-150
CSP 300R
CSP 20A
CSP 100
CSP 10

Numeric Control Panels
- Loopthrough 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 statusing
- 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/PL 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 read-out, 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 statusing 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 statusing. 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 statusing. 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.

Prices and Specifications Subject to Change Without Notice.
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
- Loopthrough 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.

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.

380 Prices and Specifications Subject to Change Without Notice.
GENERATORS/
DISTRIBUTION AMPLIFIERS

BBG-2 Blackburst Generator
Incorporating a highly stable crystal controlled oscillator, the BBG-2 produces 9 technically correct RS-170A blackburst outputs for use in synchronizing various equipment in NTSC systems. Burst amplitude, sync, blanking and setup levels are internally adjustable. Up to 9 pieces of equipment may be synchronized without using additional video amplifiers or phase error inducing loopthrough connections.
BBG-2 .............................................. $495.00

100-2 Color Sync Generator
Synchronize your system with this stable crystal controlled sync source. The 100-2 provides the NTSC signals necessary to ensure that all your equipment works together. Output signals are subcarrier, blackburst, sync, blanking and horizontal and vertical drives. To conserve space, a video or pulse distribution amplifier may be added internally, providing a ready source of sync signal distribution to multiple destinations.
100-2 .............................................. $ 795.00
100-2DA With video DA ......................... 1065.00

200-2 RS-170A Genlockable Color Sync Generator
This quarter-rack wide RS-170A unit provides crystal controlled synchronization signal outputs from either a free-running or genlocked source. Outputs include subcarrier, blackburst, composite sync, composite blanking, burst flag and horizontal and vertical drives for synchronization of all your color equipment.
200-2 .............................................. $895.00

PG-2 Color Pattern Generator
Featuring independently adjustable color vectors and a crystal controlled oscillator, the PG-2 has 8 standard test patterns, with up to 2 switchable custom IDs for each pattern. The unit may be used in either the free-running or genlocked mode, has a separate 1kHz tone output, adjustable subcarrier phase, and provides subcarrier and composite sync outputs.
PG-2 .............................................. $1395.00

PG-3 Color Bar/Sync Generator
This compact quarter-rack wide RS-170A unit not only provides sync outputs, but also generates a SMPTE color bar pattern. The PG-3 is crystal controlled and may be either free-running or genlocked to the studio master source. SMPTE color bar, subcarrier, blackburst, composite sync, composite blanking, burst flag and Field 1 ID are provided to enable color equipment synchronization.
PG-3 .............................................. $1295.00

VL-2 Video Line Isolator
Remove ground loop generated hum bars from your system with the VL-2. Optical coupling provides 80dB of ground noise reduction and the unit can withstand up to 1500V between input ground, output ground and AC ground. A front panel lamp warns of potential shock hazards due to voltages between the 3 "grounds." Internal gain and frequency adjustments provide compensation for long cable runs. The unit is also available with an audio isolator so that both audio and video can be distributed through the same isolated path.
VL-2 .............................................. $340.00
VL-2A Video and audio line isolator ........... $395.00

ADA-3 Audio Distribution Amplifier
The direct coupled ADA-3 offer a single loopthrough input, adjustable gain and 6 outputs for proper distribution of your audio. The unit is available with RCA jacks or terminal blocks.
ADA-3 .............................................. $360.00

Prices and Specifications Subject to Change Without Notice.

381
VDA-2 Video Distribution Amplifier
Featuring wide bandwidth of 30MHz, it provides 6 adjustable gain outputs from a single loopthrough input.

XB/VDA Extended Bandwidth
Video Distribution Amplifier
Featuring extra wide bandwidth of 0-120MHz, this unit provides precise, accurate and reliable high resolution video distribution through 8 isolated outputs from a single video input. The user may switch between differential input and single-ended input modes of operation. Differential input mode is useful in avoiding hum and interference because the input and output grounds are isolated from each other and from the power line ground. Due to the extra wide bandwidth of this amplifier, you can use it to distribute the Channel 3 and 4 RF output signals from your VCR.

DA10-2/3/4/5 Distribution Amplifier Assemblies
Available with combinations of 2 to 5 discreet video, audio and pulse distribution amplifiers installed, the DA10 provides a single unit for proper distribution of your video, audio and sync signals and pulses. These full rack wide units are delivered with rackmount hardware installed.

AVS-1 Automatic Video Source Selector
The AVS-1 will automatically switch to alternate video and audio source feeds if main video is lost or becomes unsatisfactorily degraded. The AVS-1 also provides an alarm to alert you to the loss/poor quality of main video condition. S/N trigger levels and switching time are user adjustable. The basic unit features RCA jacks for audio, but terminal blocks are available.

VS-2 Video Squelch
When unsatisfactory degradation or loss of main video occurs, the unit automatically switches to alert video and audio source feeds, and provides an alarm to alert you to the condition. Stereo audio, internal audio termination of the unused signal, remote control and XLR connectors are available as options. The basic unit features RCA jacks for audio, but terminal blocks are available.

Signal Alarms
Prevent unnoticed loss of signal. The VA-2 and AA-2 alarms provide both audible and visible alarms whenever the input signal is lost. The alarm continues to sound until the loss of signal condition is corrected.

Power Switches
Prolong equipment life and save energy by automatically switching off equipment when signals are no longer present, and automatically turning it back on when the signal is reapplied. Power switches are available for both audio (APS-2) and video (VPS-2) input signals. Both units feature user adjustable sensing levels and switching delays.

ST Scope Terminator
The ST Scope Terminator matches the 75 ohm impedance of coax cable to the input impedance of the typical oscilloscope by providing both 10:1 resistive and 10:1 capacitive voltage dividers when connected to an oscilloscope. This increases the frequency at which the oscilloscope input capacitance becomes significant, thereby extending the measurement accuracy from 7MHz to 70MHz when using coax cable.
### WIRELESS MICROPHONE SYSTEMS

**Pro Plus Professional Wireless Microphone Systems**

<table>
<thead>
<tr>
<th>Transmitters (150-216MHz)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>77/DIII</strong></td>
<td>Dynex III pocket transmitter; includes 153A belt clip, short flexible antenna, battery, 119 audio input plug and C157 soft zippered protective case for transmitter</td>
</tr>
<tr>
<td><strong>T-81/DIII</strong></td>
<td>Handheld transmitter with advanced technology, including Dynex III and Shure SM58 dynamic microphone element; includes battery, 126 mic-stand holder and C-158 soft zippered protective case</td>
</tr>
<tr>
<td><strong>T-82/DIII</strong></td>
<td>Same as T-81 transmitter, but with Shure SM85 condenser microphone element; includes same accessories as T-81</td>
</tr>
<tr>
<td><strong>T-87/DIII</strong></td>
<td>Same as T-81 transmitter, but with Shure SM87 condenser microphone element; includes same accessories as T-81</td>
</tr>
<tr>
<td><strong>T-88A/DIII</strong></td>
<td>Same as T-81 transmitter, but with EV N/D757A dynamic microphone element; includes same accessories as T-81</td>
</tr>
</tbody>
</table>

**Receivers (150-216MHz)**

| **R-33C/DIII** | Miniature Dynex III portable, battery-powered receiver with "Camera Black" case; includes 9V battery, 124 rubber-duckie" antenna with 225 right-angle adapter, 219 audio output plug, 221 sectional antenna, 216 audio cable, soft carrying case and Velcro strips (for camera mounting) | $3405.00 |
| **R-42A** | Pro Plus diversity receiver with Dynex III (no antennas included) | $1048.00 |
| **R-42AX** | R-42A diversity receiver with 2 120U whip antennas | $3439.00 |
| **R-42AY** | R-42A diversity receiver with 2 123U high-performance dipole antennas (telescoping elements) | $3683.00 |
| **66B/DIII** | Dynex III portable battery-powered receiver; includes 4 9V batteries and 121BNC antenna | $1092.00 |
| **67B/DIII** | Dynex III portable, diversity, battery-powered receiver; includes 4 9V alkaline batteries and 2 121BNC antennas | $1724.00 |

**Levallier Microphones (include 3' cable and Lemo connector to plug into 77/DIII transmitter)**

| **113** | Shure 83B miniature omnidirectional electret condenser microphone | $144.00 |
| **LM-201** | Sony ECM-448 miniature omnidirectional electret condenser microphone | $195.00 |
| **LM-202** | Crown GLM-100E miniature omnidirectional electret condenser microphone with windscreen, tie bar and belt clip | $216.00 |
| **LM-203** | Vega RSX-12 miniature unidirectional electret condenser microphone | $144.00 |
| **LM-204** | Sennheiser MKE-2 miniature omnidirectional electret condenser microphone | $349.00 |

**Accessories**

<table>
<thead>
<tr>
<th><strong>Multicouplers and RF Line Amplifiers</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>M-117B</strong></td>
<td>Multiband (169-216MHz) multicoupler with UHF connectors to split the RF signal from a 50-ohm antenna (such as 123) to feed 4 receivers; includes 4 155 coaxial cables and AC adapter</td>
</tr>
<tr>
<td><strong>M-217B</strong></td>
<td>Same as M-117B multicoupler, but with BNC connectors</td>
</tr>
<tr>
<td><strong>M-282</strong></td>
<td>Rackmounting wideband (169-216MHz) multicoupler; splits RF signals from 2 50-ohm antennas to feed 4 diversity receivers. Includes 8 155 cables with BNC connectors</td>
</tr>
</tbody>
</table>

### Pro 2 Wireless Microphone Systems

**Pro 2 Diversity Wireless Microphone Systems**

| **PRO 2-BPM** | Bodpack system; T-37 transmitter and R-32 diversity receiver with accessories, with Shure 838 miniature omnidirectional electret mic | $2028.00 |
| **PRO 2-BP** | Bodpack system with accessories except without mic | $1905.00 |
| **PRO 2-HE** | Handheld system; T-36 transmitter and R-32 diversity receiver with accessories | $2286.00 |
| **PRO 2-HN** | Handheld system; T-38 transmitter and R-32 diversity receiver with accessories | $2286.00 |

**Pro 2 Receivers and Transmitters**

| **R-32** | Diversity Pro 2 receiver with Dynex II; includes 120U whip antenna | $1281.00 |
| **T-37DII** | Dynex II bodpack 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, mic on/off switch, mic level control and instruction manual | $624.00 |
| **T-36DII** | Dynex II handheld transmitter, with EV BK-1 element, 9V battery, 126 mic holder, C-155 protective case, built-in antenna and instruction manual | $984.00 |
| **T-38DII** | Same as T-36 transmitter, but with EV N/D457A dynamic microphone element; includes same accessories as T-36 | $984.00 |

### VX-20 Wireless Microphone Systems

| **VX-20 BPM** | Bodpack system with lapel microphone consisting of: T-25 transmitter and R-27 receiver with accessories and Vega LM-20SX omnidirectional electret condenser microphone | $1439.00 |
| **VX-20 BP** | Bodpack system with accessories, consisting of T-25 and R-27 | $1349.00 |
| **VX-20 HE** | Handheld system; T-28 transmitter and R-27 receiver with accessories | $1547.00 |
| **VX-20 HV** | Handheld system; T-29 transmitter and R-27 receiver with accessories | $1547.00 |
| **R-27** | Miniature portable receiver with Dynex III, includes 121BNC whip antenna, 9V battery, Velcro mounting strips, soft-zipped protective case and instruction manual | $799.00 |
| **T-25** | Dynex III bodpack transmitter; includes C-157 protective case, 9V alkaline battery, 4-pin miniature XLR (TIN "Q-G"), 153A heavy-duty clip, power on/off switch, mic on/off switch, mic gain and instruction manual | $549.00 |
| **T-28** | Dynex III handheld transmitter with EV BK-1 element, includes 9V battery, C-156 protective case, internal dipole antenna and instruction manual | $747.00 |
| **T-29** | Same as T-28, but with Vega K4 cardioid condenser element, includes same accessories | $747.00 |

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Prices and Specifications Subject to Change Without Notice.
A 168X headset (using a Beyer DT-108) plugs into the heavy-duty button audio control switch (internally programmable for push-to-mute controls - a combined on/off and headset volume control, and a push-button audio control switch internally programmable for push-to-talk with continuous transmit, or push-to-talk with transmitter and audio "off" until pushed).

The QX-6 master station provides a full set of convenient controls for full-duplex communications between up to 6 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 2 operating controls—a combined on/off and headset volume control, and a push-button 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 button audio control switch (internally programmable for push-to-mute controls - a combined on/off and headset volume control, and a push-button audio control switch (internally programmable for push-to-talk with continuous transmit, or push-to-talk with transmitter and audio "off" until pushed).

The system is very easy to operate. For example, untrained personnel can easily use the QTR-1 portable, which has only 2 operating controls—a combined on/off and headset volume control, and a push-button audio control switch (internally programmable for push-to-mute controls - a combined on/off and headset volume control, and a push-button audio control switch (internally programmable for push-to-talk 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 button audio control switch (internally programmable for push-to-mute controls - a combined on/off and headset volume control, and a push-button audio control switch (internally programmable for push-to-talk with continuous transmit, or push-to-talk with transmitter and audio "off" until pushed).
PAN/TILT DRIVES

V6000PT and V6100PT Professional Pan/Tilt Drives

The V6000PT and V6100PT Professional Medium-Duty Variable Speed Pan/Tilt Drives are state-of-the-art units that provide accurate tracking of moving objects. Close tolerance gearing assures precise control and accurate stops. Pan/tilt speeds are smoothly and automatically variable in 256 discrete steps. Constructed with sound deadening material, these units guarantee ultra-quiet functioning in sound restricted environments. The V6000PT and V6100PT feature a 15-lb. load rating.

The V6000PT is designed to be used with the V7000C Control. The V6100PT is used with a V7100C Control, which requires a V7700R Single-Camera Receiver at the pan/tilt location. The V7100C may be programmed with up to 99 preset positions.

\[ \text{V6000PT} \quad 24VDC; \text{variable speed; 10 lb. load rating; tilt range } \pm 40^\circ, \text{ pan range } 270^\circ \text{ (maximum). Tilt speed } 25^\circ/\text{second (maximum), pan speed } 25^\circ/\text{second (maximum). Use with V7000C Control (2-camera capacity). For use with ENG type cameras. Unit measures } 14.75'' \text{ in height. } \$2300.00 \]

\[ \text{V6100PT} \quad 24VDC; \text{variable speed; 30 lb. load rating; tilt range } \pm 40^\circ, \text{ pan range } 315^\circ \text{ (maximum). Tilt speed } 25^\circ/\text{second (maximum), pan speed } 25^\circ/\text{second (maximum). Use with V7100C Control. Requires 1 V7700R Receiver per pan/tilt unit. For use with ENG type cameras. Unit measures } 14.75'' \text{ in height. } \$4145.00 \]

V6033PT Low Profile Variable Speed Professional Teleconferencing Pan/Tilt Drive

The V6033PT Low Profile Variable Speed Professional Teleconferencing Pan/Tilt Drive is specifically designed to provide a low viewing angle for cameras or camcorders used in teleconferencing work. It is also useful in confined areas where space may be limited and tilting angle is not critical, so that a "head on" rather than some higher angle view is obtained. Dynamic braking and instantaneous reversing combined with a 15-lb. load rating make this an ideal light-duty professional unit. The unit can be used with cameras and camcorders incorporating motorized or auto-focus lens systems.

Mounting is by means of a round base. Tripod, wall, column or ceiling mounts are optional accessories.

The V6033PT is designed to be used with the V7100C Control and requires a receiver which should be no more than 250' from the pan/tilt location when used. The V7100C Control may be programmed with up to 99 preset positions. Use with V7700R Receiver.

\[ \text{V6033PT} \quad 24VDC; \text{variable speed; 15 lb. load rating; tilt range } \pm 20^\circ, \text{ pan range } 150^\circ \text{ (maximum). Designed to provide low profile. Built-in feedback potentiometers. } \$1395.00 \]

V6035PT Programmable Pan/Tilt Drive

The V6035PT Programmable Pan/Tilt Drive is a rugged unit specifically designed for use in teleconferencing work, so that a "head on" level of view, rather than a high angle view, is obtained for cameras or camcorders. Dynamic braking and instantaneous reversing combined with a 7.5 lb. load rating makes this an ideal professional unit. The unit can be used with cameras or camcorders incorporating motorized or auto-focus lens systems.

Mounting is by means of either a standard round base or an optional tripod mount. This pan/tilt unit may be mounted and used in an inverted position, if required.

\[ \text{V6035PT} \quad 24VDC; \text{variable speed; 30 lb. load rating; tilt range } \pm 20^\circ, \text{ pan range } 270^\circ \text{ (maximum). Tilt speed } 25^\circ/\text{second (maximum), pan speed } 25^\circ/\text{second (maximum). Use with V7000C Control (2-camera capacity). For use with ENG type cameras. Unit measures } 12.15'' \text{ in height. } \$4145.00 \]

The V6035PT is designed to be used with the V7100C Control and requires a receiver within 250' of the pan/tilt location when used. The V7100C Control may be programmed with up to 99 preset positions and is used with a V7700R Single-Camera Receiver. The V6035 may be used with the V7000C if presets are not required.

\[ \text{V6035PT} \quad 24VDC; \text{variable speed; 10 lb. load rating; tilt range } +20^\circ \text{ to } -10^\circ, \text{ pan range } 350^\circ \text{ (maximum). Built-in feedback potentiometers. } \$1795.00 \]

V6050PT and V6150PT Professional Pan/Tilt Drives

The V6050PT and V6150PT Professional Medium-Duty Variable Speed Pan/Tilt Drives are state-of-the-art units that provide accurate tracking of moving objects. Close tolerance gearing assures precise control and accurate stops. Pan/tilt speeds are smoothly and automatically variable in 256 discrete steps. Constructed with sound deadening material, these units guarantee ultra-quiet functioning in sound-restricted environments. The V6050PT and V6150PT feature a 30 lb. load rating.

The V6050PT is designed to be used with the V7000C Control. The V6150PT is used with a V7100C Control which requires a V7700R Single-Camera Receiver at the pan/tilt location. The V7100C may be programmed with up to 99 preset positions.

\[ \text{V6050PT} \quad 24VDC; \text{variable speed; 30 lb. load rating; tilt range } \pm 20^\circ, \text{ pan range } 315^\circ \text{ (maximum). Tilt speed } 25^\circ/\text{second (maximum), pan speed } 25^\circ/\text{second (maximum). Use with V7000C Control (2-camera capacity). For use with ENG type cameras. Unit measures } 12.15'' \text{ in height. } \$2300.00 \]

\[ \text{V6150PT} \quad 24VDC; \text{variable speed; 30 lb. load rating; tilt range } \pm 20^\circ, \text{ pan range } 270^\circ \text{ (maximum). Tilt speed } 25^\circ/\text{second (maximum), pan speed } 25^\circ/\text{second (maximum). Use with V7100C Control. Requires 1 V7700R Receiver per pan/tilt unit. For use with ENG type cameras. Unit measures } 12.15'' \text{ in height. } \$4145.00 \]

Prices and Specifications Subject to Change Without Notice.

385
TVM-730 Composite Video Analyzer With Auto Measure
Auto measure provides graphic and text readouts for horizontal blanking measurements, frequency response, test signal parameters and many other measurements. An innovative combination of analog and digital signal processing provides the fidelity of analog resolution with the unquestionable accuracy of digital measurements. Operator defined measurement parameters can be stored in memory for instant recall and the output can be downloaded to a personal computer for storage or to generate a hard copy printout. 2 operating levels are provided. Level I lets operators display waveforms, vectors, pictures and 1 SC/H phase. Level II gives engineers a complete range of tools, including digital line selects, quad SC/H phase displays, measurement cursors with on-screen digital readouts and a revolutionary 3-D display. 4 composite inputs and a wide variety of functions provide monitoring flexibility. 12 different functions/filters can be displayed simultaneously. Waveforms can be displayed in simultaneous parade modes or overlayed for comparison of timing and amplitude characteristics. Vector displays can be overlayed for simultaneous observation and comparison of the phase and amplitude of up to 3 signals. On-screen writing completely describes the display on the CRT. The picture mode displays monochrome pictures individually, paraded or simultaneously with a waveform display, allowing visual verification of the line selected or as a visual aid to select a line to observe. Remote control (RS-232/RS-422) of all functions may be accessed via a personal computer .................................. $6750.00

TVM-720 Component Analog/Composite Video Analyzer
Operator defined measurement parameters can be stored in memory for instant recall and the output can be downloaded to a personal computer for storage or to generate a hard copy printout. 2 operating levels are provided. Level I lets operators display waveforms, vectors, pictures and 1 SC/H phase. Level II gives engineers a complete range of tools, including digital line selects, quad SC/H phase displays and measurement cursors with on-screen digital readouts. Multiple input configurations (2 component and 2 composite or 1 component and 5 composite or 8 composite) and a wide variety of functions provide monitoring flexibility. 12 different functions/filters can be displayed simultaneously. Waveforms can be displayed in simultaneous parade modes or overlayed for comparison of timing and amplitude characteristics. Vector displays can be overlayed for simultaneous observation and comparison of the phase and amplitude of up to 3 signals. On-screen writing completely describes the display on the CRT. The picture mode displays monochrome pictures individually, paraded or simultaneously with a waveform display, allowing visual verification of the line selected or as a visual aid to select a line to observe. Remote control (RS-232/RS-422) of all functions may be accessed via a personal computer .................................. $5995.00

Options
<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSC-1</td>
<td>Single standard case</td>
<td>$48.00</td>
</tr>
<tr>
<td>PTC-1</td>
<td>Portable case with handle and sunshield</td>
<td>$145.00</td>
</tr>
<tr>
<td>DRC-1</td>
<td>Double rackmount case</td>
<td>$200.00</td>
</tr>
<tr>
<td>DAT-3</td>
<td>Half rack tray for DRC-1 to mount PVS-6, PVS-6A or self-contained series distribution amplifiers</td>
<td>$99.00</td>
</tr>
<tr>
<td>BLK-1</td>
<td>Blank panel</td>
<td>$30.00</td>
</tr>
<tr>
<td>ADC-1</td>
<td>AC/DC power supply for TVM-620 (must be factory installed during manufacture)</td>
<td>$200.00</td>
</tr>
</tbody>
</table>

*To Be Announced

TVM-710 Composite Video Analyzer
Operator defined measurement parameters can be stored in memory for instant recall and the output can be downloaded to a personal computer for storage or to generate a hard copy printout. 2 operating levels are provided. Level I lets operators display waveforms, vectors, pictures and 1 SC/H phase. Level II gives engineers a complete range of tools, including digital line selects, quad SC/H phase displays, measurement cursors with on-screen digital readouts and a revolutionary 3-D display. 4 composite inputs and a wide variety of functions provide monitoring flexibility. 12 different functions/filters can be displayed simultaneously. Waveforms can be displayed in simultaneous parade modes or overlayed for comparison of timing and amplitude characteristics. Vector displays can be overlayed for simultaneous observation and comparison of the phase and amplitude of up to 3 signals. On-screen writing completely describes the display on the CRT. The picture mode displays monochrome pictures individually, paraded or simultaneously with a waveform display, allowing visual verification of the line selected or as a visual aid to select a line to observe. Remote control (RS-232/RS-422) of all functions may be accessed via a personal computer .................................. $6750.00

Prices and Specifications Subject to Change Without Notice.
TVM-621 Combination Waveform Monitor/Vectorscope
The TVM-621 is a full featured half-rack width combination waveform monitor/vectorscope which produces a variety of unique display modes. 1, 2 or 3 video signals may be observed individually or in any combination of 3 inputs. Waveforms can be displayed in either simultaneous parade modes or overlayed for comparison of timing and amplitude characteristics. Any 1 input may be displayed with simultaneous flat, low pass and chroma filters. Vector displays can also be overlayed for simultaneous observation and comparison of phase and amplitude of up to 3 signals. User defined memories permit rapid recall of frequently used modes. Diagnostic testing of the front panel controls and LEDs are built in. An R-Y mode displays the demodulated chrominance with horizontal sweep. A graticule scale is provided to aid in measuring differential phase. This display can be viewed simultaneously in the parade mode with 1 or 2 additional filter waveforms. The TVM-621 is available with an optional AC/DC power supply (ADC-1), allowing an external DC power source or battery to be input via a 4-pin XLR connector for portable field use. $3995.00

VSM-61 Vectorscope
The VSM-61 is designed for convenience and ease of operation in observing the vector display of video signals at an economical price. Market proven traditional features are combined with ergonomically designed controls. Proven, reliable circuit design permits accurate measurement of differential gain and differential phase of color television signals. Selection of inputs (A, B or subcarrier A) and references (A, B or external subcarrier) are easily accomplished via tactile membrane control switches. Rapid A/B comparisons may be made by directly switching between the A and B inputs. Requiring only 3 rack units (5.25" I and 1 half-rack width, the VSM-61 vectorscope may be mounted in the optional DRC-1 double rackmount case along with a TSM-51 or TSM-61 waveform monitor for complete signal monitoring. $2065.00

TSM-61 Waveform Monitor With Line Select
Designed for convenience and ease of operation, the TSM-61 is an excellent value in waveform monitors. Market proven traditional features are combined with ergonomically designed controls. Proven, reliable circuit design permits a variety of measurement parameters. Selection of filter response (flat, IRE, chroma or differential gain) and time base sweep (1H, 2H, 2V, 1H mag, 2H mag, 2V mag) are easily accomplished via tactile membrane control switches. Rapid A/B comparisons may be made by directly switching between A and B inputs. Line Select permits the observation of lines 14 through 21, field 1 or field 2. An auto bright-up circuit increases the intensity of the selected line for observation of VITS, VIRS or closed caption signals being displayed. Additionally, auto focus assures a clear, well defined image of the line selected, without readjustment. Requiring only 3 rack units of vertical rack space (5.25" I and 1 half-rack width, the TSM-61 waveform monitor may be mounted in the optional DRC-1 double rackmount case along with a VSM-61 vectorscope for complete signal monitoring. $2065.00

TSM-51 Waveform Monitor
The TSM-51 offers the most commonly used waveform monitor functions at an economical price. Market proven traditional features are combined with ergonomically designed controls. Proven, reliable circuit design permits a variety of measurement parameters. Selection of filter response (flat, IRE or chroma) and time base sweep (2H, 2V, 2H mag, 2V mag) are easily accomplished via tactile membrane control switches. Rapid A/B comparisons may be made by directly switching between the A and B inputs. Requiring only 3 rack units of vertical rack space (5.25" I and 1 half-rack width, the TSM-51 waveform monitor may be mounted in the optional DRC-1 double rackmount case along with a VSM-61 vectorscope for complete signal monitoring. $1882.00

Options
SSC-1 Single standard case ................. $ 48.00
PTC-1 Portable case with handle and sunshield ........ 146.00
DRC-1 Double rackmount case ............. 200.00
BLK-1 Blank panel for DRC-1 ............... 30.00
DAT-3 Half rack tray for DRC-1 to mount 2 PVS-6 or PVS-6A, stand-alone distribution amplifiers or VSG-21 color sync and test signal generator .......... 99.00
ADC-1 AC/DC power supply for TVM-621, TVM-621/P and TVM-621/PM (must be factory installed during manufacture) ............... 200.00

Prices and Specifications Subject to Change Without Notice.
# Prodigy Production Switcher

A reliable video switching and effects system follows 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. 3 standard RS-422 serial ports link Prodigy to most popular editing controllers and other intelligent devices.

### 8 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
- Downstream key transitions - cut, mix
- Combined background and key transitions—provides the power of a 2-mix/effect switcher

### Look Ahead Preview
- Displays the result of the next transition

### Integrated Stereo Audio-Follow-Video System
- 2-bus system—preset and program
- Cut or fade between audio sources
- Editor control of audio transitions
- Audio hold—inhibits AFV operation

### Fade-to-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

### Linear 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

### 3 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

### Downstream Keyer
- User programmable in and out (0 to 999 frames)
- External key cut and key fill

### Extensive Wipe Pattern Selection and Modifiers
- 24 wipe patterns standard
- Hard, soft and hard or soft bordered wipe edges with variable inside to outside softness balance
- Rate controlled joystick for positioning and pattern modification

### Pattern Memory System
- Allows editing system to select a pattern with all modifiers through path circuit boards

### Programmed 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 2 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
- Prodigy may be controlled with most available editing systems

### PRODUCTION SWITCHER

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Crosstalk:</strong></td>
<td>&gt; 40dB DC to 3.58MHz</td>
</tr>
<tr>
<td><strong>Frequency Response:</strong></td>
<td>± 0.1dB to 8MHz</td>
</tr>
<tr>
<td><strong>Outpus:</strong></td>
<td>± 0.5dB to 10MHz</td>
</tr>
<tr>
<td><strong>Outpus Impedance:</strong></td>
<td>75 ohms, ± 0.5% source terminated</td>
</tr>
<tr>
<td><strong>Tilt:</strong></td>
<td>&lt; 0.5%</td>
</tr>
<tr>
<td><strong>K Factor, 2T Pulse:</strong></td>
<td>± 0.5%K</td>
</tr>
<tr>
<td><strong>Differential Phase:</strong></td>
<td>± 0.5° at 1V p-p, 10-90% APL</td>
</tr>
<tr>
<td><strong>Differential Gain:</strong></td>
<td>± 0.5% at 1V p-p, 10-90% APL</td>
</tr>
<tr>
<td><strong>Chrominance/Luminance Inequalities:</strong></td>
<td>Delay ± 10ns</td>
</tr>
<tr>
<td><strong>S/N Ratio:</strong></td>
<td>&gt; 85dB signal/RMS noise to 5MHz</td>
</tr>
<tr>
<td><strong>Path Length Deviation:</strong></td>
<td>(Between any 2 inputs)</td>
</tr>
<tr>
<td><strong>Mix/Effects:</strong></td>
<td>&lt; 0.5° (non-adjustable)</td>
</tr>
<tr>
<td><strong>Bus Matching:</strong></td>
<td>Luminance: ± 0.5% gain; ± 3mVDC; Chrominance: ± 0.5% Amplitude; ± 0.5° Phase</td>
</tr>
<tr>
<td><strong>Connectors:</strong></td>
<td>BNC connectors</td>
</tr>
<tr>
<td><strong>AUDIO:</strong></td>
<td>2 audio inputs (left and right) per video input (inputs 2-10)</td>
</tr>
<tr>
<td><strong>Input Level:</strong></td>
<td>+ 24dBm maximum</td>
</tr>
<tr>
<td><strong>Input Impedance:</strong></td>
<td>&gt; 20K ohms balanced or 10K ohms unbalanced</td>
</tr>
<tr>
<td><strong>Outputs:</strong></td>
<td>Stereo preview and program</td>
</tr>
<tr>
<td><strong>Output Level:</strong></td>
<td>+ 24dBm maximum into 800 ohm load</td>
</tr>
<tr>
<td><strong>Output Impedance:</strong></td>
<td>Output source impedance ~ 100 ohms balanced</td>
</tr>
<tr>
<td><strong>Output DC Offset:</strong></td>
<td>± 5mV</td>
</tr>
<tr>
<td><strong>Crosstalk:</strong></td>
<td>&gt; 85dB (referenced to + 24dBm) input to input</td>
</tr>
<tr>
<td><strong>Frequency Response:</strong></td>
<td>20kHz to 20kHz ± 0.5dB</td>
</tr>
<tr>
<td><strong>(Referenced to 1kHz)</strong></td>
<td>Harmonic Distortion:</td>
</tr>
<tr>
<td><strong>Common Mode Rejection:</strong></td>
<td>&lt; 0.5% at 1kHz</td>
</tr>
<tr>
<td><strong>Common Mode Rejection:</strong></td>
<td>&lt; 0.2% at 20kHz</td>
</tr>
<tr>
<td><strong>Noise:</strong></td>
<td>40dB typical 60-20kHz, 35dB minimum 60-20kHz</td>
</tr>
<tr>
<td><strong>Connectors:</strong></td>
<td>Quick disconnect terminal strips</td>
</tr>
<tr>
<td><strong>GENERAL:</strong></td>
<td>9-pin D connectors are provided on the Electronics Frame for: Control Panel port, Editor port; Spare I/O port</td>
</tr>
<tr>
<td><strong>Control Panel Cable:</strong></td>
<td>34.2&quot; (10 meter) cable standard 9-pin D connectors</td>
</tr>
<tr>
<td><strong>Mechanical Dimensions:</strong></td>
<td>Control Panel - 8.75&quot;H × 19&quot;W × 4.5&quot;D</td>
</tr>
<tr>
<td><strong>Electronics Frame - 6.25&quot;H × 19&quot;W × 18&quot;D</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Weight:</strong></td>
<td>Control Panel - 12.5 lbs.</td>
</tr>
<tr>
<td><strong>Electronics Frame - 35 lbs.</strong></td>
<td></td>
</tr>
</tbody>
</table>

### Options

- **CTC-2**: Consolete for CTC-1 to mount RGB-1 control panel. Solid hwood construction
- **RGB-1**: RGB chrome keyer for Prodigy. Can be mounted in CTC-2 consolete extension
- **EX-P**: Externded cards for serving electronics
- **SA-1**: Stereo audio-follow-video

### Prices and Specifications Subject to Change Without Notice.
COLOR MONITORS/ RECEIVERS

Studio-13 Professional Rackmount Color Monitor
- 13" Trinitron® Color Picture Tube
- 380 lines horizontal 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 (Automatic Chroma Control) defeat (switchable)
- Selectable time constant (H. AFC)
- Monochrome select
- Setup select
- Aperture control
- Rackmount slides
- BNC connectors
- Service manual
- 101/2"H x 19"W x 19"D
- 52 lbs.
- Power requirements: 120VAC, 60Hz ± 10%
- Power consumption: 85W average, 120W maximum
- $2660.00

VM-13PRO 13" Professional Rackmount Color Monitor
- Raster size regulation
- 260 lines horizontal 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
- Internal audio speaker
- Comb filter
- Power isolation transformer
- Sharpness control
- $1795.00

AVM-13sv 13" Color Monitor With Audio and Y-C Input
- A-B-VTR switchable inputs (composite or Y-C on B input)
- 450 lines horizontal resolution
- Blue gun
- Keyed back porch clamping
- Tally
- Internal-external sync
- Pulse cross
- Underscan
- Internal audio speaker
- Comb filter
- Power isolation transformer
- Sharpness control
- $650.00

RAM-13T 13" Cable Ready Portable Color Receiver/Monitor
- 15.5/4"H x 19"W x 19"D
- 38 lbs.
- Power requirements: 120VAC, 60Hz ± 10%
- Power consumption: 55W average, 80W maximum
- $795.00

Options
- PC-1 Pulse cross
- US-1 Underscan
- DAT-3 Half rack tray for RM-8PRW without waveform monitor or vectorscope to mount 2 PVS-6 or PVS-6A, Videotek stand-alone distribution amplifiers or VSG-21 color sync and test signal generator
- 220-1 110/220VAC, 50/60Hz switchable AC adaptor for RM-8 and RM-8PR
- 8P-1 8-pin VTR cable (8"
- HG-1 Hospital grade AC cord
- $99.00

Prices and Specifications Subject to Change Without Notice.
VIDEOTEK INC.

**VDP-8000/VDP-8400 Frame Store Synchronizers**
- 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 phase
- Full proc amp controls in Freeze mode
- Freeze enable/disable allows constant processing of the input regardless of signal quality
- Hot switching
- Line select
- 2 video outputs
- Standby video input (VDP-8400)
- 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 use as a stand-alone sync generator
- Genlock
- 13/4" rackmountable

The VDP-8000 has a unique independent Freeze Field capability which permits the storage of 2 different fields, or 1 field without interruption of live video synchronizing. The VDP-8400 with 4 field memory can store 2 frames, or 1 frame without interruption of live video synchronizing. Stored images remain clear and sharp through the use of a 3-line digital comb filter.

**VDP-8000** $4995.00
**VDP-8400** $5995.00
**VDP-Remote Remote control panel** $995.00

**Times Six/Times Six Plus Blackburst 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 1/4" high, rackmountable

**Times Six Manual** $2195.00
**Times Six Plus Manual/automatic** $2995.00

**VSG-21 Color Sync and Test Signal Generator**
- Selectable test patterns: SMPTE color bars, modulated ramp, multi-burst, 10-step unmodulated staircase, audio test tone, blackburst output (will rackmount in DAT1)
- $2195.00

**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
- 6 isolated blackburst outputs
- SMPTE color bars—dual outputs
- Color field 1D 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 1/4" high, rackmountable

**VSG-201** $1995.00

**BTG-100 Handheld SMPTE Color Bar Generator**
- SMPTE color bar display digitally generated at 8 times subcarrier frequency
- 20-character programmable source ID with memory
- Lightweight and compact
- DC operation with 4 AA batteries
- AC power operation with BTG-AC 110VAC power adaptor
- Sturdy molded carrying case

**BTG-100** $495.00

**DM-141S 137-Channel Stereo Tuner/Demodulator**
- Automatic/manual fine tuning
- Varactor tuning/frequency synthesized channel selection
- BTSC (MTS) stereo decoder output with LED pilot indicators
- Balanced stereo outputs
- Internal audio monitoring—1" speaker
- Random access or up/down channel selection
- Front panel LED channel display
- Tactile feel membrane from panel key-board with LED feedback
- Front panel antenna/cable select
- Access to controls for video gain, audio gain and balance on front panel
- Short-term front panel memory maintained during power loss (1 hour)
- 75 ohm "F" connectors for antenna/cable inputs
- 100% solid-state circuitry
- 1 1/4" high, rackmountable

**DM-141S** $1995.00

**SYNCHRONIZERS/SYNC GENERATORS/AUDIO MONITORS**

**VDP-8000**
**Times Six**
**VSG-201**
**DM-141S**
**BTG-100**

**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
- 1 kHz tone output
- 600 ohm line output
- Calibrated tone output
- Hi/Low input impedance select
- 12VDC battery operation

**APM-8RS** $895.00

**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
- 2 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

Prices and Specifications Subject to Change Without Notice.
# ROUTING SWITCHERS

## PVS-6A 6X1 Audio Follow Video Passive Switcher
- 100% passive—no power requirements
- Low insertion loss
- Low video/audio crosstalk
- 6 video/audio (unbalanced) inputs
- 1 video/audio (unbalanced) output
- BNC video connectors
- Barrier strip audio connection
- 1¼" rackmount height
- Can mount 3 units side by side using a Videotek DAT-1 rackmount tray

PVS-6A ........................................... $199.00

## PVS-6 6X1 Passive Video Switcher
- 100% passive—no power requirements
- Low insertion loss
- Low video crosstalk
- 6 video inputs/1 video output
- ¼" rackmount height
- Can mount 3 units side by side using a Videotek DAT-1 rackmount tray

PVS-6 ........................................... $160.00

## 10X1 Routing Switcher Series with RS-422 Interface
- 10 looping video inputs
- Wide bandwidth for high resolution applications (1.0dB at 40MHz)
- DC restored output amplifier
- High speed clamping provides excellent hum rejection
- Low return loss
- 155dB at 1MHz
- 1.2dB from 1MHz to 24 dBm audio headroom
- Transformer coupled audio outputs, balanced or unbalanced
- 2 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
- System expandable horizontally and vertically to 40X1 and 30X10
- 1¾" rackmount height
- Can mount 3 units side by side using a Videotek DAT-1 rackmount tray

### RS-10A 10X1 Routing Switcher Series
- Video inputs, bridging 2 isolated video outputs
- 24-hour channel memory
- Vertical interval switching/momentary contact pushbuttons with changeable legends and "LED" video indicators
- 1¼" rackmount or freestanding with rubber feet

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>RS-10A</td>
<td>Remote 10 x 1 vertical interval switcher</td>
<td>$1199.00</td>
</tr>
<tr>
<td>RS-10ARC</td>
<td>Remote 10 x 1 video/audio switching panel</td>
<td>$1199.00</td>
</tr>
<tr>
<td>RS-10ARC-L</td>
<td>Local portion of RS-10ARC only, includes RCT-1 Remote Connector Kit</td>
<td>$2028.00</td>
</tr>
<tr>
<td>RS-10ARC-LS</td>
<td>Same as RS-10ARC but with switching capability</td>
<td></td>
</tr>
</tbody>
</table>

## RS-12 12x1 Routing Switcher Series
- Video inputs, bridging/2 video outputs
- Overnight channel memory
- Vertical interval switching/momentary contact pushbuttons with changeable legends and "LED" video indicators
- 1¼" rackmount or freestanding with rubber feet

PVS-1201 ...................................... $1428.00

## 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
- 1¼" rackmount or freestanding with rubber feet

VIS-1201 ...................................... $439.00

*Prices and Specifications Subject to Change Without Notice.*

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**Videotek Inc.**

RS-10A

RS-12

VIS-1201

RS-10ARC-L-SW Local portion of RS-10ARC-LS only includes RCT-1 Remote Connector Kit ........................................... $1428.00

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) ........................................... $159.00

RCT-1 Remote connector kit ........................................... $23.00

CR-1 Cable for remote ........................................... $1.99

RSCC-1 Contact closure interface ........................................... $233.00

VHS-1201 12x1 Video Only Routing Switcher
- 12 video inputs, bridging/2 isolated video outputs
- 24-hour channel memory
- Vertical interval switching/momentary contact pushbuttons with changeable legends and "LED" video indicators
- 1¼" rackmount or freestanding with rubber feet

VHS-1201 ...................................... $439.00

RS-12 12x1 Routing Switcher Series
- Video inputs, bridging/2 video outputs
- Overnight channel memory
- Vertical interval switching/momentary contact pushbuttons with changeable legends and "LED" video indicators
- 1¼" rackmount or freestanding with rubber feet

RS-12 ........................................... $233.00

RS-12RC Remote 12x1 video switching panel ........................................... $233.00

RS-12RC-LS Same as RS-12RC, but with switching capability at the local and remote locations, includes RCT-2 Remote Connector Kit ........................................... $1428.00

RS-12RC-L Local portion of RS-12RC only, includes RCT-2 Remote Connector Kit ........................................... $1228.00

RSP-2 12x1 video switching panel with RRK-2 Remote Rackmount Kit ........................................... $395.00

RRK-2 Remote rackmount kit ........................................... $395.00

BLK-2 Blank panel ........................................... $95.00

RCA-2 Additional remote connector Kit ........................................... $39.00

CR-2 Cable for remote ........................................... $1.22
MODULAR SERIES

**800 Series Distribution Amplifiers**

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 8-bay modular tray and PS-800 power supply. Up to 8 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 1 looping single-ended input and 6 outputs. Up to 300' of Belden 8281 may be equalized via a front card equalizer adjustment.

The VDA-818 is a precision video clamping DA with 1 looping differential or single-ended input and 6 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**
- 8-bay modular 2 rackmount high tray
- Will accept any combination of VDA-816 or VDA-818 modules
- Also permits the use of a redundant backup PS-800 supply
- Comes standard with a single PS-800 supply

**TR-800** $1198.00

**PS-800 Redundant Power Supply**
- Provides unregulated ± 16VDC to the TR-800 rack tray
- Additional PS-800 can be installed as a backup supply in case of primary supply failure

**PS-800** $261.00

**EQ-800** Equalizing module for VDA-816. Equalizes up to 1000' of Belden 8281

**EQ-800** $65.00

**EX-800** Extender card for servicing DA modules

**EX-800** $99.00

**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
- 1 looping differential or single-ended input and 6 outputs

**VDA-816** $395.00

**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
- 1 looping single-ended input and 6 outputs

**VDA-816S** $250.00

SELF-CONTAINED SERIES

**VDA-16 Video Distribution Amplifier**
- 1 looping video input
- 6 isolated video outputs
- Front panel output level adjustment
- Cable equalizer front panel adjustment
- Front panel LED power indicator
- BNC input/output connectors

**VDA-16** $306.00

**VDA-16WB Wide Band Video Distribution Amplifier**
- 40MHz video bandwidth
- 1 looping video input
- 6 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

**VDA-16WB** $396.00

**VDA-16WB Wide Band Video Distribution Amplifier**
- 40MHz video bandwidth
- 1 looping video input
- 6 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

**VDA-16WB** $396.00

**ADA-16 Audio Distribution Amplifier**
- 1 balanced/unbalanced audio input
- 6 balanced audio outputs
- Front panel output level adjustment
- Front panel LED power indicator
- Barrier strip input/output connectors

**ADA-16** $306.00

**PDA-16 Pulse Distribution Amplifier**
- 1 looping pulse input
- 6 pulse outputs
- Front panel input/output test points
- Front panel LED power indicator
- BNC input/output connectors

**PDA-16** $342.00

**SDA-14 Subcarrier Distribution Amplifier**
- 1 looping subcarrier input
- 4 isolated subcarrier outputs
- Regeneration technique removes noise and distortion from input signal
- Available for NTSC, PAL, PAL-M
- Front panel 0°-360° output phase adjust with 0° preset
- Front panel input/output test points
- Front panel LED power indicator
- BNC input/output connectors

**SDA-14** $420.00

Options for All Self-Contained Distribution Amplifiers

**DAT-1** Rackmount frame, accommodates 3 DAs

**DAT-2** Blank panel

Prices and Specifications Subject to Change Without Notice.
Wherever you look on a Viking case, you'll see superior strength and workmanship. Wood panels laminated with tough, scratch resistant ABS or stucco aluminum are supported by a double edged aluminum extrusion crimped at intervals for a permanent, non-yielding bond; a construction technique far stronger than conventional gluing, stapling or riveting.

Viking’s heavy-duty valances contribute to long life and a tight fit. And all but the smallest Viking cases are equipped with heavy-duty steel recessed hardware including spring loaded handles, twist locks and corners. All Viking hardware is attached with steel rivets and backed with steel washers; your assurance of greater strength and impact resistance.

The Carrylite is less expensive and 30% lighter than our ATA case. Carrylite is rugged...built of dependable heavy gauge ABS for exceptional strength yet still a beautiful and versatile way to carry your valuable equipment. Carrylite is adaptable in size for audio/visual, video, computers and musical instruments.
Vision™ Series System Packages
VIN-5A Vision 5 System Package Including:
3311-3 Single-stage ENG tripod with 100mm bowl
3313-3 Lightweight calibrated low-level spreader
3321-3S Soft, foam filled carrying case. Capacity: 18 lbs. Approximate shipping weight: 26 lbs. $325.00
Recommended for CCD Cameras in ENG Configuration.

VIN-5C Vision 5 System Package Including:
3311-3 Vision 5 ENG fluid pan and tilt head including single pan bar and clamp assembly and 100mm ball base
3313-3 Lightweight calibrated low-level spreader
3334-3 Lightweight calibrated low-level spreader. Capacity: 30 lbs. $4375.00

VIN-10A Vision 10 System Package Including:
3313-3 Vision 10 ENG fluid pan and tilt head including single pan bar and clamp assembly and 100mm ball base
3321-3S Soft, foam filled carrying case. Capacity: 18 lbs. Approximate shipping weight: 26 lbs. $2960.00
Recommended for CCD Cameras in ENG Configuration.

VIN-100C Vision 10 System Package Including:
3311-3 Heavy-duty flexible calibrated low-level spreader. Capacity: 55 lbs. $3895.00
3313-3 Lightweight calibrated low-level spreader. Capacity: 30 lbs. $4375.00

VIN-100C Vision 10 System Package Including:
3311-3 Vision 10 ENG fluid pan and tilt head including single pan bar and clamp assembly and 100mm ball base
3313-3 Lightweight calibrated low-level spreader. Capacity: 30 lbs. $4375.00

VIN-200C Vision 20 ENG/EFP System Package Including:
3313-3 Vision 20 ENG/EFP fluid pan and tilt head including telescoping pan bar and clamp assembly and 100mm ball base
3314-3 Heavy-duty flexible calibrated low-level spreader. Capacity: 55 lbs. Approximate shipping weight: 42 lbs. $6120.00
3315-3 Vision 20 ENG fluid pan and tilt head including single pan bar and clamp assembly and dual 100mm/150mm ball base

Vision Series

CAMERA SUPPORT EQUIPMENT

VIN-200SC Vision 20 Studio System Package Including:
Same as VIN-200S, also includes cable guards for 3315 dolly. Approximate shipping weight: 88 lbs. $7685.00
VIN-200S and VIN-200SC are Recommended for Portable Cameras With or Without Studio Viewfinder. Will Accommodate Below Lens Teleprompter.

Vision LT System Packages
VIN-LT Vision LT System Package Including:
3325-3S Vision 5 ENG fluid pan and tilt head including telescoping pan bar and clamp assembly and 100mm ball base
3360-3 2-stage carbon fiber tripod with 100mm bowl
3313-3 Lightweight spreader (black)
4500-3 Vision ENG carrying strap
3340-3 Soft, foam-filled carrying case. Capacity: 30 lbs. $3895.00
Recommended for CCD Cameras in ENG Configuration.

VIN-10LT Vision 10LT System Package Including:
3321-3S Vision 10 ENG fluid pan and tilt head including telescoping pan bar and clamp assembly and 100mm ball base
3360-3 2-stage carbon fiber tripod with 100mm bowl
3313-3 Lightweight spreader (black)
4500-3 Vision ENG carrying strap
3340-3 Soft, foam-filled carrying case. Capacity: 30 lbs. $5585.00
Recommended for CCD Cameras in Studio Configuration or Camcorders.

Vision CV-5 Corporate System Package
CV-5 Vision CV-5 System Package Including:
Vision 5 fluid pan and tilt head complete with single pan bar and clamp assembly and 100mm ball base. Single-stage corporate tripod with mid-level spreader and carpet feet. $1980.00
Corporate floor spreader $150.00
Corporate dolly with cable guards $400.00

Prices and Specifications Subject to Change Without Notice.
CAMERA SUPPORT
EQUIPMENT

VISION* SERIES
Pan and Tilt Heads

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3325-3S</td>
<td>Vision 5 ENG fluid pan and tilt head, complete with single pan bar, pan bar clamp and 100mm ball base</td>
<td>$1735.00</td>
</tr>
<tr>
<td>3325-3N</td>
<td>Vision 5 ENG fluid pan and tilt head, complete with single pan bar, pan bar clamp and flat base to accept intermediate adaptors</td>
<td>$1840.00</td>
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</table>

(Please specify for use with other than 100mm ball)

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3321-3S</td>
<td>Vision 10 ENG fluid pan and tilt head, complete with single pan bar, pan bar clamp and 100mm ball base</td>
<td>$2555.00</td>
</tr>
<tr>
<td>3321-3N</td>
<td>Vision 10 ENG fluid pan and tilt head, complete with single pan bar, pan bar clamp and flat base to accept intermediate adaptors</td>
<td>$2360.00</td>
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</tbody>
</table>

(Please specify for use with other than 100mm ball)

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3319-3</td>
<td>Pan and Tilt Heads</td>
<td>$1000.00</td>
</tr>
<tr>
<td>3314-3</td>
<td>Pan and Tilt Heads</td>
<td>$1050.00</td>
</tr>
<tr>
<td>3315-3A</td>
<td>Pan and Tilt Heads</td>
<td>$1050.00</td>
</tr>
</tbody>
</table>

Pan bar and clamp assembly for 3321-3 Vision 10 and 3322-3 Vision 20

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3322-3S</td>
<td>Vision 20 ENG/EFP fluid pan and tilt head, complete with single pan bar, pan bar clamp and 150mm ball base</td>
<td>$190.00</td>
</tr>
<tr>
<td>3322-3N</td>
<td>Vision 20 ENG/EFP fluid pan and tilt head, complete with single pan bar, pan bar clamp and flat base to accept intermediate adaptors</td>
<td>$190.00</td>
</tr>
</tbody>
</table>

(Please specify for use with other than dual 100mm/150mm ball)

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3259-3S</td>
<td>Vision 30 EFP fluid pan and tilt head, complete with single pan bar, pan bar clamp and 150mm ball base</td>
<td>$865.00</td>
</tr>
<tr>
<td>3259-3F</td>
<td>Vision 30 EFP fluid pan and tilt head, complete with single pan bar, pan bar clamp and flat base to accept intermediate adaptors</td>
<td>$7230.00</td>
</tr>
</tbody>
</table>

(Please specify for use with other than 150mm ball)

Tripods/Pedestals

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3310-3</td>
<td>Vision 2-stage ENG tripod with 100mm ball base</td>
<td>$1200.00</td>
</tr>
<tr>
<td>3311-3</td>
<td>Vision single-stage ENG tripod with 100mm ball base</td>
<td>$1185.00</td>
</tr>
<tr>
<td>3312-3</td>
<td>Vision 2-stage EFP tripod with 150mm ball base</td>
<td>$1220.00</td>
</tr>
<tr>
<td>3316-3</td>
<td>Vision mid-level spreader tripod with 150mm ball base</td>
<td>$380.00</td>
</tr>
<tr>
<td>3317-3</td>
<td>Vision ENG baby legs</td>
<td>$900.00</td>
</tr>
<tr>
<td>3320-3C</td>
<td>Vinten studio pedestal with self-plumbing pneumatic elevation unit, track lock, cable guards and 100mm bowl</td>
<td>$2415.00</td>
</tr>
<tr>
<td>3320-3B</td>
<td>Vision field/studio pedestal without track lock and cable guards. Capacity: 44 lbs</td>
<td>$210.00</td>
</tr>
<tr>
<td>4500-3</td>
<td>Carrying strap for Vision ENG tripods (must be specified at time of order)</td>
<td>$135.00</td>
</tr>
</tbody>
</table>

Spreaders

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3313-3</td>
<td>Vision lightweight calibrated low-level spreader</td>
<td>$435.00</td>
</tr>
<tr>
<td>3314-3</td>
<td>Vision heavy-duty flexible calibrated low-level spreader</td>
<td>$380.00</td>
</tr>
</tbody>
</table>

Dollies

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3319-3B</td>
<td>Vision folding/castoring dolly with 5&quot; wheels for Vision 5 and Vision 10 systems (recommended for remote use)</td>
<td>$635.00</td>
</tr>
<tr>
<td>3319-3C</td>
<td>Vision folding/castoring dolly with 4&quot; wheels and cable guards for Vision 5 and Vision 10 systems (recommended for studio use)</td>
<td>$610.00</td>
</tr>
<tr>
<td>3315-3</td>
<td>Vision folding/castoring dolly with 5&quot; wheels</td>
<td>$860.00</td>
</tr>
<tr>
<td>3315-3A</td>
<td>Vision folding/castoring dolly with cable guards and 5&quot; wheels</td>
<td>$1050.00</td>
</tr>
</tbody>
</table>

Accessories

Pan Bar/Pan Bar Clamp Assemblies

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3319-26</td>
<td>Pan bar and clamp assembly for 3325-3 Vision 5</td>
<td>$100.00</td>
</tr>
<tr>
<td>3319-21</td>
<td>Pan bar and clamp assembly for 3321-3 Vision 10 and 3322-3 Vision 20</td>
<td>$100.00</td>
</tr>
<tr>
<td>3319-31</td>
<td>2-part pan bar and clamp assembly for 3321-3 Vision 10 and Vision 20 (20&quot; long)</td>
<td>$190.00</td>
</tr>
<tr>
<td>3319-29</td>
<td>Pan bar and clamp assembly for 3325-3 Vision 30</td>
<td>$210.00</td>
</tr>
<tr>
<td>3329-30</td>
<td>Vision 30 clamp for Classic pan bar</td>
<td>$105.00</td>
</tr>
<tr>
<td>3308-15B</td>
<td>Classic pan bar for Vision 30 (22&quot; long)</td>
<td>$145.00</td>
</tr>
</tbody>
</table>

Adaptors

Quick Release Adaptors

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3763-3/11</td>
<td>Small auto quick release wedge assembly</td>
<td>$390.00</td>
</tr>
<tr>
<td>3761-3/13</td>
<td>Vision 30 auto quick release wedge assembly</td>
<td>$475.00</td>
</tr>
</tbody>
</table>

Base Adaptors

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3109G</td>
<td>Vision Gitzo base (Vision 5 and Vision 10 heads)</td>
<td>$110.00</td>
</tr>
<tr>
<td>10065G</td>
<td>Vision Gitzo base (Vision 20 and Vision 30 heads)</td>
<td>$130.00</td>
</tr>
<tr>
<td>3104-3</td>
<td>Vision 150mm ball base</td>
<td>$265.00</td>
</tr>
<tr>
<td>3107-3</td>
<td>Vision 100mm ball base</td>
<td>$205.00</td>
</tr>
<tr>
<td>3116-3</td>
<td>Vision Samson adaptor</td>
<td>$260.00</td>
</tr>
<tr>
<td>3750-3</td>
<td>Vision Mitchell base</td>
<td>$315.00</td>
</tr>
<tr>
<td>3752-3</td>
<td>O'Connor claw ball base (100mm)</td>
<td>$325.00</td>
</tr>
<tr>
<td>3322-900SP</td>
<td>Dual 100mm/150mm ball base (for use with Vision 20 only)</td>
<td>$175.00</td>
</tr>
<tr>
<td>3322-901SP</td>
<td>Flat base to convert Vision 20 to other than dual 100/150mm ball (used in conjunction with base adaptors listed above)</td>
<td>$240.00</td>
</tr>
<tr>
<td>3259-29</td>
<td>Flat base to convert Vision 30 to other than 150mm ball (used in conjunction with base adaptors listed above)</td>
<td>$240.00</td>
</tr>
<tr>
<td>3330-11</td>
<td>Adapter to convert Vision 5 and Vision 10 100mm ball base to flat base (used in conjunction with base adaptors listed above)</td>
<td>$95.00</td>
</tr>
<tr>
<td>3330-12</td>
<td>Vision 5 and Vision 10 hot pod adaptor (used in conjunction with 100mm ball base)</td>
<td>$120.00</td>
</tr>
<tr>
<td>3330-14</td>
<td>Vision 20 hot pod adaptor (used in conjunction with dual 100mm/150mm ball base)</td>
<td>$120.00</td>
</tr>
<tr>
<td>3330-16</td>
<td>Vision 100mm Hi-Hat adaptor</td>
<td>$250.00</td>
</tr>
<tr>
<td>3321-900SP</td>
<td>Top slide plate with two 3/8&quot; fixing screws for Vision 10 and Vision 20</td>
<td>$110.00</td>
</tr>
<tr>
<td>3326-901SP</td>
<td>Top slide plate with two 3/8&quot; fixing screws for Vision 5</td>
<td>$105.00</td>
</tr>
</tbody>
</table>

Prices and Specifications Subject to Change Without Notice.

395
### Prices and Specifications Subject to Change Without Notice.

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**CLASSIC™ SERIES**

**Pan and Tilt Heads**
All prices include 7/8" bolt fixing to camera, full size pan bar, pan bar clamp and base fitting to pedestal and/or tripod.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Capacity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3277-3</td>
<td>Mark 7A fluid cam</td>
<td>250 lbs.</td>
<td>$6,600.00</td>
</tr>
<tr>
<td>3084-14</td>
<td>Female wedge adaptor for Mark 7A</td>
<td>250 lbs.</td>
<td>$2,790.00</td>
</tr>
<tr>
<td>3716-3</td>
<td>Mark 5 cam</td>
<td>180 lbs.</td>
<td>$4,150.00</td>
</tr>
<tr>
<td>3716-13</td>
<td>Female wedge adaptor for Mark 5</td>
<td>790.00</td>
<td></td>
</tr>
<tr>
<td>3076-3</td>
<td>Petrel Mark II fluid link</td>
<td>100 lbs.</td>
<td>$2,995.00</td>
</tr>
<tr>
<td>3078-3B</td>
<td>Swan fluid post</td>
<td>50 lbs.</td>
<td>$5,500.00</td>
</tr>
</tbody>
</table>

**Accessories — Pan and Tilt Heads**

**MARK 7A and MARK 5**

**Adaptor Plates**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3062</td>
<td>Full size male wedge plate</td>
</tr>
<tr>
<td>3089-3</td>
<td>Adjustable wedge extender (sandwiches between female wedge adaptor and top of head)</td>
</tr>
<tr>
<td>3089-156</td>
<td>3008-7A Male/Female Quick Release Adaptor</td>
</tr>
<tr>
<td>1123</td>
<td>Ilagami &quot;HK&quot; series offset adaptor</td>
</tr>
<tr>
<td>1134</td>
<td>Ilagami HK-322/357 and Hitachi SK-110 series offset adaptor</td>
</tr>
</tbody>
</table>

**Pan Bar/Pan Bar Clamp Assemblies**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Capacity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3076-13AF</td>
<td>Full size female wedge adaptor including 1 each: 3308-7A Male/Female Quick Release Adaptor</td>
<td>100 lbs.</td>
<td>$2,995.00</td>
</tr>
<tr>
<td>3076-3</td>
<td>Petrel Mark II fluid link</td>
<td>100 lbs.</td>
<td>$2,995.00</td>
</tr>
<tr>
<td>3078-3B</td>
<td>Swan fluid post</td>
<td>50 lbs.</td>
<td>$5,500.00</td>
</tr>
</tbody>
</table>

**PETREL AND SWAN**

**Base Fittings (included in price of head)**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3104-3</td>
<td>150mm ball base</td>
</tr>
<tr>
<td>3750-3</td>
<td>Mitchell base</td>
</tr>
</tbody>
</table>

**NOTE:** Other base fittings available upon request.

**Male/Female Quick Release Adaptor**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Capacity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3076-13A</td>
<td>Full size female wedge adaptor including 1 each: 3308-7A full size pan bar and 3716-28 clamp for use on 3076-3 Petrel (requires 3052 male wedge plate)</td>
<td>$1,170.00</td>
<td></td>
</tr>
</tbody>
</table>

**Hi-Hat/Adaptors for Tripods and Pedestals**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Capacity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3080</td>
<td>Pro Jr. with 4 1/2&quot;, 6&quot; or 8&quot; rise (please specify)</td>
<td>240</td>
<td></td>
</tr>
<tr>
<td>3085-3</td>
<td>Standard Mitchell with 2 1/2&quot; rise</td>
<td>245.00</td>
<td></td>
</tr>
<tr>
<td>3165-3</td>
<td>8&quot; spacer with Vinten 4 bolt fixing</td>
<td>$350.00</td>
<td></td>
</tr>
<tr>
<td>1193</td>
<td>Mitchell with 4 1/2&quot;, 6&quot; or 8&quot; rise (please specify)</td>
<td>315.00</td>
<td></td>
</tr>
<tr>
<td>1205</td>
<td>O'Connor claw bowl with 4 1/2&quot;, 6&quot; or 8&quot; rise (please specify)</td>
<td>$500.00</td>
<td></td>
</tr>
<tr>
<td>1210</td>
<td>100mm bowl with 4 1/2&quot;, 6&quot; or 8&quot; rise (please specify)</td>
<td>$390.00</td>
<td></td>
</tr>
</tbody>
</table>

**Studio Pedestals**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Capacity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3702-3</td>
<td>Fulmar extended range pneumatic</td>
<td>360 lbs.</td>
<td>$28,850.00</td>
</tr>
<tr>
<td>3741-3</td>
<td>Tem standard range pneumatic</td>
<td>290 lbs.</td>
<td>$14,700.00</td>
</tr>
<tr>
<td>3287-3B</td>
<td>Hawk extended range pneumatic</td>
<td>218,000 lbs.</td>
<td>$15,000.00</td>
</tr>
<tr>
<td>3197-3</td>
<td>Teal standard range pneumatic</td>
<td>160 lbs.</td>
<td>$13,150.00</td>
</tr>
<tr>
<td>3328-3C</td>
<td>Osprey 2-stage castoring lightweight pneumatic</td>
<td>120 lbs.</td>
<td>$11,725.00</td>
</tr>
<tr>
<td>3328-3</td>
<td>Osprey 2-stage castoring lightweight pneumatic</td>
<td>120 lbs.</td>
<td>$8,000.00</td>
</tr>
<tr>
<td>3323-3</td>
<td>Osprey single-stage steering pedestal</td>
<td>150 lbs.</td>
<td>$11,200.00</td>
</tr>
<tr>
<td>3324-3</td>
<td>Osprey single-stage castoring pedestal</td>
<td>150 lbs.</td>
<td>$7,250.00</td>
</tr>
<tr>
<td>3286-3E*</td>
<td>MidiPed 2-piece lightweight pneumatic</td>
<td>100 lbs.</td>
<td>$6,350.00</td>
</tr>
<tr>
<td>3806-1135</td>
<td>Nitrogen regulator with hose and adaptor for all pedestals</td>
<td>645.00</td>
<td></td>
</tr>
</tbody>
</table>

**Remote/Portable Equipment**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3329-3C</td>
<td>Osprey folding/steering/crabbing dolly with 5&quot; wheels, cable guards and tiller</td>
<td>$5,340.00</td>
</tr>
<tr>
<td>3287-3C</td>
<td>Hawk extended range pneumatic pedestal complete with rubber cushion wheels and carrying handles, without cable guards</td>
<td>175 lbs.</td>
</tr>
<tr>
<td>3287-61</td>
<td>Cable guards (set of 3) for 3207-3C Hawk</td>
<td>$380.00</td>
</tr>
</tbody>
</table>

**Tripods and Dollies**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>3063-3</td>
<td>Combination tripod/elevation unit and dolly (price includes head adaptor), please specify 1 from: &quot;Hi-Hat/adaptors for tripods and pedestals&quot;</td>
<td>100 lbs.</td>
</tr>
<tr>
<td>3063-3A</td>
<td>Combination tripod/elevation unit and dolly with cable guards</td>
<td>100 lbs.</td>
</tr>
<tr>
<td>3206-3B</td>
<td>5/8&quot; (short) heavy-duty tripod with stabilizer (price includes Mitchell Hi-Hat)</td>
<td>120 lbs.</td>
</tr>
<tr>
<td>3207-3B</td>
<td>Standard heavy-duty tripod with stabilizer (price includes Mitchell Hi-Hat)</td>
<td>120 lbs.</td>
</tr>
<tr>
<td>3327-3</td>
<td>Osprey casting dolly with 5&quot; wheels and cable guards</td>
<td>150 lbs.</td>
</tr>
<tr>
<td>3737-3</td>
<td>Eagle extended range (crank operated) for 3206-3B</td>
<td>1,850.00</td>
</tr>
<tr>
<td>3689-3</td>
<td>Eagle extended range (crank operated) for 3207-3B</td>
<td>1,850.00</td>
</tr>
<tr>
<td>3719-3</td>
<td>Heavy-duty dolly for 3206-3B and 3207-3B</td>
<td>1,850.00</td>
</tr>
<tr>
<td>3719-3A</td>
<td>Heavy-duty dolly for cable guards for 3206-3B and 3207-3B</td>
<td>1,850.00</td>
</tr>
</tbody>
</table>

**Penguin Base, Cranes, Crane Arms**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>3067-3</td>
<td>Dolphin crane arm (with Mitchell base, if required)</td>
<td>50 lbs.</td>
</tr>
<tr>
<td>3167-3</td>
<td>Short Dolphin crane arm (with Mitchell base, if required)</td>
<td>50 lbs.</td>
</tr>
<tr>
<td>3267-3A</td>
<td>Merlin remote arm featuring standard high level platform and viewfinder support bracket</td>
<td>40 lbs.</td>
</tr>
<tr>
<td>3267-3</td>
<td>Merlin remote arm featuring standard low-level platform and viewfinder support bracket</td>
<td>40 lbs.</td>
</tr>
<tr>
<td>3510-3</td>
<td>Penguin II tracking base including T-bar steering tiller, camera-man's seat, crab/steering functions, brakes, counterbalance, bracket with weights and special adaptor to accept crane arms, pan and tilt heads or 3699 elevation unit</td>
<td>44 lbs.</td>
</tr>
<tr>
<td>3743-3</td>
<td>Keetrel crane with manual jib arm</td>
<td>450 lbs.</td>
</tr>
<tr>
<td>3764-3</td>
<td>Keetrel crane with powered jib arm</td>
<td>450 lbs.</td>
</tr>
</tbody>
</table>

**NOTE:** When calculating total load for pedestals and cranes, include weight of camera, lens, pan and tilt head, prompter and accessories. Cameraman's weight must also be allowed for on Keetrel cranes.
**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:** Asm. 57 lbs. truck

*Note: Camera platform is predrilled for elevator column*

**EFP-17** $436.00

**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:** 24"
- **Maximum Height:** 70"
- **Elevation Adjustment:** 16"
- **Geared Center Post:** 1 1/4" dia.
- **Leg Diameters:** 1 1/16"—1 1/4"
- **Head Tilt Angles:** 60° up, 90° down
- **Head Pan Rotation:** 360°
- **Weight:** 8 lbs.
- **Material & Finish:** Clear and Black anodized aluminum

**Self-Locking Gear Mechanism**

**DG/H4/TM** $218.00

**DG/TM/FM-15 Fluid Head**

**Specifications**
- **Camera platform:** 4" x 4 1/2"
- **Accommodates cameras up to 25 lbs.**
- **Dual handle capability**
- **Positive tilt lock and pan lock**
- **Leakproof and dustproof sealing**
- **Easily visible bubble level gauge**

- **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)** $436.00

**IFP-39 (Non-Folding) Industrial Field Production Cart**
The IFP-39 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.

**Specifications**
- **Upper Platform:** 39"H x 29" x 19"
- **Center Platform:** 28"H x 23" 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'

*Note: Upper platform is pre-drilled for elevator column.*

**IFP-39** $398.00

**Accessories**
- Receptacle and Cord Reel, Elevator Column, Friction Head, or Fluid Head

**Prices and Specifications Subject to Change Without Notice.**
ENG-1 Folding Video Production Cart
Equipped with large 12" wheels, the lightweight ENG-1 offers excellent mobility to video producers using 1/2" systems. Its camera platform is pre-drilled for an optional elevator column. Sloping 14" x 29" platform with two 5' straps and two adjustable brackets holds 9" monitor and VCR. Platforms are laminate material with protective plastic edge strip. 4" swivel casters lock for safety. Holds 150 lbs. of gear and folds to 42" x 23" x 12" for automobile storage. $300.00

CAM-10 Folding Video Production Cart With Fluid Head
Comes with crank adjustable column and micro-fluid head pre-mounted on 6" x 17" x 36" high camera platform. Head holds 15 lb. camera, adjusts 47"-63" height, has full pan and 180° tilt. Monitor platform measures 16" x 24" x 36" high and has two 6' straps. Lower 15" x 18" platform with 5' strap and bracket locks in either slant or horizontal position which allows 16" headroom. Tough laminate platforms have protective edging. 10" wheels on 16" wheelbase assure safe, easy movement. 4" swivel casters lock. Holds 150 lbs. Folds to 40" x 25" x 12". $545.00

GR-3 Folding Video Production Cart With Fluid Head
This lightweight folding cart for smaller systems has a pre-mounted telescoping column with fluid head that supports 10 lb. camera, adjusts 43"-82" height, has full pan and 180° tilt. Monitor column measures 16" x 33" high and has three 4' straps and three brackets to hold equipment. 8" wheels and 16" wheelbase ensure easy passage over curbs, steps and obstacles. 4" swivel casters lock for safety. Holds 130 lbs. Folds to 41" x 21" x 10" for automobile storage. $436.00

2900 Upper Platform Mount Projector Stand
Video projectors up to 24" wide can be securely mounted on the upper platform of this rugged stand, which has a tilt range of -4° to +13°. Large 24.5" by 29.5" middle and lower platforms hold professional-size VCR, cables and other equipment. Frame is 1" square steel tube and platform surfaces are tough laminate. Two 8' straps secure equipment during transit while large 5" locking swivel casters assure mobility. Overall size: 30" H x 24.5" W x 29.5" D. $360.00

3400 Upper Platform Mount Projector Stand
Similar to the 2900 stand, this larger unit holds video projectors up to 15"H x 31" W x 29"D on a pivoted center platform which can be tilted from -3° to +21°. The large 27.5" x 29.5" top shelf offers plenty of space for professional-type VCRs and control equipment at convenient 30" working height. Handy bottom shelf holds cables and accessories. The 3400 carries up to 250 lbs. of gear on large, 5" locking swivel casters. Overall size: 30" H x 34" W x 29.5" D. $360.00

2930 Center Platform Mount Projector Stand
This 3-tube projector stand accommodates video projectors up to 15"H x 25" W x 29"D on a pivoted center platform which can be tilted from -3° to +11°. The large 27.5" x 29.5" top shelf offers plenty of space for professional-type VCRs and control equipment at convenient 30" working height. Handy bottom shelf holds cables and accessories. The 2930 transports up to 250 lbs. on large, 5" locking swivel casters and has two 8" buckle-end straps to secure equipment. Overall size: 30" H x 28" W x 29.5" D. $322.00

3430 Center Platform Mount Projector Stand
Similar to the 2930 stand, this larger unit holds video projectors up to 15"H x 31" W x 29"D on a pivoted platform with adjustable tilt from -3° to +21°. The larger top shelf provides 34" x 29.5" of surface area for VCRs and control equipment. Both top and center platforms have 8" buckle-end restraints to secure equipment. The 3430 carries up to 250 lbs. of gear on large, 5" locking swivel casters. Overall size: 30" H x 34" W x 29.5" D. $360.00

Prices and Specifications Subject to Change Without Notice.
The Microphone Multicable Components Group

- Multipin disconnectible convenience and versatility
- Over 1200 products to choose from
- Nearly limitless system configurations
- Easy adaptability to a wide variety of applications
- Rugged durability
- Expansion capabilities at any time you choose
- Unrivaled portability and modular flexibility
- Simple set-up and tear-down procedures to optimize labor time
- Available in 9 different channel sizes: 3, 6, 9, 12, 15, 19, 27, 36 and 50

The Microphone Multicable Components Group is a family of rugged and versatile components that has virtually revolutionized the design and implementation of microphone multicable systems.

Modular flexibility is the hallmark of the Microphone Multicable Components Group. You can design a system to meet your immediate needs and then easily expand on it in the future. Components Group products, available in an unparalleled range of lengths and capacities, allow you complete freedom in configuring and reconfiguring your system. A simple change in length or termination enables your system to adapt to any application—quickly, efficiently and economically. The base on which you establish your system allows you almost limitless expansion capabilities at any time you choose.

And non-limiting system configurations are only a part of the components concept benefits. System components “disconnect” into easily managed, modular units for unrivaled portability. Set-up and tear-down procedures are simplified to optimize labor time.

The Components Group can be divided into 4 basic categories: Input Units, including MultiBoxes and MultiRacks; Transformer Isolated Microphone Splitters—available in both box and rack configurations; Main and Extension Cables—MultiTrunks; and Interface Components, consisting of MultiTails and Chassis Mount Multipin Connectors.

Components Group products are designed in an unmatched variety of sizes to satisfy every system requirement. Models support 3, 6, 9, 11, 15, 19, 27, 36 and 50 individual channels.

Microphone Multicable Components Group Products

- **MultiBoxes**
  Floor or wall mount termination components featuring XLR-type chassis mount connectors and 1, 2, 3 or 4 multipin connectors.

- **MultiRacks**
  Rackmount counterparts to MultiBoxes. Upfront connector identification and rack-mounting are key features.

- **MultiTails**
  Multipin to XLR-type line connectors in a fan-out arrangement provide direct plugging to equipment. Available in 4’ and 8’.

- **MultiTrunks**

- **Microphone Splitters**
  Transformer isolated microphone splitters in a wide variety of configurations, featuring genuine Jensen Transformers for optimum performance. Available in both MultiBox and MultiRack mounting styles, with either XLR-type or multipin inputs. 1, 2 or 3 isolated outputs are featured in addition to the direct output, which is phantom power compatible.

- **LineBoxes**
  Chassis mount XLR-type connectors in a stagebox wired to a length of multipair cable terminated in a multipin connector. Combines the features of MultiBoxes and MultiTrunks in a partially hardwired configuration.

- **LineTails**
  Fan-out XLR-type line connectors wired to a length of multipair cable terminated in a multipin connector. Combines the features and advantages of MultiTails and MultiTrunks in a flexible, economical configuration.

- **Multipin Connectors**
  Available pre-wired for installation in consoles and other equipment. Complete connector kits are available for applications where cables must be terminated in the field.

Prices and Specifications Subject to Change Without Notice.
HUB1000 TBC Control System
Central arbitration router allowing up to 64 TBCs to be controlled from up to 8 control panels. Following options are required: HCP300 Control Panel (minimum 1, maximum 8), HUB1000 Crosspoint Card, each card provides interface to 8 TBC remotes (minimum 1, maximum 8), SDR300/SDR350/SDR400/SDR450 TBC remotes, 1 remote required for each TBC to be controlled (minimum 1, maximum 64).

HUB1000 TBC control system ........................................... $5550.00
HCP400 EDL control panel ................................................ $1800.00
HUB 100 Crosspoint card .................................................. $1100.00
SDR300/SDR350/SDR400/SDR450 ....................................... See Above
Interface cable, HCP300 to HUB1000 ................................ *
Interface cable, TBC remote to HUB1000 ............................ *
Interface cable, TBC remote to TBC ...................................

SDR300 TBC Digital Remote Control
Digital remote for control of 1 TBC. Includes serial communications port for use with HUB1000 TBC control system. May be ordered with optional "Auto Color Framing" where applicable. No additional options required.
Auto color framing ......................................................... $975.00
Auto color framing ......................................................... $75.00
Interface cable, SDR300 to TBC ....................................... *
Interface cable, SDR300 to TBC ....................................... *

SDR350 Digital TBC Remote
Same as SDR300, less front panel controls. Intended for use as cost reduced TBC remote in HUB1000 based systems. Must be controlled via HUB1000.
Interface cable, SDR350 to TBC ....................................... *
Interface cable, SDR350 to HUB1000 ................................. *

SDR400 TBC Digital Remote Control
Digital remote for control of proc amp adjustments for D2 format VCRs. Equivalent to SDR300 in form and function. Includes serial communications port for use with HUB1000 TBC control system. No additional options required.
Interface cable, SDR400 to VCR ....................................... *

DR400 Digital TBC Remote
Same as SDR400, less communications port. Intended for stand-alone control of 1 VCR employing D2 format. May be field upgraded to SDR400. No additional options required.
Interface cable, DR400 to VCR ....................................... *

SDR450 Digital Remote
Same as SDR400, less front panel controls. Intended for use as cost reduced remote in HUB1000 based systems. Must be controlled via HUB1000.
Interface cable, SDR450 to VCR ....................................... *

Accessories
RM100 4 device rackmount ............................................. $100.00
BL100 Blank for RM 100 ............................................... $15.00

MTBC1500 Multiple TBC/D2 Controller
Provides control of 8 TBCs from up to 2 control panels. Basic system includes 1 HCP400 control panel. Comes with D2 or Zeus software, including Digimatch", which allows matching back to setup of any memory of any tape in any machine ........................................ $6900.00

ZX400 4 TBC/D2 Control System
Cost efficient 4 TBC/D2 controller providing control of up to 4 TBC/D2 units. Basic unit includes 3 analog TBC protocols and EDL or GVG200 interface. Expandable to 8 TBC controller. Includes Digimatch ......................................................... $3700.00

TM100 TBC Task Master (Patent Pending)
Automatic TBC adjustment for gain, setup, chroma and hue in 5 seconds or less. Interfaces with any Zaxcom TBC/D2 control system . . . . . $2400.00

APV100 Audio Preview Mixer
• Allows monitor mixing of up to 5 channels of audio from Betacam D2 or D1 machines in an edit session • Basic unit consists of 3 analog TBC protocols and EDL or GVG200 interface. Expandable to 8 TBC controller. Includes Digimatch ......................................................... $3500.00

* Zaxcom provides the required interconnect cable diagrams with all products. As a service to our customers cable fabrication is available at cost. Specify cable length and type of equipment to which connection will be made.

Prices and Specifications Subject to Change Without Notice.
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<td>CMT</td>
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<td>CWA 120V, 750W</td>
<td>$41.85</td>
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<td>CWA-5 125V, 750W</td>
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Note: -5 Represents Voltage Increased By 5%
WICO

STAGE/STUDIO LAMPS

svutANIA CUD

°polio

GENERAL

ELECTRIC

A UDIO VISUAL

Ordering
Code

Price

BFE 120V, 750W
BFK/BFL 120V, 750W
BNF 120V, 75W
BRH 120V, 1000W
BSF 25V, 280W
BTL 120V, 500W
BTM 120V, 500W
BTN 120V, 750W
BTP 120V, 750W
BTR 120V, 1000W
BVR 120V, 30W
BVT 120V, 1000W
BVV 120V, 1000W

$ 45.28
45.28
8.49
49.93
19.00
47.27
47.27
47.04
47.69
53.53
9.68
73.78
73.78
91.36

BVW 120V, 2000W
BWA 120V, 2000W
BWF 120V, 2000W
BWM 120V, 750W
BWN 120V, 1000W
CAC/CAJ 12V, 50W
CAX/CAW 120V, 50W

130.71
141.51

97.87
106.62
11 96
11 85

See CBX
16.67
15.75
14.96
16.74
CEA/CEB/CDK 120V, 100W. .19.16
15.19
CEM 120V, 120W
16.22
CEW/CFC 120V, 150W
19.89
CHK 120V, 150W
17.04
CLS/CLG 120V, 300W

CBS

CBX/CBS 120V, 75W
CDD 120V, 100W
CDJ 120V, 100W
CDS/CDX 120V, 100W

CLX/CMB 120V, 300W
CMV/CMT 120V, 300W .
CWZ 120V, 1500W
CXZ 120V, 1500W
CYV 120V, 1000W
CYX 120V, 2000W
DCT 120V, 2000W
DEB 120V, 500W
DMX 120V, 500W
DNS/FMC 120V, 500W
DNT/FMD 120V, 750W

19.41
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119.64
93.82
129.04
146.58

26.84
34.69

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. .57.64
DNV/FME 120V, 1000W. . . .60.49
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62.22

DNW 120V, 500W

42.51
DPJ 120V, 750W
63.24
DPW 120V, 1000W
565.07
DPY 120V, 5000W
DRB/DRC 120V, 1000W . . .28.62
DRB/DRC-5 125V, 1000W .28.62
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402

Ordering
Code
DRS 120V, 1000W
DRS -5 125V, 1000W

DRW 120V, 1000W
DSB 120V, 1000W
DTA 120V, 1500W
DTJ 120V, 1500W
DTY 120V, 1000W
DVS 130V, 500W
DVY 120V, 650W
DVY-5 125V, 650W

DWT 120V, 1000W
DWY/FAB 120V, 650W
DXN 120V, 1000W
DXW 120V, 1000W
DXX 240V, 800W
DYG 30V, 250W
DYH 120V, 600W
DYH-5 125V, 600W
DYR 220V, 650W

Price
$

32.86
32.86
55.40
64.19

98.42
81.58
1095.69
15.27
31.33
31.33
95.91
.33.33

47.25
44.62
30.05
29.89
30.52
30.52
39.46
DYS/DYV/BHC 120V, 600W .25.46
DYS/DYWBHC-5 125V, 600W .25.46
25.98
EAD 120V, 60W
19.41
EAJ 12V, 35W
42.84
EAK 120V, 100W
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EGC 120V, 500W
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EGE 120V, 500W
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EGF 120V, 750W
68.29
EGG 120V, 750W
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EGJ 120V, 1000W
74.09
EGK 120V, 1000W

EGM 120V, 1000W
EGN 120V, 500W
EGR 120V, 750W
EGT 120V, 1000W
EHC/EHB 120V, 500W
EHD 120V, 500W
EHF 120V, 750W
EHG 120V, 750W
EHM 120V, 300W
EHP 120V, 300W
EHR 120V, 400W
EHV 120V, 325W
EHZ 120V, 300W
EJD 185V, 1000W
EJG 120V, 750W
EKB 120V, 420W
EKD 120V, 650W
ELJ 120V, 1050W

101.96

57.53
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55.07
60.89
60.89
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46.49
41.18
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54.31

50.24
43.38
42.22
32.78

Ordering
Code
EMD 120V, 750W
ESL 120V, 150W

ESM 120V, 250W
ESN 120V, 100W
ESP 120V, 150W
ESR 120V, 100W
ESS 120V, 250W
ETB 120V, 250W
ETC 120V, 150W
ETD 120V, 100W
ETE 120V, 100W
ETF 120V, 150W
ETG 120V, 150W
ETH 120V, 150W
EVR 120V, 500W
EYH/FKT 120V, 250W
EYT 120V, 750W
EYV 130V, 500W

EYW 130V, 500W
EYX 120V, 500W
FAD 120V, 650W
FBG/FBD 120V, 500W
FBV 30V, 250W
FBW 30V, 350W
FBX 120V, 650W

Price
$ 54.18
36.93
39.07
39.71
36.93
39.71
24.64
39.07
24.64
42.38
42.38
38.27
23.04
38.27
39.07
26.15

49.76
40.07
35.18

40.07
25.64
35.93
49.42
53.73
33.58
47.96

FBY 120V, 1000W
FCA 120V, 650W
FCB 120V, 600W
FCB-5 125V, 600W
FCL 120V, 500W
FCM 120V, 1000W
FCV 120V, 1000W
FCZ 120V, 500W
FDA 120V, 400W
FDB 120V, 1500W
FDF 120V, 500W
FDN 120V, 500W
FEL 120V, 1000W
FEP 220V, 1000W
FER 120V, 1000W
FEV 120V, 200W
FEX 220V, 2000W
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FGT 120V, 1500W

117.76
111.64
31.26
81.81

FGW 24V, 150W
FHM 120V, 1000W

27.33
37.53

47.19

Prices and Specifications Subject to Change Without Notice.

31.36

35.93
35.93
15.27

33.82
68.29
43.04
34.29
63.67
33.82
32.62
56.60
63.78
66.44
30.20


COMPUTER • PRESENTATION • GRAPHICS
Section
Photoshop™ Software Macintosh® Version
Photoshop is the affordable Macintosh image-processing program with enough power and versatility to be used as a paint, pre-press, color correction and darkroom system, all in living 24-bit color.

Whether you start with scanned photographs, slides, electronic artwork or from scratch, Photoshop's full range of filters, painting, drawing and selection tools give you the artistic control and precision you've been missing. Paint original designs with soft-edged or custom brushes, textures or patterns. Retouch photos with a range of airbrushing tools or extend a photo's background quickly with the rubber stamp tool. Blend, layer or fill multiple images for mosaic, photo-realistic or impressionistic effects.

It's all up to you. Bitmapmed and grayscale pictures, indexed color and 24-bit images. Because the Photoshop program uses virtual memory, you can work with practically any image on a 2M byte Macintosh. Plus, Photoshop converts between different formats and file types, so you don't have to scrap the electronic artwork you've already created. You'll have automatic color trapping, retouching and color correction capabilities you'd expect to find only in a pre-press shop.

When you're ready to produce your artwork, you can print color separations directly from the Photoshop program. Or save your images as encapsulated PostScript® files and place them in popular page layout programs like PageMaker® or QuarkXPress®. You can even add type and line art effects to your continuous tone images by exporting them to the Adobe Illustrator® program.

Painting
• Paint with anti-aliased (soft-edged) paint brush or airbrush tools in any of 16 million colors • Paint with textures or patterns of any size • Create custom brushes • Perform linear or radial gradient fills • "Clone" part of an image with the rubber stamp tool • Smudge, blur or sharpen any part of the image • "Scratch area" to blend and create colors

Selection
• Photoshop's 8-bit selection mask lets you define a working area within your image • Make simple selections with the rectangular marquee and elliptical marquee tools • Make straight line and irregular selections with the lasso tool • Perform automatic selections with the "magic wand" tool • Specify precise sizes or aspect ratios for rectangular and elliptical selections • Select arbitrary regions with a variable "feather edge" • Add to, subtract from or refine selections • Copy to the selection mask from any channel or vice-versa

Adjustment
• Adjusts brightness, contrast, gamma, color balance, hue and saturation • Adjusts color balance independently for shadows, highlights and midtones • Adjusts the entire image, the selected area or any individual channel

Filters
• The Photoshop program has an extensive set of built-in filters and supports plug-in filters which permit the creation of custom filters • Image sharpening filters: sharpen, sharpen more, sharpen edges • Image softening filters: blur, blur more, gaussian blur, despeckle, motion blur • Effects filters: add noise, diffuse, facet, star lens, mosaic, trace contours, high pass • Other filters: offset, convolution, minimum, maximum, median, find edges
DIGITAL FILM RECORDERS

**DIGITAL FILM RECORDERS**

**Forte High Performance Professional Film Recorder**
- Top-of-the-line professional digital film recorder
- Can image a variety of file formats including PostScript, PICT and SCODL in either 2K, 4K or 8K addressable resolution as fast as 50 seconds per image
- Conductor software with 13 fonts
- Designed for use in slide service bureaus and corporate imaging centers where speed, quality, format variety and compatibility with many popular graphics programs are necessary
- Can be purchased with a Matrix 35mm bulk loading film module for production convenience
- The graphic arts, publishing and retouching fields can also benefit from the use of Forte. Its increased addressability (8K) and the optional 4" x 5" or 8" x 10" module allow you to make large format full color chromes and instant prints that can be used for client approval or as original artwork

For Mac and PC. 2K/4K/8K addressability IEEE interface (PC), SCSI interface (Mac). Conductor software for the Mac. Other rasterizers sold separately (MVP Star or MVP Star-16 for the PC, ChromaScript II for PostScript). Base unit $33,495.00

- **Forte With 35mm** Forte base unit with 35mm 36 exposure camera back $34,995.00
- **Forte With Matrix Bulk** Forte base unit with 35mm pin registered Matrix bulk load option (750 exposure) $42,495.00
- **Forte With Oxberry** Forte base unit with 35mm pin registered Oxberry bulk load $47,995.00

*Includes installation by an authorized Agfa Service Representative.

**QCR-Z With 35mm Professional Film Recorder**
- Industry standard
- Average 3 minutes per slide
- User selectable addressability
- 2K or 4K
- 3 colors: red, blue and green
- Bits/pixel: 24 (8 each for red, blue, green)
- 2048H x 2048V and 4096H x 4096V pixels, software selectable
- 35mm, standard cassette, 100' roll, 4" x 5" sheet, 8" x 10" sheet
- IEEE interface
- Rasterizers sold separately (MacHarmony for Mac, MVP Star or MVP Star-16 for PC, ChromaScript II for PostScript) $16,995.00

**PCR Entry Level Professional Film Recorder**
- Generates film output at 2K and 4K addressable lines (software selectable) for the clearest, sharpest, artist-quality images
- 35mm only
- 3 colors: red, green and blue to produce color combinations from a possible 16 million colors
- Self-calibration: Ensures color consistency frame after frame and roll after roll
- Automatic Diagnostics: Speeds problem analysis and minimizes downtime
- Compatible with most major mainframe, mini and microcomputer graphics software programs
- Incorporated into graphic arts workstations from such manufacturers as Artronics, AutoGraphix, AVL, Dicomed, DuPont Design Technologies and more
- Can be controlled directly with a GPIB interface (IEEE 488), or it can be interfaced with the MVP-Star to offload vector-to-raster processing from the host computer (not included)
- Compatible with the KMW VP-10 and Lasergraphics Ul 1000 rasterizers
- Up to 45 images per hour
- Film loading and exposure can take place in regular office lighting
- Film advance is automatic
- Stores red, blue, green, black, and white bits of data for each pixel
- Data Interface—IEEE Standard 488-1978
- GPIB IEEE included
- Rasterizers sold separately (MacHarmony for Mac, MVP Star or MVP Star-16 for PC, ChromaScript II for PostScript) $9,995.00

**SlideWriter Entry Level Professional Film Recorder**
- 35mm only
- SCI interface user selectable addressability
- 2K or 4K
- Includes utility software, SCSI cable
- Conductor software with 13 fonts
- Compatible with Oxberry bulk film cameras
- Generates film output at high resolution for the cleanest, sharpest, artist-quality images
- Allows you to take full advantage of your Macintosh computer's features, including: creating images from color paint and draw programs; using text in any combination of styles or sizes; merging graphics with pictures; matching corporate logos and colors; and imaging shaded, 3-D solid models
- Uses advanced microprocessor control to monitor and automatically compensate for environmental changes during the imaging process
- Uses the same file formats as other Agfa film recorders, so you are assured compatibility and interchangeability with other professional film recorders
- File formats: PC: SCODL, direct drivers; Macintosh: PICT, PICT II, 32-bit PICT, 24-bit TIFF, direct drivers; PostScript • IEEE-48 • SCSI • 2K or 4K $7,495.00

**Prices and Specifications Subject to Change Without Notice.**
RASTERIZERS AND INTERFACES

MVP Star PC Vector-to-Raster Processor Board
- High-speed raster image processor for IBM AT personal computers and 100% compatibles
- Computer-generated graphics are converted from vector format to a raster format that can be output on film recorders, color printers and laser printers
- Merge full-color, digitized photographs and computer "paintings" with vector images
- Accepts SCODL files from IBM PC, mainframe and minicomputer graphics packages, allowing access to a wide range of applications such as business charting, graphic design and more
- 1MB byte memory, driver software diskettes, 4 fonts
- For use with: ProColor Premier, PCR, GCR-Z and Forte
- MVP Conductor* image management software is the bridge between SCODL files, the MVP Star and output devices
- Total control over device selection, addressability, line densities, formats and unsharp masking to clarify and enhance images
- A scan-to-disk function allows further control over image densities on the RGB or CMY signals
- Additional built-in features include automatic descreening to prevent moire effects
- Complete control over your output device, including batch processing of images, dither pattern and size, number of copies produced
- MVP Conductor has a preview feature that lets you view images before they are recorded onto film or sent to a printer

$2,995.00

MVP Star-16 PC Vector-to-Raster Processor Board
- (SCODL) supporting multiple devices
- 16MHz 68000 processor
- 1MB byte memory
- LIM EM-4 4.0 support
- For use with: ProColor Premier, PCR, GCR-Z and Forte

$1,995.00

MacHarmony Switchbox
- For connecting Macintosh to PC or QCR-Z, SCSI and IEEE inputs
- IEEE output
- Includes Conductor software for the Mac, 13 fonts and cables

$2,995.00

Conductor Image Management Software
- Conductor's image management capability is fast, powerful and convenient
- Shoot a group of slides and prints, select global defaults, preview images
- Complete tool palette allows you to modify your layout
- Resize an image or center it on a slide, quickly and easily
- Complete control over your output device, including batch processing of images, dither pattern and size, number of copies for each file and much more
- Supports all Agfa film recorders as well as the MaxiColor* printer
- With an AppleTalk* network, you can share your film recorder among many users using the built-in Conductor Remote feature
- For the Mac. Images PICT, PICT II, 32-bit PICT and 24-bit TIF images. Includes 35 Conductor fonts and cable

$17,995.00

ChromaScript II Color PostScript Raster Image Processor
- Output PostScript files to a high-resolution color film recorder in a variety of formats
- Includes 35mm slides, 4" x 5" prints and chromes, and 8" x 10" prints and chromes
- ChromaScript II is as easy to use as other PostScript devices you are already familiar with
- Uses the same fonts, too
- Graphics created for output to a laser printer or laser imagesetter can be imaged to 35mm slides
- For Agfa film recorders
- Standalone unit with Adobe PostScript, 8M byte RAM, 80M byte disk, 73 fonts specify Mac or PC
- For use with: ProColor Premier, PCR, SlideWriter, GCR-Z and Forte (2K/4K/8K)

$5,995.00

FONT PACKAGES
MVP Serif and Sans Serif Fonts Package of 13 serif and 13 sans serif fonts for use with the MVP Star or MVP Star-16

$795.00

CAMERA BACK OPTIONS
35mm/QCR-Z 35mm 36 exposure camera module for QCR-Z
35mm/Forte 35mm 36 exposure camera module for Forte
4 x 5 Option 4 x 5 sheet film back for QCR-Z and Forte
Includes Liscio cassette and a Polaroid 559 film holder
8 x 10 Option 8 x 10 sheet film back for QCR-Z and Forte
Includes Liscio cassette for chromes
Matrix bulk load matrix registered bulk load camera for Forte
3 x 4 Option 3 x 4 Polaroid film back for ProColor

$5,995.00

DESKTOP SCANNERS
Focus Scanners
- Now there's a Focus scanner for every Macintosh® or PC® production environment
- S600GS for office publishers, S800GS for desktop publishers and S800GS for professional graphic artists and commercial printers
- Designed with standard SCSI interfaces, resolutions up to 800dpi and 64 or 256 grayscale levels, Focus scanners bring reprographics quality results out of the darkroom and onto your desktop
- 7-step sharpness control and 50-step independent control provide better highlights and shadows
- On-board memory reduces waiting time by speeding up image processing
- Combined with powerful PC View Plus or PC View Plus software, Agfa scanners bring image control to a new level
- Existing halftones can be descreened and exposure problems automatically adjusted
- Edges can be enhanced and density ranges easily defined
- Use the on-screen densitometer for exact measurements
- On-screen interactive graymap control allows users to manipulate gray-level images and automatically invert to negatives
- You can even adjust the gray transfer curve of your PostScript output device
- Focus S600GS Scanner 600 dpi resolution, 64 gray levels
- Includes McView software for Macintosh platform

$2,995.00

Focus S800GS-RC Reconditioned Focus S800GS Scanner 800 dpi resolution, 64 gray levels

$2,495.00

Focus II S800GS Scanner 800 dpi resolution, 64 and 256 gray levels

$5,495.00

Focus Color Scanners
- High-resolution color scanning
- Fully compatible with the Macintosh and meets the needs of graphic design studios, agencies, service bureaus, print shops and publishers
- MC View Color software offers 256 gray-level capability
- Combined with the unit's 24-bit graphic tools and automated features, maximizes productivity and yields color and black and white images that are sharp and clear
- With up to 800dpi resolution, you can often go directly from desktop to camera-ready art
- Functions include exposure and density control to ensure exacting parameters during the pre-scan phase
- Automatic white balance correction eliminates distortions from images scanned from varying photographic paper
- The MC Calibrator* software included with MC View Color allows you to correct for deviating gray values which can cause color shifts
- Color Map tool allows further control over image densities on the RGB or CMY signals
- Additional built-in features include automatic descreening to prevent moiré effects and unsharp masking to clarify and enhance images
- A scan-to-disk function allows you to transfer your work directly to disk, thus freeing up memory space
- Focus Color Scanner 800 dpi resolution, 24-bit color (RGB)

$7,995.00

Focus Color Transparency Module High quality light source module for scanning slides and transparencies from 35mm to 4" x 5" at up to 800 dpi resolution

$1,500.00

IMAGING SOFTWARE
McView! McView 2.0 Professional Scanning software for the Macintosh platform
- Includes software and SCSI cable

$495.00

McView Color McView Professional Color Scanning software for the Macintosh platform
- Includes software and SCSI cable

$685.00

PCView! PCView 3.0 Professional Scanning software for the IBM PC and compatibles
- Includes SCSI board for MCA bus, software and cable

$995.00

COLOR THERMAL PRINTER
MaxiColor Printer 300 dpi color thermal printer, Centronics interface
- Requires: printer interface kit for use with Macintosh; MVP Star and Super Cable for use with PC

$5,595.00

CABLES AND INTERFACES
Printer Interface Kit Centronics parallel card and cable for the Macintosh. Includes Conductor software, 13 fonts

$595.00

Super Cable Specialized Centronics cable for use with the MVP Star

$200.00

Prices and Specifications Subject to Change Without Notice.

406
PageMaker® 4.0 for Macintosh

PageMaker desktop publishing software integrates text and graphics, allowing you to write, design and produce professional-quality printed communications quickly and easily.

PageMaker is the only desktop publishing program that is file-compatible across 3 platforms—Macintosh, DOS-Windows and OS/2 Presentation Manager—allowing you to create, work on and transfer publications in mixed computing environments.

Features added for version 4.0 include sophisticated text-handling capabilities, professional typographic controls and enhanced support for long documents:

- Story Editor, fully integrated for fast text entry and editing within the PageMaker publication
- Spelling checker and search-and-replace
- Track kerning over individual words or the entire publication
- Ability to condense or expand type from 5% to 250%
- Text rotation in 90° steps
- User-defined window/orphan line control
- Ability to generate tables of contents and indexes
- Links management for managing external text and graphics files and easily keeping a publication up to date

In combination with a laser printer, PageMaker produces output that is near-typeset quality; with an imagesetter, output will be true typeset quality. You can also use PageMaker to color text and graphics, or import them from other programs.

You can output 4-color separations directly to an imagesetter, using a desktop separator, such as Aldus™ PrePrint™, that is compatible with the Open Prepress Interface (OPI) standard, or to an OPI-compatible high-end prepress system.

Word Processing Functionality

- Write and edit text in a fully integrated Story Editor: Enjoy the same performance you’d expect in a stand-alone word processor; Check spelling using a 100,000-word dictionary; Search for and replace words, phrases, fonts, point sizes and paragraph styles
- Save time with style sheet enhancements, such as the ability to switch styles while typing using the “Next Style” feature
- Apply simultaneous hyphenation and spelling verification by adding dictionaries in up to 10 other languages (purchased separately). Or add additional English dictionaries for specialized fields, such as law and medicine
- Generate tables with a new Table Editor utility, then place them directly into a PageMaker publication

Typographic Controls

- Rotate text in 90° steps
- Condense or expand type from 5% to 250%
- Apply point-size-dependent track kerning to any range of text
- Kern over any range of text to within 0.01 of an em
- Assign type sizes from 4 to 650 points in increments of 0.1 of a point
- Set leading in increments of 0.1 of a point
- Spread text evenly across a column or page with a forced-justification option

Long-Document Capabilities

- Automatically generate tables of contents—even for multiple-file publications
- Compile elegant indexes automatically, then edit them quickly and easily
- Attach graphics and ruled lines to text with new “Inline Graphics” and “Paragraph Rules” options

In combination with a laser printer, PageMaker produces output that is near-typeset quality; with an imagesetter, output will be true typeset quality. You can also use PageMaker to color text and graphics, or import them from other programs.

You can output 4-color separations directly to an imagesetter, using a desktop separator, such as Aldus™ PrePrint™, that is compatible with the Open Prepress Interface (OPI) standard, or to an OPI-compatible high-end prepress system.

Easy to Learn and Use

- Learn at your own pace with the program’s modular tutorial and comprehensive documentation
- Obtain help instantly with an online, context-sensitive Help system
- Start off right with any 30 pre-designed templates for quick and attractive formats

System Configuration

- PageMaker 4.0 requires System version 6.03 and Finder version 6.1 or higher
- Recommended configuration: Apple Macintosh portable, SE/30, II, Iix, Ilcx or Ilic with hard disk and 2M bytes of RAM
- Minimum configuration: Apple Macintosh Plus or SE with a hard disk and 1M byte of RAM
- PageMaker 4.0 prints to PostScript language-compatible or QuickDraw-compatible laser printers and PostScript language imagesetters that support Apple Macintosh

PageMaker .......................................................... $795.00

Prices and Specifications Subject to Change Without Notice.
AXCESS CONTROL PANELS

AXP-EL Touch Panel
The AXP-EL offers touch-sensitive control of media and environmental equipment. The panel features 100 user-definable pages of up to 255 unique system functions on a super-bright, electroluminescent display screen. Standard features include clock and date functions, an elapsed/countdown timer, bar graphs, a "screen saver" timer, adjustable baud rate and extensive button and function editing capabilities. The AXP-EL is also RS-232 compatible and can be controlled by a mouse. It may be housed in a wood enclosure, or it can be rack or flush mounted.

Specifications
- Screen Size: 3.875" H x 7.75" W
- Mount Size: 7.063" H x 11.813" W
- Enclosure Size: 7.75" H x 12.375" W
- Display: Amber electroluminescent pixels
- Resolution: 512(H) x 256(V)
- Memory Size: 64K (expands to 256K)
- RAM
- Operating Voltage: 12VDC, 1.25A maximum
- Wiring: 4-wire bus, including power

AXP-SP Softwire Panels
The AXP-SP Softwire Panel offers a slim-line panel with up to 64 LED buttons and up to 3 8-segment LED bar graph displays for volume, lighting or other applications. The AXP-MSP Mini-Softwire Panel can have up to 8 LED buttons and an 8-segment LED bar graph. The Softwire Panel can be flush or rackmounted or housed in a wood enclosure, and the Mini-Softwire Panel can be mounted in a standard wall box. The AXP-CPI is used for customer supplied or special order buttons. It is used for external relays, switches or closures.

Wired Control Panels

Touch Panels
- AXP-EL
- AXP-EL/PS
- AXE-EL
- AXK-EL

Softwire Panels
- AXP-SP
- AXP-MSP
- AXE-SP
- AXK-SP

Custom Panel
- AXP-CPI

AXCESS CONTROL SYSTEM

Axcess CardFrame
Axcess is a unique remote control system that simply assigns 1 control card for every piece of equipment to be controlled, from slide projectors, CD player, and VCRs to drapes, screens and lights. Each card easily fits into the front-loading 16-slot Axcess CardFrame.

Coordinating the entire system, the Axcess Master Card features powerful Motorola 68000 16-bit microprocessor and up to 128K of memory. The Master Card controls any combination of up to 255 devices, including devices utilizing infrared, RS-232/422 and MIDI codes. An optional second Master Card can be added to provide automatic backup for the primary Master Card.

With the included Axcess PC software, the system can be programmed and updated in the field using an on-site IBM-compatible computer or a modem at a remote location. Diagnostic tests, card changes, touch screen changes and systems operation can be performed in the same manner.

Specifications
- Size: 2.5" H x 19.5" W x 14" D
- Card Wiring: Phoenix captive-wire
- Power: 12VDC
- AXP-M/S: CardFrame with AXC-M and AXC-S cards
- AXP-S: CardFrame with AXC-S card only

AXCESS CONTROL SYSTEM

Touch Panel

Softwire Panels

CardFrame With Front Panel

Cards

Axcess Cards
All AXC control cards can be installed in the CardFrame without disturbing existing wiring or removing power from the system. All cards include operational status LEDs that are visible from the front, even when the cover is in place.

AXC-M System Master
AXC-S CardFrame server
AXC-232 RS-232/422
AXC-PA422 PA-422 professional audio
AXC-INP8 8 switch/logic inputs
AXC-IR/S Infrared or serial
AXC-MIDI MIDI in/out/thru
AXC-PRN Printer
AXC-REL8 8 relays — universal
AXC-REL15 15 relays with single common
AXC-SAV European 35mm projector
AXC-SLD Slide projector
AXC-SMP SMPTE time code
AXC-SPE Enhanced speech synthesizer
AXC-VOL Stereo/dual mono volume
AXC-VRG4 4 voltage outputs
AXC-VAI 2 voltage outputs and 2 analog inputs
AXC-X10 X-10 power line controller

Prices and Specifications Subject to Change Without Notice.
MEDIA CONTROL SYSTEMS

MX SERIES AND KEYBOARD COMMANDER

MX Series Wireless Projector Controls

Each MX system consists of a wireless transmitter and receiver. The receiver plugs into the back of a slide projector, and the transmitter is handheld. Using radio frequencies, the MX Series provides remote control of up to 12 functions on 1 or 2 projectors, with 9 different MX models to choose from. Since the control signal is a radio frequency, it carries through glass, walls, screens or drapes, providing an omnidirectional range of up to 150'. As a result, the controlled equipment does not even have to be positioned in the same room.

Specifications
- Transmitter: 1\"H x 2.125\" W x 3.625\" D • MX120: Size: 1.25\"H x 3.5\"W x 5.75\"D • Receiver: Size: (MX20, MX22, MX22A, MX40): 1.5\"H x 3.25\" W x 4.375\" D • Receiver Size: (MX30, MX30A, MX40A, MX40B, MX120): 1.5\"H x 5\"W x 5.25\"D • RF Carrier: 303.5MHz

KC Keyboard Commander

The KC Keyboard Commander adds the convenience of RF wireless control to your IBM-compatible personal computer. Simply connect 1 end of the KC to your keyboard and the other to the computer. No other adaptors or serial cards are required, and the keyboard remains fully functional. Any AMX transmitter may be used with the KC, allowing an omnidirectional range of up to 150'. The KC will learn and repeat any functional. Any AMX transmitter may be used with the KC, allowing an omnidirectional range of up to 150'. As a result, the controlled equipment does not even have to be positioned in the same room.

Prices and Specifications Subject to Change Without Notice.
Macintosh Ilci Personal Computer
Its 25MHz 68030 microprocessor enables the Macintosh Ilci to run applications up to 25% faster than the Macintosh Ilsi. The Macintosh Ilci also offers built-in 256-color video support, eliminating the need for a separate video card and freeing an expansion slot for other uses. It has 3 internal NuBus expansion slots for adding coprocessor and networking cards and RAM can be expanded to up to 32M bytes. The Macintosh Ilci also accommodates a cache card, which can increase the overall performance of many applications by as much as 50%.

The advanced performance of the Macintosh Ilci makes it an excellent choice for financial analysts, engineers and publishers. In addition to general productivity software, it can run a wide range of specialized applications, from 3-D modeling and animation programs to CAD and software engineering programs.

Macintosh Ilfx Personal Computer
The Macintosh Ilfx comes standard with a 40MHz 68030 microprocessor, the 68882 coprocessor, 4M bytes of RAM and the Apple SuperDrive. It has 6 NuBus slots for system expansion and can accommodate a 3.5" hard disk or a half-height 5.25" hard disk (typically available with higher storage capacities). It also has an SRAM cache, which increases overall system performance even more.

As the highest-performance, most expandable member of the Macintosh II line, the Macintosh Ilfx can be used in a broad range of applications. It's an excellent choice for engineers, architects, scientists, designers, multimedia production specialists—and anyone else who needs a fast, flexible system that incorporates different monitors and diverse networks, shares information with other types of computers and stores large documents, drawings and images. It is well suited for modeling and rendering, engineering design, managing large databases or creating multimedia presentations.

In addition to being faster, the Macintosh Ilfx differs from the Ilci in several ways:
It features a built-in 32K SRAM cache for increased performance; it has 6 NuBus expansion slots instead of 3 (allowing you to add more video cards, communications cards and other options); it can accommodate a higher-capacity 5.25" hard disk; and it has separate I/O processors for managing input and output devices, thereby increasing overall system performance.

Macintosh LC Personal Computer
The Macintosh LC comes with a 16MHz 68020 microprocessor and includes on-board video support for 3 different Apple monitors. For example, it supports 256 colors or shades of gray on the Macintosh 12" RGB display. It also includes the Apple SuperDrive (for reading from and writing to 3.5" Macintosh, MS-DOS, OS/2 and ProDOS floppy disks). Its internal expansion slot supports the Apple Ile card (which enables the Macintosh LC to run the thousands of programs available for the Apple Ile personal computer), as well as cards for networking (such as the Apple Ethernet card) and other options.

This combination of features in an affordable system makes the Macintosh LC an excellent choice for financial applications, word processing and desktop publishing, as well as for educational uses such as classroom projects and administrative functions.

Macintosh Ilsi Personal Computer
The Macintosh Ilsi offers the performance and flexibility of a Macintosh II system at an affordable price, making it an excellent choice for people in business, higher education and government. It includes a 20MHz 68030 microprocessor, built-in networking capability and on-board video (which supports 4 different Apple monitors, including the 13" AppleColor High-Resolution RGB Monitor and the Apple Macintosh Portrait Display).

Like all Macintosh computers, the Macintosh Ilsi comes with the Apple SuperDrive. It also includes a 40M byte or 80M byte internal hard disk. Unique expansion capabilities, provided through an optional NuBus or 030 Direct Slot adaptor card, allow you to customize the system to meet your specific performance needs. The Macintosh Ilsi also runs A/UX, Apple's implementation of AT&T UNIX.

The Macintosh Ilsi has many of the benefits of the Macintosh LC, but offers even more capabilities, including higher overall performance, built-in support for 4 different Apple monitors, increased memory expansion options, the ability to accommodate expansion cards (via the optional NuBus or 030 Direct Slot adaptor card), and the ability to run A/UX.
PERSONAL COMPUTERS

Premium Exec Series
* Offers 386SX or 286 processing power and a host of special options in a fully functional notebook computer. * Ideal for people who travel frequently, but can’t afford to be away from their work. * Notebook chassis: 2.25H x 14.25W x 17.9”D; 7.3 lbs. * Memory expandable to 8M bytes * Display: VGA CCFT “Paper White” graphics screen * Keyboard: 82-key with 101-key functionality * AST expansion slot * 1 serial port, 1 parallel port, 1 external VGA monitor port and 1 keypad port * LapLink* III and Battery Watch® software

Cupid-32 Premium Series
All Cupid-32 systems share these features: * Cupid-32 processor board: supports processor, coprocessor(s), memory and cache memory. * Cupid-32 system board: 2 serial and 1 parallel port; mouse port; integrated floppy controller; “no-slot” interface for hard drives; system BIOS * Cupid-32 memory expansion board: identical for all Cupid-32 systems. * Efficient memory upgradeability * Security: 3-level password protection includes server mode and keyboard disable; chassis lock for protection of system internals * Enhanced keyboard: 101/102 keys * Bundled software: Utilities/Diagnostics, includes custom BIOS-based setup for easy installation and configuration; EMS 4.0 * Optional software: MS-DOS® 3.3; MS-DOS 4.0 from AST; OS/2®

Cupid-32 Premium Tower Series
* Tower chassis: 24.25”H x 19.25”W x 16.5”D; 300W power supply * Memory: up to 16M bytes (four 4M byte SIMMs) on processor board and up to 80M bytes total using two 32-bit Cupid-32 memory expansion boards * 10 EISA expansion slots: 32-, 16- or 8-bit. Cupid-32 processor board and video adaptor each require 1 slot * 6 drive bays: up to 6 half-height (4 externally accessible). To mount 3.5” drives, Premium Install Kit (500746-002) required * SCSI hard drive support (335, 1005): high-speed SCSI interface allows connection of multiple peripheral devices (total storage over 2G bytes) using 1 slot. Uses EISA SCSI host adaptor with 1M byte cache to manage multiple hard drives independent of host system, freeing CPU resources * Mouse port * Additional software: EISA Configurator

Cupid-32 Premium i486 Desktop Series
* Integrated, on chip: 8K byte cache memory/cache controller and Intel 80387-compatible coprocessor * Desktop chassis: 6.25”H x 19.25”W x 16.5”D; 220W power supply * System board: 2 serial ports and 1 parallel port, integrated floppy controller and IDE hard drive interface, mouse port, integrated VGA (ISA only) * Memory: up to 16M bytes (four 4M byte SIMMs) on i486 processor board and up to 80M bytes total using two 32-bit Cupid-32 memory expansion boards * 7 expansion slots: seven 32/16/8-bit (EISA) or three 32/16-bit; three 16/8-bit; one 8-bit (ISA). Processor board requires 1 slot * 5 drive bays: up to 5 half-height (3 externally accessible). To mount 3.5” drives, Premium Install Kit (500746-002) required * Bundled software: Utility/Diagnostics, includes custom BIOS-based setup for easy installation and configuration * Additional software: EISA Configurator (EISA systems only)

Cupid-32 Premium 386 Desktop Series
* Desktop chassis: 6.25”H x 18.25”W x 16.5”D; 220W power supply * System board: 2 serial ports and 1 parallel port, integrated floppy controller and IDE hard drive interface, mouse port, integrated VGA * Memory (Premium 386/33 and 386/35): up to 4M bytes on processor board and up to 68M bytes total using two 32-bit Cupid-32 memory expansion boards * Memory (Premium 386SX/16): up to 16M bytes (four 4M byte SIMMs) on processor board and up to 16M bytes total using one 32-bit Cupid-32 memory expansion board * 7 expansion slots: three 32/16-bit; three 16/8-bit; one 8-bit. Processor board requires 1 slot * 5 drive bays: up to 5 half-height (3 externally accessible). To mount 3.5” drives, Premium Install Kit (500746-002) required * Bundled software: Utility/Diagnostics, includes custom BIOS-based setup for easy installation and configuration; EMS 4.0 Expanded Memory Manager, disk caching

Cupid-32 Premium II Desktop Series
* Desktop chassis: 6.25”H x 18.25”W x 16.5”D; 145W power supply * System board: 2 serial ports, 1 parallel port, 1 mouse port, 16-bit VGA graphics controller, integrated floppy controller and IDE hard drive interface * Memory: up to 16M bytes system total on processor board (four 4M byte SIMMs), or on optional memory expansion board using 1M byte SIMMs * 6 expansion slots: three 32/16/8-bit, two 16/8-bit and one 8-bit. Processor board requires 1 slot * 5 drive bays: 4 half-height, 1 1/8-height * Bundled software: Utility/Diagnostics, includes custom BIOS-based setup for easy installation and configuration; EMS 4.0 Expanded Memory Manager, disk caching

Standard Premium Series
* Desktop chassis: 6.25”H x 19.25”W x 16.5”D; 200W power supply * System board: 1 serial and 1 parallel port, integrated floppy controller * Memory: expandable to 16M bytes * 7 expansion slots: two 16-bit/FASTslots; four 16/8-bit; one 8-bit. Video adaptor requires 1 slot * 5 drive bays: up to 5 half-height (3 externally accessible). To mount 3.5” drives, Premium Install Kit (500746-002) required * Enhanced keyboard: 101/102 keys * Bundled software: MS-DOS 3.3 and GW-BASIC: Utilities/Diagnostics, includes custom BIOS-based setup for easy installation and configuration; EMS 4.0 Expanded Memory Manager, disk caching

Call for Pricing Information

Prices and Specifications Subject to Change Without Notice.
TOPAS Now Available for the Macintosh

TOPAS® 3-D Modeling and Animation Software

TOPAS is a full color 3-D modeling and animation software program for applications in creative design, presentation graphics, video production and CAD applications. TOPAS consists of 5 stand-alone, yet fully integrable, modules: the Modeler, Pro-Modeler, Animator, AutoAnimator and SuperShade.

Modeler
3-D is made easy with a natural menu system and use of a mouse or graphics tablet. With the Modeler, commands for 3-D primitives like freestyle polygons, squares, rectangles, cubes, circles and spheres are included. Also included are high quality vector fonts from Bitstream®. Object editing commands offer powerful creative options.

The full color palette of the TARGA® and AT-Vista® is available, and because TOPAS automatically anti-aliases and interpolates texture maps, it is easy to create images that appear almost real.

The following are included in the Modeler package:
- Building Tools: Simple primitives (polygons, splines, rectangles, squares, cubes, circles, spheres); Complex (surface of revolution, spiral, extrude, bevel, connect, duplicate, mirror); Groups (group, add to group, ungroup).
- Editing Tools: Object editing (rotate, move, Zmove, scale, stretch, Zstretch, match, hide object, show object, name object, delete); Polygon editing (add, move and delete points, move, cut, trim, smooth, flatten and delete polygons).
- Camera: Pan, tilt, track, dolly, zoom and revolve.
- Lighting: Display, add (up to 20 light sources), delete, move, Zmove, color.
- Texture Map: Video capture management, buffer images; mapping applicable to polygons, solids, extrusions, surfaces of revolution and spheres; specular highlights on textures.
- Color Tools: simple color creation with intensity, highlight, contrast, smooth shading controls, Gouraud shading, color control of individual polygons.
- Additional Features: Online help, preview and final rendering, image buffer and model file management, numerical input via keyboard.
- Output: Render TOPAS models to the display to obtain a quality image, or render to 512, 1K, 2K, 4K or 8K lines resolution TARGA or ATVista files in standard TGA or VST format.

Pro-Modeler
Pro-Modeler offers you all that TOPAS Modeler provides and more. With TOPAS Pro-Modeler you get the following additions:
- Soft-edged shadows
- Phong shading
- Cross sectional modeling
- 8 full screen texture map buffers
- Automatic reflection mapping
- Hierarchical grouping
- Automatic outlining of 2-D artwork
- Drill and Fog functions
- Up to 16,000 polygons
- PAL support (ATVista only)
- User definable units (cm, in, ft)

Animator
TOPAS Animator is a professional keyframe animation system that incorporates the TOPAS Pro-Modeler solids modeling software and the tools to animate those models. The Animator provides a high performance and friendly environment to produce professional video applications. TOPAS Animator provides control of all animation aspects of TOPAS models including camera control, lighting and object attributes, and motion path control. And TOPAS Animator offers both a real time wireframe and full-color solid preview of your animation sequences. Support for industry standard videotape controllers, coupled with ease-of-use, fast rendering and low cost, make TOPAS a high performance and friendly environment for the production of professional video applications.

The Animator adds the following features and functions:
- Animation of light sources for color, intensity, position • Rotation and camera movement along X, Y, Z and user-definable axes • Real time previews, both wireframe and full color solid versions • 3-D motion and path control • Variable tension, bias and continuity controls • Rotoscoping of up to 8 full separate buffers • "Reverse" capability • Scripting and script editing via graphical timeline editor of ASCII editor • Automatically generated Storyboards • Support for DiaQuest, Lyon Lamb and BCD controllers and VLAN controllers.

Options
A set of 12 optional URW® fonts are available for the Modeler, Pro-Modeler and Animator.

AutoAnimator
AutoAnimator is a subset of TOPAS Animator for rendering and sending animation sequences out to tape only. The addition of the AutoAnimator to the system configuration frees Animator stations for the task of creating animation sequences, rather than tying them up in the output of animation to the VTR. At a fraction of the investment of a full Animator package, AutoAnimator provides added flexibility in establishing production schedules to keep your work load flowing smoothly.

TOPAS/VGA
Like the earlier version of TOPAS, TOPAS/VGA is a 3-D modeling and animation software application, except it runs on any standard VGA board. TOPAS/VGA is designed to create disk-based animations that can be played back in real time on the VGA screen.

TOPAS Rapid Render System
TOPAS renders more quickly with the TOPAS Rapid Render System® (RRS). RRS is a combination of hardware and software that makes TOPAS render up to 10 times faster than on a 386/20MHz PC.

Minimum Requirements:
- IBM PC or AT compatible, or plug-compatible
- 640K of RAM • Hard disk system (10MB or greater) • Math co-processor • Lotus-Intel-Micro-soft EMS memory (2MB minimum/32M byte maximum) • Truevision® TARGA 16, 24, 32 or AT-Vista • Composite video monitor, analog RGB monitor or color TV with RF modulator • AT&T, Microsoft Mouse or compatible or Summagraphics Summasketch 961, 1201 or BitPad One compatible tablets • Videotape recorder and VTR controller (optional) • DOS 2.0 or later version
- Truevision and TARGA are registered trademarks and ATVista is a trademark of Truevision, Inc.
GRAPHICS SOFTWARE

Panorama
Panorama is image sequencing software written specifically for the Truevision® ATVista® and the TARGA +. Panorama applications include professional video shows, corporate presentations, and still frame video editing. Panorama takes full advantage of the ATVista’s onboard processing power to combine ATVista or TARGA + generated images with 45 different sophisticated wipes and fades, including pushes, pulls, fades and lower effects. Creative use of the wipes will also allow the user to simulate 2-D animation effects. The order and timing of the transitions are controlled by the user through a menu driven interface on the DOS monitor. Panorama also features a special effect called Movie. In Movie, frames of video can be captured at a reduced resolution, and then played back sequentially in real time for the production of animatics, which can be output via an encoder to videotape.

Minimum Requirements
- IBM PC or AT compatible, or plug compatible personal computer with at least 640K of RAM and a 1.2M byte disk drive (ATVista requires an IBM AT or compatible)
- 1M byte, 2M byte or 4M byte AT Vista
- Hard disk drive system of 10M bytes or greater (Optional, but recommended) Expandable memory board with at least 1M byte of memory. Panorama requires memory cards that are compatible with the Lotus-Intel-Microsoft expanded memory standard.
- Analog RGB monitor
- DOS (version 3.0 or later)

Create Slides

RIO Design and Layout Software
RIO is a full color, resolution-independent, object oriented draw and image processing program for applications in presentation graphics, graphic design, photocomposition and specialty slide production. This flexible, powerful program lets the user compose scenes that combine video-captured, TV-quality electronic color images or high resolution scanned images with vector-based text and geometric shapes, without the tedium normally associated with photo burn-in and multiple exposure techniques.

Creation
With RIO the user can create, draw and manipulate scene elements using friendly pop-up menus and a mouse or graphics tablet. Scene backgrounds can be flat or gradient, or any standard TGA or VST file. Choices of scene elements include TGA or VST images or windows, lines, circles, squares, rectangles, ellipses, regular or point-to-point polygons and text. RIO comes standard with 8 fonts (with both serif and sans serif faces) and additional font libraries are available. Text can easily be justified, kerned or edited, and all elements can be grouped, ungrouped, pushed, pulled, deleted, rotated, scaled, flipped, moved and copied.

RIO provides a variety of layout tools, like grids and light source control, and correct aspect ratios for 35mm, 4" x 5", 8" x 10" and 8½" x 11" formats. There are 5 resident color palettes and color creation models for RGB, HSV, HSL and CMY palettes. Also included are the drivers to support industry standard color scanners.

Other features include drop shadows, with direction, offset and density controlled by the user; up to 100 levels of transparency; anti-aliasing; brush and fill styles; embossing; ability to call DOS from within the program.

Touch-ups
With the proxy edit feature RIO offers the ability to edit larger, high resolution files. The proxy edit function allows the user to address screen size portions or high-res files and then access their favorite paint program to perform functions like blend, tint, airbrush, or any of the other functions provided by the paint package. This function is especially useful to remove the hard edges created during the photocomposition process, or to clean up scanned images.

Output
During the creation process the scenes are composed using a video-resolution display, but they are stored in a resolution-independent form. This allows the final images to be output at resolutions up to 4036 (8K, 32-bit) lines to digital film recorders, color inkjet or thermal printers or PostScript devices.

RIO makes it easy to queue your completed scenes and images to any of the supported printers with the batch management function. When the scenes are complete, simply select an output device from the menu, specify the number of copies required and render the queue of RIO scenes or image files to the connected device. Images can be created during working hours, and output when the station is not needed for the creation function.

Minimum Requirements
- IBM PC or AT compatible, or plug compatible personal computer with at least 640K of RAM and a 1.2M byte disk drive (ATVista requires an IBM AT or compatible)
- TARGA or ATVista or compatible videographics board
- Hard disk drive system of 10M bytes or greater
- Expandable memory board with at least 2M bytes of memory. Panorama requires memory cards that are compatible with the Lotus-Intel-Microsoft expanded memory standard
- Analog RGB monitor
- DOS (version 3.0 or later)

RIO Animator
RIO Animator is an add-on module for RIO 4.0. RIO Animator is the first low-cost, vector-based 2-D keyframe animation software for the Truevision TARGA and ATVista environment. The “Animate” menu has the following sub-menus: create key, edit key, final frame, flipbook and record. The Animator takes advantage of all of RIO’s current features and supports anti-aliased objects and text, gradients and transparency.

Graphico
Specifically designed for creation of 3-D business graphics for the TARGA and ATVista environment. Choose from over 20 different styles to automatically generate charts and graphs from spreadsheet information, and then merge the charts with scanned or captured images to create professional slides, prints or transparencies. Graphico can create video resolution images or images up to 4K in size.

ImagePaint
ImagePaint processes images with painting and illustrative styles like charcoal pencil, watercolor or exotic reflective chrome or glass. Processed still images look like hand-drawn renderings; processed video sequences look like moving paintings. ImagePaint’s effects are sure to leave a lasting impression.

Sable
Unique functionality and powerful special effects make it the perfect paint package for a broad spectrum of users. Sable’s wide variety of drawing tools, like freehand draw, blend, tint and mask, allows users to import, create and edit TIFF, PCX and TGA files.

Logo Editor 4.0
Object creation tools for the designer. Recreate logos or complex shapes with easy-to-use spline and outline functions, and then output vector information in a variety of industry standard file formats.

35mm Express/GSL
Even if you don’t own a truecolor videographics board, AT&T still has a software solution for your business graphics needs. 35mm Express/GSL supports CGA and EGA-type display boards, and can import Lotus 1-2-3 or Symphony graph information and CGM graphics files to automatically generate service bureau-quality charts, drawings and graphs. Output your files to a number of industry standard printers, or to other AT&T/GSL software applications. Use 35mm Express/GSL to make your next presentation the best ever.

*RIO and TOPAS are trademarks of AT&T Graphics Software Labs. Truevision and TARGA are registered trademarks and ATVista is a trademark of Truevision, Inc. Bitstream is a registered trademark. UNIX is a registered trademark. AutoCAD and DXF are registered trademarks of Autodesk, Inc. CAD models provided courtesy of Autodesk, Inc.

Prices and Specifications Subject to Change Without Notice.
Autodesk 3D Studio® Animation
and Modeling Software

Autodesk 3D Studio integrates all the tools professionals need to perform 3D modeling and animation under a single user interface, including close links to other Autodesk products like AutoCAD®, Autodesk Animator Pro®, Autodesk Animator®, Autodesk Animator Clips™, James Gleick's CHAOS: The Software® and CA LAB®. Software packages with comparable features cost far more and often require dedicated workstations or very expensive systems.

Autodesk 3D Studio uses the Autodesk Device Interface® (ADI®), an open, de facto standard device driver format which is supported by more than 300 computer peripherals and software packages. ADI has been extended to support video and other multimedia peripherals.

Autodesk 3D Studio creates 3D objects and generates images and animations from them with a feature set that is unprecedented on the IBM-PC. It integrates 4 high performance tools:

**Modeler Features:**
- Works with Microsoft® mouse and ADI-compatible tablets
- Runs in protected mode on 80386 and 80486 machines—size of models and scenes only limited by the amount of disk space and/or memory
- Bezier spline model creation tools—lines, curves, arcs, quads, circles, ellipses, regular polygons; Dimensions in units, feet/inches or meters/centimeters; Accuracy to 1/100 of a centimeter; User-definable snips and grids
- Bezier spline text using industry standard fonts
- Reads and saves AutoCAD 3D DXF files. Also reads 2D DXF and filmroll files
- Models can be constructed from multiple spline cross-sections interpolated along a 3D spline path—Paths can be straight, splined, circular or helical; Spline-based deformations of models include twist, bend, scale, teeter-totter and bevel; Spline-mesh models can be automatically constructed from top, front and side profiles in addition to traditional surface of revolution and extrusion tools
- 3D sculpting tools for free-form modeling
- Built-in 3D shapes include cubes, spheres, hemispheres, prisms, toroids and cones
- Keyboard coordinate entry supported
- Ability to reduce an object’s or scene’s visual complexity to maximize interactivity of large scenes
- Includes ability to reduce mesh objects to point clouds or bounding boxes
- Material properties assignment from an individual face to an entire object
- Control over smoothing groups and face normals
- Texture map alignment tools for precise map placement and style
- Interactive, unlimited real-time cameras with dynamic zoom
- Interactive spotlight and omnidirectional light placement

**Renderer Features:**
- 32-bit rendering of still images or animations
- Includes built-in library of over 100 materials
- Supports multiple rendering devices, and ships with drivers for boards including VGA, Targa, TrueVista® and Vision 16®
- Professional-quality, selectable anti-aliasing
- Transparency
- Fog and distancing shading
- Atmospferic effects
- Illumination models including wireframe, flat, Gouraud and Phong shading
- Texture, reflection, bump and opacity mapping
- Unique animated texture mapping using .FLI files from Autodesk Animator, CA LAB and CHAOS: The Software
- Unlimited number of spotlights, omnidirectional lights and ambient light
- RGB color selection
- Spotlights
- Variable hotspot and falloff sizes
- Can have cast shadows
- Loads any size .GIF, .TIF and .TGA image files into any size display; Automatic rescaling
- Automatically renders 8-bit real-time animations in .FLI format for Autodesk Animator
- Low and high resolution
- Includes VGA player program
- Saves images in .GIF, .TIF, monochrome .TIF and .TGA file formats
- Render to screen, file, VTR or printer, at any resolution
- Backgrounds can be solid colors, gradients, picture files or animations
- Outputs to Dasquset single-frame VTR controllers
- Supports printing devices through ADI interface

**Materials Editor Features:**
- Interactive user interface for creating materials library of files that define objects’ appearances
- Color control includes RGB or hue, luminance and saturation (HLS system)
- Separate control of diffuse, ambient and specular light components for simulating such materials as plastics, metals or rubber
- Shininess and transparency controls
- Materials can be 2-sided
- Materials can be self-illuminating for simulating light sources
- Materials shading methods can be set as wireframe, flat, Gouraud or Phong
- Different shading methods can be mixed in the same scene for optimum performance/rendering quality
- Texture, reflection, opacity and bump maps can be applied as a percentage of the material instead of overriding the entire material

**Keyframer Features:**
- Real-time preview renderer for shaded motion tests
- VTR-type controls and interactive time slider bar for dynamic time control
- Supports true object hierarchies with each object having an independent, user-definable pivot point
- Hierarchies can selectively inherit position, rotation, scale, squash, stretch or any combination
- Hierarchies can be slaved to dummy (non-renderable) object for more flexible control of large scenes
- Tremendous control over duplication of elements of a hierarchy to “grow” objects, and duplication of branches to “grow” complex object trees
- Automatic squash and stretch controls
- True 3D object metamorphosis
- Spotlight position, hotspot and falloff can be animated
- Lights can be slaved to objects and/or cameras
- Camera position, field-of-view and roll can be animated
- Cameras and camera targets can be slaved to objects
- Accurate spline paths can be loaded in from the Modeler for objects, lights or cameras
- Objects can be looped to repeat defined animation
- Includes object instancing
- Can create large scenes from very little geometry
- Can create multiple animated object copies from a single animated object
- Uses quaternion math to control transformations for extremely smooth motion
- Animations can be merged into other animations, making a new field of 3D clip animation sequences possible
- Full visual control of all keyframes with a spreadsheet-like interface for precise timing
- Acceleration and deceleration motion controls for visual ease-in/ease-out
- Cubic splines visually control interpolation between keys
- Tension, Continuity, Bias

**System Requirements:**
Autodesk 3D Studio runs on IBM® or Compaq® 386/486-based computers or 100% compatibles. Also required are MS-DOS 3.3 or a later release, 3M bytes of RAM, a hard disk, an 80387 or Weitek™ math coprocessor, a VGA device and a Microsoft compatible mouse or a SummitSketch® compatible tablet. Optional equipment includes Targa compatible displays and ADI compatible display and printing devices.

Autodesk 3D Studio .................................................. $2995.00

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Prices and Specifications Subject to Change Without Notice.
PROGRAMMERS/PLAYBACK SYSTEMS

PROGRAMMERS
Hewlett-Packard Vectra ES
With Genesis board set installed. Includes Alt/Connection box, 640K memory, two 360K floppy drives, 8MHz 80286 microprocessor, clock/calendar configuration with battery backup, 12" monochrome monitor, graphics display adaptor, parallel and 9-pin serial ports, 101-key enhanced keyboard, HP HIL port, bootable Procall 5, X and enhanced diskettes, MS-DOS 4.1, HP manuals and Genesis manuals. Turnkey system, ready to go. $4995.00

Genesis Board Set
Single full length 8-bit slot interface card, turns an IBM PC/XT/AT and most compatibles into a Genesis multi-image programmer, with Procall 5, X and enhanced. $1895.00

Super Genesis I/O
Additional RAM Cartridge 64K byte, stores 2048 cues $225.00
Additional RAM Cartridge 128K byte, stores 5200 cues $325.00
SG Tapetrak Cable For tape control. Standard length 15' $90.00
SG Tapetrak Cable Each additional 1' over 15' $2.00

PROGRAMMERS/PLAYBACK SYSTEMS
Coyote
3-projector leisure-time programmable dissolve with computer memory of over 900 cues, 7 dissolve/alternate rates, Positrak, sequence timing, blink, repeats, logic level aux control. Coyote SAV Same as Coyote with 12-pin DIN connectors, for use with SAV compatible projectors. $1145.00

FX-2
2-projector, real time programmable dissolve, 7 dissolve/alternate rates, freeze, blink, step and Positrak. FX-2 SAV Same as FX-2 with 12-pin DIN connectors, for use with SAV compatible projectors. $645.00

WIRELESS PROGRAMMERS/PLAYBACK SYSTEMS
IR Presenter 1
2-projector real time programmable basic dissolve with infrared hand control for programming/speaker support playback. Specify Ekta or SAV projector type. $745.00

IR Presenter 2
2-projector real time programmable advanced dissolve with infrared hand control for programming/speaker support playback. Also functions as a 2-projector M-Dove. Specify Ekta or SAV projector type. $1195.00

MULTI-IMAGE PLAYBACK SYSTEMS
M-Dove
Computerized playback module for controlling 4 projectors. Executes cues from any AVL programmer or cued audio tape. Internal loop, 2 auxiliaries, 0 tray sense option, Positrak, Cycle-trak, automatic/programmable/manual projector power control, advanced setup, bi-directional communications link, lamp and tray failure indication, home tray sense with option for show start on slot 1, playback software mode user-selectable with lock. 16-character backlit LCD display. Supplied in desktop standard. $1795.00

Super Dove
Computerized playback module for controlling 3 projectors. Executes cues from any AVL programmer or cued audio tape. Internal loop, 3 auxiliaries, integrated home tray sense with harness, Positrak, Cycle-trak, automatic/programmable/manual projector power control, advanced setup, bi-directional communications link, lamp and tray failure indication, home tray sense with option for show start on slot 1, playback software mode user-selectable with lock. 16-character backlit LCD display. Supplied in desktop standard. $1995.00

Super Dove SAV
Same as Super Dove with 12-pin DIN connectors, for use with SAV or compatible projectors. $1995.00

Dove X'
3-projector presentation playback, all features of Dove X', integral stereo tape deck, 30W amplifier. $2495.00

Pro Traveler X'
3-projector presentation playback, all features of Dove X', integral stereo tape deck, 30W amplifier. $2995.00

VIP 300M
250W xenon slide projector with built-in dissolve capability and keystorne correction. $4795.00

Prices and Specifications Subject to Change Without Notice.
BarcoVision 600S/BarcoVision 1500 HDTV
BarcoVision 600S
• 750 lumens light output • Wide range of screen sizes from 3.3' to 20' • Quad-standard: NTSC 3.58/NTSC 4.43/PAL/SECAM + S-VHS RGB analog with separate sync or with sync on green • Picture framer: 4 side blanking adjustments (video only)

For applications that require large screen projection of different composite video and standard video resolution RGB computer sources, the BarcoVision 600S delivers high light output and excellent resolution on front, rear, flat or curved screens up to 20' wide.

The BarcoVision 600S accepts inputs from any NTSC/PAL/SECAM composite video source including VCR, videodisc, off air antenna/satellite receivers and video cameras. An S-VHS input provides direct Y/C capability for American and European formats. The BarcoVision 600S is ideally suited for large screen corporate presentations, sales/educational seminars, teleconferencing links, trade shows, and sports and entertainment applications.

90-00508 ........................................ $7,995.00

BarcoVision 1500 HDTV
• Wide range of screen sizes possible from 7'-21' wide • Very high brightness projector for video, IDTV, EDTV and HDTV applications • 9” CRTs and liquid coupled TOC 7 lenses provide 1620 peak lumens brightness • Quad-standard video decoder, 15MHz RGB bandwidth, loopthrough BNC video and 4-pin S-Video inputs, RGBS analog BNC inputs • Switchable, dual mode operation for: scan frequencies, aspect ratios (4:3 or 16:9) and picture framer • Scan rates—Horizontal: 15.7kHz or 30-35kHz; Vertical: 50-60Hz

90-00589 ........................................ $16,995.00

BarcoData 650/BarcoData 1050
Common Features
Optical
Resolution: 10 lp/mm at 50% MTF
Scan Frequencies: Horizontal: 15-50kHz autolock; Vertical: 37-140Hz autolock
Minimal Retrace Time: Horizontal: <4.7 µs • Vertical: <450 µs
RGB Bandwidth: 30MHz -3dB
Inputs: RGB analog (BNC connectors), sync on green or separate sync. Video (PAL/SECAM/NTSC 3.58/NTSC 4.43): BNC-BNC looped through with 75 ohm termination switch. 4-pin S-Video input (Y/C) looped through with internal 75 ohm termination switches
Operator Controls: Contrast, brightness, color saturation, hue, sharpness, screen width, shift, input select switch video/RGB/RGBS/S-Video, fast or slow sync
Remote Control: The remote control box can be plugged into the projector and hardwired up to a distance of 330'; a 40' cable is provided with the projector

BarcoData 650
Includes common features plus: • 600 lumens at 10% peak white • 7” liquid cooled CRTs • f/1.03 hybrid lenses, with center plus edge focus adjustment. Also available with TAC 3 lens (5 IP/mm) • Optional ultra high resolution glass lenses, optimized for precise magnification (14X, 22X, 27X, 36X) • Screen size: 3.3’ x 2.5’ minimum, 20’ x 14.9’ maximum

90-00619 ........................................ $9,995.00

BarcoData 1050
Includes common features plus: 1230 lumens at 10% peak white • 9” liquid cooled CRTs • f/1.15 hybrid lenses, liquid coupled with center plus edge focus adjustment. Also available with TOC 7 lens (5 IP/mm) • Screen size: 6.6’ x 4.9’ minimum, 29’ x 21.8’ maximum

90-00629 ........................................ $18,995.00

BarcoData 800
• Very high brightness data projector with liquid cooled, square 8” CRTs and high resolution HD-8 lenses • Provides 825 lumens peak brightness • Wide range of screen sizes possible, from 4'-20' wide • 50MHz RGB bandwidth • Fully configured with loopthrough BNC video and 4-pin S-Video inputs, RGB, S, HS, VS analog BNC inputs and D9-pin RGB TTL/EGA compatible input • Microprocessor-based design features: full digital control of all setup adjustments, 25-zone digital convergence, user-friendly, menu-driven on-screen displays, Linear Digital Interpolation (LDI), 38 memory blocks with auto storage • RS-232/422 communication ports allow full computer control of up to 256 projectors • Autolock scan rates—Horizontal: 15-58kHz; Vertical: 45-120Hz

90-00549 ........................................ $13,995.00

Prices and Specifications Subject to Change Without Notice.
Bargraphics 800

- Universal and user-friendly, menu-driven digitally controlled large screen video/data/graphics projector
- Software package for the control of up to 256 projectors by an IBM PC (or compatible) or Apple Macintosh through an RS-232/422 input
- High light output of 825 lumens on screens from 1.2m up to 6m wide
- Wide range autolock circuit (15-90kHz horizontal, 45-120Hz vertical) allows the display of images from a multitude of sources, from low-end video pictures up to ultra high resolution CAD images
- Projection under non-standard angles is possible due to the built-in stepless adjustable Scheimpflug correction
- Liquid cooled 8” square CRTs with stabilized pressure chamber result in a constant superb picture quality
- Air-coupled f/1.06 hybrid lenses with an optical resolution of 10 µm/mm, fully color corrected

IRIS 800 Automatic Convergence System

- Using the infrared remote control of the 800 Series projectors, the convergence process starts by selecting an option displayed by an on-screen menu
- Scans all 25 zones on the screen and aligns red, green and blue in minutes
- Less than 12 lbs.
- Based on an advanced optical system, utilizing a high-resolution CCD camera and ultra-light front surface mirror which moves horizontal and vertical
- Operates in either a table or ceiling mounting

IRIS 800

- POR

RCVDS 800 Source Selector

- Remote controlled video and data source selector for Barco 800 Series projectors
- Connects up to 10 different video, S-Video and data sources to a Barco 800 projector
- Infrared remote control of picture settings
- Highly modular design
- An optional expansion module makes it possible to set up to 10 source switchers in a series, allowing up to 90 different sources to be connected to an 800 Series projector

System Retrovision 600S/System Retrodata 650

- System Retrovision 600S
  - Self-contained, stand-alone rear screen projection system with stereo audio capability
  - 67” high performance fresnel screen
  - Equipped with stereo audio inputs and 2 x 15W 2-way bass reflex loudspeakers
  - 750 lumens/244 FL, 800 lines resolution
  - Ideal for use in high ambient light environments where mobility is an important factor
- System Retrodata 650
  - Self-contained, stand-alone rear screen projection system with stereo audio capability
  - 67” high brightness CRTs
  - Provides peak light output
  - 15-58kHz autolock range
  - 800 lumens/196 FL, high resolution, color corrected f/1.0 hybrid HD-6C lenses (1600 lines)
  - High efficiency blue phosphor provides truer color reproduction and more brilliant whites
  - Double-pole magnetic focus rings for improved spot size and resolution
  - Independent video/RGB mode H and V size and H phase (centering) remote control
  - Allows each projector input to be individually corrected for size, aspect ratio and position

Retro 800 Series Computer Controlled Projector Systems (Preliminary)

RetroData 800/RetroGraphics 800

- Common features:
  - Built-in 67” diagonal fresnel/lenticular-type, fine pitch rear projection screen
  - 825 lumens/172 FL
  - All controls are accessible through a soft-touch front panel or through the user-friendly infrared remote control
  - Source switching
  - User settings per source (sharpness, hue, color, brightness, contrast, volume, bass, treble, balance)
  - Geometry per source
  - Convergence per source
  - Mono/stereo switch, normal/expand switch and mute function

Special features:
- 38 frequency-related memory banks
- LDI (linear digital interpolation)
- Effective on-screen display: installation screens, help screens, bar scale display of user settings, on-screen display of source frequencies
- Automatic storing of all adjustments
- Text generators for other languages
- Color temperature adjustment (3200°K, 6500°K, 9300°K or custom)
- Possibility to set adjustment parameters to mid-position
- Easily transportable cabinet
- Ruggedized construction
- Extremely fine borders around the screen

Inputs:
- RGB analog (BNC connectors), sync on green or separate sync
- RGB TTL/EGA (D9-connector)
- Video (PAL, SECAM, NTSC 3.58, NTSC 4.43), loopthrough (2xBNC) with 75 ohm termination switch
- 4-pin S-Video input, loopthrough with 75 ohm termination switch
- High brightness, high definition liquid cooled 8” CRTs
- High definition, fully color corrected, liquid cooled f/1.1 hybrid lenses
- Built-in stereo audio amplifier (2 x 16W continuous sine wave), with 2 frontal 2-way bass-reflex speaker systems (2 x 20W)
- Stereo audio input on 2 Cinch (RCA phono) connectors
- 2 audio DIN connectors for external loudspeakers

RetroData 800

- 15-58kHz autolock scan rate
- 50MHz RGB bandwidth
- 3.3µs horizontal retrace time

RetroGraphics 800

- Digitally controlled
- Can be set up and controlled from any PC
- Settings can be stored on a floppy or hard disk drive
- Includes wireless infrared remote with full access to projector’s parameters
- Switching of up to 90 inputs, software support for linking up to 256 projectors
- 15-90kHz autolock scan rate
- 60MHz RGB bandwidth
- 2.6µs horizontal retrace time

RCVDS 400 S-Quad Switcher

- Connects up to 10 different video and data sources
- Master all significant picture settings through a handheld infrared remote control
- Modular inputs
- Match any possible application where more than 1 source has to be projected on the screen

Prices and Specifications Subject to Change Without Notice.
Multidata® Monitors

Common Features:
• Wideband autolock (15 to 36kHz horizontal, 45 to 120Hz vertical) and extensive connection facilities • Possible to reproduce images from almost all the commonly used computers, such as IBM PC, XT, AT, PS/2 and Apple Macintosh II • Compatibility with Hercules, CGA, EGA, VGA, S-VGA and 8514/A graphics boards and facility for reproducing all video signals in PAL, SECAM, NTSC 4.43, NTSC 3.58 and Super VHS make the Multidata monitors extremely suitable for software and graphics presentations, video conferences, sales seminars and training programs • Dark-tinted flat square screen with horizontal resolution of 640 pixels ensures a luminous and sharp picture, even in bright surroundings • RGB bandwidth: 30MHz ± 3dB • Sound reproduction: 3W mono amplifier

OCM 2846 28" Multidata Monitor
• Ideally suited for presentations to a small audience • Dot pitch: 0.8mm • 2 frontal loudspeakers 93-30399 .............................. $3895.00

OCM 3346 33" Multidata Monitor
• Black matrix screen • Full screen VGA images • For presentations to a larger audience • Dot pitch: 0.8mm in center, 1mm at corners • 2 side speakers and supplementary socket for external loudspeaker 93-30525 .............................. $4795.00

SCM 3346 33" Multidata Monitor
• Offers the same performance specifications as the OCM 3346 in a special wedge-shaped, low profile housing • Ideal for creative applications requiring maximum flexibility and performance • Can display a wide variety of sources while stacked in virtually any configuration 93-30559 .............................. $5095.00

SCM 2846 28" Multidata Built-in Monitor
• Designed for built-in applications, such as a boardroom or demonstration area, industrial applications or for situations where the monitor has to be moved on a regular basis • Metal case, suspension points and strong handles • Dot pitch: 0.8mm • Supplementary audiosocket provided for external loudspeaker 93-305539 ............................. $4095.00

SCM 2840 System Color Monitor
• Invar mask for improved brightness • Rugged metal housing • Designed for minimum dimensions and maximum stackability (up to 16 monitors high) • In-line gun, 28" dark tinted flat square tube • Fully automatic Quad-decoder (PAL, SECAM, NTSC 3.58, NTSC 4.43) with CTI • Ideal for integrating into a videowall system, a multi-screen data information display, powerful simulation or alternatively as a Public Address Display monitor • Long term color stability due to ABL • Dual color temperature switch 6500°K and 3200°K for TV studio applications • Resolution, Horizontal (pixels): 600; Vertical (active lines interlaced): 575; Characters per line: 80; Geometric distortion (corners): < 5% • RGB bandwidth: 10MHz (-3dB) • RGB inputs: Digital RGB TTL (CGA compatible) and analog RGB with separate sync or with sync on green • Switching (Video-RGB): Automatic • Dimensions: 21.9"H x 27.4"W x 21.6"D 93-30357 .............................. $2995.00

SCM 3240 System Color Monitor
Same as SCM 2840 except: • 32" dark tinted black matrix flat square tube • Stackable up to 8 monitors high • Resolution, Horizontal (pixels): 500; Vertical (active lines interlaced): 575; Characters per line: 80; Geometric distortion (corners): < 5% • RGB bandwidth: 10MHz (-3dB) • RGB inputs: Digital RGB TTL (CGA compatible) and analog RGB with separate sync on green • Switching (Video-RGB): Automatic • Dimensions: 21.9"H x 27.4"W x 21.6"D 93-30709 .............................. $1395.00

PAT Public Address Terminal
• Perfect information display monitor • Microprocessor based, the PAT translates digital information into pictures and text • Information can be stored on the PAT via a keyboard, current loop, RS-232 port or internal modem • 28" diagonal screen size • 15.75kHz scan frequency • Character display: 12 x 40, 24 x 40, 24 x 64 • Colors: 7 foreground, 8 background • Variety of character modes, including flashing, double height, graphics set 93-30383 PAT OCM 2840 office cabinet ............................. $2595.00
93-30377 PAT SCM 2840 system cabinet ............................. $2795.00
VIDEO CONTROLLERS

BCD-5000 Professional Video Animation Controller
• Desktop or rackmountable • Serial host communication RS-232/422
• Serial/parallel mixed machine control • Tape and disc, mixed control • Full function machine control • RS-422/232 machine protocol • Standard SMPTE time code: read and write; non drop frame; drop frame • Vertical interval video switching • 2 opto-isolator “GPI triggers”

The BCD-5000 for computers with an RS-232 port provides frame-accurate control of most industrial and broadcast video tape and disc machines.

The BCD-5000 was designed with animators and time-lapse professionals in mind. It is already supported by most professional graphics animation software with more systems being added.

For rotoscoping, the BCD-5000 features a unique composite video switching system to permit frame-grab and frame recording to and from the same machine. Naturally, the BCD-5000 can be equipped to control 2 machines for dual VTR rotoscoping or simultaneous animation to 2 machines.

Compatible Machines
This is a partial list of video machines that are controllable by the BCD-5000.

Sony 1/2": VO-2811, VO-2860, VO-5000, VO-5800, VO-8850, VO-7000, VO-9000, VO-9600, VO-8850, BVU-850, BVU-870, BVU-950
Sony 1/2" Beta I: BVW-40, BVW-70, BVW-75 (Betacam also marketed under other brand names.)
Sony 1/2" Beta I Industrial: SLP-303, SLP-305, SLO-323, SLO-325, SLO-353
Panasonic 1/4": NV-9240, NV-9600, AU-700
Panasonic 1/2" VHS: NV-8170, NV-8200, NV-8500, AG-6100, AG-6200, AG-6300, AG-6500, AG-7100, AG-7300, AG-7510, AG-7500, AG-7500A
Panasonic Mill: AU-660, AU-620
JVC 1/4": CR-850U, CR-800U
JVC 1/2" VHS: BR-8600, BR-810, BR-811
JVC Mill: KRM-800
Pioneer Laser Disc: LD-V6000, 6010, 4200, 8000
Sony Laser Disc: LDP-1000A, 2000, 1200, 5000

BCD-5000
1 machine control ................................................................. $2995.00
2 machine control ................................................................. 3995.00
Without display ........................................... deduct 300.00
Null modern RS-232 cable ........................................ 50.00
EDL-4000 Edit Decision List software (MS-DOS only) ........................................... 695.00

BCD-4000 Professional Video Controller
• 1 PC 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 (read only) • Vertical interval video switching • 3 opto-isolator “GPI triggers”

The BCD-4000 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 BCD-4000 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 protocols are available for 1", Betacam, Mill and other sophisticated devices. The BCD-4000 can be equipped with a built-in 2-machine editor.

The BCD-4000 main CPU board occupies 1 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 BCD-4000 responds to the same command protocol as BCD’s VIPc and BCD-1000 with the added capability of interrupting the host computer on the user’s choice of interrupt lines.

The BCD-4000’s optional internal video editor can control any 2 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 BCD-4000 features.

Supported Machines
Sony Tape: Type V (VP-5000, VO-5600, VO-5800*, VO-5850*), Type VII and Type IX w/33-pin remote, BVU-200, BVU-800, SLO-383, SLO-305, SLO-325
Panasonic Tape: Panasonic Industrial VTRs w/34-pin remote. NV-8200, 8170, 9240, 9600, 8500, AU-700, AG-6100, 6200, 6300, 6500, 7500

*Some editing and variable speed functions not supported.

BCD-4000 Standard System
1 machine control w/SMPTE reader ........................................... $1750.00
1 machine animation/SMPTE generator option ............................ 690.00
Second machine control option, includes SMPTE reader .................. 1100.00
2 machine video editing option ........................................ 495.00
SMPTE generator option (per machine) ................................... 395.00
Additional machine control cables – parallel .......................... 150.00
Additional machine control cables – serial ........................... 50.00
EDL-4000 Edit Decision List software .................................. 995.00

BCD-1000 Video Tape Controller
• Frame accurate • Panasonic, Sony, JVC • 1 PC slot • Software compatible • Enhanced commands

The BCD-1000 is a microprocessor-controlled video tape controller for computers with IBM-PC type slots. While specifically designed to be suitable for Computer Assisted Video Instruction, the BCD-1000 is also an appropriate controller for Video Database Access and Video Tape Animation.

The BCD-1000 is a single board computer, dedicated to receiving commands from its IBM-type host and controlling an industrial video tape machine. The 10" board is small enough to fit into a Tandy 1000 computer. It generates and reads BCD’s frame addressing code for frame-accurate accessing of video tape scenes. BCD code applies numbers to each frame of video so that the system can locate any video segment frame-accurately. Optionally, the BCD-1000 may be equipped to read standard non-drop frame SMPTE code as well as perform precise video insert edits for video tape animation.

Supported Machines
Sony Tape: Type V (VP-5000, VO-5600, VO-5800*, VO-5850*), Type VII and Type IX w/33-pin remote, BVU-200, BVU-800, SLO-383, SLO-305, SLO-325
Panasonic Tape: Panasonic Industrial VTRs w/34-pin remote. NV-8200, 8170, 9240, 9600, 8500, AU-700, AG-6100, 6200, 6300, 6500, 7500

*Some editing and variable speed functions not supported.

BCD-1000 Standard System
Video tape control system .................................................... $895.00
SMPTE time code read option ........................................ 250.00
BCD-1000 Video Animation Control System
Includes SMPTE Read option ............................................... 1795.00

Prices and Specifications Subject to Change Without Notice.
COPY OUTFITS/SYSTEMS

M2 TABLE, WALL AND CARRIAGE MODELS

M2 Camera Stand—Table
Consists of • 132-80 M2 column and carriage • 137-50 Column scale/ baseboard
132-01 ................................................................................. $445.00

M2 Camera Stand—Wall
Consists of • 132-80 M2 column and carriage • 137-16 Wall mounting brackets (set) • 137-58 Column scale
132-05 ................................................................................. $380.00

M2 Column and Carriage Only
Consists of • 4' M2 column • Column scale • Camera carriage assembly
132-80 ................................................................................. $320.00

M2 COPY OUTFITS

M2 Copy Outfit—Quartz
Suitable for most opaque copying and small object photography, plus back-lit work for transparencies and special effects. For use with cameras weighing up to 15 lbs.
Consists of • 132-01 M2 column, carriage and baseboard • 137-20 Moveable copy stage • 137-50 Column scale • 138-25 Swivel light arms, pair • 138-33 Master quartz copy lights, pair • 138-80 Quartz base illuminator -bench lighting. 
This control adjusts "high" or "low" output levels for both base and side area and 600W quartz halogen (3200°K) light source. Dual function copy base illuminator with extremely even illumination over the entire 14" x 17" aperture, quartz base illuminator assembly, 14" x 17" opal plexiglass, 14" x 17" clear glass, dual function copy light control, 137-12 camera stand pedestal includes.
M2 Quartz Illuma With Pedestal
Consists of • Same as the M2-Quartz except includes 138-43 master incandescent lights, pair
132-16 ................................................................................. $925.00

M2 ILLUMA OUTFITS

M2 Quartz Illuma With Bench
For many applications. Reliable and easy to use. Features a forced-air cooled base illuminator with extremely even illumination over the entire 14" x 17" area and 600W quartz halogen (3200°K) light source. Dual function copy light control adjusts "high" or "low" output levels for both base and side lighting.
Consists of • 132-80 M2 column and carriage • 137-50 Column scale • 138-80 Quartz base illuminator-bench • 138-20 Sidelight arms, pair • 138-22 Sidelight arm braces, pair • 138-33 Master quartz copy lights, pair
132-30 ................................................................................. $1560.00

M2 Quartz Illuma With Pedestal
Consists of • Same as the Quartz Illuma except includes pedestal and 138-43 master incandescent lights, pair
132-33 ................................................................................. $1960.00

M2 RCM SYSTEM

M2 RCM System With Pedestal
A Quartz Illuma System with a camera shutter actuator built into the carriage assembly and controlled by an electronic 60 second adjustable timer located in the light control housing. The RCM is ideal for Kodak RPC and Kodalith materials, as well as all conventional films. Copy mask set is included.
Consists of • 4' M2 column, camera carriage with built-in solenoid operated cable release, quartz base illuminator with digital timer, automatic light output control and shutter release, pushbutton switch • 137-14 Camera stand pedestal • 137-25 Copy mask set • 137-50 Column scale • 138-20 Sidelight arms, pair • 138-22 Sidelight arm braces, pair • 138-33 Dual quartz copy lights, pair
132-51 ................................................................................. $2760.00

M2 Camera Stand Accessories
M2 Camera Accessories
136-10 Precision camera leveling plate ........................................ $ 48.00
136-11 Fine focusing and centering device ................................. $210.00
136-12 Camera quick release .................................................... $ 85.00
136-18 Shutter cable release .................................................... $ 89.00
136-20 Camera reflection shield — 49mm ................................. $ 25.00
136-21 Camera reflection shield — 52mm ................................. $ 25.00
136-22 Camera reflection shield — 55mm ................................. $ 25.00
136-23 Camera reflection shield — 58mm ................................. $ 25.00
136-24 Camera reflection shield — Hasselblad ......................... $ 67.00

M2 Camera Stand Risers
137-10 Camera stand riser ...................................................... $101.00
137-12 Camera stand bench ................................................... $335.00
137-14 Camera stand pedestal ............................................... $480.00
137-16 Wall mounting brackets .............................................. $ 70.00
137-20 Moveable copy stage .................................................. $290.00
137-25 Copy mask set ............................................................ $125.00
137-27 Copy holdown ............................................................ $110.00
137-28 Book holder ............................................................... $150.00
137-40 Slide duplicator .......................................................... $ 94.00
137-60 Motor drive assembly .................................................. $260.00
User installed-control switch built into motor housing—cannot be remote controlled.

M2 Lighting Accessories
138-20 Sidelight arms, pair ................................................... $ 45.00
138-22 Sidelight arm braces, pair ........................................... $ 65.00
138-25 Swivel light arms, pair ............................................... $ 42.00
580-10 Master quartz copy lights, pair, 2 lights (1 each side) .... $225.00
580-12 Auxiliary quartz copy lights, pair, 2 lights, plug into master quartz lights ................................................... $215.00
138-37 Dual quartz lights, pair, 4 lights (2 each side) ............... $440.00
138-43 Master incandescent copy lights, pair, 2 lights (1 each side) ................................................................. $180.00
138-45 Auxiliary incandescent copy lights, pair, 2 lights, plug into master incandescent lights ........................................ $180.00
138-47 Dual incandescent copy lights, pair, 4 lights (2 each side) ................................................................. $300.00
138-50 Copy light control ...................................................... $230.00
580-85 Polarizing light filter kit ............................................... $220.00
139-80 Quartz base illuminator — bench, includes: baseboard with 14" x 17" aperture, quartz base illuminator assembly, 14" x 17" opal plexiglass, 14" x 17" clear glass, dual function copy light control, 137-12 camera stand bench ................................................... $1010.00
138-81 Quartz base illuminator — pedestal, same as 138-80 except includes 137-14 camera stand pedestal ........................... $1170.00

Prices and Specifications Subject to Change Without Notice.
COPY OUTFITS/SYSTEMS

M3 TABLE, WALL, COLUMN & CARRIAGE

M3 Camera Stand — Table Model
Includes: 4' M3 column • Auxiliary dual counterbalance springs • Column scale • M3 camera carriage assembly • M3 baseboard • 26 1/2" x 23 1/2" D • Massive 6 1/4" x 10" mounting plate • M3 column/baseboard support base • For use with cameras weighing up to 30 lbs.
430-02 .................................................. $750.00

M3 Camera Stand — Table Model — EX
* Same as 430-02 except includes 5' M3 column
430-04 .................................................. $780.00

M3 Camera Stand — Wall Model
Includes: 4' M3 column • Auxiliary dual counterbalance springs • Column scale • M3 camera carriage assembly • M3 wall mounting brackets
430-06 .................................................. $580.00

M3 Camera Stand — Wall Mount — EX
* Same as 430-06 except includes 5' column
430-08 .................................................. $625.00

M3 Column & Carriage Only
Includes: 4’ M3 column • Auxiliary dual counterbalance springs • Column scale • M3 camera carriage assembly
430-80 .................................................. $520.00

M3 Column & Carriage — EX
* Same as 430-80 except includes 5’ column
430-81 .................................................. $560.00

M3 COPY OUTFIT

M3 Copy Outfit — Quartz
Includes: M3 column and carriage assembly (5') • 437-20 movable copy stage • 138-25 swivel light arms • M3 solid grid baseboard • Master quartz halogen copylights • Tabletop platform • Overall dimensions: 65" H x 53” W x 29” D • Working column height: 51" • Baseboard net working area: 26 1/2" W x 23 1/2" D • Camera mounting plate: 6" fore and aft movement • Counterbalanced: up to 30 lbs. • Adjustable • Light arm span: 53" • Front to back: 33” (35" with motor drive) • Lamps: sidelights • two 300W/120V
430-12 .................................................. $1375.00

M3 PEDESTAL & BENCH ILLUMA OUTFITS

M3 Quartz Illuma — Bench
Includes: M3 column (4 1/2' net, 6' overall) • Auxiliary dual counterbalance springs • Column scale • M3 camera carriage assembly • M3 baseboard • Camera stand bench • 138-20 Sidelight arms, pair • 138-22 Sidelight arm braces, pair • 138-47 Dual quartz copy lights, pair • Dual function copy light control
430-20 .................................................. $2160.00

M3 Quartz Illuma Stand — Pedestal
* Same as 430-20 except includes 7' overall column and camera stand pedestal
430-21 .................................................. $2340.00

M3 ACCESSORIES

437-16 Wall mounting brackets .......................................................... $ 70.00
137-25 Copy mask set ........................................................................... $125.00
137-27 Copy holdown ........................................................................... $110.00
137-28 Book holder ............................................................................... $150.00
137-40 Slide duplicator .......................................................................... $ 94.00
137-60 Motor drive assembly ................................................................ $ 260.00
User-installed control switch built into motor housing cannot be remote controlled.

M3 LIGHTING ACCESSORIES

580-10 Master quartz copy lights, pair, two lights (one each side) ....................................................................... $ 225.00
138-20 Sidelight arms, pair ................................................................. $ 95.00
580-12 Auxiliary quartz copy lights, pair, two lights, plug into master quartz lights .................................................. $ 215.00
580-14 Dual quartz lights, pair, four lights (two each side) ... $ 440.00
138-43 Master incandescent copy lights, pair, two lights (one each side) ................................................................. $ 180.00
138-45 Auxiliary incandescent copy lights, pair, two lights, plug into master incandescent lights ................................ $ 180.00
138-47 Dual incandescent copy lights, pair, four lights (two each side) ............................................................... $ 360.00
138-50 Copy light control .................................................................... $ 230.00
580-85 Polarizing light filter kit ............................................................... $ 220.00

Prices and Specifications Subject to Change Without Notice.
Canon

RC-470 Still Video Camera
- 1/4" CCD • 360,000 separate "pixels" • Video resolution of 400 lines in both horizontal and vertical axes • White-peak level 9.7MHz (deviation 2.0MHz). This extra bandwidth "headroom" can potentially raise the video resolution to 500 lines • In Frame Mode, can record up to 25 images, each using 2 tracks of the video floppy • In Field Mode, the maximum recording capacity is 50 images • Feedback AE system • Variable flash has 3 modes: On for intentional use, Off for special effects and Auto for automatic firing in lighting conditions below EV 8 • Exposure compensation. You can choose up to ±1.5 EV compensation in quarter steps, or instantly set the camera for plus 1.5 EV at the touch of a button • Solid-State Active Triangulation (SSAT) autofocus • High-performance optics offer 9mm wide or 16mm tele • Bifocal switchover type lens • Full aperture in this bright lens is f/2.0 at wide to f/2.5 at tele • High continuous-shooting speed of 20 images per sec in Field Mode; you can also choose 5-image/sec. and Single operation in that mode, while the Frame Mode offers 5-frame/sec. and Single shooting • Data recording by year/month/day, hour/minute/second or a 6-digit code number • Track Feed System: 3 modes: Normal/Skip/Insert • Self-timer: 10 sec. delay .......................... $2050.00

RC-250 XAPSHOT High Band Still Video Camera
- Built-in playback unit with easy hookup to TV • Record up to 50 still video images on a video floppy disk • Video images can be saved or erased and video floppy disk reused • High-band circuitry, 1/2" CCD with 786 horizontal pixels • Fully automatic shooting • Built-in flash • Macro photography • Shutter speeds: 1/1000 sec. to 1/10 sec., flash sync at 1/25 sec. • 10 sec. self-timer • Single or continuous 3 images/sec. shooting mode • Exposure compensation button (+ 1.5EV) • f/2.8 11mm lens (equivalent to 60mm on 35mm camera) • 1411/16 oz. (body only)
RC-250 Choice of black or white .......................... $699.00
VP-50 Disk package (10) .......................... $100.00
BP-4P Battery pack .......................... 32.50

XAPSHOT Still Video Computer Imaging Kit
A complete solution for the entry-level user, the ZAPSHOT Still Video Computer Imaging Kit bundles a XAPSHOT camera with all of its necessary accessories and a ComputerEyes" video digitizer with software. The XAPSHOT SV camera records up to 50 images (300-line video fields) on a reusable 2" floppy disk. Its point-and-shoot operation, built-in flash and automatic features allow for quick and easy "electronic photography" of virtually any subject. Images can be played back directly from the camera to any standard NTSC TV monitor. When used with the Computer Imaging Kit, the same single video cable connects the XAPSHOT to the digitizer for computer input. The bundled software controls the image capture, image adjustment and save functions of the digitizer.

Once the image is saved in the computer environment, it can easily be exported to various applications. Images can be incorporated into desktop publishing, used to enhance a database, or added as visuals to multimedia presentations. The computer imaging applications are virtually limitless.

The XAPSHOT Still Video Computer Imaging Kit is ideal for personal and many business applications. The kit is available in 5 different computer versions:

Kit Features:
- Canon RC-250 XAPSHOT SV camera • Wrist strap WS-C25 • Soft case SC-C25 • Battery charger BA-24P • Battery pack BP-4P • AC coupler AV-C25 • Mini plug-pin cable KE-M2P • Pin cable KE-PIN • Video floppy disk VF-50 • ComputerEyes software and video digitizer produced by Digital Vision Inc.

Macintosh Color Version
- Captures and displays up to 24-bit (16.7 million colors) 640 x 480 • Supports 32-bit QuickDraw" • Controls brightness, contrast, hue and color adjustments • Saves in PICT and TIFF file formats

System Requirements
- Any Macintosh II (NuBus computer) • 2M byte RAM • 3.5" floppy disk drive • 8-bit or 24-bit graphics display .......................... $1099.00

Macintosh Black and White Version
- Compact module plugs into printer or modem port • Resolution up to 640 x 480 pixels with 8-bit per pixel depth • Automatic calibration of brightness and contrast, further adjustable by user • Supports TIFF, PICT, MacPaint and EPS formats

System Requirements
- Mac 512 enhanced, Mac Plus, SE, SE/30, Classic or any Mac II • 1M byte RAM • 3.5" floppy disk drive .......................... $899.00

Apple Ilgs' Version
- Single board plugs into any slot • Supports 320 and 640 graphics mode • Images can be saved and displayed in a variety of formats

System Requirements
- 1M byte of memory • 3.5" disk drive • Composite or RGB monitor • GS/OS release 4.0 or higher .......................... $899.00

PC Color Version
- Single board for 8-bit (or 16-bit) slot • Captures 24-bit color or 8-bit grayscale images • Image control of brightness, contrast, hue and color • Supports EGA, MCGA, VGA and Super-VGA • Saves in various formats: PCX, IFF, TIFF, TGA, GIF and more

System Requirements
- PC, XT, AT, 386, 486 or compatible, or PS/2 Model 25/30 • 640K RAM minimum • 5.25" floppy drive • DOS 2.1 or higher .......................... $1099.00

PC Black and White Version
- Saves in various formats: PIC (BSAVE), PCX, IFF, TIFF, MSP, etc.

System Requirements
- Same as PC color version .......................... $899.00

STILL VIDEO EQUIPMENT

STILL VIDEO EQUIPMENT
STILL VIDEO EQUIPMENT

RV-301 Still Video Player
- Erasure function
- Use with any TV monitor
- Video floppy disk
- NTSC color, EIA standard
- Control signal for forward/reverse feed (L/R to GND); 3.50 mini jack (stereo)
- Single-screen and consecutive erasure
- Control signal for forward/reverse feed (L/R to GNDi; 3.50 mini jack istereo)
- Year/month/day or hour/minute/second with code no.: appear in lower right corner

RV-311 Still Video Player
- Same as RV-301 except includes RS-232C interface

FP-510 Full Color Printer
- Built-in masking circuit
- Ultra fine computer graphics
- 160 pixels per inch
- 64-step gradation
- High resolution printer
- Ink-jet printing method
- Analog modulation method
- Electromotive pumping mechanism and an auto-capping mechanism to prevent ink head block
- Print size: 8" x 6" and 39" x" L
- Integer multiple function, making possible print enlargement by up to 9X
- Printing Method: Drop-on-demand type ink-jet printing
- Recording Density: 8.3 PEL (6.3 pixels/mm); 160 DPI
- Data Input: CMY, RGB, B/W, palette; 1, 2, 4, and 8 bits each
- Interface: Standard—Centronics type, 8-bit parallel interface, Optional—GP-IB (IEEE-488)

FP-510

RP-420 Color Video Printer
- Single or multi-image printing
- Built-in frame memory for 25-image print (50 in field mode)
- Color ink/film thermotransfer method
- Large color print in 80 sec., small in 70 sec.
- Mirror reverse and B/W prints
- Designed primarily for use in commercial and personal still video systems, also compatible with all other video sources
- Input terminals are provided for RGB and video
- Special S-Video terminal accepts direct inputs from ultra high resolution sources, employing separate Y/C (luminance/chrominance) transmission
- Convenient Through-Print function is provided, in which the Multi-Image Memory circuit is off-line, to offer good-quality, 1-touch printing of non-moving video sources

RE-552 Video Visualizer
- Visual input terminal handles any visual source—notes, charts, color slides and even 3-D objects
- Accepts direct input from external video equipment, such as VCRs or still video players
- Output can be made to VCRs, still video recorders and other equipment
- Applications include direct display on any TV or monitor
- S-Video output capacity
- Auto focus
- 8X power zoom lens
- Front-panel controls
- External mic input and a light on each side
- A touch of a switch converts color and monochrome film negatives to positive images
- Power zoom, auto focus, auto iris and auto white balance can be adjusted manually

RE-552

FV-540 Video Floppy Disk Drive
- 3-D color scanning using a still video camera
- Video Input: Still video floppy (via built-in player: normal band/hi-band); S-Video; NTSC; Video Output: NTSC; Digital Interface: SCSI (small computer system interface)
- Image Size: 640H x 480V pixels
- Sampling Frequency: 12.25MHz (mesh ratio 1:1)
- A/D Convert: Color 24 bits (8 bits per color), 256 gray levels
- Freeze Time: 1/60 sec., (per color, B/W)
- SCSI Commands: 23
- Power: 110V/60Hz/2.5A
- SPECIFICATIONS

FV-540 With software

Prices and Specifications Subject to Change Without Notice.

Canon
VIDA-SET Video Projector Stands

* Multi-Projector Versatility: Width adjustment allows VIDA-SET to be used with popular projectors.
* Counter-Balanced Height Adjustment: Vertical height adjustment from 27½" to 38½" with the assistance of a gas spring in the pedestal to offset the weight of the video projector. Optimized for projectors weighing 55 to 75 pounds. Heavier or lighter projectors will require proportionally greater effort to raise or lower.
* Fast Image/Screen Alignment: Yaw is adjusted by rotating and then locking the upper module on the pedestal while roll and pitch are set with controls on upper module – Heavy-Duty 5" Locking Casters: Two fixed and two swiveling wheels make system roll easily yet lock up securely. Special brakes lock swiveling as well as wheel rotation for stable projection.
* Positive Projector Hold-Down: Rubber-padded clamps adjust to various projector dimensions or optional hold-down brackets provide more permanent attachment.
* Steel and Aluminum Construction

**VCM-10 Series Ceiling Mounts**

* Makes installations quicker and easier through simple attachment to standard 1½" pipe columns and fast “fine tune” position adjustments. Roll, pitch, yaw, and horizontal adjustments make it possible to compensate for small irregularities in the ceiling column plumb or location and to quickly and easily align the image on the screen • Compact and sturdy • Hard, low luster black epoxy

**Prices and Specifications Subject to Change Without Notice.**

**Accessories**

<table>
<thead>
<tr>
<th>Model</th>
<th>VSU-1P Pedestal</th>
<th>VCR Shelf (VR-1)</th>
<th>VSU-1 Table Stand</th>
</tr>
</thead>
<tbody>
<tr>
<td>VR-1</td>
<td>N/A</td>
<td>N/A</td>
<td>Same as VSU-1</td>
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<tr>
<td>VR-2</td>
<td>Same as VSU-1</td>
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<td>EK-10</td>
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**Specifications**

<table>
<thead>
<tr>
<th>Model</th>
<th>VSU-1</th>
<th>VSU-2</th>
<th>VSU-3</th>
<th>VSU-2C</th>
<th>VSU-1P</th>
<th>VSU-1S</th>
<th>VSU-1SE</th>
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<tbody>
<tr>
<td>Projector Width</td>
<td>36 1/2&quot; x 24&quot;</td>
<td>36 1/2&quot; x 24&quot;</td>
<td>36 1/2&quot; x 24&quot;</td>
<td>36 1/2&quot; x 24&quot;</td>
<td>36 1/2&quot; x 24&quot;</td>
<td>36 1/2&quot; x 24&quot;</td>
<td>36 1/2&quot; x 24&quot;</td>
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<tr>
<td>Projector Height</td>
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<td>Same as VSU-1</td>
<td>Same as VSU-1</td>
<td>Same as VSU-1</td>
<td>Same as VSU-1</td>
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<tr>
<td>Roll</td>
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<td>Same as VSU-1</td>
<td>Same as VSU-1</td>
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<td>Same as VSU-1</td>
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<td>Pitch</td>
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<td>Yaw</td>
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</tr>
<tr>
<td>Stand Height</td>
<td>16 1/2&quot; min. 20 1/4&quot; max.</td>
<td>16 1/2&quot; min. 20 1/4&quot; max.</td>
<td>16 1/2&quot; min. 20 1/4&quot; max.</td>
<td>16 1/2&quot; min. 20 1/4&quot; max.</td>
<td>16 1/2&quot; min. 20 1/4&quot; max.</td>
<td>16 1/2&quot; min. 20 1/4&quot; max.</td>
<td>16 1/2&quot; min. 20 1/4&quot; max.</td>
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<tr>
<td>Stand Depth</td>
<td>17&quot;</td>
<td>24&quot;</td>
<td>16&quot;</td>
<td>32 1/4&quot;</td>
<td>Same as VSU-1</td>
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<td>Folded Dimensions</td>
<td>23 7/8&quot; x 17&quot; x 14 3/4&quot;</td>
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<td>N/A</td>
<td>17 3/4&quot; x 13 1/4&quot; x 25&quot;</td>
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<td>N/A</td>
</tr>
</tbody>
</table>
PERSONAL COMPUTER SYSTEMS

Amiga® 500P/2000 Personal Computer Systems
Common Features:
- V1.2 and 1.3 software compatible
- Internal 3.5" 880K byte capacity micro floppy drive
- 4096 color display with many levels of resolution from a minimum of 320 x 200 to 640 x 400 (interlaced)
- 68000 microprocessor running at 7.16MHz
- Includes AMIGA VISION

Amiga 500P
- Contains 1M byte RAM with battery backed-up real time clock
- Up to 9M byte RAM (512K byte standard)
- Kickstart in 256K byte ROM
- Standard ports for printers, modems and disk drives
- Composite monochrome and RGB output ports

Amiga 2000
- Up to 9M byte RAM (1M byte standard)
- Detachable keyboard with professional numeric pad
- Space for up to 3 disk drives (2 3.5" and 1 5.25")
- Kickstart in 256K byte ROM
- 7 expansion slots
- Accepts IBM-PC compatible hardware
- 200W power supply
- CPU expansion slot
- Composite video/genlock slot
- Battery backed-up clock

Amiga 2000HD
- 16/32 bit CPU comes with built-in disk drive, keyboard, mouse, documentation and system software (workbench), Amiga-BASIC and utilities preinstalled on hard disk (backup disks included)
- Standard 1M byte RAM expandable to 9M byte
- 50M byte, 28ms hard disk with autoboot controller
- Multi-tasking operating system
- 4 voice, 2-channel sound output with built-in speech
- With Amiga Bridgeboard: internal option for IBM-PC® (MS DOS®) compatibility
- Expansion slots: up to 4 available Amiga expansion slots; up to 3 IBM-PC expansion slots; 2 special purpose expansion slots
- Built-in clock/calendar function with battery backup

Amiga 2500/30 Personal Computer
- Motorola 25MHz 68030 32-bit CPU, 68882 math coprocessor, system software (Workbench, Amiga-Basic and utilities) preinstalled on hard disk (backup disks included)
- 5M byte RAM standard, expandable to 9M byte
- 50M byte, 19ms hard disk with A2091 Autoboot Controller
- Amiga DOS multi-tasking operating system
- 4096 available colors with resolutions up to 640 x 400 (more with overscan)
- 4 voice, 2-channel stereo sound output with built-in speech synthesis
- Internal option for IBM-PC/XT or IBM-PC/AT compatibility using an Amiga Bridgeboard
- 4 available Amiga expansion slots, 4 IBM-PC expansion slots
- 1 video expansion slot
- Built-in clock/calendar with battery backup
- 200-300% performance increase over 68020 based machines
- High speed hard disk drive
- Single partition, Fast File System hard drive
- Includes AMIGA VISION

Amiga 2500/30 Personal Computer
- Same as Amiga 2500/30 with a 19ms, 100M byte hard disk.

AMIGA VISION AS250 Authoring System
- Powerful, icon-based authoring system
- Easy-to-use, flowchart based user interface allows even the most inexperienced user to develop powerful applications
- Allows the creation of a wide range of applications: business presentations; animated slide shows with audio; interactive video applications and displays; computer-based training for business, government and education
- Supports all standard Amiga file formats: IFF graphics; ANIM 5 animation format; SMUS music; 8SVX digitized sound
- Compatible with dBASE III* database files
- Supports a wide variety of peripherals including videodisk players, genlocks and touchscreens

Prices and Specifications Subject to Change Without Notice.
EZIPXpc 150MHz Digital/Analog Interface
- 150MHz universal PC interface
- Connects over 90% PCs and video cards (including PS/2, Mac IIs, and CGA, MDA, Hercules, EGA, MCGA, Enhanced EGA, VGA, 8514/A, XGA, Super VGA and Super Mac) to RGB data projectors and monitors
- LCD automatically displays the computer's H and V scan rates
- Digital frequency-sensitive centering
- Other fully automatic features: digital/analog input selection, color/monochrome detection, sync polarity, sync stripping on test, sync on green output
- Unique input cable contains three connectors (15 pin D HD, 15 pin D, 9 pin)
- Inputs: TTL, analog, sync
- Outputs: RGB comp sync or RGB sync on green at 75 ohms on BNC connectors
- 1 control position for H centering
- Separate power supply
EZIPXpc includes single 3-way input cable
Carrying Case

123A S-Video Interface - VGA to S-Video TV
- Low cost way to display computers on S-Video TVs
- Ideal for classrooms, meetings and sales presentations
- Connects computer to S-Video or standard TVs
- S-Video also referred to as S-VHS or Beta-ED
- Has luminance and chrominance for superior color definition and detail
- and is a must when displaying 80 column text. If displaying graphics and 40 column text, a standard TV will produce satisfactory results
- Will record programs on S-VHS VCR
- 1 S-Video and 1 composite video output
- Requires 1 input cable and 1 output cable
- 123A interface includes memory resident software
- 123A to operate with IBM PS/2 Model 30-286, 50, 55, 60, 70, 70 portable, 80, IBM display adaptor and 100% compatible VGA cards
123A
Input Cables
12-8525-00 PS/2-25 color* 12.50
12-8513-15 PS/2-20, 30-286, 50, 60, 70, 70.* 80, * and VGA compatible with color 12.50
12-1200-09 PC, XT/AT with CGA 12.50
12-2000-23 Commodore Amiga (color only) 12.50
12-9962-09 Targa video adaptors in PCs 12.50
12-215-15 Apple II GS (15 pin color only) 12.50
12-1040-13 Atari 520ST and 1040ST (color only) 12.50
*Picture on monitor is scrambled. Use multiscan monitor or set up additional S-Video or standard TV for local viewing.
S-Video to S-Video cables - 4-pin to 4-pin also available.

460 Color/Monochrome Digital Interface
- For EGA, CGA, Mono and Hercules cards
- 100MHz video bandwidth
- Horizontal sync from 15 to 75kHz
- 5 options available
460
$395.00
OPT-00 EGA modification for Sony 1030/1 40.00
OPT-01 Self diagnostics with LED 95.00
OPT-02 CGA/EGA mode output jack 22.00
OPT-03 External interface input for IBM 3270 PCG 70.00
OPT-04 Special IBM enhancement - 3179 70.00
OPT-05 No sync on RGB 70.00
460-99 Ruggedized rental/demo unit w/OPT-01 640.00
461 Color and mono, digital with interface.
Supports terminals with odd-interlace and has no vertical centering control 395.00

700 RGB Analog to Analog Interface
- 100MHz analog interface supports newest workstations, including IBM PS/2, VGA and Mac II workstations
- Outputs: RGB and composite monochrome (0.7V P-P at 75 ohms), TTL composite sync
- Output video has sync removed and is DC restored to: Black = 0.0VDC
- Sync input 250mV to 8V P-P
- Automatically selects: 1) horizontal and vertical sync 2) composite sync or 3) sync on green
- "Zero Drift" positioning of < 150ns drift from 50° to 150°
- Calibrated, adjustable RGB gain controls on front panel
- Accepts positive, negative or differential analog video inputs
- Autotrack horizontal positioning control covers 15 to 95kHz
- Separate power supply
- Analog video input
- Color and monochrome input and output
- Rackmounts available
- 100MHz RGB Distribution Systems
- 950 Series switches route signals from any combination of RGB or composite video sources to 1 projector or monitor
- 900 Series distribution amplifiers connect 1 RGB/computer video source to any number of monitors/projectors
- 100MHz switches and DAs have 3 identical analog channels for R, G, B video and 1 analog/digital sync channel
- Switch options include auto sync polarity, 2 RS-232 applications and range of remote controls including wired, infrared and a buffered terminal remote for external control systems.
- DA options include auto sync polarity and long cable equalization.
- Rackmounts available
900-04 1 in 4 out DA 969.00
900-08 1 in 8 out DA 1249.00
950-04 4 in 1 out switch 1325.00
950-08 8 in 1 out switch 1850.00
950-12 12 in 1 out switch 2375.00
950-16 16 in 1 out switch 2895.00
950-20 20 in 1 out switch 3425.00
950-24 24 in 1 out switch 3950.00
Call for price and part no. on options, remote controls and rackmounts.

RGB and Sync Umbilical Cable
- 100MHz RGB/sync cable combines 4 or 5 ultra-low loss coaxial cables into 1 highly flexible, easy-to-handle cable
- Cables are lower than RG59 types, and mil-spec BNCs are watertight and double-crimped for strength
- Wires are brightly color-coded and can be distinguished in low light
- Standard lengths are 3' to 300' and custom lengths, connectors and cabling kits are also available
Call for part numbers and price.
A/V CONTROL SYSTEMS

Cresnet II Audio-Visual Control System

• Very friendly software • Centralized software • Symbolic graphic programming • Symbolic editor • Software utilities • Software drivers • Field programmable • Copilot mode • Plug-in card system • Modular • International power supply • High function density • Expansion rack • Local area network • Disk storage • RF 2-way wireless • Infrared wireless • Ease of installation

This flexible, cost effective, modular control system will meet all your control needs, from the most basic control requirements to the most sophisticated. A world class system designed to operate from any international power, Cresnet II features high density hardware supervised by symbolic programming language. An extensive selection of distinctively styled control panels, enclosures and accessories are available. The Cresnet II originates with the master computer module.

System software is centralized in the master computer module and most hardware setup is software defined. During power-up, all hardware setup and software characteristics are downloaded from the master computer module to the control modules. This eliminates the need to modify factory programmed PROMs to accommodate specific system requirements. Centralized system software means that existing systems may be quickly repaired by a simple module replacement and modules may be inventoried for fast system delivery requirements.

System components and modules are easily added, removed or replaced without the inconvenience of removing the card rack from an equipment rack. All electronic components, including switches, indicators and power supplies, are mounted on plug-in modules for easy replacement and repair. A selection of control modules and rack front panel modules are available to meet every control need. Many modules include powerful on-board microprocessors capable of independent control, allowing for maximum system speed at minimum system cost.

Each type of module contains a fixed identity which permits the master computer module to identify any module type and location within a system configuration.

Versatile Card Rack Design

The 5.25" high x 7.5" deep, 19" card rack incorporates 12 slots. The first slot is assigned either to the master computer module or the system expansion computer module. The second slot is assigned to a power management module. The remaining 10 slots are available for use by a comprehensive collection of control modules designed to cost effectively fulfill every audio, video and environmental control need. When the disk storage option is used, 9 slots remain for control modules. A motherboard incorporating gold plated card edge connectors is used to interconnect control modules.

The card rack includes a front mounted control panel which provides system performance information as well as save to disk, load from disk, program-run and power switches. A 9-pin D-type RS-232 connector is located on this panel and used for computer interfacing.

The front region of the card rack has been designed to accept modular pushbutton and special function control panels. These panels can provide for local control if required. Panels are supplied with custom engraving and colored button caps using Crestron's exclusive "custom crafted panel" concept.

Simplified System Expansion

Cresnet II incorporates a family of powerful control modules. Therefore, complex control requirements can be implemented with a minimum number of modules. All but the very largest systems may require only a single card rack. However, if required, system size can be economically increased with the use of 5.25" high expansion card racks. Each rack can hold 10 control modules with up to 15 racks in a single system. Expansion racks require a power management module and expansion computer module.

Ease of Installation

Cresnet II has been specifically designed to simplify installation. By making extensive use of screw terminal connectors, control modules may be replaced in a matter of seconds by removing connectors. These connectors do not require soldering or special tools, allowing for fast, quality field wiring. Wiring may be quickly inspected, tested and corrected. An optional wiring support system is available which provides a organized means of dressing wiring connections.

Crestron’s exclusive Local Area Network (LAN) technology means it only requires 4 wires to install the most sophisticated Crestron equipment.

Exclusive Disk Storage Capability

An optional high quality 3.5" 1.4M byte disk storage module is available. The disk drive may be specified at time of system purchase. System configurations may be stored and loaded to and from disk, including any programmed system component such as the Command Center and fade dissolve unit (ICFD-2). This allows instant complete change for a specific user application. Programs may be developed on a personal computer at a remote location and quickly loaded into a Cresnet II system, eliminating system downtime.

Typical System Consists of:

WITHOUT DISK DRIVE

CNRACK (1) Card rack with 3.5" disk drive; holds 9 modules ........................................ 1280.00
CNMU-D (1) Master computer for systems with disk drive; ........................................ 1088.00
1 CNPS-25 or CNPS-50 Power Supply:
CNPS-25 25W output, operates on 120VAC, 50/60Hz, occupies 1 module space in card rack .......... 375.00
CNPS-50 50W output, operates on 100 to 140VAC, 50/60Hz, mounts external to rack .................. 525.00
CNPM/MM (1) System Power Component. Provides local regulation of CNPS system power supply; 1 required per CNRACK and CNRACK-D ........................................ 300.00
Control modules as required ........................................... POR*
Wired or wireless control panels as required .................... POR*
Additional system power components as required .......... POR*

WITH DISK DRIVE

CNRACK (1) Holds 10 control modules; supplied with system control panel ................................ 8863.00
CNMU-D (1) Master computer module; 1 per system .......... 788.00
1 CNPS-25 or CNPS-50 Power Supply:
CNPS-25 25W ........................................ 375.00
CNPS-50 50W ........................................ 525.00
CNPM/MM (1) System power component .................. 300.00
Control modules as required ........................................... POR*
Wired or wireless control panels as required .................... POR*
Additional system power components as required .......... POR*

FOR WIRELESS CONTROL

CNWCI-4 (1) Wireless module. Interface module required in systems with IR or RF wireless transmitters; has 4 wireless adaptor module inputs ........................................ 375.00
Wired Adaptors as Required Each wireless adaptor occupies 1 port of a CNWCI-4. IR and 1-way RF may be used simultaneously.
CNRF-W 1-way remote mounted RF receiver for use with CNWCI-4 ........................................ 150.00
CNRF-2W 2-way remote mounted RF transceiver for use with CNWCI-4; 1 CNRF-2W allowed per CNWCI-4 ........................................ 375.00
CNIRR-1W 1-way remote mounted IR receiver for use with CNWCI-4 ........................................ 150.00

Note: All modules occupy 1 space in card rack.

*Price On Request

Prices and Specifications Subject to Change Without Notice.

427
Cresnet IIP/IIPB Media Control Systems

The Cresnet IIP takes the worry and confusion out of specifying a media control system because it incorporates all the features, functions and software most commonly required in a presentation environment.

In today’s market, many control systems are extremely cost sensitive. To satisfy this requirement, Crestron also offers the Cresnet IIP, Version B. Version B is the perfect cost efficient system with a special combination of features required in a small installation.

Cresnet IIP is powerful, incorporating every software feature and programming tool provided with its big brother, Cresnet II. The Cresnet IIP control system series supports all Cresnet II software, panels, interfaces and accessories.

The Cresnet IIP includes the most commonly used control functions packaged into a complete, turnkey, single priced control system.

Standard Features Include:
- Master computer with exclusive SIMPL (Symbolic Intensive Master Programming Language) software
- 25W power supply, UL listed, CSA and FCC Class B approved
- 16 isolated contact closures
- 8 solid-state switch outputs
- 8 inputs with over-voltage protection
- 6 serial outputs for infrared
- RS-232 or serial interface
- 2-channel professional quality volume control
- Communication port for both 1 and 2-way RF and IR

Cresnet IIP Version B Features:
- Master computer with exclusive SIMPL software
- 25W power supply, UL listed, CSA and FCC Class B approved
- 8 isolated contact closures
- 8 solid-state switch outputs
- 6 serial outputs for infrared, RS-232 or serial interface
- Single-channel professional quality volume control
- Communication port for both 1 and 2-way RF and IR

Options (Both Versions):
- 2 bi-directional RS-232 communication ports
- Local control front panel, including 50 functions and dual bargraph
- 50W VDE approved external power supply for international use and for large system power requirements

Specifications

Power Input: 100-140VAC, 50/60Hz, 30W domestic; 200-240VAC, 50/60Hz, 50W via external CNPSI-50 international.

Power Output: 15W power factor supplied to other devices

Approvals: UL, CSA, FCC Class B

Size and Weight: 3.5" H x 19" W x 9.5" D, approx. 13 lbs.

Serial Output Ports: 6 ports for serial, IR or RS-232 control; 300-19,200 baud

Relay Outputs: 16 isolated closures, 2A, 30VAC/VDC resistive, 1A, 30VAC/VDC inductive, 1mA min.

Inputs: 8 solid-state switch inputs; input threshold less than 0.9VDC or closure to ground max. input 24VDC

Outputs: 8 solid-state switch outputs to ground; 0.1A max. per output, 24VDC max. open circuit voltage

Software

To complete the control package, Crestron has developed an easy-to-use, intuitive programming language, SIMPL. This is the same software used on larger Cresnet II systems. SIMPL uses graphic symbols which represent control functions. Control scenarios are simply represented by block diagrams drawn using the library of available symbols. The block diagrams are then converted into control programs by user-friendly software. Program entry is as easy as filling in the blanks. Cresnet IIP with SIMPL software incorporates a system of software device drivers used to communicate and control equipment with serial inputs, thus eliminating the need for custom chips and special programming. These drivers are available for virtually every type of equipment used in the A/V industry. The Cresnet IIP also includes a wealth of programming tools and utilities to further simplify system programming startup.

CNP
Complete control system with 6 IR/serial/RS-232 ports, 16 relays, 8 inputs, 8 outputs, 2-channel Pro volume control, wireless interface, power supply and system software...

CNPI
For international use. Same as CNP less power supply. Requires a CNPSI-50...

CNPI-A
Complete control system with 6 IR/serial/RS-232 ports, 8 relays, 24 outputs, 3-channel Pro volume control, wireless interface, power supply and system software...

CNPI-A
For international use. Same as CNP-A less power supply. Requires a CNPSI-50...

CNPI-B
Complete control system with 6 IR/serial/RS-232 ports, 8 relays, 8 outputs, 1-channel Pro volume control, wireless interface, power supply and system software...

CNPI-B
For international use. Same as CNP-B less power supply. Requires a CNPSI-50...

System Options

CNPLCP-50 50-function local control front panel; includes colored cap LEDs, with feedback dual bargraph and custom engraving...

CNPCOM-2 2 bi-directional RS-232 ports...
A/V CONTROL SYSTEMS

The Command Center Audio-Visual Control and Presentation Management System

- User-friendly control center
- Presenter’s message screen
- Speaker timer system
- Teleprompter
- Teleconferencing control center
- Data retrieval terminal
- Time and date indicators
- Graphic display
- Fully field programmable
- Touch-sensitive display screen
- 640W x 400H pixels
- Choice of models with display colors of: black-on-white or amber-on-black
- Choice of super-twist LCD or electroluminescent display

Software Included:
- On-board graphic and operating system
- Mouse interface (Logitech) via RS-232 port
- MS-DOS and Macintosh interface software for upload, download, keyboard, mouse and message transmission
- A printer may be connected to the RS-232 port to produce full-size copies of panel configurations stored in the Command Center

The Command Center is a bright, high resolution, touch-sensitive display screen with powerful on-board computers and advanced graphic display software. This compact low power unit can simulate control buttons and switches as a 98 pane display text and graphics. When used in combination with Crestron’s control products, the Command Center is perfect for both large and small systems.

Control panels are displayed on a high resolution screen with just the control functions and speaker support elements needed for a particular presentation. Panels may be as simple or as complex as an application requires.

A unique directory concept allows simple access to any panel. A panel button may be assigned to select any other panel in the non-volatile memory. Thus, related panels may be accessed from the active panel. This same button can also activate control functions while changing to the new displayed panel. Support elements such as clock, speaker timer, teleprompter, computer accessed message and data window may be conveniently integrated into any panel.

Advanced graphic software provides fast, smooth display changes with an almost infinite variety of graphic shapes and sizes, including four upper and lower case type sizes. The combination of graphics and text gives the freedom to design user-friendly self-instructing panels.

Control buttons may be simply created by drawing them on the screen with your finger. Standard button shapes are square, rectangle, circle, ellipse, radius and obround shapes. Size aspect ratios and line thickness may be changed by a simple touch. Panel design is simplified by a grid and snap-to-grid feature. This feature allows buttons to be moved to exact alignment with each other, thus locking button locations to a grid which is displayed on the screen during the panel design process. Borders defining button groups may be created with the same ease and variety as creating buttons. Four text sizes are available to label buttons and borders. Special characters may be used to give your panel that professional look. A system of pull-down menus and menu panels provides instant access to all editing and panel design functions.

Predefined graphic elements are inserted into a panel design by a single touch. These include clocks, speaker timers, bar graphs and random access keypads. Complete displays, as well as complex graphics, icons and corporate logos, can be created on an AUTOCAD system and loaded directly into the Command Center. Once displayed on the Command Center, the AUTOCAD graphics can be easily configured to perform any desired function in the remote control system. Non-volatile memory permits storage of up to 999 discrete functions.

The RS-232 port may also be used to connect a PC and mouse to the Command Center. The mouse can be used to draw graphics, floor plans, teleconferencing layouts, and replace the human finger in programming. The PC’s keyboard speeds the process of entering text.

A PC also may be used to transmit messages to the Command Center. The message appears in a window of user-defined size. A simple touch of the message window removes it from the screen. A presenter may also recall computer files and display them using the same window technique. Optional teleprompter software is available so that an interactive, full feature speaker teleprompter may be implemented.

An input/output port allows up to 64 pushbutton switches with incandescent or LED feedback indicators to be connected directly to the Command Center. The switches may operate any function in the system and interact with the Command Center display. Relays may also be driven from this port to provide control of local functions, such as lectern height control or microphone mute.

In systems with multiple Command Centers, the tracking feature updates each display should a change be initiated on any panel. Tracking may be selectively inhibited on any panel, permitting selection of a different display without affecting the other panels.

CTP-1000DST LCD double super-twist cold cathode fluorescent backlight. 5.2" H x 8.3" W screen, high brightness, black-on-white graphics. Suitable for very high ambient lighting. Mid-sized viewing area...

CTP-1000EL2 Electroluminescent display. 4.7" H x 7.6" W screen, widest viewing angle, high contrast amber-on-black graphics.

CTP-1000ELB Same as CTP-1000EL2 plus 16 independent pushbuttons with LED feedback indicators...

RMK-1000 Rackmount kit. Requires 10.5" rack space. For use with CTP-1000DST...

RMK-1000EL Rackmount kit. Requires 10.5" rack space. For use with CTP-1000EL2...

TSDK-1000 Table stand kit. 2 smoke-gray acrylic side panels for use with CTP-1000DST...

TSK-1000EL Table stand kit. For use with CTP-1000EL2; 2 smoke-gray acrylic side panels...

TPS-1000 Teleprompter software. For MS-DOS PC...

DBS-1000 Data base access software. For MS-DOS PC...

LTM-1000 Logitech mouse...

Prices and Specifications Subject to Change Without Notice.
CRESTRON

A Comprehensive Line of Off-the-Shelf Wireless Transmitters and Wired Panels for Use With Crestron Control Systems

There is a wide variety of button configurations to suit virtually every control requirement—from a simple handheld 1-button wireless transmitter to a sophisticated wired or wireless panel with feedback. And any wired or wireless panel used in conjunction with an Executive or Cresnet system includes a custom engraved panel. An easy-to-use design kit provides a wide variety of design choices. Now you can select console enclosure finish as well as panel and button colors.

Wireless Transmitters

- 250' range from received unit
- Multiple control locations
- Simple screwdriver adjustments of carrier frequency, no test equipment necessary
- Dip switch for digital identity code selection
- Power consumed only during button depression
- Long-life 9V alkaline battery included
- LED indicates battery strength
- Consoles may be freestanding or mounted in a lectern
- Dip switch for digital identity code selection
- Simple installation via 4-conductor cable
- Panels available with 8 to 48 functions
- Control panels may be positioned up to 1000' from the control decoder
- Complete customization is also available with the Cresnet Designer Panels. Virtually every aspect of the unit is defined by the end user to provide a panel which would enhance any AV facility.

1- and 2-way console transmitters are available with 16 to 48 functions. Convenient handheld transmitters utilize 1-way transmission. The compact, lightweight units are available with 1 to 16 functions and may be used in conjunction with the larger transmitters.

Regardless of the size of the transmitter, the primary feature that links all units is their dependable operation. Crestron employs a unique combination of frequency tuning and digital coding which allows numerous systems to operate in close proximity without interference. The ultra high frequency (UHF) radio transmissions permit wireless operation of equipment through walls and rear projection screens.

Wired Panels

The Executive Series II EWP wired panels offer features you want at a price you can afford.

- Simple installation via 4-conductor cable
- Panels available with 8 to 48 functions
- Control panels may be positioned up to 1000' from the control decoder
- Complete customization is also available with the Cresnet Designer Panels. Virtually every aspect of the unit is defined by the end user to provide a panel which would enhance any AV facility.

1-Way Transmitters Handheld

(Executive and Cresnet)

<table>
<thead>
<tr>
<th>Transmitter</th>
<th>Functions</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTS-12</td>
<td>12</td>
<td>$383.00</td>
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<tr>
<td>CTS-16</td>
<td>16</td>
<td>$459.00</td>
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</table>

2-Way Transmitters Console

(Executive and Cresnet)

<table>
<thead>
<tr>
<th>Transmitter</th>
<th>Functions</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTV-24</td>
<td>24</td>
<td>$995.00</td>
</tr>
<tr>
<td>CTV-32</td>
<td>32</td>
<td>$1148.00</td>
</tr>
<tr>
<td>CTV-40</td>
<td>40</td>
<td>$1301.00</td>
</tr>
<tr>
<td>CTV-48</td>
<td>48</td>
<td>$1454.00</td>
</tr>
</tbody>
</table>

Wireless Transmitters

- 2-Way Wireless Transmitters

These transmitters are used solely with Cresnet systems. True feedback is provided via an LED located on each pushbutton. As a function is activated on any panel or equipment control module, the LED illuminates on all wireless panels to indicate equipment status. A battery-saving feature allows the LEDs to automatically extinguish after 30 seconds and illuminate again when any function is activated or if the Status button is depressed.

250' range from received unit. Multiple control locations. True feedback is provided via an LED located on each pushbutton. As a function is activated on any panel or equipment control module, the LED illuminates on all wireless panels to indicate equipment status. A battery-saving feature allows the LEDs to automatically extinguish after 30 seconds and illuminate again when any function is activated or if the Status button is depressed.

2-Way Wireless Transmitters

(Executive and Cresnet)

<table>
<thead>
<tr>
<th>Transmitter</th>
<th>Functions</th>
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</tr>
</thead>
<tbody>
<tr>
<td>CTF-16</td>
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2-Transmitters Handheld

(Executive and Cresnet)

<table>
<thead>
<tr>
<th>Transmitter</th>
<th>Functions</th>
<th>Price</th>
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</thead>
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<tr>
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</tr>
<tr>
<td>CTF-48</td>
<td>48</td>
<td>$1454.00</td>
</tr>
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</table>

Mini Transmitters (Executive and Cresnet)

<table>
<thead>
<tr>
<th>Transmitter</th>
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</tr>
</thead>
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<tr>
<td>CTM-4</td>
<td>4</td>
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<td>6</td>
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</tr>
<tr>
<td>CTM-8</td>
<td>8</td>
<td>$275.00</td>
</tr>
</tbody>
</table>

Wired Panels (Executive and Cresnet)

- EWP-8      | 8-function wired panel | $842.00 |
- EWP-16     | 16-function wired panel | $842.00 |
- EWP-24     | 24-function wired panel | $995.00 |
- EWP-32     | 32-function wired panel | $1148.00 |
- EWP-40     | 40-function wired panel | $1301.00 |
- EWP-48     | 48-function wired panel | $1454.00 |

Custom Wired Panels (Cresnet Only)

<table>
<thead>
<tr>
<th>Transmitter</th>
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</tr>
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<tr>
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Custom panels finishes and button cap colors are available

Mini Transmitters (Executive and Cresnet)

<table>
<thead>
<tr>
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Mini Transmitters (Executive and Cresnet)

<table>
<thead>
<tr>
<th>Transmitter</th>
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<td>CTM-8</td>
<td>8</td>
<td>$275.00</td>
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</table>

Wired Panels (Executive and Cresnet)

- EWP-8      | 8-function wired panel | $842.00 |
- EWP-16     | 16-function wired panel | $842.00 |
- EWP-24     | 24-function wired panel | $995.00 |
- EWP-32     | 32-function wired panel | $1148.00 |
- EWP-40     | 40-function wired panel | $1301.00 |
- EWP-48     | 48-function wired panel | $1454.00 |

Custom Wired Panels (Cresnet Only)

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</tr>
</thead>
<tbody>
<tr>
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</tr>
<tr>
<td>CDP-60</td>
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</table>

Touch Panels (Executive or Cresnet)

<table>
<thead>
<tr>
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<tr>
<td>CTP-2000</td>
<td>High performance, white-on-blue graphics. Largest viewing area.</td>
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<tr>
<td>CTP-2000DST</td>
<td>For black on white graphics. Suitable for very high ambient lighting, mid-sized viewing area.</td>
<td>$5700.00</td>
</tr>
</tbody>
</table>

430 Prices and Specifications Subject to Change Without Notice.
# TELEVISION FORMAT SCRENS

## TELEVISION FORMAT PROJECTION SCREENS
Various models available with Glass Beaded or nongloss Matte White surface, both flame retardant and mildew resistant.

## TRIPOD MODEL SCREENS
**Picture King Television Format**
- Extra heavy-duty tripod
- Spring roller in embossed metal case
- Camlock metal roller system
- Automatic fabric lock
- Automatic leg lock
- Extra heavy extruded gable type constructed aluminum legs
- Full range height adjustment
- Plunger locks for positive stops
- Built-in keystone eliminator

## MANUAL WALL/CEILING SCREENS
**Model B** Television Format
- Large, ruggedly constructed screen
- No rub, flat back case
- Grooved metal rollers on larger sizes
- May be hung from wall, ceiling or map rail

**Model C** Television Format
- Floor stand to fit all sizes, optional at extra cost
- Slat saddle distributes weight evenly
- Metal rollers on larger sizes
- May be hung from wall, ceiling or map rail

## TELEVISION FORMAT SCREENS

### Perm-Wall Television Format
- Custom screens
- Wall mounting
- No legs
- No case
- Permanent installation

### ELECTRIC WALL/CEILING SCREENS
**Cosmopolitan Electrol® Television Format**
- Whisper-quiet screen with fingertip operation
- Picture surface centered
- Custom crafted for visual presentations
- Walnut grain vinyl covered steel case

**Boardroom Electrol® Television Format**
- Picture surface centered
- Sturdy wood case
- Comes assembled ready for in-ceiling installation

**Senior Electrol® Television Format**
- Low profile decorator
- 2%/" diameter octagon screen case hangs unobtrusively in any room
- Perfect for boardrooms, home entertainment areas, meeting rooms or other "design" sensitive areas
- Electric brake prevents coasting, adjustable limit switches offer format versatility
- Choice of matte or glass beaded surface with black masking borders standard
- Pre-wired with in-line cord switch, no electrician needed for installation
- Accessory low voltage control systems, including wireless remote, optional
- Black case finish with chrome end caps

## PORTABLE SCREENS
**Fast-Fold Television Format**
- Freestanding portable frame
- Snap-button surface snaps onto frame
- Frame and legs 1" square hard alloy structural aluminum tubing etched and anodized
- Frame height adjustable on legs in 6" increments
- Folding frame can be tilted for keystone

## TABLES

### Size

<table>
<thead>
<tr>
<th>H x W</th>
<th>Nominal Diag. Size</th>
<th>Glass Beaded</th>
<th>Matte White</th>
<th>Price</th>
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<tbody>
<tr>
<td>64&quot; x 84&quot;</td>
<td>100&quot;</td>
<td>11-3125-040</td>
<td>11-3125-330</td>
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<tr>
<td>72&quot; x 96&quot;</td>
<td>10&quot;</td>
<td>11-3145-040</td>
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### Price

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<td>10&quot;</td>
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<table>
<thead>
<tr>
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<tbody>
<tr>
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<tr>
<td>72&quot; x 96&quot;</td>
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<table>
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<td>10&quot;</td>
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<table>
<thead>
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<tbody>
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<td>80&quot;</td>
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</tr>
<tr>
<td>64&quot; x 84&quot;</td>
<td>100&quot;</td>
<td>12-4125-040</td>
</tr>
</tbody>
</table>

Prices and Specifications Subject to Change Without Notice.
**POLACOAT® REAR PROJECTION SCREENS**

- In-wall screens for professional presentations
- Choice of glass or acrylic substrates in wide selection of thicknesses and sizes
- Choose glass for longest service life and sound isolation
- Select acrylic for breakage-resistance and installation ease

### Aluminum Frames
- Bronze or satin finish anodized aluminum frames greatly simplify screen installation and provide a finished look.
- Shipped complete with no assembly required
- Bronze or satin finish aluminum frames greatly simplify installation and provide a finished look.

### Optical Coatings for Every Application
- Da-3N - The best balance between brightness and viewing angle for general purpose projection. Yields excellent contrast and color fidelity.
- Da-6N - Special multi-image coating offers wide-angle viewing with short focal length lenses. Provides excellent contrast, brightness, and light distribution.
- Da-5N - High gain projection. Yields excellent contrast and color fidelity.
- Da-1N - Special projection. Yields excellent contrast and color fidelity.

### Da-Plex
- For wide-angle viewing under reduced ambient lighting conditions.
- Provides excellent contrast, brightness, and light distribution.
- Special Freight Handling Required
- Minimum order $50.00

### Da-Glas™
- The balance between brightness and viewing angle and viewing angle for general purpose projection.
- Provides excellent contrast and color fidelity.

### Available With Factory Installed Frames For In-Wall Placement

#### Factory Framed Sizes
- Use the following chart to determine overall frame size.
- Note: Da-Plex up to 7’ x 10’, Da-Glas up to 6’ x 10’

### Unframed Screen Weights
- Frames simplify installation and provide a finished look.
- Frames ship as an assembly for easy carpenter installation, thus avoiding costly on-site glazing.

### Prices and Specifications Subject to Change Without Notice.
Videowalls

SAM Videowall System

Image Storing
Storage capacity for up to 6 images per module (can be held and recalled later); animate images at any time (no waiting time); recall, creatively combine, erase and overwrite images in any desired sequence, and exchange visual data from 1 memory (module) with other memories.

Picture Size/Format Variation
Starting with the "standard" picture size—1 full image per module—you can:
• Scale up or down to different image formats from 1/2 screen to 64 screen (8 x 8)
• Present different motifs on each image area—for example, 16, 9 or 4 different images on 1 screen module or 16 different images on a giant 8 x 8 module screen
• Combine and mix different picture sizes, motifs and image segments (partial pictures) on the same screen area, regardless of size.

For example, a large-screen, 64 module wall SAM offers:
• 64 sources
• 512-image storage capacity (8 per module)
• Scale-down: 1/4, 1/8, 1/16 image sizes 16, 9 or 4 images per module
• Scale-up: almost any desired configuration, e.g., 1 x 1, 1 x 2, 2 x 2, 2 x 4, 3 x 3, 3 x 4, 4 x 2, 4 x 4, 4 x 5, 5 x 5, 5 x 6, 6 x 7, 7 x 7, 8 x 7, 8 x 8.

Post Production Effects
RGB color generator, mirror effects, image compression, stretching, colorizations and other post production effects are all possible with SAM.

SAM Systems

<table>
<thead>
<tr>
<th>Frame Store Cards Used</th>
<th>Includes Monitors</th>
<th>Without Monitors</th>
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<tbody>
<tr>
<td>2 x 2</td>
<td>4</td>
<td>$22,300.00</td>
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<tr>
<td>3 x 3</td>
<td>9</td>
<td>$40,600.00</td>
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<td>16</td>
<td>$66,300.00</td>
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<td>5 x 5</td>
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<td>6 x 6</td>
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<td>8 x 8</td>
<td>64</td>
<td>$254,800.00</td>
</tr>
<tr>
<td>10 x 10</td>
<td>100</td>
<td>$399,900.00</td>
</tr>
</tbody>
</table>

SAM-Pro Software

SAM-Pro is a powerful software specially designed for controlling and programming SAM Videowall. It is user-friendly and easy to learn while at the same time allowing the production of all the impressive effects possible with SAM.

SAM-Pro software can be used with any IBM AT or compatible computer. If used without the SAM Control Card, the computer must have at least 1 serial port. The SAM Control Card is required if you wish to use a SMPTE/timcode for programming or controlling a VCR.

SAM-Pro functions on an immediate execution command basis (I/O-C system), i.e., every command from the software is immediately interpreted and executed by the SAM cards. The 2 primary types of commands for SAM-Pro are direct and single chip commands. A direct command consists of a single byte and causes a single, direct action or effect. A single chip command affects SAM in a more complex way and can cause multiple effects and actions. Used together, these 2 types of commands give SAM-Pro very broad video design capabilities

$1,500.00

SAM Single Unit

Single board play version including: power supply, converter, remote control with special effects

$5,950.00

Universal Videowall System (Effect Software Included)

• Magnifications from 1 x 1-6 x 6 and 8 x 8 (any X-Y combination, e.g., 3 x 2)
• Combination of max. 100 racks for an 1800 monitor wall
• Keyboard monitor freeze capability
• Color generator for 16 million colors
• Colorize mode allows mixed real video with color display
• 4 software controlled RGB inputs on board
• 2 parallel RGB outputs per monitor card
• RS-232 control with on-board micro control card
• Internal SMPTE/EBU timecode reader
• Internal U-Matic control interface
• Universal 1 software emulator
• 10 MHz digitizing rate—video bandwidth: 5 MHz
• 3*8-bit color resolution (8-bit red, 8-bit blue)
• RGB standard inputs 0.7 V p-p, composite sync
• 1.0V p-p
• Pixel resolution: 1 x 1= 256 x 256/2 x 2-6 x 6=512 x 512
• Power supply: 85-240 VAC/50-60 Hz
• Power dissipation: 350 W

GPS Pro Software

GPS Pro is a control software for Universal. Running on an IBM AT computer, this software gives you the programming power for maximum performance.

GPS Pro offers not only a special command set for controlling a videowall, but also implements the major structure functions of a modern programming language. For example, there is no longer the need for a higher language to implement interactive videowall programs. Conditioned program execution is possible, as well as defining global and local variables, loop/loop end constructions and mathematic functions.

In addition GPS Pro supports up to 4 of the Controller Cards in your IBM computer, which offers many possibilities to control external devices with a maximum of 28 special RS-232 ports. Also the IBM internal COM-ports 1-4 are supported to control peripherals over the RS-232. In combination with the Controller Card, GPS Pro also synchronizes and controls program flow with standard SMPTE/EBU studio time code.

The built-in editor has all the features of a modern program implementation such as full block command support, as well as pull down menus for easy handling. For the advanced programmer there are CTRL hotkeys for quick editing and On-Line Help immediately gives you an entire page of information about any command which might be giving you trouble. Simply place the cursor on the command and press F5. Line capacity is only restricted by the free memory in your computer.

A special feature is the EOC (Execute-On-Edit) mode. All commands are executed immediately after the Return key. You always have the instant control of the given commands and the wall status. The commands themselves are recognized after just 3 significant letters, so instead of wasting time typing long statements, you can concentrate on the creative part of your programming sessions.

Running a program is as easy as pressing the function key F1. For automatic program execution, there is a Time-Table (running any program at any preset time automatically) and even command line parameters for unoperated startup on power on

$1,500.00

Prices and Specifications Subject to Change Without Notice.
**PROJECTION SCREENS**

**V-Screen – 5-Year Warranty**

All Draper V-Screens are warranted against defects in materials and/or workmanship for 5 years.

Extreme simplicity of design, durable components and tearproof fiberglass matte white viewing surface make the Draper V-Screen the longest lasting classroom wall screen, and at a very reasonable price.

<table>
<thead>
<tr>
<th>Size</th>
<th>Product Number</th>
<th>Shipping Wt. (Lbs.)</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>40&quot; x 40&quot;</td>
<td>VS4040M</td>
<td>5</td>
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<tr>
<td>50&quot; x 50&quot;</td>
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<td>96&quot; x 96&quot;</td>
<td>VS9696M</td>
<td>19</td>
<td>$224.00</td>
</tr>
</tbody>
</table>

**Star – Classroom Wall Screen**

Durable construction and attractive design—at an economy price. Cylindrical steel case and tearproof fiberglass matte white are standard. Heavy gauge endcaps form universal mounting brackets.

<table>
<thead>
<tr>
<th>Size</th>
<th>Product Number</th>
<th>Shipping Wt. (Lbs.)</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>50&quot; x 50&quot;</td>
<td>ST5050M</td>
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<tr>
<td>84&quot; x 84&quot;</td>
<td>ST8484M</td>
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<td>$181.00</td>
</tr>
</tbody>
</table>

**Luma – Finest Wall/Ceiling Screen**

Highest quality projection screen for wall or ceiling mounting. Combines contemporary appearance and dependable performance. Attractive walnut and chrome styling. Choice of fiberglass matte white (-M) or glass beaded (-G) viewing surface.

<table>
<thead>
<tr>
<th>Size</th>
<th>Product Number</th>
<th>Shipping Wt. (Lbs.)</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>50&quot; x 50&quot;</td>
<td>LM5050M/G</td>
<td>11</td>
<td>$81.00</td>
</tr>
<tr>
<td>60&quot; x 60&quot;</td>
<td>LM6060M/G</td>
<td>15</td>
<td>$95.00</td>
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<tr>
<td>70&quot; x 70&quot;</td>
<td>LM7070M/G</td>
<td>17</td>
<td>$120.00</td>
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<tr>
<td>84&quot; x 84&quot;</td>
<td>LM8484M/G</td>
<td>22</td>
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<tr>
<td>96&quot; x 96&quot;</td>
<td>LM9696M/G</td>
<td>27</td>
<td>$256.00</td>
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</table>

**Luma 2 – For Large Audiences**

Superior quality spring roller screen for large audiences. Designed for wall or ceiling mounting. Walnut woodgrain and chrome styling. Choice of fiberglass matte white (-M) or glass beaded (-G) viewing surface.

<table>
<thead>
<tr>
<th>Size</th>
<th>Product Number</th>
<th>Shipping Wt. (Lbs.)</th>
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</tr>
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<tbody>
<tr>
<td>6' x 8'</td>
<td>L27296M/G</td>
<td>39</td>
<td>$325.00</td>
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<tr>
<td>8' x 8'</td>
<td>L29696M/G</td>
<td>41</td>
<td>$350.00</td>
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<tr>
<td>7' x 9'</td>
<td>L279M/G</td>
<td>45</td>
<td>$362.00</td>
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<tr>
<td>9' x 9'</td>
<td>L299M/G</td>
<td>48</td>
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<td>4' x 10'</td>
<td>L2410M/G</td>
<td>47</td>
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<td>8' x 10'</td>
<td>L2810M/G</td>
<td>50</td>
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<tr>
<td>10' x 10'</td>
<td>L21010M/G</td>
<td>56</td>
<td>$478.00</td>
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<tr>
<td>5' x 12'</td>
<td>L2512M/G</td>
<td>65</td>
<td>$548.00</td>
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<td>9' x 12'</td>
<td>L2912M/G</td>
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<tr>
<td>12' x 12'</td>
<td>L21212M/G</td>
<td>85</td>
<td>$614.00</td>
</tr>
</tbody>
</table>

**Mounting Fixtures for Wall/Ceiling Screens**

- **T-Bar Twist Clips** – Mount screens directly to T-irons supporting suspended ceilings — without tools. For Star and Luma through 70" x 70" and all V-Screens. **TBTC** .......................................................... pr./$8.20
- **Keystone Eliminator Brackets** 16" - 25" adjustable brackets .......................................................... pr./$25.20
- **Non-adjustable wall brackets, 6" extension** .......................................................... pr./$11.00
- **Non-adjustable wall brackets, 12" extension** .......................................................... pr./$19.70

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Prices and Specifications Subject to Change Without Notice.
**VIDEO/GRAPHICS PROJECTION SYSTEMS**

**ECP® 3100 Data/Graphics Projector**

The ECP 3100 is a microprocessor-based 3-lens data/graphics and video projection system that scans 15-55kHz. Simple to set up and operate, the ECP 3100 has on-screen menus and is controlled by an infrared remote keypad.

**Scan Frequency:** 15-55kHz (horizontal) autolock
45-120Hz (vertical) autolock

**Retrace:** 3.6ms

**Light Output:** 650 lumens

**Resolution:** 1280 x 1024

**Bandwidth:** 60MHz

**Inputs:** RGB, TTL, NTSC 3.58, NTSC 4.43, PAL, SECAM

**Screen Size:** 5'-25' diameter

**Size:** 17.25" H x 24" W x 25" D

**Weight:** 99 lbs.

ECP 3100 ........................................ $12,995.00

**ECP 3101 Acon® Data/Graphics Projector**

Same as ECP 3100 except weighs 114 lbs. and features Acon automatic convergence feature. Acon auto-convergence is a hardware/software system that automatically aligns the projected color image from an Electrohome 3-lens data/graphics projector when initiated by the user through a command from the projector’s keyboard or remote. This function is performed by the Acon system in less than 3 minutes over 45 zones on the screen. Before Acon, this wasn’t even a remote possibility.

ECP 3101 ........................................ $15,995.00

**ECP 4100 Data/Graphics Projector**

The ECP 4100 is a microprocessor-based 3-lens data/graphics and video projection system that scans 15-80kHz. Simple to set up and operate, the ECP 4100 has on-screen menus and is controlled by an infrared remote keypad.

**Scan Frequency:** 15-80kHz (horizontal) autolock
45-120Hz (vertical) autolock

**Retrace:** 2.5ms

**Light Output:** 650 lumens

**Resolution:** 1280 x 1024

**Bandwidth:** 70MHz

**Inputs:** RGB, TTL, NTSC 3.58, NTSC 4.43, PAL, SECAM

**Screen Size:** 5'-25' diameter

**Size:** 17.25" H x 24" W x 25" D

**Weight:** 99 lbs.

ECP 4100 ........................................ $19,995.00

**ECP 4101 Acon Data/Graphics Projector**

Same as ECP 4100 except weighs 114 lbs. and features Acon automatic convergence feature.

ECP 4101 ........................................ $22,995.00

**Data/Graphics Projector Accessories**

<table>
<thead>
<tr>
<th>Accessory</th>
<th>Price</th>
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<tbody>
<tr>
<td>Mobile cart</td>
<td>$ 499.00</td>
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<tr>
<td>Ceiling mount</td>
<td>$ 355.00</td>
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<tr>
<td>IR video/data switcher</td>
<td>$ 1,595.00</td>
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<tr>
<td>Quad standard decoder NTSC/PAL/SECAM</td>
<td>$ 596.00</td>
</tr>
<tr>
<td>Interface modules</td>
<td>$255.00-295.00</td>
</tr>
</tbody>
</table>

**ECP Retro Portable Rear Screen Projection Enclosure**

The ECP Retro is a portable rear screen projection enclosure for Electrohome Data/Graphics Projection Systems. Provides a self-contained, stand-alone 67” diagonal rear screen enclosure for sharp, bright images in full ambient light environments.

- **Size:** 78" H x 58.2" W x 32" D
  (Pullout adds 18" to depth)
- **Color:** Gray tubular steel frame with gray corded polypropylene covered panels
- **Weight:** 355 lb./420 lb. shipping weight
- **Screen:** 67” diagonal high resolution fresnel/lenticular screen

ECP Retro ........................................ $7,500.00

Prices and Specifications Subject to Change Without Notice.
Overhead Projectors (Non Glare)
Common features found in all of our overhead projectors include a large 10" x 10" stage for projecting 650W of direct halogen lamp illumination. The color tone control is universally interlocked with the focusing knob for excellent color rendition. All cooling systems utilize a built-in fan motor to provide high volume forced-air cooling. For projector and personal safety, an incorporated safety switch automatically disengages the electrical circuit when the stage is opened. A thermal switch prevents overheating. All units project both sheet and/or roll transparencies.

Classroom Overhead Projectors
4302 HP-L14 Budget Classroom 14" lens, 10" x 10" aperture, solid metal body, ENX lamp, dust-free sealed compact head, rack and pinion focusing ............. $249.00
4320 HP-L355, 14" lens, 16.5 lbs ............... $299.00
4327 HP-L355 Deluxe with lamp changer and variable brightness control, 14" lens, 17.6 lbs., supplied with 1 ENX lamp ................ $369.00

Portable, Wide Angle Projectors
4319 HP-L290 Portable, wide angle 11.4" lens, 16.5 lbs., with reinforced carrying cover .............. $465.00
4324 HP-L290 Deluxe Portable with lamp changer and variable brightness control, wide angle 11.4" lens, 17.6 lbs., supplied with covering cover and 1 ENX lamp .......................... $535.00
4318 HP-A250 Portable, multi-voltage, aperture size 11 1/4" x 11 1/4", high/low brightness control, wide angle 11.4" lens, 23 lbs., with reinforced carrying cover .... $499.00

Briefcase Size, Self-Contained Projectors
4345 HP-254S Portable, self-contained projector, aperture 10" x 10", wide angle 11.4" lens, spare lamp storage, supplied with 1 ENX lamp, plastic dust cover, dismounted size 4.9" x 17.7" x 14.1", slim, lightweight 18 lbs ................ $396.00
4310 HP-285S Portable, similar to HP-254S but has a wide angle 11.4" lens, aperture 11 1/4" x 11 1/4" business size, with quick lamp changer, 2 FLW lamps, reinforced carrying cover, self-retracting cord storage, weight 19.2 lbs ........ $508.00
4309 HP-285P Portable, features same as HP-285S but with 11-12.6" 3-element vari-focus lens for higher resolution .......... $617.00
4351 Padded soft carrying case for HP-254S/285S/285P ........................................ $87.50

300 Series Conference Room Type Overhead Projectors
* 11 1/4" x 11 1/4" (A4 format) aperture * High quality metal body * Whisper-quiet, powerful cooling * Superior resolution optics
4701-27 HP-A305 LV Overhead Projector. 24V, 250W EHU lamp, 265-305mm Vari-focal 3-element lens, Hi-Lo brightness selection, quick lamp changer, multi-voltage (soldering change required) ........................................ $499.00
4705 HP-A305 SQ Overhead Projector. 36V, 400W EVD lamp, 265-305mm Vari-focal 4-element lens, non-keystone focusing at 7° angle, Hi-Lo brightness selection, quick lamp changer ........................................ $595.00
4707 HP-A380 Zoom Overhead Projector. 36V, 400W EVD lamp, 170-380mm Vari-focal 6-element lens, power-operated 2X zoom stage, 360° swivel head, variable brightness control, automatic lamp changer ........................................ $1650.00
4708 HP-305 Solar Overhead Projector. 250W metal-halide lamp, 265-305mm Vari-focal 3-element lens, 360° swivel head, Hi-Lo brightness selection ........................... $1890.00

Prices and Specifications Subject to Change Without Notice.
**UNIVERSAL COMPUTER INTERFACES**

**RGB202 PLUS Universal TTL/Analog/ECL Computer Graphics Interface**

Along with an extended line of monitor breakout cables and internal computer wiring kits, the RGB202 PLUS provides versatility and compatibility with any computer system on the market. The horizontal frequency range of the RGB202 PLUS is 15-125kHz, the RGB video bandwidth is 220MHz and it contains switchable dual TTL and analog/ECL inputs. Special enhancement features give the RGB202 PLUS the ability to improve clarity, sharpness, video level, enhance the blue level of TTL signals, do full picture centering and also boost the video output for cable runs of up to 1000'.

- Auto power LED
- Variable level control
- Variable peaking (sharpness) control
- LCD composer scan frequency readout
- Boost switch (for long cable runs)
- Vertical picture centering
- Dual horizontal picture centering controls (1 for the TTL input and 1 for analog/ECL input)
- Horizontal frequency indication LEDs (4 ranges) • Variable TTL blue enhancement
- Front panel TTL and analog/ECL input switch • Rear panel input switch remote jack • 75 termination switch
- Automatic sync stripping from green
- Sync on green switch
- Serration pulse removal switch
- Widen vertical sync pulse switch (150ms to 500ms)
- 1000' cable run capability
- Horizontal frequency range of 15-125kHz • RGB video bandwidth of 220MHz -3dB (sweep tested) • Rise time of 1.6ns (pulse tested)
- External control knobs • FCC Class A
- Monochrome composite video output
- Separate H and V sync output
- Color RGB and sync output
- Horizontal frequency range of the RGB202 PLUS is 15-125kHz, the RGB video bandwidth is 220MHz and it contains switchable dual TTL and analog/ECL inputs.

**UK -2 Universal Interface Kit**

- Uses Extron's industry standard RGB202 PLUS universal TTL/analog/ECL computer video interface along with the included MBC (Monitor Breakout Cables) and the ICWKs (Internal Computer Wiring Kit) allows immediate compatibility with virtually every interface application, including mainframes, workstations, PCs, laptops and portables. Included cables allow connection to the following computers: IBM PC XT/AT CGA/EGA, IBM PS/2 VGA, Super VGA and Extended VGA, Macintosh II, IIx, IIcx, IIci, Apple IIgs, Sun Sparc, NeXT, Mac SE and SE/30, Sun Workstations, Apollo Workstations, Silicon Graphics Workstations, IBM MDA Cards and Hercules HGC Cards. Includes a carrying case which is small enough to fit under an airplane seat.

**UK-2 Kit**

- Factory installed • Price: $2295.00

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**Partial Computer Compatibility Listing (cont'd)**

<table>
<thead>
<tr>
<th>Cable Name</th>
<th>Compatible Computers</th>
<th>Hor. kHz</th>
<th>Vert. Hz</th>
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<td>ICWK Mac SE RGB</td>
<td>22.0</td>
<td>60</td>
</tr>
<tr>
<td>ICWK AT&amp;T 7300</td>
<td>AT&amp;T 7300 Mono</td>
<td>22.3</td>
<td>60</td>
</tr>
<tr>
<td>MBC AT&amp;T 6300</td>
<td>AT&amp;T 6300 Color</td>
<td>26.0</td>
<td>60</td>
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<tr>
<td>MBC B25</td>
<td>Burrroughs 25</td>
<td>19.8</td>
<td>60</td>
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<tr>
<td>MBC NCR PC 6, 8</td>
<td>NCR PC 6, 8 Color</td>
<td>23.6</td>
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<td>MBC Sigma 400</td>
<td>Sigma 400 Color</td>
<td>31.4</td>
<td>60</td>
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<td>MBC Sperry Med.</td>
<td>Sperry Medium Res.</td>
<td>15.7</td>
<td>60</td>
</tr>
<tr>
<td>MBC TI PC</td>
<td>Texas Ins. PC Color</td>
<td>19.2</td>
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<td>MBC TI Business Pro</td>
<td>Texas Ins. Bus. Pro</td>
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<td>MBC West PC Mono</td>
<td>West PC Mono 8-pin DIN</td>
<td>18.4</td>
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<tr>
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<td>West PC Color 8-pin &quot;0&quot;</td>
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<td>MBC Zenith 150</td>
<td>Zenith 150 Color</td>
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<td>MBC Mac II HR</td>
<td>Apple IIgs and IIc</td>
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<td>66</td>
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<td>Mac II w/ Super Mac Card</td>
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<td>60/70</td>
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<td>Amiga 500, 1000, 2000</td>
<td>15.7</td>
<td>60</td>
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<tr>
<td>MBC IBM PGA</td>
<td>PC, XT, AT and Compatibles</td>
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<td>MBC IBM PS/2</td>
<td>PS/2 VGA</td>
<td>31.5</td>
<td>60/70</td>
</tr>
<tr>
<td>MBC IBG VR</td>
<td>VGA or Super VGA</td>
<td>31.5</td>
<td>60/70</td>
</tr>
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<td>MBC NeXT XR</td>
<td>NeXT Computers</td>
<td>62</td>
<td>68</td>
</tr>
<tr>
<td>MBC SUN/ APOLO</td>
<td>Monochrome 3G Sun</td>
<td>63.8</td>
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<td>Workstations or any</td>
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<td>MBC DEC 340</td>
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<td>MBC IBM PGA</td>
<td>PC, XT, AT and Compatibles</td>
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<td>MBC IBM PS/2</td>
<td>PS/2 VGA</td>
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<td>MBC IBG VR</td>
<td>VGA or Super VGA</td>
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<td>MBC NeXT XR</td>
<td>NeXT Computers</td>
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<td>MBC SUN/ APOLO</td>
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<td>MBC RGB Universal HR</td>
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<td>MBC DEC 340</td>
<td>DEC 340</td>
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<td>60/70</td>
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<tr>
<td>MBC Amiga 2000</td>
<td>Amiga 500, 1000, 2000</td>
<td>15.7</td>
<td>60</td>
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<tr>
<td>MBC IBM PGA</td>
<td>PC, XT, AT and Compatibles</td>
<td>31.5</td>
<td>60</td>
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<tr>
<td>MBC IBM PS/2</td>
<td>PS/2 VGA</td>
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<td>60/70</td>
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<tr>
<td>MBC IBG VR</td>
<td>VGA or Super VGA</td>
<td>31.5</td>
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<tr>
<td>MBC NeXT XR</td>
<td>NeXT Computers</td>
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<td>MBC SUN/ APOLO</td>
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<td>MBC RGB Universal HR</td>
<td>Color Sun and Apollo</td>
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<td>Amiga 500, 1000, 2000</td>
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<td>MBC IBM PGA</td>
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<td>MBC IBM PS/2</td>
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<td>MBC IBG VR</td>
<td>VGA or Super VGA</td>
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<tr>
<td>MBC RGB Universal HR</td>
<td>Color Sun and Apollo</td>
<td>64</td>
<td>60</td>
</tr>
</tbody>
</table>
RGB 118/RGB 118 PLUS Universal Interfaces

The RGB 118 and RGB 118 PLUS (with SRI) Universal Interfaces are compatible with any computer video output with a TTL, analog or ECL signal (such as CGA, EGA, VGA, IBM PS/2, Mac II, Super VGA, Sun, NeXT and many more). Providing an RGB video bandwidth range of 150MHz and a horizontal frequency range between 15-100kHz, the RGB 118 and RGB 118 PLUS allow any computer to be connected to a compatible large screen data projector or data monitor. The easy-to-use RGB 118 and RGB 118 PLUS also include a number of features that guarantee complete computer compatibility, including the ability to automatically track any incoming frequency and allow for picture centering, video peaking (sharpness) controls, adjustable gain control, horizontal centering and 3 output configurations (RGB-Sync, RGB-Sync on Green or Mono Composite). The RGB 118 PLUS with SRI has 2 additional features. An LCD scan-rate display automatically detects the horizontal and vertical frequency of any input computer source through the connected cable and displays that frequency in hertz. Also, through the power of SRI, simply holding the RGB 118 PLUS up to the face of the computer’s monitor will display the horizontal rate without any attached input cables.

Common Features

- Horizontal centering shifts the displayed image to the right or left of the screen, as desired. A horizontal center on/off switch is provided to override the horizontal center control.
- Peaking allows for the sharpness of the displayed image to be enhanced in 2 increments. Peaking of high resolution type signals decreases the “fuzziness” or “streaking” commonly associated with projection of many computer signals.
- 3 output configurations standard—RGB-Sync: The RGB 118 and RGB 118 PLUS are factory set for the most common application of analog separated red, green, blue and composite sync outputs. The RGB 118 and RGB 118 PLUS automatically strip sync off the red, green and blue video channels of any incoming signal. RGB-Sync on Green: A switch is provided to allow sync to be added to the green channel of any output signal. Mono Composite Video: A switch is provided to allow for a monochrome composite video signal output utilizing the green channel.
- Can automatically strip sync from any incoming computer signal from the red, green and blue video channels.
- A TTL blue enhancement control is provided for mixing just the right amount of blue information with the green signal for displaying text in a more readable “aqua” color.
- A 12V power output jack is provided to allow for connection of all of Extron’s MBC buffers for high resolution computers and workstations.
- Standard 9-pin TTL, analog or ECL input connector provided to allow for connection of the RGB 118 and RGB 118 PLUS to all of Extron’s existing MBC and ICWK cables, thus not requiring a complete set of new cables.

Features of the RGB 118 PLUS Only

- SRI allows for automatic detection of the horizontal and vertical frequency by simply holding the RGB 118 PLUS up to the face of the computer’s monitor screen. No connection cables are required. The scan-rate is displayed on the LCD readout in hertz.
- An LCD readout is provided to determine the exact horizontal and vertical scan rates from the input computer source. The frequency is displayed in hertz.
- Vertical shift

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>RGB 118</td>
<td>$495.00</td>
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<tr>
<td>RGB 118 PLUS</td>
<td>$650.00</td>
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</table>

UK-1 jr Universal Interface Kit

- Uses Extron’s simple to use RGB118 PLUS universal TTL/ analog/ECL computer video’s interface along with a number of MBC “Monitor Breakout Cables”
- Provides simple compatibility with the most popular PC type applications including: IBM PC XT/AT colors and compatibles, CGA/EGA, IBM PS/2, VGA, Super VGA, extended VGA, Apple IIGS and all Mac II models
- Along with the RGB 118 PLUS and the monitor breakout cables, the UK-1 jr comes with a 25’ high resolution BNC cable, all packaged in a handy carrying case

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>UK-1 jr</td>
<td>$1125.00</td>
</tr>
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</table>

VS-100 VideoShift Screen Saver

The VS-100 allows the projector or monitor to be utilized at all times because it never totally shuts off the signal. It simply moves the displayed image around in a circle continuously on the screen, thus minimizing the amount of time for burn-in.

The VS-100 has a range adjustment capable of manually setting the amount of shift around the screen, depending on the size of the characters being displayed.

A complete revolution around the screen is factory set for 8 minutes so it is unnoticeable by the audience. It simply “sits” in the background, helping to extend the life of the CRT.

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>VS-100</td>
<td>$995.00</td>
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</table>

Prices and Specifications Subject to Change Without Notice.
VIDEO PROJECTION/ PRESENTATION SYSTEMS

Imager® LCD10 Portable Liquid Crystal Video Projector
- Portable, under 30 lbs.
- Easy to set up and use
- Single lens system
- No convergence
- Three 3.1" active matrix LCDs
- High pixel count
- Available for maximum brightness and resolution
- 331,350 total pixels
- Reverse picture scanning
- Front and rear projection
- Built-in 3W amplifier and speaker
- Image sizes up to 120"
- Infrared remote control and focus
- 12.7"H x 8.7"W x 24.9"D
- f/4.5 lens with 5.51" - 10.63" motor drive zoom and focus
- 150W metal halide lamp

Imager 150 Video Projector
- Wireless infrared remote control
- On-screen menus
- Digital chassis
- With comb filter
- Audio amp with 2 5" speakers
- Ceiling mount (optional)

Specifications
- Scan Frequency: 15.75kHz horizontal, 60Hz vertical
- Brightness: 600 lumens
- Resolution: 425 lines S-Video and 525 lines RGB
- Inputs: 1 NTSC video (BNC), 1 S-Video (with optional adaptor), 1 RGB (with optional adaptor), 1 audio (RCA)
- Picture Size: 60-120"
- Throw Distance: 1.14x screen width

Imager 210 Video/Graphics Projector
- Vary the picture size from 50" to greater than 120" diagonally
- Vary the throw distance from about 5' to 18'
- Project inputs from any video signal, and switch from 1 to another instantly
- Link up with IBM® and IBM CGA compatible computers, using the optional RGB interface, for dynamic data and graphics displays of up to 2000 characters
- Project on front or rear screens
- Use the projector ceiling mounted or freestanding
- 650 lumens
- 600 TV lines
- 1000 lines RGB
- f/1.0 hybrid lenses
- Quadra-potential focus gun (QPF)
- Dual focus lens designed for sharp edge focus

Specifications
- Screen Size: > 9' x 12'
- Lenses: Double-focus hybrid
- Inputs: 1 loopthrough composite video, 1 S-VHS, 1 RGB
- Power Supply: 120V, 50/60Hz
- Weight: 77 lbs.
- Dimensions: 1113/22"H x 2211/16"W x 239/4"D

Imager 310 Video/Data Projector
- RGB/video switcher (with audio follow switching)
- Remote controls: wireless infrared, 1 full function and 1 executive remote, digital convergence (static, dynamic, point)
- 8 convergence and picture geometry memories
- 12" RGBHV and control cables
- Ceiling mount (optional)

Specifications
- Scan Frequency: 15.750-36kHz horizontal, 38-100kHz vertical
- CRTs: 7" with Norita glass lenses
- Brightness: 575 lumens
- RGB Bandwidth: 30MHz
- Resolution: 800 lines RGB and 600 lines video
- Minimum Retrace: <4.8 microseconds horizontal, <600 microseconds vertical
- Inputs (via switchers): 2 video, 1 RGB, 1 S-Video
- 3 RGB (19-pin TTL/analog and 2 BNC analog)
- Picture Size: 72-120"

Imager 414 Video/SuperData Projector
- RGB/video switcher (with audio follow video switching)
- Remote controls: backlit wired/wireless infrared, 1 full function and 1 executive remote (12" cable included), digital convergence
- (static, dynamic, point), 12 convergence and picture geometry memories, center and edge electronic focus, height, width, H-position, V-hold, RGB gains, on-screen menus, quick copy for fast convergence setup
- Ceiling mount kit
- 52" RGBHV and control cables

Specifications
- Scan Frequency: 15.750-55kHz horizontal, 38-100kHz vertical
- CRTs: 7" liquid cooled with HD6 lenses
- Brightness: 600 lumens
- Peak white: RGB Bandwidth: 50MHz
- Resolution: 1000 lines RGB and 600 lines video
- Minimum Retrace: <4.5 microseconds horizontal, <450 microseconds vertical
- Inputs (via switchers): 2 video (PAL/SECAM/NTSC and 1 S-Video), 3 RGB (19-pin TTL/analog and 2 BNC analog)
- Picture Size: 60-300"

Imager 610 Video/Graphics Projector
- RGB/video switcher (with audio follow video switching)
- Remote controls: backlit wired/wireless infrared
- 1 full function and 1 executive remote (12" cable included), digital convergence (static, dynamic and point), 12 convergence and picture geometry memories, center and edge electronic focus, height, width, H-position, V-hold, RGB gains, on-screen menus, quick copy for fast convergence setup
- Ceiling mount kit
- 52" RGBHV and control cables

Specifications
- Scan Frequency: 15.750-75kHz horizontal, 38-100kHz vertical
- CRTs: 9" liquid cooled, and liquid coupled with HD10 lenses
- Brightness: 850 lumens peak white
- RGB Bandwidth: 70MHz
- Resolution: 1200 lines RGB and 600 lines video
- Minimum Retrace: <2.5 microseconds horizontal, <450 microseconds vertical
- Inputs (via switchers): 2 video (PAL/SECAM/NTSC and 1 S-Video), 3 RGB (19-pin TTL/analog and 2 BNC analog)
- Picture Size: 100-150"

Imager VZ10 Wolf Visualizer Image Magnification System
- Single high-resolution CCD
- 380,000 pixels
- > 450 lines horizontal resolution
- Minimum 3.5" depth of focus
- Front surface mirror
- Automatic white balance
- Auto or manual iris
- Easy setup and use
- Light remotely zooms in sync with camera
- Remote control iris and focus
- 24V/150W halogen lamp
- Variable incidence angle control
- Reflector head rotates 360°
- Built-in backup light source
- Built-in 35mm slide viewer
- 6.1 tele zoom lens eliminates the need for additional lenses
- Tabletop or flush installations
- 37 lbs., folds down to less than 7" high
- Light path and scanning system prevent shadows and reflections

$9,995.00

Prices and Specifications Subject to Change Without Notice.

439
VideoShow® Presentation Systems

- Create a presentation with VideoShow and a PC/XT/AT, PS/2°, or Macintosh° II or SE. Macro Vision° technology automatically enhances images.
- Show a presentation with VideoShow and a color monitor or video projector.
- Focus the attention of your audience on key points with features that highlight text and build charts and graphs as you present, and dynamic special effects such as spirals, fades and wipes.
- Move to any picture in your presentation, in any order, at the press of a button.
- Push just 2 buttons to turn VideoShow into a self-running presentation system.
- As compact as a briefcase.
- Wireless remote control.
- Disk-based presentation maintains confidentiality and makes last-minute changes easy.
- Connects to PhotoMetric° SlideMaker° to make 35mm slides.
- Works with PrintMaker® software and a variety of popular printers to create overhead transparencies and hardcopy handouts or reports.

VideoShow Professional

- Allows you to create and show presentations that include photographic images, clip art, charts, graphs, drawings and text.
- Compatible with most popular software for PC/AT, PS/2, Macintosh II and SE.
- 100,000 simultaneous on-screen colors for photographic images, 5000 for computer-generated images.
- ImageProcessor® software compresses data so a whole presentation can fit on a single diskette.
- Optional HardDisk stores hundreds of photographic images or thousands of graphic images for multiple presentations without disk-switching, or for large image libraries.
- 5 1/4" or 3 1/2" disk.
- Integrate photographic images with graphics.
- Create slides and transparencies.
- Wireless remote.

VideoShow Professional Presentation Products

- 4000348 ARC (advanced remote control) for VideoShow. Combines the functions of a teleprompter and random access image database with those of a traditional remote control. $1795.00
- 4000279 VideoShow Professional 180 (5 1/4") $8995.00
- 4000284 VideoShow Professional 280 (3 1/2") $8995.00
- 4000333 VideoShow Professional 180XP (5 1/4") $7995.00
- 4000335 VideoShow Professional 280XP (3 1/2") $7995.00

Design Station Products

- 4000209 Natural Image Pack #1 (includes ImageProcessor software, high speed ImageLink, Image Capture Board, software and cable (DOS: 3 1/2" and 5 1/4"). $4495.00
- 4000202 Natural Image Pack #2 (includes ImageProcessor software and high speed ImageLink). $2195.00
- 4000331 Natural Image Pack for Macintosh (includes NuVista board and ImageProcessor for Mac, which includes StarTime software). $4995.00
- 4000337 ImageProcessor for Mac (includes StarTime). $1995.00
- 4000364 Color video camera model JVC KY-F30C1 (includes RGB adaptor and power unit). $6995.00
- 4000195 Camera stand with lights. $595.00
- 4000203 System adaptor 180 kit. $440.00

HardDisk Products

- 4000367 VideoShow HardDisk (includes controller module and cartridge with case). $1595.00
- 4000368 HardDisk cartridge with case. $695.00
- 4000369 HardDisk controller module (includes cable). $950.00
- 4000366 AT-XT SCSI adaptor kit. $129.00

VideoShow Executive

- Allows you to create and show presentations that include computer-generated images of all kinds including charts, graphs, clip art, drawings, text, etc.
- Compatible with most popular software for PC/AT, PS/2 and Macintosh II and SE.
- 1000 simultaneous on-screen colors.
- Wireless remote.

- 4000165 VideoShow Executive 160 (5 1/4" disk) $3995.00
- 4000258 VideoShow Executive 260 (3 1/2" disk) $3995.00

Cables

- 4300125 EIA cable. $40.00
- 4300163 VideoShow RGB output monitor cable 10'. $95.00
- 4300164 ImageProcessor 6' output cable. $85.00
- 4300169 MultiSync cable 10' (for VideoShow 160/180/280 to an NEC multisync monitor). $90.00
- 4300177 Apple RGB cable (10' for VideoShow 260). $95.00
- 4300178 SCSI to Mac cable (3'). $40.00
- 4300179 SCSI to SCSI cable (6'). $50.00
- 3000266 SCSI terminator. $30.00

Hardware Options

- 4000107 Video enhancer for VideoShow 160. $250.00
- 4100103 Replacement remote control. $150.00
- 4000105 VideoLink. $150.00

Carrying Cases

- 5000139 Hard carrying case for VideoShow 160/260. $250.00
- 5000104 Hard carrying case for VideoShow 160. $150.00
- 5000111 Deluxe soft carrying case for VideoShow 160. $290.00
- 5000112 Soft carrying case (std. for VideoShow 160). $100.00
- 5000151 Hard carrying case for VideoShow 260. $150.00
- 5000150 Soft carrying case for VideoShow 260. $150.00

Prices and Specifications Subject to Change Without Notice.
VIDEO FLOPPY SYSTEM/
COLOR VIDEO PRINTERS

VX-52A Video Floppy System
- Records and plays back video floppy disks
- Up to 50 still (pseudo-frame) images can be stored on a single disk
- Both continuous playback and fast forward/reverse search (45 images per second) modes are available
- Accepts NTSC input
- Can be connected directly to a source of video signals — video camera, video recorder, TV, etc.
- Whenever a scene that you want to record appears on the screen of the TV or in the camera’s viewfinder, simply pressing a button activates the recording mechanism and a single frame is recorded on the floppy disk
- Disks can be played back and still pictures seen on the TV or printed by either printer
- Fast forward and reverse at 4 pictures per second
- Automatic playback at speeds of 0.5, 1.0 and 5.0 seconds per picture
- Full function wired remote control is standard
- 350 TV lines resolution
VX-52A ........................................... $1495.00

VX-100A Video Floppy Disk Drive
- All features of the VX-52A
- 25 frame images or 50 field images
- S-(Y/C) connectors for high quality dubbing
- Wired remote control
- Input/output terminals are provided for both NTSC composite video and analog RGB
- RS-232C interface allows full computer control
- Date and ID superimpose
- High-speed serial shot capability for following fast-moving sports action without blurring
- Continuous replay mode for presentations
- High-speed random access
VX-100A ........................................... $2695.00
VX-DB100 Dubbing cable .................. 25.00
VX-SC100 S-(Y/C) output cable ............ 25.00

Accessory for Video Floppy Systems
VX-F50 2" Video Floppy Disk
- The luminance and color are separated and recorded separately for pictures with accurate color
- The disks have a capacity of 50 frames and can be rewritten for repeated use
VX-F50 ........................................... $99.95

VY-200A Color Video Printer System
- Versatile video printer, suited for a wide range of applications
- 128 possible gradations for each of the 3 primary colors (yellow, magenta, cyan)
- Over 2 million possible hues are available
- Freeze-frame sequences may be reproduced in combinations of 4, 16, 25 and 64 frames per picture
- Print area is adjustable
- Included are input/output terminals for NTSC composite video, S-Video and analog/TTL RGB signals
- Front loading paper and ink
- Built-in IC RGB frame memory + 1 frame optional
- 480x640 resolution
- Print counter quantity preset up to 9
- Mirror mode printing
- Color, tint, brightness and contrast adjustment before memory
- Wired remote
- Multi-scan up to 32kHz
VY-200A ........................................... $3995.00

VY-150A Color Video Printer
- High quality hard copy from video sources including NTSC and S-Video signals
- Prints in 100 seconds
- Freezes any video picture
- Date and title superimposition
- Once an illustration or title is recorded with a camcorder, it can be transferred to the VY-150A for superimposition in any of 8 colors (reversals are also permitted)
- Advanced photo processing circuitry
- When using composite video or S-Video input, the color, white balance, contrast and brightness of a still picture can be adjusted prior to printing
- Also accepts RGB input (still only)
- Can also be output as a composite video or S-Video signal
- Front panel controls
- 64 gradations for each of 3 primary colors
- 3 3/4" x 4 3/8" print area
- Picture memory: 1 frame/2 fields
- Remote control included
VY-150A ........................................... $1995.00

Accessories for Video Printers
VY-SX100A Paper and ink cartridge ........ $99.95
VY-T50 Transparency paper and ink cartridge ... 99.95

Prices and Specifications Subject to Change Without Notice.
# Hitachi

**A World Leader in Technology**

**CDR-1700/CDR-1750 CD-ROM Drives**
- 340ms access time
- Slim stand-alone design
- Dust-free chassis with dust-proof door
- Automatic pickup lens cleaning (ALC) mechanism
- Daisychain up to 8 drives
- Audio output
- 3-way caddy ejection

**CDR1700S**
- Slim line external CD-ROM drive, triple dust protection/audio capability/Hitachi bus. Includes caddy. **$815.00**

**CDR1750S**
- Slim line external CD-ROM drive, triple dust protection/audio capability/SCSI bus. Includes caddy. **$965.00**

**CDR1700SPC**
- Complete external package for ISA (PC) bus. Includes: CDR1700S, CDIFI4A, CDCBL25C, CDREXT4, caddy. **$995.00**

**CDR1700SMC**
- Complete external package for MCA bus. Includes: CDR1700S, CDIFI5A, CDCBL25C, CDREXT4M, caddy. **$1095.00**

**CDR1750SMAC**
- Complete external package for Mac II. Includes: CDR1750S, CDCBLSC3, CDMACDRV11, caddy. **$1060.00**

**CDR-3600/CDR-3650 CD-ROM Drives**
- Hitachi bus (CDR-3600)/embedded SCSI type I (CDR-3650)
- Access time of 450 ms (1/3 stroke)
- Large buffer for high throughput
- Automatic pickup lens cleaning (ALC) mechanism
- Daisy chain up to 8 drives (CDR-3600)
- Horizontal or vertical installation
- Linear motor
- Compatible with earlier CD-ROM drives
- 2-channel audio output with stepless volume control

**CDR3600**
- Internal half height CD-ROM drive, dust protection/audio capability/Hitachi bus. Includes caddy. **$745.00**

**CDR3600PC**
- Complete internal half height package for ISA (PC) bus. Includes CDR3600, CDIFI35A, CDCBL35A, CDR1700S, CDR3650. **$865.00**

**CDR3650**
- Internal half height CD-ROM drive, dust protection/audio capability/SCSI bus. Includes caddy. **$865.00**

**CD-ROM Interface Cards**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDIFI4A</td>
<td>Interface card for ISA (PC) bus. IBM PC/XT/AT PS/2 25/30 or compatible for up to 4 external CD-ROM drives</td>
<td><strong>$70.00</strong></td>
</tr>
<tr>
<td>CDIFI5A</td>
<td>Interface card for MCA bus. IBM PS/2 50/60/60/70/80 or compatible for up to 4 external CD-ROM drives</td>
<td><strong>$70.00</strong></td>
</tr>
<tr>
<td>CDIFI8A</td>
<td>Interface card for ISA (PC) bus. IBM PC/XT/AT PS/2 25/30 or compatible for up to 8 external and/or internal CD-ROM drives</td>
<td><strong>$150.00</strong></td>
</tr>
<tr>
<td>CDIFI35A</td>
<td>Interface card for ISA (PC) bus. IBM PC/XT/AT or compatible for up to 4 internal CD-ROM drives</td>
<td><strong>$70.00</strong></td>
</tr>
<tr>
<td>CDSCKTF10</td>
<td>SCSI interface kit for CDR1750S. Includes: future domain SCSI host adaptor (TMC845), 5.25&quot; SCSI device driver and Microsoft CD-ROM extensions disk, special SCSI interface cable</td>
<td><strong>$180.00</strong></td>
</tr>
<tr>
<td>CDSCKTF10B</td>
<td>SCSI interface kit for CDR3650. Includes: future domain SCSI host adaptor (TMC845), 5.25&quot; SCSI device driver and Microsoft CD-ROM extensions disk, special SCSI interface cable</td>
<td><strong>$180.00</strong></td>
</tr>
<tr>
<td>CDSCKTF110</td>
<td>5.25&quot; external connecting cable (37-pin) for CDR1700S/CDR1503S/CDR2503S. <strong>$80.00</strong></td>
<td></td>
</tr>
<tr>
<td>CDSCKTF210</td>
<td>Internal connecting cable (40-pin) for CDR3600/CDR3500USM. <strong>$20.00</strong></td>
<td></td>
</tr>
<tr>
<td>CDSCKTF310</td>
<td>Special cable for up to 4 internal drive package 4 x 40-pin plus 1 x 37-pin female chassis-mount. <strong>$70.00</strong></td>
<td></td>
</tr>
<tr>
<td>CDSCLSC3</td>
<td>3' external SCSI cable for Macintosh (25-pin to 50-pin). <strong>$25.00</strong></td>
<td></td>
</tr>
<tr>
<td>CDCBLSC6</td>
<td>6' external SCSI cable for Macintosh (25-pin to 50-pin). <strong>$36.00</strong></td>
<td></td>
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<tr>
<td>CDCBLS</td>
<td>External SCSI cable (50-pin to 50-pin). <strong>$100.00</strong></td>
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</tbody>
</table>

**CD-ROM Cables**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDCBL25C</td>
<td>5' external connecting cable (37-pin) for CDR1700S/CDR1503S/CDR2500S. <strong>$80.00</strong></td>
<td></td>
</tr>
<tr>
<td>CDCBL35A</td>
<td>Internal connecting cable (40-pin) for CDR3600/CDR3500USM. <strong>$20.00</strong></td>
<td></td>
</tr>
<tr>
<td>CDCBL35C</td>
<td>Special cable for up to 4 internal drive package 4 x 40-pin plus 1 x 37-pin female chassis-mount. <strong>$70.00</strong></td>
<td></td>
</tr>
<tr>
<td>CDCBL35E</td>
<td>Special cable for up to 8 internal drive package 8 x 40-pin plus 1 x 37-pin female chassis-mount. <strong>$100.00</strong></td>
<td></td>
</tr>
<tr>
<td>CDCBLS</td>
<td>3' external SCSI cable for Macintosh (25-pin to 50-pin). <strong>$25.00</strong></td>
<td></td>
</tr>
<tr>
<td>CDCBLSC6</td>
<td>6' external SCSI cable for Macintosh (25-pin to 50-pin). <strong>$36.00</strong></td>
<td></td>
</tr>
<tr>
<td>CDCBLS</td>
<td>External SCSI cable (50-pin to 50-pin). <strong>$100.00</strong></td>
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</tbody>
</table>

**CD-ROM Accessories**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDROMBIOS</td>
<td>BIOS software for Hitachi CD-ROM drives. <strong>$100.00</strong></td>
<td></td>
</tr>
<tr>
<td>CDREXT4</td>
<td>5.25&quot; Microsoft CD-ROM extensions disk, includes Hitachi device drivers for ISA (PC) plus MCA bus. <strong>$30.00</strong></td>
<td></td>
</tr>
<tr>
<td>CDREXT4M</td>
<td>3.5&quot; Microsoft CD-ROM extensions disk. Includes Hitachi device drivers for ISA (PC) plus MCA bus. <strong>$30.00</strong></td>
<td></td>
</tr>
<tr>
<td>CDMACDRV11</td>
<td>Macintosh driver software. <strong>$70.00</strong></td>
<td></td>
</tr>
<tr>
<td>CDSCDRV10F</td>
<td>5.25&quot; SCSI device driver/Microsoft CD-ROM extensions disk for future domain TMC845 and TMC1660. <strong>$70.00</strong></td>
<td></td>
</tr>
<tr>
<td>CDMUSIC</td>
<td>5.25&quot; audio play software for Hitachi CD-ROM drives. <strong>$50.00</strong></td>
<td></td>
</tr>
<tr>
<td>CDTAPE</td>
<td>Instructional videotape for CD-ROM drive system installation. <strong>$59.00</strong></td>
<td></td>
</tr>
<tr>
<td>CDROMTEST3</td>
<td>Test/demo CD-ROM disc. <strong>$100.00</strong></td>
<td></td>
</tr>
<tr>
<td>CDCTR</td>
<td>Caddy. <strong>$15.00</strong></td>
<td></td>
</tr>
<tr>
<td>100CDCTR</td>
<td>Caddy (100 pieces bulk). <strong>$1000.00</strong></td>
<td></td>
</tr>
</tbody>
</table>

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**Prices and Specifications Subject to Change Without Notice.**
COLOR SCANNERS

**Personal Color Scanner**
- Full-color 50-300 dpi flatbed scanner • Scans line art, black and white continuous tone and text • Capable of scanning 8" x 14" color originals • Supported by Scan-It software • Images can be cropped, modified, enhanced and saved in a variety of formats • 8-bit A/D conversion, 6-bit accuracy • 256 levels per color • 3 fluorescent lamps (RGB) • Bi-directional parallel interface • 140-second full area color scan • 20-second full area black and white scan

Affordable desktop color scanning for the general office environment. This full-color 300 dpi flatbed scanner meets all of your desktop scanning needs. Incorporate brilliant color images into presentations, business communications and compositions. Scan line art, black and white continuous tones and text. No matter what the application, Howtek delivers the perfect input solution.

Capable of scanning full 8.5" x 14" color originals, the Personal Color Scanner is supported by proprietary Scan-It software. Images can be cropped, modified and enhanced and saved in a variety of formats to export into other applications.

**Personal Color Scanner With parallel card for MSDOS and Scan-It** ......... $1295.00
**Personal Color Scanner With parallel card for MSDOS and Mathematica Tempra Pro** ......... 1295.00
**Personal Color Scanner Kit — PC Kit includes:** cable, board and Astral Picture Publisher Plus or Mathematica Tempra Pro ..... 300.00
**Personal Color Scanner Kit — Mac Kit includes:** cable, board and Adobe Photoshop LE ..... 600.00

**Scanmaster 3 Color Scanner**
- 11.7" x 17" (11.7" x 16" transparency) • Scans continuous tone, halftone, line art and text • 75-400 dpi continuous • Full 8-bit A/D accuracy • 256 levels per color • Single CCD sensor, single fluorescent bulb • Standard 8-bit GPIB interface • Full B-size (A3-size) flatbed • Stationary platen • Supports Scan-It software, which incorporates cropping, resizing, color balance, fill formatting

The Scanmaster 3 is a full B-size (A3-size) digital desktop flatbed color scanner that accurately scans both reflective and transmissive copy, incorporating design elements previously found only in much higher priced scanning systems. The high resolution capability of the Scanmaster 3 makes it an ideal input device for accomplishing a number of applications including: • Pre-press • Desktop publishing • Presentations • Graphic arts • Scientific/medical • General imaging and design

The Scanmaster 3 uses a multi-element CCD, single illumination fluorescent bulb light source with highly accurate dichroic filters. The architecture also includes a Digital Signal Processor (DSP) which processes computationally intensive algorithms leading to speed and quality improvements. Scan resolution ranges from 75 to 400 dpi with more accurate spectral response. Analog-to-digital conversion develops full 24-bit accuracy, 8-bit for each color (red, green, blue) and for black and white scanning.

Advanced features are combined in Scanmaster 3 which significantly enhance scan accuracy, scan stability, shadow detail and color discrimination. Improved color discrimination is achieved through the use of a signal lamp/filter architecture. Special dark signal correction circuitry is utilized which significantly improves shadow detail.

Scanmaster 3 uses a stationary platen design for high reliability. This design reduces the overall effective footprint (desktop) requirement while allowing full-sized (B/A3) transparencies to be scanned. The transparency option also supports A4-size transparencies in portrait or landscape orientation. Scanmaster 3 scans continuous tone, halftone, line art and text image types in full 24-bit color or 256-level black and white grayscale.

Scanmaster 3 interfaces to an image capturing computer using the industry standard IEEE 488 GPIB standard interface. Scanmaster 3 is supported by Scan-It scanning software, which incorporates features of cropping, resizing, color balance, fill formatting and other advancements including unique image enhancement capabilities.

**Scanmaster 3 With transparency option** ...... $6995.00
**Scanmaster 3 With GPIB interface, cable, Scan-It, Astral Picture Publisher Plus and transparency option** ............... 8195.00
**Scanmaster 3 With GPIB interface, cable, Scan-It, Mathematica Tempra Pro and transparency option** .......... 8195.00
**Scanmaster 3 With GPIB interface, cable, MacScan-It, Adobe Photoshop and transparency option** ............. 8195.00
**Transparency option** .................. 659.00

Prices and Specifications Subject to Change Without Notice.

443
Scanmaster 3+ Color Scanner

- 11.7" x 17" • Scans continuous tone, halftone, line art and text • 75 to 1200 dpi • Full 8-bit A/D conversion per color • 256 levels per color • Single fluorescent bulb and RGB filters • Standard 8-bit GPIB • CCD array • Full B-size (A3-size) reflective and transparent copy format • Upwardly compatible with existing Scanmaster series • Transparency option standard • No operator controls required • Broader dynamic range • Enhanced scan accuracy and stability • Improved color discrimination • Incorporates system functions at the device level

The Scanmaster 3+ is a full B-size (A-3-size) digital desktop flatbed scanner that accurately scans both reflective and transparent copy, incorporating design elements previously found only in much higher priced scanning systems. The high resolution capability of the Scanmaster 3+ makes it an ideal input device for accomplishing a number of applications, including: • Graphic arts • Line art • Pre-press • Technical publishing • Scientific/medical

Advanced engineering significantly enhances scan accuracy, resolution, shadow detail and color discrimination. Improved color discrimination is achieved through electronic enhancements designed to stabilize and extend the scanner range (optical density).

Scanmaster 3+ uses a stationary platen design for high reliability. This design reduces the overall effective footprint (desk space) requirement while allowing for full-sized (B/A3) transparencies to be scanned. The transparency option also supports A/A4 size transparencies in portrait or landscape orientation. Scanmaster 3+ scans continuous tone, halftone, line art and text image types in full 24-bit color or 256 gray levels and binary (1-bit mode).

<table>
<thead>
<tr>
<th>Scanmaster 3+</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>With transparency option</td>
<td>$7995.00</td>
</tr>
<tr>
<td>With GPIB interface, cable, Astral Picture Publisher Plus* and transparency option</td>
<td>$9195.00</td>
</tr>
<tr>
<td>With GPIB interface, Mathematica Tempra Pro* and transparency option</td>
<td>$9195.00</td>
</tr>
<tr>
<td>With GPIB interface, cable, Adobe Photoshop* and transparency option</td>
<td>$9195.00</td>
</tr>
</tbody>
</table>

Scanmaster 35 Plus Color Scanner

- 24mm x 36mm image size • Positives, negatives, mounted or unmounted, filmstrips • 2000 x 2000 dpi • Color separation • Scanning is accomplished using a 2048-element CCD array, a fluorescent lamp and a color filter wheel • Overall image resolution of 3 million pixels per film, with accuracy to 1/2 pixel • Scans at 12 bits per color, with a total accuracy of 24 bits per pixel (4096 gray levels) • The user can choose to read the raw 12-bit CCD data or 12- or 8-bit values that have been color corrected • Selectable data packing • Scanning in line oriented and sent over a standard 8-bit GPIB interface • Under control of the host computer, output data can be packed in 1 of 3 ways: RGB pixel packed, RGB line packed or black and white • Scan-It applications program • Menu-driven package provides the user with immediate access to all of the features of the Scanmaster 35 Plus • Available for both the IBM PC and Mac II • Scan-It allows the user to display scanned images and generate display files for processing with other graphics editing software

Scanmaster 35 Plus adds a new dimension to desktop scanning. Both Macintosh and IBM PC compatible, Scanmaster 35 Plus converts film images into data which can be displayed and stored on an image-capturing computer. Input can be in the form of 35mm positive or negative film, color or black and white, either mounted or in strip form.

Scanmaster 35 Plus has a scanning resolution of 2000 x 2000 dpi, yielding an effective resolution of 1333 x 2000 dpi and full 180° image rotation capability. It is recommended for publishing and other applications where presentation of the image in the appropriate orientation is essential.

<table>
<thead>
<tr>
<th>Scanmaster 35 Plus</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>With GPIB interface, cable, Mathematica Tempra Pro</td>
<td>$6995.00</td>
</tr>
<tr>
<td>With GPIB interface, cable and Adobe Photoshop</td>
<td>$6995.00</td>
</tr>
<tr>
<td>With GPIB interface, cable and Mathematica Tempra Pro</td>
<td>$6995.00</td>
</tr>
<tr>
<td>With GPIB interface, cable and Adobe Photoshop</td>
<td>$6995.00</td>
</tr>
</tbody>
</table>

Scan-It* Applications Program

- Professional scanning software on a variety of platforms (IBM-PC, PS/2, Macintosh and workstations) and across the full line of Scanmaster products • Easy-to-use, mouse driven utility program satisfies a broad range of image input needs from the casual user to the graphic arts professional

Prescan—Lets you quickly display the image on the monitor for cropping and resizing.

Scan—Allows you to scan to a virtual disk file or to the monitor at variable resolutions and sharpness settings.

Contrast and Color Correction—Allows you to modify image quality by adjusting brightness, contrast and individual gamma settings.

Sharpness—Edge sharpness can be set to either soften, normal, sharp or exaggerated.

Image Type—Allows you to specify type of artwork to be scanned.

File Formats—The final image can be saved in TIFF, PICT, PICT32, TGA, VGA, RIFF, Artisan and Sun Raster file formats.

Scan-It Specify PC, PS/2, Mac | $100.00

Systems Interfaces Available:

GPIB Drive Kit c/o GPIB board and cable (specify PC, PS/2, Mac) | $795.00
GPIB cable | $50.00

Prices and Specifications Subject to Change Without Notice.
VIDEO TITLING AND SEQUENCING SOFTWARE

Inscriber* Video Titling Software for ATVista* and Targa*

Ttitling
- Anti-aliased text with dropshadow and edging displayed as you type
- Flexible text positioning
- Free-form alignment
- Access to over 250 fonts
- Extreme ease of use
- Use the graphics and logo tools to highlight your text or load in any Truecolor image as a background
- Advanced page description language integrates Inscriber with remote data feeds for use in "on-air" applications
- Full function text creation system is geared especially to the rapid entry and editing of display text
- Flexible alignment means that you can make your lines overlap or be positioned anywhere; you can ask for any spacing or you can constrain text to preserve line-to-line spacing. Lines can move independently of one another or together with lines below
- Left, right and center alignment is easy with adjustable tab stops
- Automatic word wrap mode simplifies text entry
- Apply text attributes like drop, offset or extruded shadows in 8 directions in any amount
- Use edging to emphasize your message, in any amount with outline, glow or embossed effects
- Color text with a solid color or with a gradient from top to bottom
- Transparency of text can also be controlled overall or varying from top to bottom
- Text can be arbitrarily sized, compressed or expanded, drawn as "small caps" or slanted left or right in degree increments
- Kerning can be set per line or individually per character
- Standard 12 fonts: Helvetica Bold, ITC Zapf Chancery, ITC Bookman Demi, Palatino Italic, or maybe ITC Avant Garde Gothic Book
- Fonts contain over 200 characters including commonly used symbols and foreign language accents
- Supreme option has 50 fonts including Benguit, Revue, Hobo, New Century Schoolbook and Stencil
- Import a special symbol or multi-colored graphic image and Inscriber will make it into a logo. You can then apply special effects like shadow and edging to it just like text. And you can resize it
- Dedicated support for video output gives you an adjustable safe title area, screen center markers, definition of video key areas, partial or full video "show-through" of text or graphics and integrated roll and crawl. Add linear keyer support, anti-aliasing, optional edge-blurring of high luminance text and you have the best possible character edge quality for encoding to video

Presentation
- Sequence images in a flexible professional manner using several types of transitions in multiple directions with varying speed and transition element granularity
- Single step through slides, forward and reverse, instantly display selected key images, trigger external hardware via a system escape. Top it off with rolled credits
- Presentation module will let you build sequences of images to be displayed
- A variety of transitions between pictures including fade, snap, wipe, push, tile, louvre, turn, crawl, peel and flip. You control the speed, direction, size and motion of the transitions
- Fully programmable with loops, conditionals and system escapes to custom applications
- Can be used to control interactive displays with real-time updating
- Supports both NTSC and PAL
- Standard Truecolor format files can be compressed to about one third of their normal size. The resulting file displays 10 times faster—in about 1 to 2 seconds

Prices and Specifications Subject to Change Without Notice.

Inscriber ATVista .............................. $3995.00
Inscriber Targa 16 12 fonts .......................... 1895.00
Inscriber Supreme Targa 16 50 fonts  .................. 2695.00
Inscriber Targa + 12 fonts ........................... 2895.00
Inscriber Supreme Targa + 50 fonts .................. 3695.00

Special Effects
- Smooth fades
- Real-time image warping for page turns, curls and peels
- Push effects, flips, louvres or tiling
- Sprite animation, roll and crawl, windowed effects
- Roll credits at varying speeds
- Push segments on the screen off, slide new segments on
- Hardware works on any PC-AT compatible hard disk system with a number of videographics cards such as the Truevision ATVista and Targa 16
- Depending on the choice of card, 640K of PC memory and 1M of EMS is required on your computer system
- Additional video and/or EMS memory is recommended to improve creation and presentation speed
- An RGB video monitor is recommended for optimal display of screen menus
- A mouse simplifies learning and using Inscriber, but you can also use a variety of graphics tablets
- Contact closure switches and infrared remote controls can be configured to work with Inscriber to control image transitions

Distributed Exclusively by MainFrame Computer Graphics Ltd.

ACE Cooking Gizmo
only $19.95!

To order please call
1 (800) 555-1212

Have your system ready
Tell the operator you want the "Inscriber" adjustment kit and the ACE Cooking Gizmo.

Color photo used with written permission.
Liteshow II Portable Presentation Management System
- Captures computer generated presentations onto a standard 3 1/2" diskette, then lets you organize it and enhance it.
- Built-in special effects generator lets you add wipes, dissolves, fades and more.
- Plugs into virtually any monitor, video/data projector or LCD projection panel.
- Color palette of 256,000 colors, of which 256 can be displayed simultaneously.
- Includes handheld remote control. Power supply: UL approved 12VDC, 1.5A.
- Screen aspect ratio: 1.33:1.
- User selectable color palette mapping.
- Auto signal recognition circuitry.
- Vibrant solid color pixels for smooth, continuous color.
- Matching the colors on the computer monitor.

5000CX True Color LCD Projection Panel
- Projects 4913 true colors. 15:1 contrast ratio. 640 x 480 resolution supports CGA, EGA, VGA, Apple Macintosh and Mac II.
- Liteshow II...
- $1995.00

5000CX True Color LCD Projection Panel
- Projects 4913 true colors. 15:1 contrast ratio. 640 x 480 resolution supports CGA, EGA, VGA, Apple Macintosh and Mac II.
- Liteshow II...
- $1995.00

480C/480CX True Color LCD Projection Panels
- 640 x 480 pixel resolution. Integral temperature regulating fan.
- User selectable color palette mapping.
- Auto signal recognition circuitry.
- Vibrant solid color pixels for smooth, continuous color.
- Compatible with: IBM CGA, EGA, VGA, Apple Macintosh and Mac II.
- Manual, cables (8-pin, 15-15 pin) and AC adaptor are included.
- 480C: 8 true colors: red, green, blue, cyan, magenta, yellow, black and white...
- $3995.00
- 480CX: Projects 64 brilliant colors simultaneously from a palette of 64, matching the colors on the computer monitor...
- $4495.00

480S/480GS PC Viewers
- 640 x 480 pixel resolution. Compatible with: IBM CGA, EGA, VGA, Apple II series, Macintosh and Mac II.
- Manual, cables (9-pin, 15-15 pin) and AC adaptor are included.
- 480S: With shades of blue or patterns to represent 8 colors...
- $1355.00
- 480GS: With shades of gray or patterns to represent 8 colors, high contrast 20:1 display...
- $1995.00

200S PC Viewer
- Bright blue and yellow display with 8:1 contrast. 640 x 200 pixel resolution.
- Works with Apple II, IBM and compatible computers in CGA mode.
- Cables provided: 8 levels of gray scale, 8 patterns.
- $925.00

Overview™ 360P Portable Overhead Projector
- Instant lamp changer. Built-in heat filters, quiet fans and low wattage bright quartz halogen light.
- Rack and pinion focus. Automatic power cut-off turns off the power when protective housing is removed.
- $495.00

Optional Accessories for PC Viewers
- Snap-on portable presentation computer with built-in firmware. Allows you to organize captured images, add special effects and then present computer generated images without your computer.
- Includes an infrared remote control with pointer and highlight controls. Allows you to upgrade your 480S or 480GS by adding a Presentation Module...
- $1595.00
- Carry case for your PC Viewer, power supply and cables. Made of durable Cordura type material with hand and shoulder straps for easier carrying. Not designed for the 480C, 480CX or 5000CX...
- $69.95

C75 Deluxe soft carry case with shoulder strap for PC Viewer. Includes an infrared remote control to allow computer to send and receive signals. $99.95

C95 Hard carry case for all PC Viewers. Space provided for adapters, cables and remote controls. Comes with lock and key...

Accessories for IBM and Compatible PCs
- A25 Allows operation of both monitor and viewer on a IBM PS/2 Model 25. Adds a video output port to the PS/2 Model 25 to allow display of the MCGA graphics. Installed inside the case of the Model 25...
- $599.95
- A40C Allows operation of both monitor and viewer with IBM and compatibles using VGA graphics and IBM PS/2. Provides 2 outputs, 1 connector for the 15-pin monitor cable and a 15-pin connector for the PC Viewer. Use the AC adaptor from the PC Viewer to power both the viewer and the A40C...
- $199.95
- A60 Allows operation of both monitor and viewer on a PC with CGA andEGA. Internal amplifier assures quality image. Use the AC adaptor from the PC Viewer to power both the viewer and the adaptor box. Equipped with a 9-pin input and a 9-pin output. Not for use with A5 cable...
- $145.95

Additional Interfaces for IBM and Macintosh Computers
- A5 This cable allows connection of a Hercules® or MDA (Monochrome Display Adaptor). Not for use with the A60 adaptor...
- $29.95
- A50 Allows AT&T 6300, 6300+ or Olivetti M24 or M28 to be connected to the PC Viewer. Your color monitor can remain connected and operating. Connects to the 25-pin connector on the AT&T and provides a 9-pin for your PC Viewer...
- $119.95

Required Adaptors for Macintosh Computers
- A10 Internal card/cable required for use on the Macintosh 128, 512 and +. Must be installed inside the Macintosh. The monitor and the PC Viewer both operate. Bezel not included...
- $119.95
- A20 Internal card/cable required for use on Macintosh SE. Does not utilize the SE expansion bus. Must be installed inside the Macintosh. The monitor and PC Viewer both operate. Bezel not included...
- $99.95
- A35C External adaptor box required for connection of the PC Viewer to the Mac II video output. Equipped with a level adjustment. The monitor and the PC Viewer both operate. Use the AC adaptor from the PC Viewer to power both the viewer and the A35C...
- $249.95
- A15 Covers the unused area on the PC Viewer so that the Mac image fills the screen...
- $14.95

Prices and Specifications Subject to Change Without Notice.
INTERFACES/DISTRIBUTION AMPLIFIERS

IN1100 High Frequency Optical Ground Loop Isolator
• 120MHz optical ground loop isolator with built-in AC power supply
• 5 BNC input and output connectors
• 120/220V operation is selected at the time of order
• Removes all hum-bars from high resolution video displays

IN2000/2000DA Universal Analog/TTL/ECL Interfaces for Computers and Projectors
• Works with analog and digital signals
• Horizontal picture centering control
• RGBS, mono or sync on green outputs
• 100MHz video bandwidth
• Gain control

IN2000 External 12V power adaptor. Fully automatic
\$540.00

IN2000DA Built-in 1 in 2 out distribution amplifier
\$740.00

IN2000 Plus Universal Analog/TTL/ECL Interface for Computers and Projectors
• Gain and peaking controls
• Horizontal picture centering control
• RGBS, mono or sync on green outputs
• 200+ MHz video bandwidth
• Digital frequency readout
\$1020.00

IN2001 Universal Analog/TTL/ECL Interface for Computers and Projectors
• Ideal for rental applications
• Horizontal picture centering control
• RGBS, mono or sync on green outputs
• 100MHz video bandwidth
• Built-in factory set 120/220V power supply
\$680.00

IN2055/2056 1 in 4 Out Composite Video Distribution Amplifier/Line Driver
• 200MHz video bandwidth
• Individual output gain controls (internal)
• Individual peaking controls (internal)
• BNC input and output connectors

IN2055 High resolution video distribution amplifier. Individual gain and peaking controls for each output (internal)
\$320.00

IN2056 1 in 1 out video line driver for extending cable length to 1000'.
The actual drive distance varies with cable used.
\$240.00

IN2060 IBM VGA, MCGA, XVGA, 8514A Distribution Amplifier
• For IBM PS/2 VGA, MCGA, Super-VGA, 8514A color/monochrome and compatible graphic cards
• Provides an additional output for LCD panel or VGA video monitor
• Precision coaxes are used for all video and sync signals

IN2061 Targa Board Distribution Amplifier
• For Targa type video graphic cards, provides an output for additional monitor
• Loophoop through input cable allows easy connection of local monitor and additional display
• Input and outputs are pin compatible to Targa board format
• Will work with any video output compatible with Targa board

IN2065 High Resolution Video Sync Separator
• For composite monochrome signals or RGB with sync on green
• Provides separate sync output and 3 video outputs
• BNC input and output connectors
• Internal video gain control

IN2067/2069 High Resolution Video and Sync Combiners
• 120MHz video bandwidth
• Internal sync level control
• Combines sync with video
• Works with RGB and sync signals

IN2067 RGB and sync input to RGB and sync on green output. Internal sync level control
\$320.00

IN2069 RGB and sync on green input to RGB and sync on all output. Internal sync level control
\$320.00

Prices and Specifications Subject to Change Without Notice.
**IN3010/3020 1 In 4/6 Out Variable Gain RGBS Analog Distribution Amplifiers**

IN3010 1 in 4 out RGBS distribution amplifier with variable gain control and 150MHz bandwidth. 120V and 220V operation specified at time of order $1,120.00

IN3020 1 in 6 out RGBS distribution amplifier with variable gain control and 150MHz bandwidth. 120V and 220V operation specified at time of order $1,260.00

**IN3011/3021 1 In 4/6 Out Fixed Gain RGBS Analog Distribution Amplifiers**

- Up to 1.5V p-p input video range
- 120/220V factory set operation
- Rackmountable
- 150MHz video bandwidth

IN3011 1 in 4 out RGBS distribution amplifier $560.00

IN3021 1 in 6 out RGBS distribution amplifier $780.00

**IN3012/3014 1 In 2 Out 150MHz RGBS/H&V Analog Distribution Amplifiers**

- 150MHz video bandwidth
- Fixed gain of 1.1 for each video output
- Up to 1.5V p-p input video range
- RGBS or RGB H&V configuration
- Allows connection of local monitor and an additional large screen projector or monitor

IN3012 1 in 2 out RGBS distribution amplifier $440.00

IN3014 1 in 2 out RGB H&V distribution amplifier $520.00

**IN3050/3055 1 In 4 Out EGA/CGA/VGA/Mac II Distribution Amplifiers**

- 100MHz video bandwidth
- Fully buffered outputs
- Drives 75’ of special cable
- Works with LCD displays

IN3050 1 in 4 out CGA/EGA video distribution amplifier. Can be used with any TTL video signals $340.00

IN3055 1 in 4 out PS/2 VGA or Mac II video distribution amplifier $480.00

**IN 3056/3058 1 In 4/8 Out S-VHS Analog Distribution Amplifiers**

- 35MHz video bandwidth
- Works with PAL and NTSC format
- Up to 1.5V p-p input video range
- Chroma and luma configuration

IN3056 1 in 4 out S-VHS distribution amplifier $320.00

IN3058 1 in 8 out S-VHS distribution amplifier $560.00

**IN3505 2 In 1 Out 150MHz Analog RGB and Sync Video Switcher**

- 150MHz RGBS video bandwidth
- Front panel manual control
- Remote control connector for hardware remote switching
- Built-in AC power supply

IN3510 2 in 1 out switcher $440.00

**IN5600/6000E Universal 12 Port RGBS Routing Switchers With RS-232 Control**

- Input gain controls
- Preview monitor output
- 100MHz bandwidth
- Fully programmable

IN5600 Universal routing switcher with 12 port capability. Built-in RS-232 control. Controller included $9,995.00

IN6000E Universal routing switcher with 12 ports. Expandable to 24 ports by stacking 2 units $14,995.00

IN6059 Remote control pad for IN6000/6000E routing switches. 16 controls can be connected at a time $980.00

**IN3511/3521 4/6 In 1 Out Analog RGB and Sync Auto Switchers**

- 120MHz video bandwidth
- Automatic channel selection
- Rackmountable enclosure
- Built-in 120/220V factory set power supply

IN3511 4 inputs 1 output RGBS analog auto switcher $660.00

IN3521 6 inputs 1 output RGBS analog auto switcher $900.00

**IN3564/3568 4/8 In 1 Out VGA/XVGA/8514A Video Switchers**

- 120MHz video bandwidth
- Front panel manual control
- Tally output
- Remote control connector for hardware remote switching
- Handles all types of VGA signal formats

IN3564 4 in 1 out switcher $660.00

IN3568 8 in 1 out switcher $980.00

**IN3574/3578 4/8 In 1 Out Mac II, Super Mac Video Switchers**

- 120MHz video bandwidth
- Front panel manual control
- Remote control connector for hardware remote switching
- High voltage (50V) tally outputs

IN3574 4 in 1 out switcher $660.00

IN3578 8 in 1 out switcher $980.00

**IN4090/4091 2 In 1 Out Analog NTSC and RGB and Sync Video Auto Switchers**

- 120MHz video bandwidth
- Automatic channel selection

IN4090 2 inputs 1 output NTSC composite video audio switcher $260.00

IN4091 2 inputs 1 output RGBS analog auto switcher $360.00

**Prices and Specifications Subject to Change Without Notice.**
VIDEO ADAPTORS/BOARD/ENCODER BOX

VIA™ Video Input Adaptor
VIA is a real-time video input adaptor, meaning that a complete single frame is acquired (digitized and stored in memory) as it occurs in 1/60 of a second. Live subjects can be captured from a camera or VCR without being placed in ‘pause.’ Images may be captured from any NTSC video source, in 320 by 240/65,536 colors. The captured images are converted to a digital format that can be manipulated and saved to a file in various formats for later use. The captured images can be displayed on any VGA system monitor in 320 by 200/256 colors without a VIA adaptor installed in the system. A video RGB monitor or multi-sync monitor can be attached to the VIA video output connector, allowing the user to view live or captured images during the capturing process.

VIA is supplied with installation software and a stand-alone image acquisition program that provides a simple, menu-driven interface through which the user can configure the hardware, build 2-monitor systems, preview, control brightness, saturation and hue adjustments to the image, capture images, save the image in several different formats and display previously acquired images.

VIA is available for both PS/2 Micro Channel (VIA/MC) and conventional PC bus computers (VIA/PC).

VIA/PC ........................................... $595.00
VIA/MC ........................................... $595.00

SuperVIA Color Video Digitizing Adaptor
SuperVIA can colorfully capture images in real time, 1/60 or 1/30 of a second, and display on a VGA, Super VIA or IBM 8514 equipped computer system from 320 by 200 up to 640 by 480 resolution in 256 colors from a palette of 65,536 or 64 gray levels.

SuperVIA is engineered to digitize from any NTSC or PAL video signal. SuperVIA is supplied with installation utilities and an easy, menu-driven, image capture software program. The software is used to configure the hardware, build 2-monitor systems and control brightness, saturation and hue. Hot key preview and freeze and color mapping control are also software controlled, along with the capability to modify and save images in different resolutions and various file formats.

SuperVIA/PC ................................... $895.00
SuperVIA/MC .................................. $895.00

SYLVIA™ Still Video Capture Board
SYLVIA is a still video capture board for high-resolution monochrome and color applications. It requires the image to be steady during the capturing process.

Images can be digitized from 320 by 240 to 640 by 480 in 256 gray levels or 16.7 million colors. Monochrome images are captured from NTSC or PAL B/W or color composite video equipment. Color images are captured by sequentially digitizing the RGB video signal EIA 60Hz (U.S. standard) or CCIR 50Hz (European standard), thus yielding 16.7 million color images. An optional external RGB color decoder box, the CECI, is required to convert standard NTSC or PAL color composite or Y/C (S-Video) to RGB video signal for color image capture.

SYLVIA is supplied with installation software and a stand-alone image acquisition program that provides a simple, menu-driven interface through which the user can configure the hardware, preview and capture images from a camera or other video source, save the image in several different formats and display previously acquired images. A Video mode allows the operator to view an image on the display continuously in the event a second monitor is unavailable.

SYLVIA/PC ..................................... $395.00
SYLVIA/MC .................................... $395.00
CECI External RGB color decoder box ............ $195.00

VINplus™ Encoder Box
The VINplus converts the signals from your VGA computer display adaptor into professional television video signals.

The VGA computer graphic animation is transferred to the VCR, TV or big screen projector in real time as it appears on the VGA computer monitor. The signal conversion is transparent to the VGA and software animator application.

The VINplus product has 2 elements: the software program and the encoder box. The VINplus software program must be loaded into the computer system memory in order for the VGA signal to TV video signal conversion to take place.

VINplus software changes the horizontal frequency output of the VGA display adaptor to TV video frequency. The analog VGA output signal connected to the VINplus box is encoded to a composite or Y/C (S-Video) signal. The VGA computer monitor connected to the VINplus box will display whatever is being converted to video signal if it’s a multisync monitor that supports video frequency (horizontal frequency at 15.75kHz or lower). If it’s a fixed VGA frequency monitor, the VINplus box will automatically disable it while the VGA signal is being converted to TV video signal.

There are 3 different kinds of video signal output from the VINplus: composite, Y/C (S-Video) and RGB video signal. The composite and Y/C video signals are used most often by home and industrial video equipment such as a video camera, VCR, TV and video editing/genlock/overlay system. The RGB video signal is used by big screen TV projectors and color video printers.

The VINplus box works with your existing VGA display adaptor. It is perfect for most laptop, portable, notebook and desktop computers that are equipped with a VGA display in the system. VINplus can also be used alone without the VINplus software program to convert any analog RGB video to a composite or Y/C signal such as RGB video camera and SuperVIA RGB video output signal.

VINplus ........................................ $495.00

Prices and Specifications Subject to Change Without Notice.
**KY-F30C1 1/2" 3-CCD Color Camera (Less Lens)**
- Specifically designed for input to image processing systems
- 32 lux at f/1.4
- 500 lines horizontal resolution
- Built-in full color bar generator
- 668 x 485 resolution
- 58dB S/N ratio
- Simplified control panel
- 1-line scanning
- 9-pin RGB output
- Genlock
- Composite and Y/C outputs
- Optional accessories: HZ-H713U, KA-F30KITU AC adaptor kit, RM-LP80U remote control unit

**KY-F30C1**
$5045.00

**Accessories**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Price</th>
</tr>
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<tbody>
<tr>
<td>HZ-H713U</td>
<td>13:1 Manual Zoom Lens</td>
<td></td>
</tr>
<tr>
<td>HZ-M151U</td>
<td>Nikon Microscope Adaptor</td>
<td></td>
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<tr>
<td>HZ-M152U</td>
<td>Olympus Microscope Adaptor</td>
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<tr>
<td>HZ-M153U</td>
<td>Zeiss Microscope Adaptor</td>
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<tr>
<td>KA-F30KITU</td>
<td>AC Adaptor Kit</td>
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<tr>
<td>TK-1070U</td>
<td>2/3&quot; CCD Color Camera (Less Lens)</td>
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<tr>
<td>TK-F7100U</td>
<td>RGB Frame Capture Camera (Less Lens)</td>
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<tr>
<td>TK-870U</td>
<td>2/3&quot; CCD Color Camera</td>
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<tr>
<td>GD-H3220USL</td>
<td>19&quot; Pro Multi-Sync Monitor</td>
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**Computer Imaging Accessories**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Price</th>
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<tbody>
<tr>
<td>AC-C412P</td>
<td>AC Adaptor for TK-870U</td>
<td></td>
</tr>
<tr>
<td>AC-C712P</td>
<td>AC Adaptor for TK-1070U</td>
<td></td>
</tr>
<tr>
<td>HL-25 25mm Fixed Focal Lens for TK-870U</td>
<td>C-mount lens with manual iris/focus. No zoom. Wide angle view with focusing as close as 10&quot;</td>
<td></td>
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<tr>
<td>HZ-C611AF</td>
<td>C-Mount Autofocus Lens for TK-870U, TK-1070U</td>
<td></td>
</tr>
<tr>
<td>VC-452-4U</td>
<td>9-Pin to 9-Pin RGB Cable (4-Meter)</td>
<td></td>
</tr>
</tbody>
</table>

*Prices and Specifications Subject to Change Without Notice.*
XR-W1001 Write-Once CD-ROM Drive (Preliminary)

- Built-in type
- 5.25" half-height form factor
- Real-time encoding
- High-speed access
- Conforms to Orange Book
- SCSI interface
- JVC extension support (ISO 9660)

The XR-W1001 features the ability to specify characteristics of the ROM and write-once memories, permitting flexible use according to application. The disc can be played on existing CD-ROM drives by processing (finalizing) it after data has been written. Also, new data can be appended sequentially with JVC Extensions (JVC's File System Software), which conform to the ISO 9660 standard.

A wide range of applications are envisioned for the XR-W1001 CD-ROM including still-picture files, authoring systems and small-system electronic publishing.

Specifications

- Capacity: 580M bytes/side
- Data Transfer Rate: 153.6K bytes/sec.
- Access Time: 300ms (average)
- Rotation Speed: 200 to 500 CLV
- Host Interface: SCSI
- Bit Error Rate: < 10^-13
- Disc Diameter: 4.72"
- Dimensions: 53/4" x 1 3/8" x 81/16"
- Loading: Auto loading/auto eject
- Vibration: 0.5G (operating)
- Shock: 2G (operating)
- Temperature: -20°C to 60°C (non-operating); 5°C to 40°C (operating)
- Humidity: 25% to 85% (operating/wet bulb 29°C)
- MTBF: 20,000 POH
- Indicator: "Busy" (front panel)
- Power Requirement: 5VDC, 12V
- Caddy: Standard CD-ROM caddy
- Controls: Eject button, volume control
- Jack: Headphones
- Power Consumption: 10W

XR-W1001 .................................................. TBA*

*To Be Announced
ProVAS Animation Controller and Encoder/Sync Generator

Controller Section
* Designed specifically to be the comprehensive solution for computer graphics applications * Performs single frame recording and frame grabbing (frame capture) operations from computer graphics systems to standard editing VTRs * Operators control all recording, grabbing, search and VTR functions from the host terminal * RS-232 9-pin D connectors for control of 2 serial machines * Programmable event triggers * Software selectable preroll and timeout * Accurate search to any frame on any VTR interface * Programmable scene playback and sequencing * Status information available over RS-232 interface * All recorder control functions including jog and shuttle supported * Separate sync input for video edit timing * Audio editing capability

Encoder/Sync Generator Section
* Full bandwidth encoding. Outputs include composite video (2), component video Betacam or M-II, S-VHS and separate Y and C * Internal sync generator allows for genlock of NTSC or PAL RGB devices, or the ProVAS will slave to incoming sync from the RGB source or house sync * Accepts continuous subcarrier input for phase locked color framing * Adjustments are included for sync advance and delay, selectability of calibrated or adjustable RGB input levels, selectable color bars and blackburst, also Superblack video output for keying * Sync generator outputs include: composite sync, blanking, burst flag, subcarrier, horizontal and vertical drive, also PAL ID pulse in PAL version * Sync input accepts composite sync, composite video, sync on green * Internal color bar generator: NTSC-SMPTE, EIA standard or full color, PAL-BCC, EBU or full color, blackburst * Adjustment for sync advance and delay * Accepts RGB with setup, can add setup to video or adjust for Superblack video output * Switchable loopthrough or terminated RGB and sync inputs * 360° SCH phase adjustment * Adjustments and switches available from front panel * Desktop or rackmountable; front and rear rackmounting brackets included

ProVAS ....................................... $6980.00
ProVAS/PAL PAL version .................. 6980.00

MiniVAS-2 Animation Controller
* Performs single frame recording and frame grabbing (frame capture) operations from computer graphics systems to standard editing VTRs * Operators control all recording, grabbing, search and VTR functions from the host terminal * Remote RS-232 interface at 9600 baud * No modification required to VTR * Assures field accuracy by the use of Lyon Lamb's proprietary Vertical Interval Frame Code. Additionally, SMPTE time code is used interchangeably with VIFC® for VTRs with time code output available. An LED display on the ProVAS displays the VIFC or SMPTE time code for positioning and locational status * Interfaces automatically to a wide range of VTR formats including S-VHS U-Matic, Betacam, M-II, 1" type C, D1, D2 and HDTV, as well as laser disc recorders * All supported recorder interfaces reside in ProVAS firmware so the user may select or change recorders at any time with no hardware or software modification. ProVAS can be easily updated at any time for newly developed recording devices * Supported by all major animation software packages running on every level of computer platform * Programmable operations for 1 or more frames * Frame grabbing with programmable offsets * Rotoscoping capability with 2 VTR control * 2 RS-422 9-pin D connectors for control of 2 serial machines * Programmable event triggers * Software selectable preroll and timeout * Accurate search to any frame on any VTR interface * Programmable scene playback and sequencing * Status information available over RS-232 interface * All recorder control functions including jog and shuttle supported * Separate sync input for video edit timing * Audio editing capability

MiniVAS-2 Includes video recorder cable, does not include S-VHS to BNC cable set. ...... $4980.00
Additional VTR Cables RS-422, AG-7500, BR-S811 or VO-5850 .................. 75.00
S-VHS Cable Set S-VHS to BNC cable set for S-VHS MiniVAS-2 or S-VHS ENC-7 operation. . 160.00

452 Prices and Specifications Subject to Change Without Notice.
RTC Real Time Scan Converter
- High-resolution scan conversion in real time
- Automatic conversion of RGB signals scanning at rates from 20kHz to 89kHz (standard NTSC version), 14kHz to 60kHz (LF version), 20kHz to 73kHz (standard PAL version)
- Proprietary VLSI digital filtering with selectable sharp, medium and soft focus on both the input horizontal and vertical axis allows for high text resolution, removes unpleasant flickering and adds hardware anti-aliasing
- Zoom, pan and scroll capability for precise image composition
- 3 source input channels with built-in selector and memories for storage of 40 sets of input and output settings
- Adjustable for various input aspect ratios
- Digital encoder with menu-driven settings and memory
- Selectable encoder filters
- Outputs include composite video, component Betacam or M-II, S-VHS and 15kHz RGB
- Internal sync generator allows genlock of external devices or will genlock system to external input (NTSC or PAL), sync and subcarrier
- Built-in black and color bars
- Easy-to-use menu operation with front panel 2-line x 40-character backlit LCD display and controls
- All features may also be controlled through a serial communications port
- Easy connection to graphics computers via looping BNC connectors; typically the computer’s monitor outputs are looped through the RTC
- NTSC and PAL versions available

The RTC real time scan converter accepts RGB signals from virtually any computer—from PC to workstation to supercomputer, and converts the RGB output to a broadcast-quality NTSC or PAL video signal. This allows computer images to be recorded on video tape recorders, displayed on standard video monitors or projection systems, and broadcast. The RTC automatically converts output from computers scanning from 14kHz to 89kHz. Up to 3 independent sources may be connected simultaneously. Pan, scroll and zoom features allow the smallest graphic detail to become the center of attention.

Outputs include composite video, component video Betacam or M-II, S-VHS and low resolution RGB. There is a built-in genlock sync generator with color bars and black.

The RTC conversion process actually combines individual pixels where other processes discard some pixels and lose resolution. With the RTC there is no distortion so that circles remain circles and squares remain squares. The operator has complete flexibility to size, position and compose graphic elements. Pushbuttons allow for text to be sharpened and shaded images to be softened, and the built-in digital encoder and sync generator assures the highest quality for all video formats.

RTC ........................................... $24,950.00
RTC/LF Low frequency scanning version of RTC. Automatic conversion of RGB signals scanning at rates from 14kHz-69kHz ........ 24,950.00
RTC/HD Version of RTC specifically designed for input of HDTV signals ........ 24,950.00
RTC/PAL PAL version of RTC .............. 30,950.00
RTC/PAL/LF PAL version of RTC/LF ........ 30,950.00
RTC/PAL/HD Version of RTC/PAL specifically designed for input of HDTV signals ......... 30,950.00
RTC Rack Slides Rackmounting slides for RTC ........ 250.00

ENC-7 Encoder/Sync Generator
- Available in both NTSC and PAL versions
- Full bandwidth encoding. Outputs include composite video (2), component video Betacam or M-II, S-VHS and separate Y and C
- Internal sync generator allows for genlock of NTSC or PAL RGB devices, or the ENC-7 will slave to incoming sync from the RGB source or house sync
- Accepts continuous subcarrier input for phase locked color framing
- Adjustments are included for sync advance and delay, selectability of calibrated or adjustable RGB input levels, selectable color bars and blackburst, also Superblack video output for keying
- Sync generator outputs include: composite sync, blanking, burst flag, subcarrier, horizontal and vertical drive, also PAL ID pulse in PAL version
- Sync input accepts composite sync, composite video, sync on green
- Internal color bar generator: NTSC-SMPTE, EIA standard or full color; PAL-BBC, EBU or full color; blackburst
- Accepts RGB with setup, can add setup to video or adjust for Superblack video output
- Switchable loopthrough or terminated RGB and sync inputs
- 360° SCH phase adjustment
- Adjustments and switches available from front panel

The ENC-7 is a broadcast quality encoder/sync generator designed specifically to be the comprehensive solution for computer graphics applications. The ENC-7 meets the special requirements of RGB imagemakers for RS-170A encoding. Full bandwidth filter encoding outputs include composite video, component video Betacam or M-II, S-VHS and separate Y and C. The internal sync generator allows for genlock of NTSC or PAL level RGB devices, or the ENC-7 will slave to incoming sync from the RGB source or house sync. For studio environments the ENC-7 accepts subcarrier input for phase locked color framing.

Adjustments include sync advance and delay, selectability of calibrated or adjustable RGB input levels, selectable color bars, blackburst and Superblack video output for keying.

ENC-7 ........................................ $4,500.00
ENC-7/PAL PAL version ................. 4,500.00
S-VHS Cable Set S-VHS to BNC set for S-VHS ENC-7 operation ......................... 160.00

Prices and Specifications Subject to Change Without Notice.
4180/4080/2080 Projection Panels

Common Features
- Slim line design for portability
- Infrared heat shielding
- High efficiency cooling fan
- State-of-the-art chip on glass technology
- Easy access top mounted display controls
- Compatible with many of today’s popular computers, including IBM, IBM compatible and Macintosh systems
- Panel-Ready™ presentation software allows you to capture images from any DOS-based software
- Store as many as 300 text pages or 30 images on one 2.0M byte high-density disk
- 17 choices of transition effects and 3 dissolve speeds
- 2:1 magnifier

For winning presentations that really make an impact, choose the projection panels that make the most of your resources. Continue to use your current computer and software to communicate your ideas. Or use Panel-Ready presentation software to produce visual presentations from any input software. You’re no longer limited to a specific set of transparencies. Use your PC to present “live” and interactive charts, spreadsheets and graphics. Or, during brainstorming sessions, use the panel as an interactive tool to help generate ideas or solve problems. The magnifier feature of Panel-Ready adds emphasis and readability. Magnify any area on the screen to twice its size.

3M projection panels are simple to install and easy to use. They fit on top of your overhead projector and can be controlled from either your PC, the panel itself or, depending on the model, a remote control.

4180 Projection Panel
- 4913 colors
- Infrared remote control
- High resolution – 648 x 480 pixels
4180 ............................................ $6495.00

4080 Projection Panel
- 64 vivid color capability
- High resolution – 640 x 480 pixels
4080 ............................................ $4995.00

2080 Projection Panel
- Color mapping presents full-color graphics in up to 16 shades
- High resolution – 720 x 480 pixels
- Infrared remote control
- Presentation software that lets you freeze, dissolve or re-order images and create other effects
- Includes panel remote and Mac remote software
2080 ............................................ $2295.00

Compatible Chart 1,2

<table>
<thead>
<tr>
<th>IBM PS/2, VGA</th>
<th>4180/4080</th>
<th>2080</th>
</tr>
</thead>
<tbody>
<tr>
<td>Macintosh II, IIsi, LC</td>
<td>X²</td>
<td>X</td>
</tr>
<tr>
<td>IBM PC/XT/AT, EGA/CGA</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>IBM PC/XT/AT, CGA only</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Olivetti and AT&amp;T</td>
<td>X³</td>
<td>X³</td>
</tr>
<tr>
<td>Macintosh SE, Plus, 512/128K, Classic</td>
<td>X³</td>
<td>X³</td>
</tr>
<tr>
<td>Apple II, II GS, DEC VT2200</td>
<td>NA</td>
<td>X³</td>
</tr>
</tbody>
</table>

1Not compatible with portable Macintosh
2A loopthrough adaptor is required for simultaneous CRT and LCD viewing
3With optional interface kit
4Requires optional cable

"IBM," "PS/2," and "AT" are trademarks of International Business Machines Corporation.
"Macintosh" is a licensed trademark of Apple Computer.
"Panel-Ready" is a trademark of Mind Path Technology

Prices and Specifications Subject to Change Without Notice.
MULTIMEDIA PRESENTATION AND ANIMATION SOFTWARE

**Director Version 2.0**

With Director Version 2.0 you can develop a complete multimedia presentation by creating graphics, text and animations, synchronizing them with sound and video and adding a full range of interactive control for your presenter or audience.

Director Version 2.0 features 2 integrated modules, Overview and Studio, which operate as a single program for transforming your visions into dynamic multimedia communications.

Overview is a multimedia presentation module. You can quickly import and arrange graphics (PICT, MacPaint, Scrapbook, PICS, Glue files), animations (Director and VideoWorks II files), and sounds (SND, MacRecorder**, MacInTalk**) to easily create a complete multimedia presentation. You can also add animated text and charts in just seconds using the Auto Animate function.

Studio, the heart of Director Version 2.0, is the production module. With Studio you have complete, precise control over time of virtually every element in your multimedia presentation.

Studio has 3 main elements: Paint, Score and Lingo**. Use the Paint module to create and edit beautiful 8- and 32-bit graphics and add dramatic animation effects to your artwork. Score is a time-line that allows you to position and easily animate the artwork that you've created or Imported, synchronize the animation, assign color palettes, add special effects and more. Lingo, a HyperTalk-like scripting language, provides flexibility to add buttons, scripts and a full range of interactivity to your multimedia presentations.

Lingo also uses XObjects** (and HyperCard** XCMDs) to allow you to add sound and video to your presentations from external devices such as CD-ROM and videodisc players and videotape recorders.

Once your multimedia communications are complete, you can present them on your Macintosh** with full color and sound. Or project them using a large screen monitor or video projector. You can also record your presentation to videotape in real time or with frame accuracy, or overlay your animations onto existing video footage.

Director Version 2.0 includes Player**, a utility that lets you distribute your productions for viewing by those who do not have Director Version 2.0. Also available from your dealer is Accelerator**, a utility that speeds and smooths your finished animations for presentations and recording to videotape. Accelerator supports the non-interactive movies created in Director ........ $895.00

**Director Version 3.0**

Anti-aliased text and graphics, image blending, full support for editing and playback of 24- and 32-bit images.

**Sound**

Dual sound channels, fade in and fade out of volume, play sounds direct from disk, sound playback during movie loading.

**Lingo**

"Smart" castmembers can have scripts attached, external device controls which can be cut and pasted, Improved HyperTalk syntax and text manipulation compatibility, over 60 Lingo commands.

**Memory Management**

"Cast on demand" memory management, castmembers can be linked to data files, unlimited size movies, full text handling, batch importing of sound, image and movie data.

**System 7**

32-bit memory addressing, AppleEvents**, TrueType**, Balloon Help**, virtual memory, streaming audio playback and file sharing.

**Wider Audience**

Unlimited size movies can play back on minimally configured systems. Your messages can be distributed to more people at no charge, thereby adding value to your ideas .................. $995.00

**Three-D**

Three-D gives you power, flexibility and a straightforward interface to create dazzling images and animations, exciting flying logos, architectural fly-throughs, package designs and compelling photorealistic visualizations.

Three-D consists of 3 separate modules that operate together: 3DWorks, RenderWorks and ImageWorks. 3DWorks is the animation module in which users can import 3-D models, easily and directly animate multiple objects, cameras and lights in 3-D space.

RenderWorks is the visualization module in which color, texture maps, surface material, shading and lighting attributes set in 3DWorks are applied to models and animations for realism and exciting visual effects.

ImageWorks is the compositing and output module where the user can digitally composite 2-D and 3-D images and animations and output these as PICT or PICS files for inclusion in Director or other programs or record directly to videotape.

The Three-D Developer Version allows you to bring in models from 3-D modeling and CAD programs in a variety of formats. Users can render images in either 8 or 24 bits with automatic dithering. Users can also use the Accelerator (included) to accelerate animations for real time preview on screen. Three-D also supports output of the MacRenderMan RIB file format from Pixon ........................................... $1495.00

**MediaMaker**

MediaMaker is an easy-to-use tool for editing, assembling and synchronizing video with Macintosh graphics, sound and animation to create stunning videotape productions and presentations right from Macintosh desktops.

By providing an integrated environment on the Macintosh, MediaMaker simplifies the videotape production process while at the same time taking advantage of existing Macintosh graphics, animation and sounds. With its user interface, MediaMaker is the definitive video publishing tool for laying out and synchronizing video with sound, animation and graphics to create customized videotapes quickly and inexpensively.

MediaMaker features 2 main parts: Collections and Sequences. MediaMaker Collections are media libraries that allow you to view, add, organize and edit elements of videotape, videotape, compact disc audio, Macintosh sound, graphics and animations. Each element is represented by a unique picon—or picture icon—that provides a visual cue to the content of the segment you have defined. You can have as many picons as you wish, and you can copy picons from one collection to another, the advantage of easy organization of your project's material.

Playback of one video segment can be triggered before another and/or synchronized with other media, such as sound and animation. With Sequences, you can assemble your video segments, synchronize them with music from compact disc, insert or overlay a Director animation, and then mix a voice narration track. Finally, MediaMaker Sequences can be automatically output to videotape using MediaMaker's powerful "Print to Video" feature ........................................... $695.00

Prices and Specifications Subject to Change Without Notice. 455
MITSUBISHI ELECTRONICS
PROFESSIONAL ELECTRONICS DIVISION

VS-1202/2020 Video/RGB Projectors
* 9-element all-glass lenses  • 4-corner independent convergence  • 4-side blanking control  • Provide ultra bright, high resolution color images  • 700 peak lumen output  • Variable screen sizes: from 70" to 120" (diagonal) VS-1202, 120" to 240" (diagonal) VS-2020  • Horizontal resolution: 1000 lines (RGB analog), 800 lines (composite video)  • 9500°K color temperature provides whites previously thought unattainable for video projectors  • Composite, S-VHS, RGB analog inputs  • RGB TTL with optional remote  • 3 times greater than normal contrast through the use of an electromagnetic focus system and optical coupling of lenses and CRTs  • Dynamic focus circuitry keeps focus sharp right to the edges  • Double optical coupling in the VS-2020 lens assembly provides a 30% increase in contrast over the already impressive VS-1202  • Compatible with a wide variety of video sources  • Composite video input connectors are provided to accommodate television tuners, VTRs, VCRs, video discs, video cameras and other AV equipment  • S-VHS (separate Y/C) input terminals are included for high resolution displays  • RGB analog signal terminals are provided for professional equipment, broadcasting and personal computers  • A TTL input is available on the optional remote

VS-1202
70"-120" adjustable (flat screen)  • $7,200.00
VS-2020
120"-200" adjustable (flat screen)  • 675 lumens  • $7,200.00
VC-1200U
Remote control/switcher. Composite, RGB analog and RGB TTL inputs. Control of static convergence, contrast, tint, brightness, color, etc. Audio follows video when inputs are switched. 31/2"H x 19"W x 121/2"D.  • $615.00
CA-003
Cable for remote, 49'.  • $65.00
CA-002
Cable for remote, 98'.  • $345.00
CA-001
Cable for remote, 164'.  • $545.00
VIMIVS1200
ATA shipping case with handles and casters  • $555.00

VS-1250R Video/DiamondScan Computer Projector
* Auto tracking function (15 ~ 36kHz horizontal scanning frequencies and 50 ~ 100Hz vertical scanning frequencies)  • Signal-free convergence function  • 875 peak lumen output  • NTSC, S-VHS, PAL, SECAM. RGB analog and RGB TTL are accepted  • 7" liquid cooled CRTs with a 9-element all-glass lens assembly  • 9500°K color temperature  • Clear, highly defined video images achieved through the use of a line converger  • Horizontal positioning control  • 1100 horizontal lines resolution (RGB)  • Resolution and contrast have been dramatically improved by the use of a 9-element all-glass lens assembly in place of the conventional 6-element hybrid type  • Distortion is minimized and blooming of the focal point at peak brightness is eliminated through the use of an electromagnetic focus electron gun  • Distributed cathode of scandium oxide achieves a dramatic increase in brightness (875 peak lumen output) without sacrificing CRT life expectancy  • By incorporating a CCD tandem compound filter, color and brightness signals can be separated in a wider band, which significantly reduces NTSC artifacts while producing a clearer screen image  • Dichroic coating, mirror-like in appearance, on the green lens filters out the yellow and blue components inherent in the light from the green CRT of projectors  • Provides true color representation

Compatibility

<table>
<thead>
<tr>
<th>Computer</th>
<th>Resolution</th>
<th>TTL/Analog</th>
<th>H</th>
<th>V</th>
</tr>
</thead>
<tbody>
<tr>
<td>PC/AT/DOS CGA</td>
<td>640 x 200</td>
<td>TTL</td>
<td>15.75</td>
<td>60</td>
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<tr>
<td>PC/AT/DOSEGA</td>
<td>640 x 200/350</td>
<td>TTL</td>
<td>15.75/21.85</td>
<td>60</td>
</tr>
<tr>
<td>PC/AT/PGA</td>
<td>640 x 400/480</td>
<td>A</td>
<td>30.48</td>
<td>60</td>
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<tr>
<td>PS/2 VGA</td>
<td>640 x 480/640/350</td>
<td>A</td>
<td>31.5/35.5</td>
<td>50/70/88</td>
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<tr>
<td>Apple</td>
<td>640 x 480</td>
<td>A</td>
<td>35.0</td>
<td>66.6</td>
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<tr>
<td>Mac Plus</td>
<td>512 x 342</td>
<td>A</td>
<td>24.0</td>
<td></td>
</tr>
<tr>
<td>Macintosh</td>
<td>512 x 342</td>
<td>A</td>
<td>24.0</td>
<td></td>
</tr>
</tbody>
</table>

VC-1250 Interface/Controller (Standard)
Features:
* Power on/off, vertical synchronization input switching, static convergence, color, tint, contrast and brightness

Service Controls:
* Dynamic convergence, vertical width, vertical linearity, horizontal width, correction of keystone distortion, adjustment of lens focus and horizontal position

Hours Meter:
VS-1250R  • $10,900.00
VS-1250R  • $10,900.00
CA-053  • Cable for remote, 49'.  • $260.00
CA-052  • Cable for remote, 98'.  • $320.00
CA-051  • Cable for remote, 164'.  • $750.00

Interface Cables
C-VGA25  • IBM PS/2 to VC-1250/DiamondScan monitors  • $65.00
C-PS/2  • IBM 9-pin to VC-1250/DiamondScan monitors  • $65.00
C-MAC25  • Mac II to VC-1250/DiamondScan monitors  • $65.00
C-2525  • VC-1250 to VS-1250R/DiamondScan monitors  • $65.00
C-2525  • Interface to VC-1250/DiamondScan monitors  • $95.00
C-AM-2751A/AM-3151A/AM-3501R  • $13,500.00

Prices and Specifications Subject to Change Without Notice.
COLOR MONITORS

COLOR MONITORS

Common Features:
- Fully compatible with IBM® compatibles and the Apple® Macintosh® II 14", 16", 20", 21", 26", 33" and 37" screen sizes
- Perfect for a complete range of applications: presentation graphics, desktop publishing, CAD/CAM, and more
- Automatic tracking of scanning frequencies for maximum versatility
- Prices do not include bases

XC3715C 37" Auto-Tracking Color Monitor
- Bright, high color saturation picture, viewable at any angle
- High contrast direct-view CRT with up to 800 x 560 lines resolution for critical imaging applications
- Auto-tracking circuitry automatically locks onto 15kHz-36kHz horizontal and 40Hz-75Hz vertical frequencies
- 37" fine pitch CRT with dynamic beam focus for sharper imagery
- Microprocessor controlled display alignment and sizing
- Digital, wireless remote control with MPU scan mode memory
- Accepts composite video, S-VHS, analog RGB and TTL inputs
- NTSC, M-NTSC, PAL and SECAM capable
- Auto-tracking circuitry
- Stereo audio inputs and speakers
- Worldwide regulatory standards
- 120V/220V switchable power supply
- Designed to fulfill the extremely versatile requirements of institutional, governmental and multi-national corporate applications
- Able to operate from virtually any worldwide video standard or power source
- Mac II and VGA compatible
- XC3715C $7,599.00
- XB3715-1 Base $995.00

XC3315C 33" Auto-Tracking Color Monitor
- 33" high contrast direct-view CRT
- Up to 800H x 560V resolution
- 30MHz bandwidth
- Accepts TTL, analog, and television-type video signals
- Fully compatible with IBM CGA, EGA, PGA, VGA and Mac II
- XC3315C $5,495.00
- XB3300-1 Base $899.00

HJ6505 26" Color Monitor
- Display area 38% larger than standard 20" CRTs
- More readable alternative to the 20" monitors currently used on high-end workstations for large, finely detailed CAD imagery
- Compatible with leading CAD/CAM workstations
- Auto-tracking automatically adjusts the scanning frequency to match that of the graphics controller board utilized
- 31mm dot pitch precision in-line CRT with a 90° deflection angle for sharper, clearer text and graphics
- Automatically tracks horizontal (45 - 70kHz) and vertical (50 - 80Hz) frequencies
- Dynamic Beam Focus (DBF) electron gun provides sharp focus over entire CRT
- Ultra-high resolution, up to 1280 x 1024 pixels
- HJ6505SAX Anti-glare CRT $15,110.00
- HJ6505SK $14,950.00

FHL6115 21" Color Monitor
- Capable of displaying a full 8" x 10" page with bleed margin
- 16.5% (24 square inches) larger area than a 19" PIL monitor
- 52% flatter than a standard PIL CRT
- Anti-glare, bonded CRT faceplate
- 31mm dot pitch CRT
- DBF electron gun provides sharp focus over entire CRT
- Microprocessor-based auto-tracking for versatility
- 110MHz video bandwidth
- Ideal for high ambient lighting conditions
- Microprocessor-based memory system
- Well-suited for WYSIWYG desktop publishing
- FHL6115SBK Bonded anti-glare CRT $4,900.00
- FHL6115STK High contrast CRT $4,600.00

HL6915 20" Color Monitor
- DBF electron gun allows viewing of crisp, clear pixels over the entire CRT face
- Ultra-high resolution images up to 1280 x 1024 pixels
- 110MHz video bandwidth provides sharp, clear viewing of highly detailed drawings
- Bonded anti-glare CRT on SBK version
- Conversion of 0.3mm
- Higher contrast ratio for viewing ease
- Improved raster regulation
- Higher video bandwidth
- New circuitry provides high contrast ratio and brightest viewing of high resolution images
- Digital microprocessor scan mode memory memorizes up to 20 frequency settings of horizontal width, phase and centering plus vertical size and position
- Auto-tracking from 30-64kHz horizontal for versatility
- Tilt swivel base included
- HL6915SBK Bonded anti-glare CRT $3,790.00
- HL6915SATK Diamond matte anti-glare CRT $3,570.00
- HL6915STK High contrast CRT $3,495.00

Prices and Specifications Subject to Change Without Notice.
AM-2751A 27" Color Multiscan Monitor

- Mitsubishi's DiamondScan® frequency scanning automatically senses and locks onto horizontal scanning from 15-36kHz and vertical scanning from 45-90Hz
- Designed specifically for computer graphics, video and imaging applications
- Compatible with IBM® PC, VGA, EGA, CGA and Macintosh® II graphics standards
- Wide range of input signals: NTSC/PAL, composite video; S-Video terminal (separate Y/C); RGB analog; RGB TTL; monochrome TTL; 1 pair detachable speakers; 5W per channel audio amplifier; wired remote control of power on and input switching
- Color select switch accommodates both 8-color and 64-color standards from RGB TTL
- 600 lines horizontal resolution, video
- Microprocessor control system provides automatic vertical raster height adjustment
- High-fidelity stereo audio outputs
- 231/8"H x 261/4"W x 19"D
- AM-2751A $3700.00

AM-3151A 31" Color Multiscan Monitor

- DiamondScan enables it to automatically sense and lock-on computer and video horizontal scanning frequencies ranging from 15-36kHz and vertical scanning frequencies from 45-90Hz
- For computer graphics, video and imaging applications
- Accepts IBM PC, VGA, EGA and CGA standards
- Also accepts NTSC and PAL television standards
- Inputs for S-VHS and RGB TTL sources with 2 inputs each for composite and RGB analog sources
- Output jacks for RGB analog and composite
- 640 x 480 pixel resolution, RGB
- 600 lines horizontal resolution, video
- Color select switch accommodates 8-, 16- and 64-color standards from RGB TTL
- Microprocessor control system provides automatic vertical raster height adjustment
- 26'/2" H x 303/8" W x 213/4" D
- AM-3151A $5200.00

AM-3501R 35" Color Multiscan Monitor

- High-resolution DiamondScan monitor with automatic variable scanning from 15 to 35kHz
- Compatible with IBM PC PGC/EGA/CGA
- NTSC composite video input
- RGB analog input
- RGB TTL input
- High-resolution graphic display for computers to workstations, with possibilities for countless other applications
- 2-channel audio amplifier and speakers
- Monochrome TTL
- AM-3501R $6900.00
- GP-35 Glare protection screen $1540-500
- VIMTAM3501H ATA shipping case with handles and casters $105.00

Interface Cables for AM-2751A, AM-3151A, AM-3501R

- C-TTL TTL 9-pin TTL out to 9-pin TTL in $50.00
- C-VGA BNC IBM PS2 $95.00
- C-PGA BNC IBM PGA 9-pin $95.00
- C-MAC BNC Mac II $95.00
- C-25 BNC Analog $95.00

SMR-2601R Color Data Monitor/Receiver

- 26" step scan monitor receiver
- Handles horizontal scanning frequencies of 15.6 - 15.8kHz and 30 - 36kHz (selects automatically), and vertical scanning frequencies of 50 - 90Hz
- S-VHS, composite (x2), 8-pin VTR, RGB analog (x2) inputs
- RGB analog and composite (x2) outputs
- 181-channel cable compatible FS tuning
- Wireless remote control
- Antenna A/B
- Variable (x1) and fixed (x1) stereo audio outputs/inputs
- Built-in front-firing speakers: 241/4" x 261/4" x 20" x 105 lbs.
- SMR-2601R $2600.00

MONITORS/MONITOR RECEIVER/ S-VHS RECORDER/PLAYER

BV-1000

- Deck-to-deck editing with ±5 frames accuracy
- Flying erase heads
- Jog/shuttle dial permits variable visual search, still frame, variable slow motion, frame-by-frame advance
- 430 lines horizontal resolution in S-VHS mode
- 14MHz, 8-bit digital memory
- Special effects include 9-100 split screens, freeze frame, edit window, picture-in-picture, strobe effect, multi-window strobe, variable speed-scan and window size
- Insert edit, fine edit and audio dubbing
- High-speed 99-position address and 19-position index search capability
- VHS-HQ, CCD noise reduction, comb filter and twin digital auto tracking circuits for image enhancement
- Hi-Fi/MTS stereo audio circuitry
- Real time counter, counter memory, time remaining, auto on/play, auto repeat, auto rewind, fast play and reverse play
- Full-function wireless remote control
- Rackmountable
- BV-1000 R-1000 Rackmount for BV-1000 $1650.00

BV-1000 S-VHS Hi-Fi Editing Recorder/Player

- Deck-to-deck editing with ± 5 frames accuracy
- Flying erase heads
- Jog/shuttle dial permits variable visual search, still frame, variable slow motion, frame-by-frame advance
- 430 lines horizontal resolution in S-VHS mode
- 14MHz, 8-bit digital memory
- Special effects include 9-100 split screens, freeze frame, edit window, picture-in-picture, strobe effect, multi-window strobe, variable speed-scan and window size
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- Real time counter, counter memory, time remaining, auto on/play, auto repeat, auto rewind, fast play and reverse play
- Full-function wireless remote control
- Rackmountable
- BV-1000 R-1000 Rackmount for BV-1000 $100.00

Price On Request

Prices and Specifications Subject to Change Without Notice.
COLOR MONITORS

COLOR MONITORS
Common Features
• Fully compatible with IBM® compatibles and the Apple® Macintosh™ II • 14", 16", 20", 21", 26", 33" and 37" screen sizes • Perfect for a complete range of applications: presentation graphics, desktop publishing, CAD/CAM and more • Models with adjustable fixed frequencies for optimum performance • Models with automatic tracking of scanning frequencies for maximum versatility • Prices do not include bases unless indicated otherwise

HL6935 20" Diamond Scan 20L
• Up to 1280H x 1024V resolution • Analog input signal • 100MHz bandwidth • Microprocessor enhanced programmable display settings • Scan frequency 30-64kHz horizontal and 50-90Hz vertical • Tilt and swivel base included
HL6935ATK Non-glare CRT $3445.00

HC3905 20" Color Display Monitor
• Microprocessor based auto scanning system for versatility and ease of use (15.7-38kHz horizontal and 45-90Hz vertical) • Analog or TTL input • Pre-set modes for 800 x 600, IBM CGA, EGA, VGA, 8514/A and Apple Macintosh II • High contrast anti-glare CRT • Standard or long persistence phosphors available • 0.31mm dot pitch • Resolution: up to 1024 x 788 pixels interlaced
HC3905ATK Non-glare CRT $2670.00
HC3905L9ATK L.P. phosphor with non-glare CRT $2720.00

HL6605ATK/FL6615ATK 15" Color Display Monitors
• Microprocessor based auto scanning system for versatility and ease of use • Compatible with IBM PS/2 VGA, Apple Macintosh II and many other graphics boards • Accurate digital display control; memorizes up to 20 combinations of settings for horizontal width, phase and centering, pincushion correction, vertical height and centering • High contrast or high contrast anti-glare CRTs available • Dot pitch: 0.31mm (HL6605ATK); 0.28mm (FL6615ATK) • Resolution: 1024 x 788 typical (HL6605ATK); 1280 x 1024 non-interlaced (FL6615ATK)
HL6605ATK $2030.00
FL6615ATK $2310.00

FA3425 14" Diamond Scan 14L
• Automatically scans all horizontal frequencies between 15.7 and 35.5kHz and vertical frequencies between 50 and 87Hz • Compatible with IBM PS/2, PC/AT/XT, Apple Mac II and IIGS • Picture size compatible with EGA, CGA, MCGA, VGA and 8514A (with all controls to clicked position) • Interface mode also available • 4 modes (color, green, amber and white) selectable by Text switch • Accepts TTL and analog video input • Accepts TTL separate sync, TTL composite sync and sync on green • 14" high-resolution CRT with 0.28mm dot pitch • XF-type gun for the strictest focusing requirements of high-density displays • Compact, lightweight chassis • For VGA and MCGA • High contrast, non-glare CRT
FA3425L9ATK For interface mode $1175.00
FA3415ATK For non-interface mode $1015.00

AUM1381ATSV 14" Diamond Scan 14
• 800H x 600V maximum resolution • Analog, TTL, NTSC input signals • 30MHz bandwidth • Scanning frequency: 15.6-36kHz horizontal, 45-90Hz vertical • High contrast, non-glare CRT
AUM1381ATSV Including tilt and swivel base $889.00

Prices and Specifications Subject to Change Without Notice.
S340-10 Color Sublimation Thermal Printer
- Produces near photographic quality color hardcopy, including fine detailed images, solid patterns and smooth curves for consistent, state-of-the-art computer graphics applications
- 150 x 150 DPI continuous-tone printing capability
- Smooth transitions between colors and shades
- Capable of producing up to 16.7 million colors
- Uses continuous-tone, rather than a dithering technique, to print images
- A full-color letter-size page can be produced in approximately 100 seconds
- Full page buffer
- Single sheet adjustable paper cartridge accommodates letter and legal paper or transparency sizes
- Prints images 2 to 3 times larger than the original
- Easy-open top for replacement of ink rolls
- Maximum system and workstation compatibility
- Now bundled with Superprint, Import Plus, chooser level Mac I/F kit or Sun newsprint driver

Specify: S340-10M (Mac); S340-10D (Import Plus); S340-10W (Superprint); S340-10S (Sun) ........................... $13,995.00

G370-10U Color Thermal Transfer Printer
- Combines high resolution color printing technology and versatile PC compatibility all in a small footprint design
- Fast and easy to use for all printing applications
- Ideal for a variety of imaging applications
- 300 dpi
- Provides high resolution graphics for detailed, solid images
- Prints 7 primary colors
- Capable of printing thousands of color combinations, depending on the type software and printer controller used
- Compatible with all IBM® compatible and Apple® Macintosh II computers
- Print enlargement capability for producing images 2 to 3 times larger than original
- Adjustable paper cassette

Specify: G370-10UM (Mac); G370-10UD (Import Plus); G370-10UW (Superprint); G370-10US (Sun) .................... $5,995.00

G330-70 Color Thermal Transfer Printer
- Video interface built into printer, compatible with many popular graphics boards
- Up to 4096 colors for clear images
- Color thermal transfer technology delivers bright colors
- Computer system must be IBM PC/XT/AT or compatible, IBM PS/2®, or Apple Macintosh II
- Graphics adaptor must be CGA, EGA, PGC, VGA or compatible, or Apple Macintosh II
- Delivers fast, high-quality color output on glossy paper or transparency film
- Built-in video interface enables it to create a full-color, permanent hard copy of an image viewed on your computer monitor
- 150 dpi resolution
- Ideally suited for presentation graphics, paint-type graphic art and PC CAD
- Easy to use and operates smoothly in several PC environments
- Can print the screen display from many popular graphics boards

G330-70 ...................................................... $3,390.00

G650 Color Thermal Transfer Printer
- Same basic model as the G330-70
- 300 dpi resolution
- 8-bit Centronics® parallel
- Speed: color 60 sec./page, monochrome 25 sec./page
- Cut sheet paper: A, B size
- Transparencies: A, B size

G650 ............................................................... $6,995.00

G500 Printer/Plotter System
- Compatible with Auto-CAD® and Lotus 1-2-3®
- Operates with IBM PCs and compatibles
- Frees up PC during printing
- 240 dpi resolution
- Continuous forms: A size
- Transparencies: A size
- Speed: color 60 sec./page, monochrome 25 sec./page
- 8-bit Centronics parallel

G500 .............................................................. $4,700.00

B350-70 Video Interface for G650/G500
- Captures up to 4096 colors from most video sources
- Downloads image to video controller in 4 seconds or less
- Captures screen resolutions up to 1280 x 1024 in 4 seconds or less
- Multiple copy capability up to 99 copies
- Compatible with pixel rates up to 125MHz
- Supports 16 gray levels

B350-70 .......................................................... $4,900.00

Prices and Specifications Subject to Change Without Notice.
COLOR VIDEO PRINTERS
CP-210U DiamondScan Color Video Printer
• Sublimation-type thermal transfer color video processor • High resolution (1280 x 1128 dots maximum) • 15-35 kHz horizontal scanning frequency • 16.7 million colors per dot • Print image size 7.5" H x 5" V • Multi-image capability • Separate R and B levels for RGB • Expanded memory • Multiple gamma curve selection • Unit not shipped with paper $1790.00
CP-110U DiamondScan Color Video Printer
• Sublimation-type thermal transfer color video corner processor • High resolution (800 x 640 dots) • Auto-scan from 15-35 kHz, 8 bits (256 gradations) and 16.7 million colors per dot • Print image size 4" H x 3" V in approximately 70 seconds • Separate R and B levels for RGB • Unit shipped with paper and ink cartridge for 20 images $3490.00
CP-10 Color Video Printer
• Sublimation-type thermal transfer color video printer • High resolution (6 dots/mm) • 64 gray scale gradation • Preview monitor checks and adjusts images, real-time scan and zoom function • LED mode indicators • Automatic gain control • True Prints positive or negative • Variable print sizes accommodate overscan, underscan, color, tint, picture, sharpness, frame and field • Wired remote control included with date, time and comments • On-screen menu: includes brightness, contrast, gamma curve printing • Multi-source inputs: composite IPAL, Secam, NTSC and GP-IB inputs • Anti-tearing circuitry for use with time lapse security VCRs, UL544 medical approval • Compatible with high density paper • Wired remote • Positive/negative 3" x 4" image • 72-hour battery backup. Time display is in hours, minutes, seconds • Commercially available monochrome video printer • Price includes wired remote control •...
**NEC**

**VIDEO PROJECTION SYSTEMS**

**DP-1200S MultiSync™ Video Projection System**
- 2-piece projection system with variable projected picture size from 70" to 120", measured diagonally; large enough to accommodate large audiences • Separate projector and control unit for flexible operation; permits total control in permanent installations • Professional-grade 7.0" CRTs are optically coupled and liquid cooled for improved picture sharpness and brightness • 6-element, all-glass lenses for superlative brightness (475 lumens, peak white) • Multi-synchronous capability locks in data inputs from 15-36kHz (H), 38-100Hz (V); compatible with IBM CGA, EGA, PGA, VGA, 8514A and others • 3 RGB inputs (control unit) for high quality connection to a computer permit high-resolution color graphic displays • Full 2000 character computer text display (80 columns x 25 rows) • Comb filter circuitry for superior color reproduction and incredibly fine picture detail; 550 lines of horizontal resolution via video inputs • Wireless remote control, in addition to wired remote operation • Multiple video monitor inputs/outputs control unit for full flexibility • 2 sets of direct-line video inputs with BNC video connectors for a more secure connection • Loophole output from a video source • Special ceiling-mount and rear-projection installations possible via scan reversal (serviceman's adjustment) • Digital convergence control for superlative accuracy; 8 convergence preset memories

DP-1200S projects an image on any wall or screen, 70" to 120" measured diagonally. This 2-piece video projector has 2 sets of video inputs to handle VCRs, VDPs, camera inputs and more. Multi-Sync circuitry accepts inputs from all 3 IBM color graphics boards for IBM CGA, EGA and PGA.

**GP-3000 GraphicSmart Graphics Projection System**
- Multiple Frequency Graphics System capable of projecting high resolution computer graphics and video images from 60" to 300" diagonally • Utilizes sophisticated digital convergence circuitry to allow pinpoint accuracy of the picture by back-lit remote control • Unit will display computer graphics information within a range of 15-55kHz horizontal, 38-100Hz vertical • High resolution hybrid lenses • Liquid cooled CRTs • IBM CGA, EGA, PGA, VGA and 8514A compatible • System includes: projector, 5-input system interface (SI-5320), convergence setup remote control (wired or wireless), user remote control (wired or wireless), RGB connecting cables, control cable, 9-pin to 9-pin and 9-pin to 15-pin interface cables, ceiling mount and operators manual

**GP-5000 GraphicSmart HR Projection System**
- Multiple frequency high-resolution graphics projection system capable of projecting ultra-high resolution computer graphics, HDTV and video images from 100" to 150" diagonally • Utilizes sophisticated digital convergence circuitry to allow pinpoint accuracy of picture convergence by back-lit remote control • Unit will display video and computer graphics information within a range of 15-75kHz horizontal, 38-100Hz vertical • Ultra-high resolution lenses, liquid cooled, optically coupled 9" CRTs • Compatibility includes, but is not limited to, quad video, virtually all personal computer standards, HDTV sources, as well as the majority of CAD/CAM workstations • System includes: projector, 5-input system interface (SI-5320), convergence setup remote control (wired or wireless), user remote control (wired or wireless), RGBH/V connecting cables, system interface control cable, 9-pin to 9-pin filter adaptor, 15-pin to 9-pin adaptor, ceiling mount kit and owner's manual

**IDC-1000 ImageSmart™ Improved Definition Video Converter**
- Improves picture quality for display by converting any composite NTSC signal source as well as the super-high resolution S-Video VCR format to high scan 31.5kHz non-interlaced analog RGB • Works with all NEC DataSmart Projection Systems and Data Monitors • 2 levels of digital noise reduction • 3 positions of incremental freeze • Picture freeze • Stereo audio-follow-video switching • 3 video inputs with stereo audio • Chroma on/off • 8-pin EIA-J VTR input • Rackmount accessory • Wired/wireless remote control • 4½" H x 16½" W x 17¾" D

**PC-CTL Projector Software Control**
- Permits full remote control of NEC GP-Series projectors • Convergence as well as all picture parameters and input switching is conveniently controlled by computer • Ideal for users who have multiple projectors, change screen sizes, move their projectors regularly or require discrete remote control capability • Bi-directional communication allows the user to download convergence and picture information from the projector in file format onto disk, and upload picture information files to the same or other projectors • Storage capacity for multiple image files is limited only by data storage capacity of the host computer • Requires: IBM or compatible AT class 80286 processor or better) computer, DOS version 3.1 or higher, 1 RS-232 COM PORT. RS-232 to RS-422 converter and cabling required

**IDC-1000**

Prices and Specifications Subject to Change Without Notice.
COLOR VIDEO/GRAPHICS MONITORS/PC-VCR

DM-2000P/DM-2600P/DM-3000P

DataSmart® Data Monitor Series

- S-Video inputs/outputs
- Full S-VHS video/line recorder
- Compatible with IBM®, CGA®, EGA®, VGA® and PGA® graphics adaptors
- Multiple sync capability—automatically locks on data inputs 15-35.5 kHz
- Available in 30", 26" and 20" diagonal sizes
- Picture tube with flat, square screen for reduced geometric distortion
- Invar shadow mask resists deformation due to heat
- Maintains color purity
- 34-pin multi-connector for easy interface
- Built-in stereo amplifier and stereo speakers
- External speaker output terminals
- Picture tube corrects for pincushion distortion, so straight lines appear straight
- Professional comb filter for improved performance; horizontal resolution of 600 lines for DM-3000P (560 lines for DM-2000P and DM-2600P)
- Black matrix picture tube with dark glass for excellent contrast ratio (52% tinted)
- Switchable AFC: Fast for slow-motion or freeze-frame of videotapes, Slow to correct horizontal jitter from weak signals
- Blue raster switch for quick, correct setup
- 3.58MHz trap filter provides sharp edges on composite video computer graphics, eliminates "crawling"
- High DC restoration for a stable picture on high-contrast subjects; provides >90% restoration
- Heavy duty switching power supply maintains picture size despite AC voltage fluctuation
- Video 1 input/loop output with BNC; independent L/R audio connections
- Video 2 input with BNC connector; independent L/R audio connections
- Monitor output with BNC video connector sends out whatever is on screen; independent L/R audio connections
- 8-pin VTR connection with separate switch position offers 1-cable connection
- Earphone output jack
- Detachable 3-prong, grounded AC cable for safe connection
- Full range of controls: color, tint, black-level, picture, sharpness, RGB contrast, RGB H-position

The DM-2000P/DM-2600P/DM-3000P DataSmart Series is a complete lineup of data monitors for large screen data display applications. Available in 20", 26" and 30" sizes, DataSmart monitors offer you the ability to display high-resolution computer graphics, composite video and the S-video format. The DataSmart Series of monitors will accept horizontal scanning frequencies within a range of 15-35.5 kHz (TTL or analog). This allows compatibility with IBM, CGA, EGA, PGA and VGA graphic adaptors. Color purity is maintained through an Invar shadow mask. The high-contrast black matrix picture tube combined with comb filter circuitry offers remarkable detail—600 lines resolution. The DM-2000P, DM-2600P, and DM-3000P DataSmart monitors are ideal for large conference rooms, training rooms or for major presentations.

Specifications

Power: 120VAC, 60Hz
Dimensions: DM-2000P—18"H x 201/2"W x 181/2"D; DM-2600P—23"H x 26"W x 19"D; DM-3000P—281/2"H x 30"W x 211/2"D
Weight: DM-2000P—55.2 lbs.; DM-2600P—89.3 lbs.; DM-3000P—152.2 lbs.

ICB-34 Cable

- 4 BNC (R, G, B and sync) to 34-pin cable for analog interface to DM monitors
- 2" length

ICB-34-34

$85.00

PV-S98A PC-VCR

- Ideal for video filing and desktop video presentations from multimedia sources
- PC controls all VCR functions by way of RS-232C serial interface
- Advanced "full load" mechanism for quick command response
- 3 speeds: forward, play and slow motion
- Insert/assemble editing with flying erase head
- MTS stereo 155-channel cable ready programmable tuner
- Built-in address generator allows address post-dubbing of pre-recorded tapes
- Compatible with Apple Macintosh II or MS-DOS architecture
- Single frame accurate record/playback capability and Jet Search (2.5 minutes on T-1201)
- Random access controlled through either RS-232C port or via wireless remote control
- $2100.00

Prices and Specifications Subject to Change Without Notice.
Video Toaster

- Digital Video Effects — Real time (60fps) geometric manipulation of incoming live video. Just point and click for flips, spins, tumbles, blinds, squeezes, zooms (with variable borders), splits, trajectories, push-on/off, digital trails, mosaics, montages and hundreds more.

- Character Generator — Generate 35ns text in 16.8 million colors with variable drop and cast shadows, outlines and transparent shadows. Includes 25 standard fonts plus unlimited user-definable fonts, 100 pages of on-line storage, graphic separators and full spectrum background color gradations. Features variable speed smooth crawl and scroll at 60 fps.

- Color Processing — The Video Toaster’s color processing engine can create color negatives, monochrome, solarization, posterization, color vignettes and photographic filter effects.

- Dual Frame Buffers — Render 24 bit 3-D images and paint on a 24 bit canvas with optional software. High speed frame loading in less than 3 seconds.

- Production Switcher — Performs dissolves, wipes, key and color effects between any of 7 channels. Includes 4 synchronous live video sources, 2 frame buffers and 1 background generator (matte color). The Toaster’s unique integration allows switcher and digital effects to be combined, such as fading a digital effect.

- Preview Output — Compose camera shots or preview frame buffers prior to transitions.

- Intuitive Interface — Make transitions by pulling the on-screen T-bar or with the variable speed “Auto” control. Just point and click with the mouse to perform any Toaster function.

- Linear Keyer — Overlay live video sources or combine live video with a frame buffer.

- Digital Still Store — Stores up to 1000 video still frames to disk. 1 buffer can be loading while the other is displaying. Perform digital transitions or wipes between buffers.

- Frame Grabber — Capture up to 8 consecutive NTSC fields at 1/60th of a second each. Frames may be saved to disk with or without motion and later recalled with the still store.

- Integrated Design — The all-in-1 integration of the Toaster allows powerful features such as decaying and regenerating trails, digital effects on keys and digital manipulation of character generator output.

Specifications

- Video Standard: NTSC
- Inputs: 4 composite synchronous input; BNC connectors; 1V p-p coherent chroma; software controllable 75 ohm termination or high impedance for loopthrough on each input; keyed clamping DC restore
- Main Video Output: 1V p-p composite into 75 ohms
- Preview Output: 1V p-p composite into 75 ohms
- Reference Video: Composite color or blackburst on video input #1
- Sequence Trigger: GPI trigger with optional cable and software
- Insertion Delay: 400ns video in to main out
- Sync Generator: Sync, blanking and burst internally regenerated. Meets all FCC broadcast video and RS-170A specifications
- S/N Ratio: > 55dB
- Sampling Rate: 14.31818MHz
- Quantizing: 8 bits
- Differential Phase: < 3 degrees
- Luminance Bandwidth: + 0/-3dB to 5MHz
- Luminance Resolution: > 400 lines
- Memory: 8 fields (expandable)
- Still Store: Dual outputs independently routed to switcher; stores 1, 2, 4 or 8 fields
- Capacity: Up to 1000 frames depending on hard disk
- Load Time: From RAM: < 1/6 second
- From hard disk: < 3 seconds
- Switcher: 7 inputs: external video 1-4; digital channel 1; digital channel 2; matte generator
- Independent software control of input channel at every pixel (70ns)
- Linear keyer: 16 steps at 70ns resolution; 256 steps at 280ns resolution
- Dual luminance keyer for dual threshold keying or 2 independent keys
- Dual clip level control with 256 steps
- Key input switchable to any input or digital still store
- Independently selectable Preview output
- Digital Effects: Arbitrary geometric remapping at 60 fps
- Host Computer: Amiga 2000 or 2500; 3M bytes of RAM recommended; hard drive recommended for still store
- Power Requirements: Power supplied by host computer
- Dimensions: 13.5" x 5" x 1"

Video Toaster $3995.00

Prices and Specifications Subject to Change Without Notice.
**FILM SCANNER/ COLOR PRINTER**

**LS-3500 35mm Film Scanner**
The LS-3500 scans film in 4096 x 6144 pixels over a 24mm x 36mm area. Reproduced images have perfect color registration and ultra-high definition.

Scans Any 35mm Film
Read directly from positive or negative color film with extremely accurate color reproduction. Direct reading from monochrome film is also possible.

Accurate Color Reproduction
Red, green and blue are each sampled in 8-bit code to provide 256 color gradations. Sequential scanning of the 3 color screens produces more than 16.7 million colors. Color correction is also possible.

A Wealth of Commands
Many simple commands are provided in ASCII codes. They provide the user with scanning and processing flexibility through specifying parameters such as cropping area, exposure, color balance, gamma curve, etc.

Standard Interfaces
The LS-3500 can be connected to most types of computers, because it features both RS-232C and GPIB (IEEE-488) as standard equipment. The GPIB interface in particular enables high-speed data processing.

Flexible Color Reproduction
Colors are reproduced accurately and automatically to maintain the original quality of both positive and negative films. Specific color matches can be obtained through simple adjustments.

Easy Operation
The operator simply places the film holder in the LS-3500. The scanner automatically performs a densitometric analysis, establishes color table data and scans the image, sending the data to the computer.

Compact and Lightweight
The LS-3500 is small enough (11.3" x 15.1" x 5.6") for desktop use and weighs only 15.4 lbs. for easy portability to other workstations.

### CP-3000 Full Color Printer

- **Density of 8 dots/mm with resolution of 1024 x 1280 pixels makes it possible to print high quality full-color (16.7 million colors) pictures. In addition, using the y (gamma) and color adjustment functions you can adjust the contrast and tint as you like.**

- **Compact and Lightweight**
The CP-3000 is compact and light enough to configure a system on any desktop (11.4" x 7.6" x 19.0"), weighs 39.6 lbs.

- **Standard Interfaces**
The digital model (CP-3000D) is equipped with GPIB, SCSI and Centronics interfaces to meet various needs.

- **The analog model (CP-3000A) can be directly connected via analog RGB to most computers, including engineering workstations, to reproduce CRT images quickly without software.**

### CP-3000 Touch Scanner Mode
When used with the LS-3500 Film Scanner, simply choose the scanner mode to get high quality print.

### Built-in Window Function
You can designate the print area using the 4M byte memory of the CP-3000. Even overlays and divided images can be printed however you like.

### High-Fidelity Printing on OHP Sheets
You can print not only on standard paper but also directly onto OHP (transparency) sheets for impressive presentations.

### Clear Sleeve for Storing Pictures
This sleeve allows for greatly extended storage life of thermal sublimation dye transfer image systems. Not only can you store pictures in this clear sleeve, but it also keeps print surfaces free from dust or discoloration and maintains the quality of the image over long periods.

### Prices and Specifications Subject to Change Without Notice.
**ViewFrame® Spectra True Color LCD Panel**

- 4096 rich, saturated colors for beautiful graphics
- High contrast ratio for sharp, clear images
- Ultra-fast refresh rate for crisp animation, transitions and mouse movement
- Remote or on-board operation
- Front or rear projection capability
- Color and tint control for adjustment to light conditions, projection screen or individual tastes
- Screen clear and optional overhead projector power by remote control to maximize audience attention
- Compatible with most computers
- Advanced cooling for trouble-free operation
- Built-in monitor "redrive" amplifier provides simultaneous optional viewing of monitor and projected image
- Initial adjustments for each video are saved in permanent memory for easy subsequent setup
- Each ViewFrame Spectra includes LCD panel, choice of 1 set of video interface and redrive cables (redrive cable not needed for VGA), remote control panel, utility software, operator's guide, impact resistant carrying case and power supply

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
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<tr>
<td>V70</td>
<td>ViewFrame Spectra (VGA cable)</td>
<td>$5995.00</td>
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<td>V71</td>
<td>ViewFrame Spectra (Mac II cable set)</td>
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<tr>
<td>V72</td>
<td>ViewFrame Spectra (CGA/EGA/Mac cable set)</td>
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</tbody>
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**ViewFrame II + 2 Gray Scale LCD Panel**

- Triple super-twist nematic LCD
- 8 shades of gray
- Black on white (or inverted)
- 640 x 480 pixels
- High resolution LCD display panel connects to video port of computer and allows projection of computer output onto a large viewing screen
- AutoJust image positioning
- "Y" cables for simultaneous monitor and display viewing
- Active cooling system for continuous operation
- Double scanning circuitry
- Composite input jack works with the DEC VT 220 and Apple II series computers
- Compatible with: Mac II, Macintosh 512, Plus, SE or SE/30 (with optional adapter); all IBM PCs—PS/2, AT, XT with VGA, EGA, CGA, Monochrome** or Hercules Monochrome**; all other IBM compatibles; Compaq; Atari ST; DEC VT 220/340; Zenith; Apple II+; AT&T 6300**
- Works with front and rear screen projection systems, all standard overhead projectors
- Includes LCD, Mac II, PS/2 (VGA), EGA/CGA cables, utility software, carrying case and power supply

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
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<tbody>
<tr>
<td>V20</td>
<td>ViewFrame II + 2</td>
<td>$1995.00</td>
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<tr>
<td>A02</td>
<td>Macintosh SE/30 adapter kit</td>
<td>$149.00</td>
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<td>A04</td>
<td>Macintosh Plus adapter kit</td>
<td>$149.00</td>
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<td>A06</td>
<td>DEC VT 340 adapter</td>
<td>$249.00</td>
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<td>A08</td>
<td>Macintosh portable adapter</td>
<td>$285.00</td>
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<td>A09</td>
<td>Macintosh Classic adapter</td>
<td>$149.00</td>
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<tr>
<td>C01</td>
<td>AT&amp;T 6300 cable</td>
<td>$49.00</td>
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<tr>
<td>C02</td>
<td>Hercules/monochrome cable</td>
<td>$49.00</td>
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<tr>
<td>C03</td>
<td>VGA cable</td>
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<tr>
<td>C04</td>
<td>EGA/CGA cable</td>
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<td>C05</td>
<td>Macintosh II cable</td>
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<td>C07</td>
<td>DEC VT 220 cable</td>
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<td>C09</td>
<td>Atari color cable</td>
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<td>P02</td>
<td>110V power supply for ViewFrame II + 2</td>
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<td>P04</td>
<td>110V power supply for ViewFrame Spectra</td>
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<td>220V power supply for ViewFrame II + 2</td>
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<td>P11</td>
<td>220V power supply for ViewFrame Spectra</td>
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<tr>
<td>I01</td>
<td>Remote control for ViewFrame II + 2</td>
<td>$195.00</td>
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</table>

**TOTEBOARD Wireless Computer Keyboard**

- Remote-control keyboard is a small-footprint, 100 key keyboard that transmits keystrokes via infrared light transmissions to the TOTEBOARD receiver
- Receiver connects by cable to an IBM PC or compatible computer at either the keyboard jack or serial port
- Use to control computer-based presentations or as a versatile keyboard replacement
- 30" range
- Can control up to 8 different computers
- Many TOTEBOARDS can be used to address 1 computer
- 60% the size of a standard keyboard
- Built-in hand grip, long-life batteries and selectable 1-hand operation
- Works with any IBM PC, XT, AT, PS/2 or compatible
- Includes keyboard, infrared receiver and cable

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
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<tbody>
<tr>
<td>K01</td>
<td>TOTEBOARD keyboard</td>
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<tr>
<td>K02</td>
<td>TOTEBOARD receiver</td>
<td>$149.00</td>
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<tr>
<td>C10</td>
<td>PC/XT/AT cable</td>
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<td>C11</td>
<td>PS/2 cable</td>
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<td>C12</td>
<td>9-pin serial/F cable</td>
<td>$49.00</td>
</tr>
<tr>
<td>C13</td>
<td>25-pin serial/F cable</td>
<td>$49.00</td>
</tr>
</tbody>
</table>

*Monochrome only
**Special optional cable required

**Prices and Specifications Subject to Change Without Notice.**
MONITOR/VIDEO PROJECTION SYSTEMS

**DT-2700MS 27" Video/Data Multi-Scan Monitor**
- Tint-faced flat screen
- Resolution: Video 600 TVL, RGB 640x480 dots
- Variable scanning rate: horizontal 15.5kHz to 38kHz, vertical 50Hz to 100Hz
- Selectable inputs: RGB1/RGB2/RGB3/video or S-Video
- Remote input for wired remote capability
- Advanced digital scan compatible (with optional ET-100DS)
- Built-in stereo audio amp/speakers

**DT-2700MS**
$3500.00

**PC-2700 Shipping and Storage Case for DT-2700MS**
- Steel construction, recessed, spring loaded, twist latches
- Steel machine drive rivets
- Heavy-duty casters
- Conforms to Air Transport Association specifications
- Interior padding, custom designed to provide the DT-2700MS with maximum shock protection

**PC-2700**
$745.00

**PT-101Y/PT-301Y Color Video/Data Projectors**
- 650 lumens
- 1000 lines RGB resolution
- NTSC video resolution
- S-Video input
- 650 lines NTSC video resolution
- 1000 lines S-Video input
- 4-system capability: PAL/SECAM/NTSC 3.58/M-NTSC 4.43
- Line/video/RGB ITTL/linear selectable
- 2000 character display
- Blue mode selector
- Built-in cross-hatch generator
- Sync inversion switch broadens computer signal compatibility
- 4-corner independent dynamic convergence controls for fast calibration
- Pulse switching power supply for reduced weight and size
- Ideal for teleconferencing, business, entertainment and education
- Lens spacers for 50"-54" screens and 85"-120" screens
- Ceiling/cart mounting kit
- Lens caps
- Either system can easily be moved from 1 location to another using the PC-101 Carrying Case or the ET-CR101 Custom Adjustable Cart
- Both upright and ceiling mount are possible, and you can use front or rear projection
- Lightweight, compact chassis and special mounting plate simplify ceiling installation

**Screen size:**
- PT-101Y/72: 50"-72" diagonal; ceiling mount
- PT-101Y/72F: 50"-84" diagonal; floor mount
- PT-101Y/120: 85"-120" diagonal; ceiling mount
- PT-101Y/120F: 85"-120" diagonal; floor mount
- PT-301Y: 150"-300" diagonal; floor mount

**PT-200 Advanced Digital Video/Data Projector**
- Dual focus 6-element color corrected lens
- Direct lens/CRT optical coupling system for high contrast
- Advanced digital scan compatible
- Auto scanning from 15kHz to 37kHz horizontally; 50 to 100Hz vertically
- S-VHS compatible
- Bright 550 lumens light output
- High resolution 1100 lines (RGB), 650 lines (video)
- Multiple inputs Line/S-Video/RGB (analog)/RGB2 (TTL) selectable
- Multi-standard capability (NTSC, PAL, Secam, M-NTSC)
- Built-in audio AMP/speaker; test pattern generator
- Compatible with ET-100DS Advanced Digital Scan Converter
- Accepts all accessories associated with the PT-105 and PT-105N

**PT-200/72**
- Preset for 72" diagonal; floor mount...$5000.00

**PT-200/72F**
- Preset for 72" diagonal; floor mount...$5000.00

**PT-200/120**
- Preset for 120" diagonal; floor mount...$5000.00

**PT-200/120F**
- Preset for 120" diagonal; floor mount...$5000.00

**PT-301Y**
- Video/projector for 150" to 300" screens...$7800.00

**Accessories for Video/Data Projectors**

**ET-10G**
- PC/RGB interface with rackmount (use with ET-100C, ET-101C, ET-102C)...$495.00

**ET-11C15**
- RCU cable, 50' (use with ET-11RY)*...$185.00

**ET-11C30**
- RCU cable, 98' (use with ET-11RY)*...$275.00

**ET-11C50**
- RCU cable, 164' (use with ET-11RY)*...$385.00

**ET-15R**
- Remote control with rackmount for PT-200/72F/120F (use with ET-11C15, ET-11C30 and ET-11C50)...$295.00

**ET-11RY**
- Remote control with rackmount for all PT-101Y and PT-301Y series (use with ET-11C15, ET-11C30 and ET-11C50)...$300.00

**ET-100YC**
- S-Video/BNC conversion adaptor (2 pcs.)*...$67.00

**ET-100C**
- Computer interface cable for IBM-PC Series and Panasonic (use with ET-10G)...$65.00

**ET-101C**
- Computer interface cable for Apple III (use with ET-10G)...$65.00

**ET-102C**
- Computer interface cable for NEC-PC-8001A (use with ET-10G)...$40.00

**ET-721S**
- Semi-curved 72" wall screen with wall mounting kit, use with ET-SS101...$990.00

**ET-CR101A**
- Heavy-duty adjustable cart with wheels*...$275.00

**ET-SS101**
- Screen stand, use with ET-721S (PT-101Y/72, PT-200/72F)...$440.00

**PC-101**
- Custom carrying case with wheels (PT-101 projectors)...$440.00

*All models except PT-200/72R

Prices and Specifications Subject to Change Without Notice.
AG-ES10 Video Floppy Camera
- 1/2" interline transfer CCD (722H x 494V pixels; 360,000 pixels)
- > 400 lines of horizontal resolution for frame recording • > 500 lines of horizontal resolution recording capability from a 3-CCD or 3-tube camera input • Up to 50 pictures per disk (field mode); 25 frames per second in frame mode • 2 high/normal band recording • 2 focal ranges: wide angle班长 of 400 lines horizontally, telephoto of 720 lines horizontally • Infrared automatic focus • Auto exposure • Full auto white balance • High-speed continuous recording (1, 5, 10 or 15 pictures per second in frame mode, 1 or 5 pictures per second in field mode) • Liquid crystal display (for camera status) • Easy dubbing • External signal input • Blank search per second in frame model • Video floppy disk (for camera status) • Easy dubbing • External signal input • Blank search per second in frame model • Video floppy disk (for camera status)

AG-ES100 Video Floppy Player
- 50 pictures per disk (field mode) • High-band/normal playback • Jog dial (up to 15 images/sec) • Auto advance for automatic sequential playback of all pictures on the disk, adjustable from 1/30th to 60 seconds • Field/frame address (OSD) • Auto power off function • Auto tracking • Wireless remote controller • Skew correction • 3800 rpm • External sync input • Forced field playback • Selectable time, date, time or ID# playback (OSD) • 47mm O still video floppy disk • Modulation systems – Y signal: frequency modulation; C signal: color difference line, sequential frequency, modulation recording • Output: video BNC, S-Video, dub 5-pin • Horizontal resolution HB: > 500 lines; NR: > 350 lines; S/N ratio: Y: > 46dB; C: > 45dB; Y/C cable

AG-ES10 Video Floppy Camera

AG-ES10 Video Floppy Camera

AG-ES100 Video Floppy Player

AG-EP60 Video Printer
- Multiple printing in 4, 9, 16 or 25 squares in 3 modes: (1) up to 25 of the same image, (2) up to 25 different images, (3) 3-second strobe for automatic capture of up to 25 different images • Split Print for cropped wallet size "portrait formatted" pictures • Zoom Print for enlargements of any quarter of the video image • Parallel control port (compatible with IFP232SVP or FPR-250 control systems) • Wireless remote that also controls the AG-190 or AG-1730 VCRs • RGB, Y/C, composite input memory • Y/C, composite outputs • Memory or erase function (for the highest possible quality) • Character generator port (NV-CGI Character Generator)

AG-EP70 Video Printer
- Sharp color image, resolution 6 dots/mm, 448 x 512 dots per image • 128 tones each of yellow, magenta and cyan • Capstan motor drive • Nearly 2.1 million different color tones • Thermal transfer recording • Recording (printing) speed is roughly 80 sec. per image • Frame memory 8-bit, 1 frame, 2 field (at video or S-Video input) • Mirror reverse function • Frame Print/print field print • S-Video in/out terminals • RGB input • Auto paper feed • Picture adjustment controls • Wired remote control port • Warning indicators • Print size: 3 1/4" x 3 1/4" • Print functions: Continue Print: up to 10; Multi-print: 4, 9, 16, 25 square

STILL-IMAGE SYSTEM

STILL-IMAGE SYSTEM

Price and Specifications Subject to Change Without Notice.
OPTICAL DISC RECORDER/PLAYERS

TQ-2026F 8" Color Motion Video-Audio/Still Video
Optical Disc Recorder/Player
- 300 lines horizontal resolution • 24,000 frames per disc • Quick 0.5 second access time • Built-in genlock circuitry • Motion recording/playback • Computer interfacing RS-232C • Playback mode variety • Playback rate of 30 frames per second; 1 disc can provide over 13 minutes and 20 seconds of continuous playback • Direct captioning • 2 channels • On-screen display • Full-function remote control wired and wireless • Disc ID function • Precision duplication • Serial recording/playback • Video input level control • E-E button • Field button • Headphone jack with volume control • Front panel sync signal selector (external/auto) • External sync in/out terminals • External subcarrier in/out terminals • Dual microphone input jacks for 2-channel recording • Function (L) switches for Beep, Display, Framing Servo, Pre-check, White Flag Detection settings

TQ-2026F .......................................................... $12,500.00
TQ-2027F Player version only of TQ-2026F .............. 3,995.00

TQ-2028F High Resolution Monochrome
Optical Memory Disc Recorder/Player
Same features as TQ-2026F except: • 450 lines horizontal resolution • Monochrome • 16,000 frames per disc • Playback rate 30 frames per second; one disc can provide over 8 minutes and 50 seconds of continuous playback

TQ-2028F .......................................................... $13,900.00

TQ-3031F Optical Disc Recorder
- Digital Y/C separation for professional image quality • Analog RGB/Video (NTSC Composite)/S-Video input/output • Either normal or high resolution record/playback in any record/playback mode • 450 lines horizontal resolution in high resolution mode • 400 lines horizontal resolution (max. value) in normal mode • 45dB chroma signal-to-noise • 12" (30cm) single (TQ-FH331) sided disc or double (TQ-FH332) sided disc. Discs allow up to 54,000 frames per side (normal mode) and 36,000 frames per side (high resolution mode) • RS-232C connector equipped. RS-422A available as option • Remote control (option) and online control over multiple functions: replacement picture management, disc ID, self-booting, default setting, deck number assignment, user area partitioning, interface card slot, ROM application support

TQ-3031F .......................................................... $18,995.00
TQ-3032F Player version only of TQ-3031F .......... 5,495.00

TQ-3038F High Resolution Monochrome
Optical Disc Recorder/Player
- Large capacity write-once 12" optical disc • Playback and recording of 36,000 still pictures, or 20 minutes of motion • Record any type of B/W image data on an optical disc from a standard video camera or VCR • Over 800 lines resolution • High band 9.7MHz • 1-piece lens • Tilt-servo system for accurate tracking • Genlock • 0.7 second data access time • High-speed scan (50X normal), variable fast forward (1-10X normal), variable automatic frame (1-256 second intervals) and variable slow motion (1/2-1/256 normal), all modes either direction • On-screen display • External computer control capability • External control I/O port • Dubbing function • On-screen setup menus • Disc ID number writing • Deck ID numbers • Alternate picture management (required optional remote control unit or computer control) • Free recording area detection and allocation • Automatic recording mode switch off • 8K byte RAM to memorize programs created by an external computer • User area partitioning • Captioning • Interval recording

TQ-3038F .......................................................... $19,995.00

Prices and Specifications Subject to Change Without Notice.
Panasonic

LQ-4000 Rewritable Optical Disc Recorder/Player
- Images can be erased and new ones can be written
- Also permits trial writing and corrective overwriting
- Rearrange or edit contents with ease
- Single lightweight optical head for recording, playback and erasure
- Erasure is performed separately to avoid error
- 450 lines horizontal resolution in hi-res mode
- Equipped with 4 input/output signal formats to easily integrate into a wide range of systems
- S-Video connectors (Y/C separate)
- Analog RGB connectors
- Composite video connectors
- Dubbing connectors
- Unit will output in all signal formats simultaneously
- RS-232C interface and I/O port (for external control) are supplied as standard equipment (RS-422A is optional)
- 12" magneto-optical disc

LM-A400 Rewritable Single-Sided Disc Cartridge
- Maximum motion of 30 minutes, or 54,000 still frames (normal)
- 20 minutes of motion, or 36,000 still frames (hi-res)
- Remote Control
- 35 functions
- 3VDC (2 AAA batteries)

LF-5010/LF-5014 5¼" WORM Optical Disc Drives
- Single-Sided 470M bytes, Double-Sided 940M bytes
- On a compact, removable double-sided 5¼" disc, Panasonic WORM optical disc drives can contain up to 940M bytes
- Average seek time is 90ms
- Maximum sustained data transfer rate is 655kbps between the device and the host
- Each medium (470M byte/940M byte) has a rated life of more than 10 years for data storage integrity
- The drive is designed and manufactured to precisely meet the media characteristics, and has an MTBF of 20,000 hours
- Read/write compatibility with 470M byte and 940M byte medium
- The optical disc drive is easily integrated as a computer peripheral because the SCSI-2 controller is embedded within 5¼" drive form factor

- LF-5010 External ............................................. $3299.00
- LF-5014 Internal ............................................. 2999.00
- LF-5010A Interface for LF-5010 Macintosh .......... 299.00
- LM-D501W Optical Disc Cartridge
  - 940M byte × 1024 byte sector size × Double sided ............................................. $149.00
- LM-D501 Optical Disc Cartridge
  - 470M byte × Single sided ............................................. 489.00

LF-7010/LF-7014 5¼" Direct Overwrite
- Multi-function Optical Disc Drives
  - Single drive offering both WORM and rewrite
  - 1G byte capacity per disc
  - Compatible with LF-5010, making it suitable for archival storage
  - 90ms average seek time
  - SCSI-2 interface
  - 20,000 hours MTBF
  - MS-DOS, Macintosh, OS/2, UNIX compatible

- LF-7010 External ............................................. $3995.00
- LF-7014 Internal ............................................. 3595.00
- LM-D702W Optical Disc Cartridge
  - Rewritable × 1000M bytes/cartridge × 1024 byte sector size
  - Single-sided ............................................. $245.00
- LM-D501W Optical Disc Cartridge
  - Write-once × 940M bytes/cartridge × 1024 byte sector size
  - Single-sided ............................................. $149.00

LF-9000S/LF-9004 5¼" Rewritable Magneto-Optical Disc Drive
- Continuous composite format
- ISO standard compatible
- 326/652M byte × 1042 byte sector size × < 70ms average seek time
- SCSI embedded controller

- LF-9000S External ............................................. $4650.00
- LF-9004 Internal ............................................. 4150.00
- LM-D902 512K byte sector size, optical disc cartridge ............................................. 250.00
- LM-D902W 1024M byte sector size, optical disc cartridge ............................................. 250.00

Interface Kits for LF-5010/LF-7010/LF-9000
- LF-5710M IBM interface for external drive ............................................. $495.00
- LF-5714M Internal drive ............................................. 495.00
- LF-5710A Apple interface ............................................. 395.00
- LF-5710P Micro-Channel DOS ............................................. 950.00

*Price On Request

Prices and Specifications Subject to Change Without Notice.
CD-ROMS

**CDD200 5 1/4" Half-Height CD-ROM**
The CDD200 is a 5 1/4" half-height CD-ROM drive unit which can be mounted in a host computer.

A plug-in board serving as a serial host I/F in PC XT-AT computers is available.

Software support for MS-DOS environments includes both hardware dependent and hardware independent parts of the Microsoft CD Extension server. Thus the CD-ROM can be accessed by the application as a normal storage device like a hard disk. Also, discs which follow high Sierra or ISO 9660 coding rules can be read by the host computer.

**Applications**
CD-ROM technology is now accepted as an ideal means to distribute information at low costs. Early applications include the distribution of large reference databases such as: *Medical* *Legal* *Financial* *Educational*

As a next generation of CD-ROM applications is emerging, CD-ROM discs contain a combination of data bases and customized software specially tailored to offer solutions in vertical markets such as: *Parts catalogs* *Telephone directories* *Service manuals* *Diagnostic information*

CD-ROM is a powerful tool for micro and minicomputer applications. A removable disc provides random access to mass amounts of information previously not available in a convenient, inexpensive and machine-readable format. For the end user, it means access to vast amounts of information to improve and facilitate computer applications such as: *CAD/CAM* *Financial analysis* *Legal research* *Word processing* *Education*

**Specifications**

- **Capacity:** 600M bytes on CD-ROM disc in removable cartridge
- **Access Time:** Maximum: < 1 second; Average: < 500ms including latency
- **Transfer Rate:** 153.6K bytes/second Mode 1; 175.2K bytes/second Mode 2
- **Interface:** Serial, with option for PC-AT bus or Micro-Channel bus
- **Physical:** 5 1/4" form factor, built-in, front load, half-height. Vertical and horizontal operation
- **Dimensions:** 1 3/4" H x 5 3/4" W x 8" D; Weight: 4.4 lbs. Disc diameter: 4.72"
- **Electrical:** From PC power supply: +5VDC, 1A; +12VDC, 0.4A
- **Environmental:** Ambient temperature: Functional 41° to 131° F; Full Specification: 50° to 122° F. Heat Dissipation 14W typical; can be used in either vertical or horizontal orientation
- **Reliability:** MTBF 32,000 hours. (demonstrated)
- **Configurations:** CDD200 Package, consisting of: CDD200 built-in CD-ROM drive, internal I/O cable to host interface, installation and operation manual, 2 caddies, CDD200 complete subsystem package, consisting of above, plus: CM153 host interface for PC-AT, 22 SW1300 device driver and MS-DOS Extensions software

**CDD200**

**TBA**

**CDD401 Desktop CD-ROM**
The CDD401 is a stand-alone desktop drive unit which can be connected to a host computer. Connection facilities include PC-AT computers and PS/2 models with MCA bus via plug-in boards.

The Hi-Fi stereo audio output (a headphone jack on the front of the unit, or line out jack on the back of the unit which can be connected to an external amplifier) can be used to listen to audio tracks on CD-ROM discs or CD audio discs.

A single CD-ROM stores up to 600M bytes of data. This represents over 200,000 pages of text, or more than a thousand images, or the storage of hours of spoken text. Alternatively, storage may take the form of any of the above combinations.

Software support for MS-DOS environments includes both hardware dependent and hardware independent parts of the Microsoft CD Extension server. Thus the CD-ROM can be accessed by the application as a normal storage device like a hard disk. Also, discs which follow high Sierra or ISO 9660 coding rules can be read by the host computer.

**Specifications**

- **Capacity:** 600M bytes on CD-ROM disc in removable cartridge
- **Access Time:** Maximum: < 1 second; Average: < 0.4 second excluding latency
- **Transfer Rate:** 153.6K bytes/second Mode 1; 175.2K bytes/second Mode 2
- **Interface:** Serial, with option for PC-AT bus or Micro-Channel bus
- **Audio:** Stereo audio output at the front (6.3mm jack) with volume control. 2 RCA type output connections at rear for stereo line output 2VRMS @ 2K ohms S/N 90dB
- **Dimensions:** 3" H x 12 1/2" W x 11" D; Weight: 9.9 lbs. Disc diameter: 4.72"
- **Electrical:** 110VAC, 60Hz
- **Reliability:** MTBF 32,000 hours
- **Physical:** The desktop drive unit can also be placed in between the PC and the monitor
- **Package Consists of:** CD-ROM drive unit, interface card (CM153), MS-DOS Extensions/Driver software, I/O cable, 2 caddies, interface cable, AC line cord

**CDD401**

**TBA**

*TBA* *To Be Announced*
LD-V8000 Industrial LaserDisc* Player
- A breakthrough Level I, II and III player
- 1 hour per side (CLV) of fully interactive video
- Can access any frame on a CAV disc in 1/2 second (0.5) or less (4 seconds or less in the CLV format)
- 12" and 8" discs
- Digitally stores video frames for seamless search—no more distracting visual discontinuities
- Has 4-track audio capabilities—2 tracks for digital and 2 for analog sound
- Can hold a still picture on the screen and play any portion of the 4 audio tracks
- 12" and 8" discs
- Digitally stores video frames for seamless search—no more distracting visual discontinuities
- Has 4-track audio capabilities—2 tracks for digital and 2 for analog sound
- Can hold a still picture on the screen and play any portion of the 4 audio tracks
- 2-field digital memory in its video processing circuitry in which it uses a digital timebase corrector to enhance the picture quality
- Freeze frame and variable speed play, once restricted to CAV discs, are now available on CLV discs
- RS-232C interface
- Its open architecture allows the interactive system designer to build onto existing hardware
- 5 1/2"H x 16 17/32"W x 17 3/16"D
- Remote control not included

LaserVision Videodisc

LD-V8000...........................................$2280.00

RU-V103 Remote control unit. Enlarged keypad.
Membrane style .......................................70.00
RU-V6000T Remote control unit. .......................70.00
CC-03 RS-232C cable (male DB-15 to male DB-25 DTE) 25.00
CC-04 RS-232C interface cable for Apple Macintosh Plus/SE,
Apple II GS and Mac II (male DB-15 to Apple "Circular-8") 25.00
CK-15P Interface cable kit. IBM InfoWindow 50.00

LD-V4200 LaserDisc Player
- Designed for use as an economical but high performance Level 3 player
- RS-232C interface
- Slimline profile
- Front panel player controls and player generated 11 line by 20 character text overlay
- Long distance frame searches are accomplished in less than 3 seconds
- Short searches (less than 100 frames) do not produce a blanked video output
- Plays both 12" and 8" standard play (CAV) and extended play (CLV) discs
- 5-pin DIN connector
- 19.8 lbs.
- Monitor -visible self-diagnostics, internal register capabilities
- Disc identification code command for up to 60 characters of ID information
- Optional hard wired remote control

LD-V4200 ...........................................$1095.00

RU-V101 Remote control unit. ........................65.00
CC-03 RS-232C cable (male DB-15 to male DB-25 DTE) 25.00
CC-04 RS-232C interface cable for Apple Macintosh Plus/SE,
Apple II GS and Mac II (male DB-15 to Apple "Circular-8") 25.00
CK-15P Interface cable kit. IBM InfoWindow 50.00

LD-V2200 Industrial LaserDisc Player
With Enlarged Keypad Remote Control
- Low cost player with the advantages, features and functionality of more expensive players
- Designed with the needs of the professional educator in mind
- Offers classroom versatility, wireless remote control capability, RS-232C computer interface and LaserBarcode System support
- Compatible with a broad range of existing applications
- Remote Control
  A wireless remote control unit is packaged with the player. Controls are enlarged, easy to read and simple to use.

LD-V2200 Industrial LaserDisc Player
With Enlarged Keypad Remote Control
- Low cost player with the advantages, features and functionality of more expensive players
- Designed with the needs of the professional educator in mind
- Offers classroom versatility, wireless remote control capability, RS-232C computer interface and LaserBarcode System support
- Compatible with a broad range of existing applications
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LD-V2200 Industrial LaserDisc Player
With Enlarged Keypad Remote Control
- Low cost player with the advantages, features and functionality of more expensive players
- Designed with the needs of the professional educator in mind
- Offers classroom versatility, wireless remote control capability, RS-232C computer interface and LaserBarcode System support
- Compatible with a broad range of existing applications
- Remote Control
  A wireless remote control unit is packaged with the player. Controls are enlarged, easy to read and simple to use.

Computer Control
The RS-232C interface allows the LD-V2200 to be used with Apple II, Macintosh, IBM and many other computers. The LD-V2200 responds to the same mnemonic command language used to control the LD-V4200, including access to the 11 line by 20 character display. Most programs developed for the LD-V4200 can be used with the LD-V2200 with no modification.

Easy Installation
The LD-V2200 can be connected to the antenna terminals of any television set, or separate audio and video outputs may be used for connection to a video monitor. A single cable allows the LD-V2200 to be connected to a computer. A variety of optional cables is available to accommodate the most frequently used computers.

Accessories
The following optional accessories are available for the LD-V2200:
- LaserBarcode Reader (UC-V104BC)
- LaserBarcode Tool Kit (MS-DOS barcode printing utilities)
- Interface cables for the computers listed below

LD-V2200 ...........................................$895.00

Part #  Computer  Price
CC-03  Apple II Super Serial card  $25.00
       (DB-15 male to DB-25 male)
CC-04  IBM PC 25-pin connector  $25.00
       (DB-15 male to circular 8-pin)
       Macintosh and Apple IIGS  25.00
LASERDISC PLAYER/ BARCODE SYSTEM

LD-V2000 LaserDisc Player
• General purpose level 1 and level 3 player with a slimline profile and automatic disc loading system
• Supports both 12" and 8" discs with complete standard play (CAV) and extended play (CLV) features available during manual and computer modes
• 8-pin DIN connector
• Performs frame searches to any of the CAV disc’s 54,000 still frames in less than 8 seconds and will also time search to the nearest second on CLV discs
• A wireless remote control is included
• Pioneer SR external control jack
LD-V2000 ................................................ $640.00
RU-V103 Remote control unit. Enlarged keypad.
Membrane style ........................................... 70.00

UC-V104BC LaserBarcode Reader
• Barcode that is generated with the LaserBarcode Tool Kit conforms to Pioneer’s LaserBarcode format and can be read and transmitted by the UC-V104BC
• Trace the scanner pen over the barcode of the video you want to see
• With the option of using the scanner pen as a wireless control or by simply plugging it directly into the LD-V2000 or other compatible LaserDisc Player, you have an interactive LaserBarcode system
• Areas in which the LaserBarcode System has been applied: encyclopedias, hobby magazines, education and training programs, introductory manuals for new products and new technologies, home shopping for visual demonstrations of products in catalogs and entertainment video, such as games of adventure
UC-V104BC ........................................... $130.00

LaserBarcode Tool Kit
• Easy-to-use, menu driven, automated software utility that simplifies the creation of custom barcodes for LaserDisc player control
• Designed to operate with IBM/MS-DOS compatible computers and printers
• The tool kit creates and prints barcode which can be read by the UC-V104BC LaserBarcode Scanner
• Operates as a TSR (Terminate and Stay Resident) utility that can be called up and used from within a word processing application
• Designed to work with the following commercially available MS-DOS programs: WordStar, MultiMate II, WordPerfect and Microsoft Word

Specifications
The LaserBarcode Tool Kit will operate with IBM/MS-DOS machines that have sufficient RAM to run a word processing program plus an additional 128K.
The LaserBarcode Tool Kit requires DOS 2.0 or above.

Word Processing Programs
The LaserBarcode Tool Kit is designed to work with MS-DOS word processing programs. Although it may operate with a variety of word processors, it has been tested with the programs listed below:

LaserBarcode Tool Kit ........................................... $195.00

Bar’n’coder Software
Bar’n’coder is a software package which allows the user to create barcodes for application with the LaserBarcode Reader. Designed to function with any Macintosh with Hypercard, Bar’n’coder guides the user through several menu screens. The user then selects from the various command choices available. Options include chapter searches, frame searches, play frame(s), audio on or off, and audio channel selection. The only input required is the desired frame numbers and up to 2 lines of descriptive text for each barcode developed.

Command codes can be developed with the LD player connected to the computer, allowing for testing during development.

Bar’n’coder uses any Mac-compatible printer. Page layouts are pre-set and chosen from the menu. Finished barcodes can be cut and pasted into a document manually or, using Macintosh or Hypercard tools, directly into a word processing document. A format has also been included for Avery Laser Printer Labels #5160.

Bar’n’coder Software ........................................... $49.95

Prices and Specifications Subject to Change Without Notice.
DD-5101 Series Optical Disc Subsystem
- Integrated, high-performance, 5.25" write-once optical disc system
- 654MB to 1.3GB expandable subsystem
- Compact
- Extreme fast access time
- Organic dye recording material for estimated lifetime greater than 15 years
- Unit can be positioned horizontally or vertically

An IBM-Specialized SCSI
A combination of the DD-M5101 optical disc control board (DD-C5101) and SCSI host adaptor board, developed especially for use with IBM PC/AT and compatible personal computers. Slot the DD-C5002 directly into the computer's motherboard, and the DD-M5101 goes in the half-height open slot of the computer, becoming essentially "built-in."

Standard SCSI Computer Interface
For compatibility with the widest possible range of associated computer equipment, the DD-C5101 and DD-C5002 optical disc controller are equipped with the world-standard SCSI high-speed parallel computer interface.

Ultra High Speed Random Access
In other optical disc drive units, the optical head unit is relatively large, including mirror, lens, detector and laser diode. During seek operation, this entire unit has to move, thus slowing access time. The DD-SS5101 features a separate optical components system. Laser diode and detector are stationary, the mirror/lens section is separate, moved by a high efficiency linear motor. Average seek time is less than 60ms.

Defect Sector Management
When a write fault occurs, data is automatically rewritten into a reserved sector which is allocated outside the user area. Alternate sector is managed inside the drive controller so that data is always written correctly from the host computer. User capacity of 327MB per side is maintained.

DD-SS101 Optical Disc Drive Subsystem
- Consists of DD-M5101 drive unit (1 unit); DD-C5101 controller (1 unit)
- 5.25" disc 654MB (double-sided, formatted) Air sandwich disc construction
- ISO 9660 or High Sierra file formats
- Standard compact disc audio discs can also be played

DD-U5101 Optical Disc Drive (Full Height)
- Front loading mechanism
- Same as DD-SS5101 except 1/8" H x 5 1/8" W x 8" D

DD-M5101 Optical Disc Mechanical Unit (Half Height)
- 1/4" H x 5 1/4" W x 8" D

CD-ROM Changer
- Removable disc magazine
- Holds up to 6 compact discs (CD-ROM and/or CD audio)
- Front-loading mechanism
- Drive can be configured as 6 logical devices, or as a single device with up to 6 discs as 1 data source
- Data can be retrieved by an automated search through the 6 CD-ROM discs

Standard Disc Formats
- Drive supports playback of CD-ROM discs conforming to the ISO-9660 or High Sierra file formats
- Standard compact disc audio discs can also be played

CD Audio Jukebox
- 1 magazine can be used as a jukebox with more than 6 hours of music from CD-audio discs
- Playback can be programmed to resquence selections from the 6 discs
- Built-in stereo headphone jack with volume control
- Audio connectors on the back allow connection to an external sound system

CD-ROM Changer
- Supports an extensive command set: set of standard CD-ROM commands, plus vendor specific extra commands for simple operation
- 2 SCSI ports permit daisy-chaining of up to 7 drives
- Built-in SCSI terminator can be switched on or off

High Performance Mechanism
- Use of a high speed linear motor reduces access time to a maximum of 0.8 seconds
- Heavy-duty, brushless spindle motor provides for high reliability

Prices and Specifications Subject to Change Without Notice.
PRESENTATION STATION

Presentation Station
The Presentation Station creates executive-quality presentation images in a variety of formats, including 35mm slides, overhead transparencies and HP LaserJet or PaintJet hard copy. Featuring concurrent operation, the MS-DOS-based Presentation Station outputs to Digital Palette CI-5000, CI-3000 computer film recorders, the Bravo Computer Slide Maker and other printers. The Presentation Station consists of an AT-class presentation graphics creator card and Presentation Express" companion graphics software.

Depending on your output devices, Presentation Station can produce Polaroid 35mm instant slides, conventional 35mm slides, overhead transparencies and black-and-white or color paper handouts. Presentation Station automatically adjusts your visuals, depending upon the medium you choose.

Presentation Station includes a proprietary Polaroid Graphics Creator Card that simply plugs into your IBM PC AT, or compatible, with at least 640K RAM and a multisync monitor. Working with Polaroid's Presentation Express software, a complete graphics workstation is created. Adjustments, modifications and complete changes to your presentations can be made right up to the last minute.

Nearly every conceivable type of business chart, graph or word slide has been preformatted into Presentation Station. An array of text, charts, adjacent bar charts, stacked bar charts, line charts, area charts, tabular charts and pie charts have been included. All you do is type the information into the program and press the "F10" key. Your finished graphic is displayed exactly as it will appear in your final output. And you can redisplay the same data in multiple formats without tiresome rekeying.

Presentation Station's built-in Art Director is like having a design studio in a box. You choose from 22 styles of presentation graphics, all professionally designed for maximum business impact. Your entire show is art-directed for you, including type style, color, size, spacing, justification, background color and overall layout. Choose the style you like best, or custom-design your own style. Either way your presentation will automatically appear in one consistent style, regardless of its length or complexity. And you can change the style at any time for a completely different look with just a few keystrokes.

Once your slides are created, you can review them in order, right on the screen. Then arrange and rearrange them in any order you like. Or use this same "Screen Director" feature to run a "slideless" presentation right at your PC or on a big-screen monitor, complete with automatic delays between each slide. Presentation Station will even make handy "speaker's notes" to guide you through your talk.

Switching from 35mm slides to overhead transparencies is also no problem. Presentation Station's built-in Media Director automatically adjusts the proportions of your work to accommodate either 35mm or overhead transparency format.

Presentation Station allows you to make individual modifications to your work.

Create your own palette from 16.8 million available colors. Each graphic can display up to 252 colors for dynamic effects. Select typefaces from 8 high quality fonts, including both serif and sans serif in roman, bold and italic styles. Change size, position, spacing and any other variable you like, within one slide or within all slides.

Using Presentation Station's Draw option, virtually any type of image from simple title charts to the most complex artwork can be created. Use this option to create diagrams, flow charts, organization charts or maps. Or, create logos, symbols or special backgrounds to incorporate into other charts. You can also convert preformatted charts into "Draw" charts, allowing you to manipulate them in virtually limitless ways. Use the program's own "building blocks" to create your images, or draw freehand using a mouse, tablet, or even your PC keyboard.

Presentation Station also includes a handy clip-art file. You choose from a variety of business-related images and incorporate them into your slides as you like. A special "Scrapbook" feature lets you store custom images in the computer's memory, building your own image bank for future reference.

You can bring graphs created in Lotus 1-2-3 or Symphony worksheets directly into Presentation Station. All you do is tell the program where to find the worksheet file. The program does the rest. Once imported, Lotus 1-2-3 or Symphony graphs can be manipulated or modified just as any other Presentation Station graphic.

You can also import images from other applications that work with the CGM (Computer Graphics Metafile) format, including Harvard Graphics, Freelance, StudioWorks, Genigraphics, Powerpoint, MacDraw and others.

For added convenience, you may export graphics from Presentation Station to a wide range of applications, such as desktop publishing, in the PostScript and EPS formats.

Presentation Station features "concurrent operation." While your images are being printed, you can continue to create new slides or switch to another program altogether. You save valuable time and free up your computer for other applications.

Presentations Station is compatible with today's major hardcopy options, including:
- Hewlett-Packard PaintJet or DEC LJ252 Ink Jet Printer. Lets you create full-color or black-and-white paper handouts and transparencies
- PostScript and Color PostScript compatible printers. Lets you output your graphics on Apple LaserWriter, IBM Personal PagePrinter, DEC PrintServer 40, DEC LNO3R and professional image-setters such as those from Agfa-Compugraphic and Linotronic

Presentation Station
System includes: graphic display processor, Presentation Express Ver. 1.0 WS software ........................................... $2495.00

Prices and Specifications Subject to Change Without Notice.
Bravo Slide Maker Desktop Presentation System
- Makes slides of charts, graphs, photos, illustrations and more
- Simple to operate
- Allows confidentiality for high security subjects
- Eliminates the need for many expensive and time-consuming outside services
- Operates on normal AC power
- Requires little space
- Instant results allow for additional planning time
- Smoother presentations
- Eliminates the need for expensive and messy chemicals
- Many films to choose from for a variety of slide types
- Communicate faster, better and with less cost and effort

With the Bravo Slide Maker you can work from charts, graphs, computer printouts, photographs, magazine pages, books, handwritten documents, photocopies, typewritten/typset text or any other business document or flat object — whether drawn, printed or sketched. You'll also get the most out of your in-house computer capabilities. Simply print out your presentation and place the print-out on the Bravo Slide Maker. If you've ever faced the deadline pressure of a last-minute presentation, you'll appreciate the Bravo Slide Maker because you can create Polaroid 35mm slides—in full color, white-on-blue or black-and-white—in seconds.

Turn any business document into an instant 35mm slide, overhead transparency or color print in minutes. The Bravo Slide Maker allows you to choose the films that best match your needs and your message. 35mm slides add an air of importance to your presentations and enable you to easily present to larger groups. And you can choose any of 4 Polaroid 35mm Instant Slide Films.

The Bravo Slide Maker also produces Polacolor ER 3 1/4" x 4 1/4" instant prints. They're perfect for documentation, making a hard copy of your presentation and creating meeting handouts. Or use prints to proof your computer-generated graphics before you make 35mm slides. They're ready in just 60 seconds.

Original artwork can be 8 1/2" x 11", A4 size (21 x 29.7cm) or 5" x 7". Other sizes can be cropped or masked to work within these document sizes.

The Bravo Slide Maker is designed to fit almost anywhere you might place an ordinary office copier. It measures just 28" x 25" x 16", weighs only 27 lbs. and operates on normal AC current. It can be set up in minutes and operated by anyone on your staff. Because the system is instant, it requires no replacement of chemicals or other unusual maintenance procedures. Simply plug it in, load your film and you're ready to make great presentation visuals.

Bravo Slide Maker .................................................. $3195.00

Bravo Computer Slide Maker Universal Color Film Recorder
- Digital computer film recorder capable of producing boardroom-quality 35mm slides with addressable resolutions of up to 8000 lines from a palette of up to 16.7 million colors
- Uses advanced digital technology to create instant or conventionally processed 35mm slides of stunning clarity and brilliance
- A fraction of the cost of outside slide services
- Uses High-Contrast PolaChrome Instant 35mm Slide Film
- When you're not in a hurry, 35mm Presentation Chrome is specially formulated to give you high quality results from your computer graphics
- Electronic digital graphic display processor lets the system take full advantage of your PC's ability to produce graphics
- Create special effects such as embossed backgrounds, corporate logos and gradation of colors for background hues—important slide features that you used to have to pay extra for
- 3 versions: IBM version connects to your host computer's parallel printer port, allowing it to be used with many leading graphics packages designed for IBM PC or PS/2, and the Macintosh version connects to your SCSI port. IBM/Mac universal version also available
- Macintosh II driver operates under the "Chooser" menu option and takes full advantage of the color capabilities of the Mac II
- Includes: power cord, 35mm Express driver, 35mm camera unit, Presentation Express driver

Bravo Computer Slide Maker ................................................................. $5995.00

Digital Palette CI 3000 Desktop Film Recorder
- Turn color graphics from your IBM PC AT, PS/2 or compatible into high-resolution, full-color 35mm slides or prints, simply and inexpensively
- Images will have the look of an expensive, professionally produced presentation—in a fraction of the time and cost
- 35mm slides created have an image resolution of 2048 pixels by 1366 addressable pixels
- Advanced color recording capability provides exceptional color rendition and continuous-tone, shaded backgrounds
- Works with a wide range of graphic formats to give you needed flexibility
- Polaroid's ImagePrint™ software provides compatibility with a variety of popular software packages including Harvard Graphics and Applause II
- Virtually any software generating CGM, TIF or TARGA file formats is compatible. Or you can use direct drivers in Polaroid's Presentation Express, 35mm Express or Freelance Plus to generate high-quality slides, prints or overheads
- Just plug the CI 3000 into the parallel port of your computer and you're ready to go. No special boards required
- Gives you all the hardcopy formats you'll ever need and allows you to image on 18 different types of film, including Polaroid's instant 35mm films and conventionally-processed Polaroid Presentation Chrome
- Includes all the equipment necessary to develop and mount Polaroid instant 35mm films and create small format, full-color overhead transparencies
- Includes: CI 3000 color film recorder, 35mm camera unit, 3 1/4" x 4 1/4" pack film camera, 35mm power processor, 35mm illuminated slide mounter, parallel cable, power cord, ImagePrint software, 35mm Express driver, Presentation Express driver, Freelance Plus driver

CI 3000 ................................................................. $4495.00

Digital Palette CI 5000
Same as CI 3000 except:
- For both IBM and Macintosh computers
- Image resolution up to 4000 lines
- Includes: same as CI 3000 components

CI 5000 ................................................................. $5995.00

PalettePlus Computer Image Recording System
- Instant computer-generated slides, prints and small-format overhead transparencies
- A complete computer slidemaking system for complete security
- 640 x 700 pixel resolution hardcopy of images created on personal computer with an Enhanced Graphics Adaptor (EGA) or EGA-compatible board and graphics software packages with PalettePlus drivers
- Includes: PalettePlus recorder, 35mm film unit with full/frame lens, 3 1/4" x 4 1/4" film unit, power processor, OneStep graphic software, illuminated slide mounter, Palette software and manual, and all cables

PalettePlus ................................................................. $2999.00
VIDEO SCAN CONVERTERS / VIDEO WINDOWING SYSTEMS

RGB/VideoLink™ 600A/600AX Scan Converter
- Converts EGA, VGA and Mac II graphics to television format (NTSC or PAL) in real time
- Allows recording of computer graphics on any videotape recorder and connection to video projectors, teleconferencing systems and composite monitors
- Automatically synchronizes to any computer RGB signal with horizontal scan rate from 21.5-35.0kHz
- Supports all standard VGA modes, the EGA in 640 x 350 mode and the standard Macintosh 640 x 480 display
- Proprietary digital signal processing (DSP) circuitry eliminates interface flicker; thin horizontal lines and menu boxes appear stable
- No software drivers or additional software required
- Output video may be free run for standalone use or genlocked for studio environments
- Eliminates the roll bars and desaturation associated with pointing a camera at the screen
- Full 24-bit color processing; over 16 million colors
- Simple external connections to the computer; adjustment-free installation
- Outputs: NTSC (or PAL) composite video; analog RGB RS-170A; 525 line, 30Hz or EBU standard; 625 line, 25Hz S-VHS/ED Beta *Y, R-Y, B-Y (Betacam/MII) are available on 600AX

600A .................................................. $ 9,995.00
600AX with linear keyer for combining computer images with live video, full broadcast quality encoder/sync generator, Betacam/MII output ........................................... 10,995.00

RGB/VideoLink 1450AX Scan Converter
- Fully automatic synchronization to input signals from 21.5-80.0kHz, without adjustments or jumper settings
- Proprietary digital signal processing (DSP) circuitry eliminates interface flicker; thin horizontal lines and menu boxes appear stable
- Scan conversion occurs in real time
- NTSC RS-170A or PAL encoder and sync generator; supports all videotape formats including VHS, S-VHS, ED Beta, 3/4" U-Matic, 1"
- Betacam/MII
- High quality linear keyer overlays computer generated text and graphics onto video, without the “jaggies” associated with 1-bit keyers
- Full 24-bit color processing; over 16 million colors
- Simple external connections to the computer; adjustment-free installation
- No software drivers or additional software required
- Eliminates the roll bars and desaturation associated with pointing a camera at the screen
- Y, R-Y, B-Y (Betacam/MII) output
- Encoder controls: system timing, subcarrier phase, sync timing
- User controls: key function, key level

The RGB/VideoLink 1450AX accepts non-interlaced RGB signals at resolutions up to 1280 x 1024 pixels. The RGB/VideoLink analyzes the input signal from the computer and automatically synchronizes to it. The RGB inputs are digitized, filtered and buffered in a frame store. The digitized image is then converted by digital-to-analog converters to RGB signals at video resolution and encoded into NTSC RS-170A (or PAL EBU standard) composite video. S-Video and RGB outputs at video resolution are also provided: Betacam/MII outputs are available on the Model 1450AX. Complete conversion and encoding are accomplished in real time.

The RGB/VideoLink is easily installed using video cables. Loop-through connectors are provided on all inputs; installation does not interfere with normal operation of the computer or its monitor.

RGB/VideoLink 1450AX ............................................. $14,995.00

RGB/View 2050 Video Windowing System
- Compatible with all high resolution computer graphics displays (1024 x 768 to 1280 x 1024 pixel resolution) interlaced or non-interlaced. Synchronizes to video displays with horizontal scan rates of 44-90kHz non-interlaced or 22-45kHz interlaced
- NTSC or PAL composite video input. Also, component RGB (RS-170 or EBU standard) input. Other inputs, including EGA, VGA and 875 line interlaced (RS-343), are available by special order
- Video window may be positioned, scaled, clipped and overlaid
- High resolution video output without flicker (for non-interlaced computer systems)
- Output to the computer system’s normal monitor or to a high scan rate projector
- No burden on computer processing; no impact on computer bus resources
- 100% compatible with any application software; no software changes required
- No computer slots required; connection via standard video cables
- 4 basic window sizes: full screen, 1/4, 1/16 and 1/64 screen
- Video window may be of arbitrary size and shape
- Comprehensive graphic overlay capability using versatile chroma keyer
- Full 24-bit true color processing throughout; highest quality video image available
- Video window control from the front panel or via an RS-232 port
- Computer callable library functions to manipulate video image size, position, brightness, contrast and color
- Optional SCSI port for frame grabbing
- Freeze frame
- Brightness, contrast and saturation controls
- Look-up tables (LUTs) for color mapping
- Motion filter

RGB/View 2050 .................................................. $9,495.00

Prices and Specifications Subject to Change Without Notice.
QA-1000 True Color Computer Projection Panel
- State-of-the-art 10.4” TFT (Thin Film Transistor) LCD with an active matrix drive system
- Capable of displaying both computer text and full-motion animation graphics in up to 64 brilliant colors
- Replaces the ‘shades of gray’ used in conventional displays with an array of 64 bright and high-contrast true colors
- Automatic screen centering
- Built-in solid-state EEPROM memory
- Cylindrical cooling fan

The QA-1000 offers outstanding compatibility, as well as auto-setup, for use with virtually all popular PCs, graphics cards and software. A partial list of compatible computers includes the IBM PS/2, PS/1, PC/ XT/AT and compatibles (VGA, MCGA, EGA, CGA, MDA and Hercules/+In-Color), Apple Macintosh (Mac II, Mac SE, Mac +), Apple II family, and AT&T (PC6300WGS, PC6386WGS, PC6312WGS, PC6286WGS).

QA-1000 $5295.00

QA-75 Super Bright LCD Computer/Data Projection Panel
- 16 true shades of gray (user selectable for either gray scale or pixel patterns)
- Compatibility with auto-setup for PS/2, PC/XT/AT and compatibles (VGA, MCGA, EGA, CGA, MDA and Hercules/+In-Color), Macintosh family (Mac II, Mac SE, Mac +), AT&T (PC6300wgs, PC6386wgs, PC6312wgs, PC6286wgs), Apple II family (II, II +, IIc, IIC, IIgs). Manual setup also provided to optimize compatibility with an even wider range of computers
- Super-bright 640x480 ”TSTN” (Triple Super Twist Nematic) LCD displays page black and white images that are consistently brighter and higher in contrast than conventional LCDs (approx. 2X-3X higher contrast than ‘colorized’ panels)
- 2 easy-access on-screen menus
- 23-key infrared remote unit
- Up to 21 computer functions may be controlled using the included remote control
- Comes complete with 9-pin and 15-pin d-Sub RGB signal cables for direct connection with IBM PCs, PS/2s and compatibles. Apple Mac II and AT&T computers require an optional adaptor cable; Apple II and Mac +/SE computers require an optional interface whose output conforms with Sharp’s technical specifications.

QA-75 $1595.00

XG-50 Video Scanner Presentation System
- Easily connects to video projectors and TV monitors, and allows documents and full-color photographs to be presented to a large audience
- 400 TV lines resolution
- 1/2” CCD with 750,000 pixels (250,000 x RGB) reproduces clear and bright images
- 8X power zoom and focus lens enlarges small and hard to read print
- Built-in video frame image memory
- Wide size capacity, handles everything from 35mm film to B4 paper
- Unique positive/negative reverse function
- Composite, S-Video (Y/C) and analog RGB outputs
- Flicker-less fluorescent lamp included
- Dimensions: set up 26 1/2”H x 26 3/4”W x 23 5/8”D
- 22 lbs.

XG-50 $3995.00

GZ-P21U S-VHS Compatible Color Video Printer
- High resolution
- Inputs for S-VHS, composite and RGB analog video sources
- 800 x 478 dot format
- Digital “freeze frame” memory
- Multi-image print mode allows 2, 4 or 25 reduced size images to be reproduced on a single print sheet
- Grounded (3-wire) AC power cord

GZ-P21U $1795.00

Optional Printer Accessories
GZ-Y100U Color Print Ink/Paper Set
Each set includes 100 sheets and ink cassette $95.00

GZ-Z20U Color Transparency Ink/Film Set
Each set includes 20 sheets and ink cassette $40.00

GZ-W100U Monochrome Print Sheets
Each set includes 100 sheets thermal paper $20.00

Prices and Specifications Subject to Change Without Notice.
VIDEO/DATA PROJECTORS

**VPH-1041Q Super Bright** Color Video Projector
- Factory adjusted for 100" flat screen, 67°-250° adjustable • High resolution (RGB 1000 TVL, Video 650 TVL) • High brightness of 600 lumens • Displays 2000 characters • PAL/SECAM/NTSC/NTC 4.43, auto sense • Y/C input • Built-in speaker • Delta TAC II lens

VPH-1041Q .................................................. $5,999.00

**VPH-1042Q Super Bright Color Video Projector**
- Factory adjusted for 100" flat screen, 67°-250° adjustable • High resolution (RGB 1000 TVL, Video 650 TVL) • High brightness of 600 lumens • Displays 2000 characters • PAL/SECAM/NTSC/NTC 4.43, auto sense • Y/C input • HACC/HD-6 lens • Built-in speaker • Excellent corner focus • Uses VPR-722S remote control and CCG-8BRS cables

VPH-1042Q .................................................. $8,594.00

**VPH-1031Q MultiScan™ Color Video/Data Projector**
- Factory adjusted for 100" flat screen, 60°-250° adjustable • Automatic locking for computer signals (H:15-36kHz, V: 40-150Hz) • High resolution (RGB 1100 TVL, Video 650 TVL) • Displays 4000 characters • High brightness of 300 lumens • PAL/SECAM/NTSC/NTC 4.43 • Auto sense for TV standard • RGB/video superimpose • 2 RGB inputs • Built-in speaker

VPH-1031Q .................................................. $8,575.00

**VPH-1270Q MultiScan Color Video/Data Projector**
- Factory adjusted for 120" flat screen, 70°-250° adjustable • 1250 TV lines RGB resolution (measured at a horizontal frequency of 15kHz) • Light output: Peak white, 650 lumens; all white, 200 lumens • Remote controlled convergence • NTSC/PAL/SECAM/NTSC 4.43 color system automatically selected • Automatic locking to most computer signals: 15.75kHz to 71kHz horizontal • Built-in speaker • Memory function • On-screen display function • Horizontal and vertical size and shift controls • High performance hybrid lenses, HACC lens • Supplied with IFB-10 interface board, remote control unit, remote control cable, extension board and AC power cord

VPH-1270Q .................................................. $15,990.00

**Accessories**

- PSS-10 Projector suspension support for VPH projectors .................................................. $570.00
- PSS-722 Projector suspension support for ceiling mount for VPH-1030/1040 Series .................................................. $275.00
- SU-722 Stand for floor mount for VPH-1030/1040 Series .................................................. $610.00
- ST-72 TV tuner, 181-channel stereo decoding (MTS) .................................................. $430.00
- VHC-1040 Carrying case for VPH-1031Q and VPH-1041Q .................................................. $690.00
- VPH-1041Q/1042Q .................................................. $600.00
- VPR-722S Remote control for VPH-1030/1040 Series .................................................. $600.00
- VPF-720 Ornamental frame for 72" screen (VPS-72HG1) .................................................. $605.00
- VPS-72HG1 High gain concave screen for VPH Series, Gain = 13 .................................................. $980.00
- PSS-1270 Projector suspension support/mounting bracket for VPH-1270Q .................................................. $695.00
- VPS-100HG1 High gain concave screen for VPH Series (100" diagonal) includes ornamental frame. Gain = 13 .................................................. $3,795.00
- VPS-100F1 Flat screen (100" diagonal) for VPH Series, includes winding mechanism and stopper. Gain = 2.5 .................................................. $690.00
- VPH-700R Rear projection screen, 70" diagonal, 2-piece black stripe Lenticular/Fresnel construction, for VPH Series. Includes ornamental mounting frame. Gain = 5.2 .................................................. $4,285.00
- IFB-10 Analog RGB/computer interface/input card; RGB input: 5 BNC (R, G, B, Comp/Hd, VD); Audio input: 2 RCA phone plug (Left, Right); Bandwidth: 100MHz; for VPH-1270Q/PC-1270 only .................................................. $300.00
- IFB-20 Analog RGB/computer interface/input card; RGB input: D-Sub 8-pin (R,G,HD,VD); Audio input: 2 RCA phone plug (Left, Right); Bandwidth: 100MHz; for VPH-1270Q/PC-1270 only .................................................. $300.00
- IFB-30 Digital RGB/computer interface/input card; RGB input: D-Sub 8-pin (R, G, B, r, g, b, HD, VD); Audio input: 2 RCA phone plug (Left, Right); for VPH-1270Q/PC-1270 only .................................................. $415.00
- RSM-1270 RS-422 interface protocol manual for VPH-1270Q .................................................. $55.00

**RVP-6000Q Rear Screen Video Projection System**
- 60" rear projected screen size • Especially suitable for business presentations and information display which require sophisticated multimedia capabilities • Contains projection head, rear projection screen, reflective mirror and audio system in compact, 1-piece unit which enables convenient, transportable installation • Easy to set up and operate via infrared remote control system, projection system can display a wide variety of input sources including high end graphics computers • Optical coupling system links projection system’s lenses and cathode ray tubes (CRTs) to help reduce light refraction and ensure display of high contrast pictures • Images displayed on the RVP-6000Q system are virtually unaffected by ambient light due to the design of the system’s rear projection screen • Only 1 mirror used to reflect images, minimizing loss of light intensity • Super Fine Pitch™ screen contains a combination of fresnel and lenticular lenses, helping widen both vertical and horizontal viewing angles • 0.6mm pitch lenticular screen provides precise display of computer images • Black strips coated on screen’s lenticular front surface absorb ambient light and enhance contrast to prevent image "washout" under typical room lighting conditions • Combination of CRT and lens design maximizes projector’s light output, generating a bright display of up to 1500l at peak white and 400l all white. Resolution 1280 x 1024 pixels (RGB input) • Accepts input signals with horizontal scanning frequencies from 15kHz to 65kHz and vertical scanning frequencies from 38Hz to 150Hz • Accepts and automatically adjusts for a wide variety of computer sync signals • Compatible with new high quality video formats including DTV (High Definition Television) and IDTV (Improved Definition Television) • Provides Y/C and Video inputs, plus input ports for optional IFB-series interface boards • Can be configured for wired or wireless operation to provide easy control of all projection functions including convergence, RGB size and shift, centering, input selection, picture control and volume • Memory function stores adjusted picture settings, retaining this memory even after power has been turned off until further adjustments are made • Adjustment status and information about input signals can be displayed on system’s screen for reference

RVP-6000Q .................................................. $25,990.00

Prices and Specifications Subject to Change Without Notice.
GVM-1300 (13")/GVM-2000 (20")
Trinitron Graphics Monitors
• Accept composite video from VTRs as well as high-resolution color graphics from personal computers
• Operate over a wide range of horizontal and vertical synchronization frequencies, enabling users to view video images from VTRs and graphics from various types of computers on a single screen
• 2 composite video inputs accommodate the various recording formats
• High-resolution video image of 600 TVL (GVM-1300) and 560 TVL (GVM-2000)
• 2 RGB computer inputs
• Computer resolution is 720 x 480 pixels (GVM-2000) and 900 x 560 pixels (GVM-1300)
• Stable automatic white balance facility
• Built-in speaker for audio input and controls to adjust the horizontal and vertical shift and size

GVM-1300 .......................................................... $1,495.00
GVM-2000 .......................................................... $2,300.00

GVM-1305TS 13" Multiscan Touchscreen Monitor
• Provides automatic detection of input signal line frequency
• Multiscan capability allows the monitor to automatically adjust its scanning rate to a wide variety of input signals, and to accurately display a picture on its anti-glare screen
• Accepts most computer sync signals, in addition to composite video, Y/C and analog/TTL video signals
• Provides multiple audio and video inputs with loop-through, which facilitates its use in a multipurpose workstation environment
• Includes ELODEV 1.4c software for interrupt-driven, RS-232C touchscreen support, along with language bindings for compilers manufactured by Borland International, Microsoft Corp. and IBM Corp.

GVM-1305TS .......................................................... $2,800.00
LVS-5000 Laser Videodisc Recorder / LVS-5000 Laser Videodisc Processor
The Laser VideoDisc Recording System allows the user to record images onto blank optical discs. The recorded images are safe for more than 30 years according to the Sony acceleration test.

High Quality Picture
The adoption of the time compression component recording format ensures that the Laser VideoDisc Recording System records and reproduces high quality pictures. The alloy formation techniques used to record onto the optical discs help sustain the image’s crispness.

Black and White Mode
The Laser VideoDisc Recording System can be set to record and playback only black and white images. Elimination of color components allows an increase in resolution with the bandwidth of 6.7MHz.

Multiple Inputs/Outputs
The LVS-5000 can accommodate multiple types of video inputs and outputs. Its component inputs/outputs (RGB or Y/R-Y/B-Y) can be used for the highest quality recording and playback. The system is also equipped with a composite input/output to enable interfacing with numerous video sources including VTRs and cameras.

Quick Access Time
Any video frame on a disc can be accessed within 0.5 second on the full stroke average.

Semiconductor Diode Laser Pickup
The Laser VideoDisc Recording System employs a high-power semiconductor laser diode, which boasts high durability, long life, and low power consumption.

Frame Picture Recording Capability
In addition to its ability to record and play back 24 minutes of continuous video and audio, the Laser VideoDisc Recording System allows frame picture recording. A maximum of 43,500 frames in NTSC and 36,250 frames in PAL can be recorded on 1 side of the disc.

Computer Interface
The Laser VideoDisc Recording System can be controlled from an external computer via the built-in RS-232C port. The product’s software protocol is compatible with that of the Sony LDP series. The optional LDM-5000 Interface Manual will provide detailed protocol information.

Convenient System Expandability
The Laser VideoDisc Recording System consists of 2 separate units, a signal processor and a recorder. 1 processor can be interfaced with up to 10 recorders. When recorders are serially connected and controlled by an external computer, several discs can be recorded and played back consecutively. Furthermore, playback of 1 segment can be followed by another segment from a different disc without any recognizable transition noise between the 2 scenes.

Both NTSC and PAL Signal Processing Capability
When the optional DB-W5000P PAL Board is installed in the LVS-5000, the Laser VideoDisc Recording System is capable of recording and playing back both NTSC and PAL signals.

PCM Audio Recording
Audio signals are encoded into a digital form by the PCM (Pulse Code Modulation) circuit. The result is high fidelity audio.

User Data
A 64K byte area is reserved on each side of the optical disc for user data. With the assistance of an external computer, user information such as the disc ID, contents and picture index can be recorded.

Noiseless Picture Playback at Variable Speeds
Noiseless pictures can be played back at still and 1/2 to 3 times normal speed in the forward and reverse directions.

Genlock Capability
When a reference video signal (VBS or sync) is input, the playback signal will be synchronized with the reference signal.
LVR-5000 ................................................. $10,500.00
LVS-5000 .................................................. 10,500.00

LVA-7000 Laser Videodisc Player
- Component time division multiplex recording format
- Can play back 24 minutes of moving pictures or 43,500 frames of still pictures from each side of the disc
- Search mode: The playback picture changes without the video signal muting during the head movement, using a frame memory
- Slow mode: Since a disc is played back frame by frame due to its recording format, fast moving objects may sometimes blur, especially in slow motion mode. The LVA-7000 provides field-by-field slow motion playback capability by using frame memory to minimize picture blurring. This brings added clarity to both slow motion sequences and stills.
- User memory mode: Any 2 fields can be stored in the memory for instantaneous reference at any time. The picture quality of the memorized image remains excellent thanks to the component video signal processing
- Equipped with component video output (Y/R-Y/B-Y)/analog RGB output, Y/C separate video output (DIN 4-pin) and composite video output
- Quick access time of 0.5 second
- External computer control capability via the built-in RS-232C port (compatible with Sony LVR/LVS and LDP series protocol)
- Equipped with a 9-pin Remote interface (RS-422 serial) to be controlled by Sony BVE series editing control units
- High resolution black and white mode
- Both NTSC and PAL signal playback capability, using an optional PAL board
- A 64K byte area for user data on each side of the disc
- Noiseless pictures can be played back at still and slow motion speeds from 1/2 to normal, and fast motion at 3 times normal speed in forward and reverse
- Index indication on/off switch
- Multi-connection capability using video input connectors
- Genlock capability
- System sync phase adjustment for connection to an SEG or switcher

LVA-7000 .................................................. $9,995.00

Business and Professional Group

Prices and Specifications Subject to Change Without Notice.
Sony

Business and Professional Group

ProMavica™ STILL VIDEO SYSTEM

MVR-5300 Still Video Recorder/Player
* Records and plays back high quality video images on a 2" video floppy disk
* Up to 25 full frame (or 50 field) can be stored on a disk which can be erased and used again and again
* Horizontal resolution of more than 500 TV lines
* Composite video, analog RGB and Y/C signal input/output facilities
* RS-232C interface allows the unit to be connected with a variety of video equipment
* Auto play function allows playback of the first picture track to the last picture track sequentially
* On-screen display: track information can be displayed on the monitor by pressing the search button, which indicates if the track has been recorded in field or frame mode and which tracks are blank

MVR-5300 $3715.00

MVP-660/ACP-150 Portable Still Video Player With Battery Charger
* Equipped with both Hi-band and standard mode playback capability with 500 lines horizontal resolution
* Equipped with composite Video Out, S-Video Out, RGB Out and a component Video Out
* Audio playback capability recorded on still video disk
* Erase function
* Shuttle dial search
* On-screen display of track number, date and time or playback capability recorded on still video disk

MVP-660/ACP-150 $3060.00

MVC-2000 Single Chip Still Video Camera Recorder
* Both Hi-band and normal band still video formats selectable on camera
* 1/3" interline transfer CCD switch
* 380,000 picture elements
* Single lens reflex, 6X zoom lens 12mm-72mm and macro function
* Exposure control programmable to AE or shutter priority AE
* Self-adjusting auto white balance
* Time and date are automatically recorded along with aperture value and shutter speed, all of which can be superimposed on MVP-660 screen

MVC-2000 $53060.00

MVC-5000 2-CCD Still Video Camera Recorder
* Same features as the MVC-2000
* Single lens reflex and exclusive bayonet lens mount for Nikon lenses
* Equipped with Video Out for external VTR or video monitor
* Records up to 9.6 seconds of audio per track
* Equipped with unidirectional electret condenser microphone
* Exposure control with programmed AE, shutter priority AE, aperture priority AE or manual exposure control
* White balance set to self-adjusting auto, 5800K, 3200K or memory mode
* Skip function for skipping designated tracks

MVC-5000 $7150.00

MVC-5000 Accessories
AC-V55 AC adaptor/battery charger $180.00
EBP-9 Battery case for MVC-2000 $240.00
MFL-30 Electronic flash for MVC-5000 $415.00

MVC-5000

UP-3000 Color Video Printer
* Multiple inputs such as RGB, Y/C and composite video signals enable the UP-3000 to be used with a variety of video equipment
* More than 500 TV lines resolution
* An A6 size print (5½" x 4") is produced in approximately 80 seconds

UP-3000 Color Video Printer $3895.00

UP-5000 Color Video Printer
* Capable of printing over 16.7 million colors per dot
* Hard copy comparable to photographic methods
* Produces full size and split images

UP-5000 Color Video Printer $6895.00

UPC Accessories
UPK-5000 Memory board $1300.00
UPC-5010A Color print pack (100 prints) $125.00
UPC-5020 Monochrome print pack (100 prints) $110.00
UPC-5030 Transparency print pack (50 prints) $100.00
UPC-FRAME50 Transparency frame (50 pcs.) $25.00

UP-5000 Accessories

UPK-5000 Memory board $1300.00

Prices and Specifications Subject to Change Without Notice.
**VIDEO SCANNER/FRAME MEMORY UNIT**

**UY-T55 Color Video Scanner**
- Provides quick, cost effective means of converting flat art to high quality video images
- High speed scanning — approx. 7 seconds per image (normal color mode, A4 size)
- High quality RGB video output — equal to 3-chip camera. High resolution at any portion. No distortion at any corner
- Cropping and zooming — picks out any portion out of whole page
- 24 bits digital process — 16.7 million colors
- Overlay memory for superimpose function — can add pre-scanned image onto the picture
- Cursor pointing — useful in presentation
- Easy operation compared with 3-chip camera — no focusing, no lighting, no white balance
- Transportable — lightweight, easy to set up
- Sync-lock capability — synchronization with other video source
- Color adjustment — available for video output
- RGB frame memory plus overlay memory
- Software independent — no need of host computer

**Specifications**
- **Scanning System:** Flat-bed, linear CCD sensor
- **Input Media:** Sheet, card, book
- **Maximum Scanning Area:** 81/2" x 113/4"
- **Sensor:** Linear CCD sensor (8 dots/mm: 1,728 dots)
- **Light Source:** Red LED, green LED, blue fluorescent lamp
- **Gradation:** 256 gradations/each color (R, G, B 3-channel)
- **Scanning Speed:** Approx. 7 seconds (normal color mode)
- **Trimming:** 14 magnification levels, free positioning
- **Frame Memory:** 512(V) x 768(H) x 8 bits x 3 colors for image, Effective image area: 430(V) x 700(H)
- **Pointer:** 512(V) x 768(H) x 4 bits for superimpose, Effective image area: 430(V) x 700(H)
- **Scanning Mode:** Norm/Fine/B&W/Title, Color/Contrast/Brightness/Hue/Sharpness/Red/Blue (on rear panel)
- **Dimensions:** 43/4"H x 13"W x 20"D
- **Weight:** Approx. 19.1 lbs.
- **UY-T55** $6495.00

**MPU-F100 Frame Memory/Frame Synchronizer**
The MPU-F100 accepts asynchronous video signals, locks them with the house sync and outputs synchronous video signals. It also provides time base error correction to eliminate skew errors and jitter. These functions enable video playback sources including ProMavica recorders/players to be used in various video systems such as in computer graphics, CATV, POP and POI operations.

ProMavica recorders/players show video signal muting during the transition of the head movement from 1 picture to another. The MPU-F100 eliminates this phenomenon by storing a picture in the frame memory. Also, using the Lap Dissolve function, 1 picture can switch over to another with 1.2 seconds of transition time. The MPU-F100 and a ProMavica recorder/player should be connected via an optional interface cable, IFC-100 (2m).

In combination with a ProMavica recorder/player, 3 kinds of still video control modes are available.

**ON Mode:** The MPU-F100 freezes a picture automatically when the ProMavica deck goes into playback mode. Also, when the deck plays back a different track, the MPU-F100 freezes a new picture.

**OFF Mode:** There is no functional relation between the ProMavica deck and the MPU-F100.

**TIMER STOP Mode:** The ProMavica deck goes into the stop mode after continuously playing back the same picture for 10 minutes, without track change. After the deck is in the stop mode, the frozen picture remains.

The MPU-F100 is equipped with an external genlock input connector for composite video or blackburst input. It can control hue and color level of the composite and Y/C separate video signals, and video level and setup level of the input signals. Noise reduction circuit for still pictures provides 4 steps of noise reduction levels. An RS-232C interface is employed for an external computer control.

**MPU-F100** $3995.00

**Prices and Specifications Subject to Change Without Notice.**
SONY

Business and Professional Group

AVC-D7 Single Chip CCD Monochrome Video Camera

- Provides superior performance of lower lag, electronic shutter and high sensitivity, as well as the traditional CCD advantages of long life, no image burning, zero geometric distortion, freedom from magnetic field interference and high resistance to vibration and shock.
- 380,000 effective picture elements on sensing area of 8.8 x 6.6 mm.
- Horizontal resolution of 570 TV lines.
- Signal-to-noise ratio of 50 dB.
- Minimum illumination is only 3 lux (f/1.4).
- Automatic Gain Control (AGC) function allows the AVC-D7 to shoot under various light levels.
- External genlock capability and built-in camera ID generator are useful in multiple camera operations.
- Accepts various genlock signals of VBS, VS, sync, or HD/VD.
- Also, the identification of cameras is possible by superimposing a 4-digit number on the picture.
- The camera body is remarkably small and lightweight, only 5" in length and 11.6 oz. in weight.
- 8-step variable speed electronic shutter ranging from 1/60 to 1/1000 second offers blur-free pictures and improves dynamic resolution when shooting fast-moving objects.
- Designed to accept C-mount lenses for 2/3" image size cameras with iris control capability.
- Consumes only 3.3W (using the CCMC-12P multi-core cable) or 6.5W (using coaxial cable).
- Aluminum diecast chassis assures durability in severe environments.

Supplied Accessories:
- Lens mount cap
- Operating manual

AVC-D7 ........................................... $1200.00

DXC-151 Single Chip CCD Color Video Camera

- Color video camera with mosaic type CCD with primary color filter.
- Horizontal resolution of 460 TV lines.
- Minimum illumination 25 lux (f/1.4).
- Electronic shutter 1/60-1/1000 sec.
- Genlock VBS, BS.
- White balance ATW, AWB, preset (3200K/5600K).
- RGB, Y/C output, composite VBS, connector for computer image capture cards (9-pin D-sub).
- High-fidelity color reproduction.

DXC-151 ........................................... $1565.00

DXC-107 Single Chip CCD Color Video Camera

- IT (Interline Transfer) HAD (Hole Accumulated Diode) sensor CCD chip with 380,000 effective picture elements.
- 1/2" size contributes to camera's compact and lightweight design.
- Horizontal resolution of 470 TV lines.
- High sensitivity is provided through the CCD imager's complementary color mosaic filter.
- HAD sensor technology considerably reduces dark current, ensuring an excellent signal-to-noise ratio of 46dB.
- 4 alternate white balance control modes can be selected to meet a wide range of operational conditions.
- 2 automatic control modes, AWB (auto white balance) or ATW (auto tracing white), or 2 preset modes, indoor (3200K) or outdoor (5600K), can easily be selected by switch on the side panel.
- CCD iris function automatically controls the exposure by electronically adjusting the shutter speed, instead of using the mechanical auto iris function, which is incorporated in the lens.
- Only a single coaxial cable is required to transmit the video and sync signals and DC power.
- The variable speed electronic shutter enables the DXC-107 to capture clear images of moving objects, giving a remarkable improvement in dynamic resolution. Blur-free pictures for extremely clear still or slow-motion playback can be obtained.
- The shutter speed is easily selected by a switch on the side panel.
- A 4-digit ID number can be generated and superimposed on the picture.
- Each digit can be selected by 4 rotary switches on the side panel.
- The DXC-107 color video camera packs outstanding picture taking performance and excellent operational facilities into a remarkably compact body.
- The CCD chip offers high resolution and high sensitivity for vivid, clear pictures.
- The CCD iris' function, built into the CCD imager, electronically controls exposure, eliminating the need for auto iris control in any shooting environment.
- Its small and lightweight design combines with its excellent performance and many operational features to meet the demands of various industrial applications.

DXC-107 ........................................... $1280.00

VID-P10 Video Presentation Stand

- Integral DXC-101 camera chassis, lens, portable copy stand with lights.
- 6X macro zoom lens fills screen with 2.4" x 1.75" to 13.5" x 9.9" object.
- 510 x 392 CCD for clear, burn-free pictures.
- Mic and phono inputs with volume control; line level output.
- RF output with optional RFU-89K.
- Switched AC outlet (300W).
- Built-in microphone amplifier.
- Can be folded and carried like a briefcase.
- The pictures from the VID-P10 can also be recorded by VTRs and Sony Mavica still video recorders.
- Can display books, catalogs, even 3-D objects and flat objects.
- Also, the VID-P10 can display them on TV monitors and projectors.

Supplied Accessories:
- Soft cover
- 2 lamps
- AC cable
- Operating manual
- Operating seal

VID-P10 ........................................... $3500.00

Prices and Specifications Subject to Change Without Notice.
PROJECTION SCREENS/FRAMES

Videomatte 2000 With Snap Frame
Choice of wall mount, ceiling hung or completely freestanding. Screen is tensioned on all sides, assuring surface flatness. Aluminum construction with 1 1/2" black masking borders for video overscan. Unit is shipped disassembled, can be assembled and installed in minutes. Disassembly for storage, if required. Custom sizes also available. Add $210.00 to list price for adjustable floor stands or T-stands with adjustable height feature.

Add $210.00 to list price for adjustable floor stands

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<th>Model #</th>
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Videomatte 2000 With Electric Rollup
Unit can be wall mounted or ceiling recessed. Standard features include all aluminum construction, 4" diameter roller tube, adjustable limit switches on motor, built-in "J" box for wiring, tab guy system to prevent edge curl, flat black finish and remote control switch. Black masking for overscan. Custom sizes also available.

Add $210.00 to list price for adjustable floor stands

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<tr>
<th>Model #</th>
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Options
- Video tuner interface or screen trigger $169.00
- Low voltage control with wall switch 275.00
- Wireless remote command 399.00

Custom Electric screens
- No seams to show and no beads to fall off
- Tab-Guy system controls excess stretch yet allows screen to smooth within minutes of unrolling. Also eliminates bothersome edge curl. Entire screen is flat
- Cable-tension system eliminates roller sag, assuring smooth, trouble-free roll-up without center wrinkle pattern during projection
- Sound perforations are available for roll-on speakers behind lowered screen
- All Electric screen models operate on 115V, 60 cycle power. 220V, 50 cycle models are available for overseas use
- Each screen is custom manufactured to your specifications
- All pricing upon request

Model A - Any size to 9'H x 12'W All metal construction. Intube motor
Base Price $1020.00 Width Per Foot Price $70.00

Model A-B - Any size to 14'H x 16'W 5" diameter roller tube. Intube motor
Base Price $1750.00 Width Per Foot Price $100.00

Model A-B-T - Any size to 14'H x 16'W Motorized trap door. Dual motor construction, 24V control circuit
Base Price $3050.00 Width Per Foot Price $130.00

Model B - Any size to 18'H x 25'W 6" diameter stressed roller tube. External motor, unlimited cycling. Heavy duty professional unit
Base Price $4000.00 Width Per Foot Price $150.00

Model C - Any size to 25'H x 43'W 8" diameter stressed roller tube. Heavy duty external motor with 25V control circuit. Unlimited cycling.
Base Price $6000.00 Width Per Foot Price $250.00

Prices and Specifications Subject to Change Without Notice. 485
**Microgrid® III Graphics Tablet**
- For IBM® and Apple® Macintosh® microcomputers and major graphics workstations
- Standard accuracy of 0.005"; optional high accuracy of 0.002"
- Multiple output format—Summagraphics Microgrid UIOF, GTCO and Calcomp compatibility for use with all major software packages
- Dual transducer capability, 16-bit processor, skew correction and built-in ADB support that lets you connect the tablet to an Apple Macintosh II or SE computer
- Input devices—2- or 3-button stylus, 4-button cursor, or 16-button cursor with optional magnifier
- Optional stylus and cursor holders can be mounted on either side of tablet for easy access
- Stylus and 16-button cursor can be simultaneously active, providing on-demand change of transducers. Combining the programming flexibility of the 16-button cursor with the stylus creates a "16-button" stylus
- Easily tailor the following Microgrid features to your specific application: baud rate, output format, resolution, origin location and transducer
- Rugged, ABS non-glare work surface for high durability
- Thin (1.5") lightweight construction with 1-piece top surface and rounded edges
- Adjustable tilt stand available (17" x 24" and 20" x 20") or easy-to-assemble power or manual lift stand (24" x 36", 36" x 48" and 44" x 60")
- Optional utilities diskette—Autodesk® Device Interface™ (ADI™) driver; Microsoft® 3.0 Windows Driver; Tablet.com™ driver with Microsoft Mouse emulation; diagnostic test, reset and configuration software

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**SummaSketch® II Graphics Tablet**
- For the IBM family of PCs
- Choose from standard 11.7" x 11.7" active area tablet or the Professional version with an 18" x 12" active area
- The Professional is ideal for applications that require large work areas, or standard work areas with a separate template/menu section
- SummaSketch II tablets come with both a 4-button cursor and 2-button stylus. An optional 16-button cursor is also available
- Utilities diskette includes diagnostic test software; reset software; configuration software; ADI driver; Microsoft Windows driver and Tablet.com, a tablet driver which includes functions specific to absolute pointing devices and Microsoft Mouse emulation
- Interface cable for the IBM PC, PS/2 and AT (and compatibles)
- High resolution—up to 1016 lines per inch, or scale output to match any monitor resolution
- Precise input: 4-button or 16-button cursors. With cross-hair sight for applications requiring precise digitizing
- 2-button stylus with pen-tip switch and barrel button provides a natural pen-to-paper feel for free-hand drawing

<table>
<thead>
<tr>
<th>SummaSketch II</th>
<th>Price</th>
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<tr>
<td>12 x 12/16-button for IBM PC</td>
<td>$599.00</td>
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<tr>
<td>12 x 12/4-button for IBM PC</td>
<td>$599.00</td>
</tr>
<tr>
<td>ADB 12 x 12 for Mac</td>
<td>$699.00</td>
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<tr>
<td>ADB 12 x 18 for Mac</td>
<td>$1099.00</td>
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<tr>
<td>Pro 12 x 18/16-button for IBM PC</td>
<td>$999.00</td>
</tr>
<tr>
<td>Pro 12 x 18/4-button for IBM PC</td>
<td>$999.00</td>
</tr>
</tbody>
</table>

**LCL™ Graphics Tablet**
- For IBM PC, PS/2 and compatibles and Apple Macintosh personal computers
- Rugged enough to stand up to the rigors of a construction site, its thin design (0.9" profile) and light weight (under 30 lbs.) make it very portable
- The durable, 1-piece, high-pressure laminate surface protects internal components
- Multiple output format—Microgrid® UIOF and GTCO compatibility for use with all major software packages, including cost estimating, CAD and facilities management applications
- Connects the Summagraphics LCL to your Macintosh II or SE using the optional Apple Desktop Bus™ (ADB®) interface
- Input devices—2- or 3-button stylus and 4- or 16-button cursors
- Optional lightweight stand

<table>
<thead>
<tr>
<th>LCL</th>
<th>Price</th>
</tr>
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<tbody>
<tr>
<td>36 x 48</td>
<td>$2499.00</td>
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</table>
COLOR PRINTERS

Phaser II PXS IPDS Color PostScript Printer
- 300 dpi
- Thermal transfer
- Color PostScript compatible
- 35 typefaces standard
- Downloadable fonts
- Compatible with GDDM applications
- AppleTalk, RS-232, coax interfaces
- 68020, 16MHz, 6-10M byte RAM
- Automatic port switching
- Same faces as LaserWriter
- Use with typefaces from Adobe, Bitstream and others
- Ideal for presentations from IBM mainframe software
- Also connects to Macs, PCs, PS/2s and compatibles
- Serves different computers with no user intervention
- Accepts print jobs and prints simultaneously with optional expansion RAM

$10,990.00

Phaser II PXN Color PostScript Printer
- 300 dpi
- Thermal transfer
- Color PostScript compatible
- HP 7475A emulation built in
- Supports Unix 4.3 BSD and System V with LPR extensions
- 68020, 16MHz, 6-10M byte RAM
- Automatic port switching
- Multi-tasking (with optional memory expansion)
- Easiest connects to workstations, PCs and Macintosh computers

$10,995.00

Phaser II PX Color PostScript Compatible Printer
- Thermal-wax transfer technology
- 300 dpi resolution
- PostScript language compatibility
- Designed with networks in mind; simultaneously handles input from Macintosh, IBM PC and PS/2 computers and workstations automatically
- Proprietary imaging techniques
- Certified Pantone color simulations
- Cut-sheet paper and transparency film
- HP-GL for applications that do not support PostScript
- On-board memory processor
- Standard 6M byte RAM expandable to 10M byte RAM
- SCSI port for external hard disk
- 3 media choices

$7,995.00

RGB II Color Screen Printer
- 300 dpi color
- Thermal transfer
- 4 sec. offload
- Auto calibration
- Finished prints in 43 sec.
- Fiber optic cable
- Windowing
- Sheet fed
- Up to 8 ports
- Multi-tasking

$6,500.00

Phaser II DX/DXN Network Color Image Printer
- 300 dpi
- Thermal wax transfer technology
- Thick/thin Ethernet interface
- 16 million colors
- Sheet fed
- 68020 processor
- 4-12M byte RAM
- Sun Open Look compatible
- X-Window compatible

$8,995.00

Phaser II SX Color Printer
- Thermal-wax transfer technology
- 300 dpi resolution
- Built-in image decompression data handling
- Macintosh printer driver with background printing; access to all QuickDraw compatible applications
- Windows 3.0 printer driver for PC environment
- Freedom of Press for host-based PC and Macintosh PostScript compatibility
- Adobe Type Manager (ATM) for high resolution fonts
- TekColor compatibility for the Macintosh
- 1M byte RAM
- SCSI and parallel interfaces
- 3 media choices
- Modular construction for upgradeability
- Optional 3-parallel-port multiplexer
- 4M byte memory upgrade

$4,995.00

ColorQuick Ink-jet Printer for PCs
- Drop-on-demand ink-jet technology
- 216 dpi resolution
- Up to 16.7 million colors through software dithering
- Centronics port on the printer
- Tek PC printer drivers
- Several media choices: plain paper, coated paper, transparency film
- Wide range of media sizes: A (8.5" x 11"), legal (8.5" x 14"), B tabloid (11" x 17"), A4 (210mm x 297mm), A3 (297mm x 420mm), oversize (12" x 18"); paper, roll, 11"; transparency film: A and A4 cut-sheet, 11" roll
- Upgrade available for PostScript and HP-GL compatibility
- Different media feed methods: automatic sheet feeder, roll feed, manual feed, optional tractor feed
- Special inks
- Ink indicators on printer

$2,345.00

ColorQuick Ink-jet Printer for the Macintosh II or Larger
- Drop-on-demand ink-jet technology and Tektronix formulated inks
- 216 dpi resolution
- Special inks
- Ink indicators on the printer and in Macintosh status window
- Quick color prints (lettersize with 256-color palette) in about 2 minutes
- SCSI (Small Computer Systems Interface) port for connecting the printer to a Macintosh II
- Color printer dialog boxes
- TekColor matching
- 32-bit QuickDraw compatibility
- Upgrade available for PostScript compatibility
- Precision printing
- Up to 16.7 million colors
- Font disks with 11 typeface families
- Several media choices: plain paper, coated paper, transparency film
- Wide range of media sizes: paper, cut-sheet: A (8.5" x 11"), legal (8.5" x 14"), B tabloid (11" x 17"), A4 (210mm x 297mm), A3 (297mm x 420mm), oversize (12" x 18"), A4 (210mm x 297mm), A3 (297mm x 420mm); paper, roll, 11"; transparency film: A and A4 cut-sheet, 11" roll
- Different media feed methods: automatic sheet feeder, roll feed, manual feed, optional tractor feed

$2,345.00

Prices and Specifications Subject to Change Without Notice.

Tektronix
The best and the brightest.
LUMENA® 16/32™
LUMENA (version 3.34) is an IBM-PC/AT or 386-based graphics/paint program for the design and production of professional-quality images. Developed for visual communications professionals, LUMENA is a comprehensive program with over 250 versatile tools which can be utilized to create sophisticated images from a palette of 32,000 or 16.7 million colors. LUMENA's power is in integrating traditional and computer-generated images, providing designers with extensive flexibility in utilizing and manipulating diverse source materials.

Input
- Flat art slides or photographs
- Real world 3-D objects including fabrics and textures
- Segments from existing videotape
- Live video images
- Free-hand drawings using stylus and graphics tablet
- Image files from other software

Output
- Color hardcopy from printers and plotters
- 35mm slides
- 4" x 5" and 8" x 10" transparencies
- Videotape

User Interface
- Intuitive menus
- Customizable menu display
- On-line help
- Permanently displayed status and prompt areas

Color Selection
- 32,000 or 16.7 million colors
- RGB, CYM, and HSV numerical color bars
- Color palette menu
- Custom palette creation
- Color selection from screen image
- Gradations with up to 32 control colors for square, rectangular, circular and elliptical fills

Draw
- All standard drawing tools including hollow or filled shapes and T-square
- Anti-aliased shapes
- Selectable pen sizes
- Image elements selectable for special manipulation (e.g., user-definable cells for fades, brushes, etc.)

Paint
- Artist brush
- Air, chalk, clone, colorrun, smear, custom, pull, stretch, tint, smooth, stir, texture, pressure and water brushes

Image Enhancement
- Emboss, postcard, pixellate, transparency, contrast, perspective, fade, color filters and sharpness

Oasis
Oasis is color image creation software with videographic tools for the Macintosh where ideas can be visualized and explored. Oasis offers video tools designed to meet the needs of the emerging desktop video market. This unique component includes features such as: HLS color model, video legal palette, graphics overlay, alpha channel support, luminance key and video capture.

Brushes
Customizable attributes let you simulate the effects of virtually any traditional art medium:
- Airbrush
- Artist brush
- Solid brush
- Stretch
- Tint
- Saturate
- Valuate
- Soften
- Smear
- Clipboard brush
- Colorize
- Eraser
- Gradiation
- Pull
- Reveal from underlying document

Brush Attributes
- Continuous
- No buildup

Pressure-Sensitive Attributes
- Brush size
- Density
- Gradation

Artist Brush Attributes
- Color blend
- Dry-out speed
- Feathered edges
- Wetness/stretch

Lines/Shapes
- Circles/ellipses
- Filled/hollow shapes
- Lines
- Open/closed curves
- Polygons
- Rectangles/squares

Fill/Gradients
- Solid or transparent fill
- Fill with special effects
- Gradation cycles
- Gradation direction
- Radial gradation
- Linear gradation
- Shape gradation

Text
- Any system font
- Up to 1000 point type
- Justification (L, R, C)
- ATM/TrueType compatible
- Standard text styles
- Anti-alias

Selection
SuperSelect lets you select areas with most tools:
- Lasso expands or shrinks past background or touched colors
- Marquee
- Masks
- Reverse selection
- Select last operation

Color Palette
- HSV, RGB, CMY color models
- Mix with airbrush or smear tools
- Color storage boxes
- Copy and swath for color matching
- Dynamic color grading

Layout and Assembly
- Move, copy, size, scale, rotate, spin, remap, warp, rulers, snap-to grids, trim, masks, cut and paste

Text
- Anti-aliasing
- Outlined or hollow fonts
- Adjustable drop shadows
- Tit, rotate, move or scale functions
- Automatic or manual kerning and leading
- 54 vector fonts
- Text on splines and curves
- Prints vector fonts on raster images

Special Effects
- 3 mask modes: Write, Protect and Stencil
- 7 special Draw modes, including Saturate, Colorize and Transparent
- 10 special Move modes, including Tint, Valuate, Block, Over, Shadow and Density
- Combined with other tools and modes multiply the range of effects
- Soft edge masking (Vista)

Animation
- Cell, stop-frame and history
- 2-D metamorphosis

Hi-Res Support
- Supports images up to 4K x 4K resolution
- Vector output to film recorders up to 4K x 4K resolution
- Images may be scanned in at or interpolated up to high resolution

Support
- Over 250-page documentation with separate tutorials
- On-line help for all tools
- 24-hour Bulletin Board System technical support
- 90-day free telephone support to registered end users

LUMENA/16/32/VT/S6T
3.34 $2495.00

Video-Out
3.34 495.00

LUMENA/VISTA
3.5 3995.00

Video-Out
3.5 495.00

Text Options
Fonts-Pro Classics (16)
795.00

Fonts-Pro Designer (16)
795.00

Fonts-Pro Vogue (16)
795.00

Stand-Alone Modules
Film Factory
1.0 695.00

Print-Out
2.0 495.00

SOFTWARE

Hi-Res Support
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Stand-Alone Modules
Film Factory
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Print-Out
2.0 495.00

Additional Key Features
- Supports Adobe Photoshop™ Acquire/Export plug-in modules for input and output
- Supports PICT, TGA, and TIFF file formats
- Chooser level print and film output
- Display device independence
- Full support of QuickDraw™ accelerators
- Memory available indicator
- Open multiple documents simultaneously
- Personal preferences for system setup
- Realize documents

System Requirements
- Macintosh® LC, II, Ix, Icx, Ll, Iilli, lilli or Iff
- Color or gray scale monitor
- 5M bytes of system memory
- 32-bit QuickDraw™ System 6.0.5 or later
- Pressure sensitive tablet and stylus (recommended)

Oasis

Prices and Specifications Subject to Change Without Notice.
VIDEO GRAPHICS BOARDS

NuVista +® Video Graphics Board
By integrating its powerful video features with the Macintosh® II, the NuVista+ video card makes it easy for you to create professional animation, to overlay graphics and text onto a live video source, or to videotape presentations. Simply connect the NuVista+ to your VCR and record. Plus, with features like digital linear and chroma keying, it’s simple to achieve professional results.

Making the right connections simplifies most projects. So the NuVista+ offers composite and S-Video encoding and decoding on-board, making it easy for you to connect to any video source. No external peripherals are needed, no extra costs are incurred. And the results are broadcast-quality, thanks to our proprietary third-generation encoder/decoder technology.

The encoder and decoder adjustments are accessible from any application through the control panel. Controls for signal source selection, tint, color, brightness and contrast are all easy to use. Simultaneous output of composite, S-Video and analog RGB allow you to monitor your video project while it’s taping.

The linear keying functions are accessible from the control panel and let you fade to any color or blend live video with computer generated text and images. You can specify transparency level and duration for professional transitions. You can choose any color, even in 32-bit/pixel mode, to overlay a computer-generated image or animation onto live video.

The chroma key function lets you dynamically merge live video with computer-generated graphics for special effects. For example, television weather reports use chroma keying by placing the meteorologist in front of a blue screen and then merging the weather maps wherever the blue color appears on-camera.

NuVista+ With 1M byte ......................................... $2995.00
Post Sale Upgrade Policy
Upgradable to 2M byte or 4M byte for $600.00 if at time of purchase, or $750.00 if after original purchase.
VideoScript Software for NuVista+ ..................... $495.00

TARGA+® Video Graphics Board
Digital chroma keying lets you superimpose a live video image over a computer generated graphic for special effects and other uses. Chroma key capture lets you digitize the composited image.

Memory configurations are upgradeable, so your TARGA+ can grow in power as your needs dictate. Every TARGA+ 16/32 will run all TARGA software, in 16, 24 or 32 bit per pixel modes.

Digital linear keying offers 256 levels of blending, fades to any color and smooth crossfading of images for transitions.

TARGA+ is available for AT and Microchannel (MCA) buses. Existing TARGA software will run on PS/2 machines operating under MS-DOS.

Three 8-bit lookup tables provide color/gamma correction or 8-bit/pixel color cycle effects.

Larger memory options allow off-screen buffering and 'hidden' capture of images, and can be segmented in many different configurations.

TARGA+ integrates the original TARGA 16, 24 and 32 bit/pixel boards into one card. With enough memory, a TARGA+ board can run any compatible software program, regardless of bit/pixel requirements.

Third generation genlock is more robust, and syncs to virtually any external video source flawlessly.

Composite and S-Video decoding is on board. Simultaneous output of RGB, composite and S-Video is provided for maximum flexibility.

VGA pass-through and overlay capabilities are now on board, so you can overlay VGA animations with TARGA files (non-interlaced modes only). This also allows for a single monitor solution, where you boot up in VGA mode and then switch to TARGA mode using a single keystroke.

TARGA+ 16 .............................................................. $1795.00
TARGA+ 32 .............................................................. 1995.00
TARGA+ 64 .............................................................. 2495.00

TARGA M8 Video Graphics Board
Color Resolution: 256 gray levels; or 256 colors from a palette of 16,777,216
Input Signals: 4 RS-170 compatible (black/white) video channels, or analog RGB (for sequential color capture); Digital RGBI input (for pass-through of CGA output)
Output Signals: analog RGB monochrome, RS-170 composite video
Overlay Capability: overlay live input with memory (1 entry in color look-up table)
Memory: 8 bits/pixel, 256K bytes
Overscan: optional

TARGA M8 ................................................................. $1995.00

ATVista® Video Graphics Board

<table>
<thead>
<tr>
<th>ATVista</th>
<th>ATVista</th>
<th>ATVista</th>
</tr>
</thead>
<tbody>
<tr>
<td>1M byte</td>
<td>2M byte</td>
<td>4M byte</td>
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<td>PC Host</td>
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<td>Data Bus Width</td>
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<td>Row Table</td>
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<td>Pan</td>
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<td>VMX Expansion</td>
<td>2-10M bytes</td>
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<td>Video Memory Upgrade</td>
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<tr>
<td>No</td>
<td>2M bytes</td>
<td>4M bytes</td>
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</tbody>
</table>

ATVista 1M byte ...................................................... $2995.00
ATVista 2M byte ...................................................... 3595.00
ATVista 4M byte ...................................................... 4795.00
2M byte VRAM upgrade (2M byte to 4M byte) ................... 1500.00
Upgradeable DRAM as follows:
ATVista 2M byte ...................................................... $400.00
ATVista 4M byte ...................................................... 800.00
ATVista 6M byte ...................................................... 1200.00
ATVista 8M byte ...................................................... 1600.00
ATVista 10M byte .................................................... 2000.00
ATVista 12M byte .................................................... 2400.00

Prices and Specifications Subject to Change Without Notice.
**Truevision**

**Video VGA** Video Graphics Board
- 100% register and BIOS compatible in all standard modes
- The card is auto-switchable between 8- and 16-bit bus transfer rates, and works with any ISA platform machine
- 256 colors are selectable from a palette of 262,144
- Software drivers and utilities provide access to all major MS-DOS programs and file conversion utilities for TGA images
- User-switchable for booting in either VGA or interlaced NTSC mode
- Connectors include: 15-pin D type VGA connector, 6-pin DIN connector for S-Video input and output with VideoVGA cable, standard VGA feature connector on top of card
- Video overlay and keying let you select a color from the 8 bit/pixel VGA graphic and replace it with true color, live incoming video
- Recordable VGA output, so programs like AutoDesk® Animator™ can go directly to VCRs
- Connects to any IBM PC, XT, AT or compatible with a standard 50-pin DIN connector
- Connects to IBM color display monitor with a standard RCA connector

**Horizon 860-OMB™ Processor Card**
The Horizon 860-OMB offers you a 33MIPS, 66MFlops microprocessor, up to 64M bytes of dedicated memory and a super-fast data bus, all in a single slot board for your AT.
- The on-board Intel i860™ microprocessor is known for high speed, and the HorizonBus™ adds unmatched performance. The 64-bit wide, high throughput HorizonBus moves data at a maximum burst rate of 24M bytes/second. Future HorizonLine™ products will use the HorizonBus to offer new realms of power for all data-intensive applications.
- Upgradeable DRAM as follows:
  - 4M byte board ........................................... $1000.00
  - 8M byte board ........................................... $2000.00
  - 16M byte board ......................................... $3000.00
  - 32M byte board ......................................... $4000.00
- RenderPak™ includes Horizon860 with 8M byte and RenderMan™ ........................................... $7995.00

**Image Capture Board (ICB)**
The ICB is the original frame capture card for the IBM PC, XT, AT or compatible. It lets you capture full-color images from any conventional video source in real time and display them on analog RGB or composite video monitors at resolutions up to 256 x 240 pixels. Its 16 bits per pixel enable the ICB to produce continuous-tone images of striking clarity and realism, while its moderate spatial resolution makes it the right choice for applications where file size is an important consideration.
- ICB .......................................................... $1295.00

**Video Display Adaptor With Digital Enhancement (VDA/D)**
When you need an inexpensive, display-only videographics board, choose the VDA/D. You can use the VDA/D with your IBM PC, XT, AT or compatible to create original graphics from scratch or to display images captured with the ICB. Like the ICB, the VDA/D provides resolutions up to 256 x 240 pixels. The VDA/D uses color look-up tables to display 256—or as many as 1008—colors from a palette of over 32,000 colors, giving you amazing picture quality with low memory overhead. And the VDA/D can display your images on analog RGB monitors, composite video monitors and even the standard IBM color display monitor.
- VDA/D .......................................................... $695.00

**VIDI/O™ BOX Encoder/Decoder**
Our video encoder/decoder is a useful companion to any Truevision videographics adaptor. The VIDI/O BOX is a stand-alone unit full of features providing a range of video input and output options: analog RGB can be encoded to composite video or S-Video, the high-quality standard for Super VHS and ED Beta; and composite video or S-Video can be decoded to analog RGB. Thus, with the VIDI/O BOX, standard video input and output devices such as cameras, VCRs and monitors can be connected to your Truevision videographics adaptor. Other important features include loopthrough of all inputs; subcarrier phase, hue and saturation adjustments; genlock; and blackburst generation capability.
- VIDI/O BOX ................................................... $995.00

**Software**
- TIPS™ for TARGA + 16/32—Including TIPS Typeright ........... $795.00
- TIPS for 4M byte ATVista ................................... $1795.00

Prices and Specifications Subject to Change Without Notice.
Executive Presenter

The Executive Presenter is designed for use in corporate boardrooms, presentation rooms or permanent installations when high quality visuals are needed to support speeches or complete presentations.

The Presenter is a total turnkey playback system for graphics, real “photographic” visuals and live video. Complete with its own wireless remote control, it delivers your electronic presentation with confidence and ease.

The system “plays” all TVL Executive created presentations, or creates shows automatically using any TVL Executive, TVL Producer, VideoShow (.PIC) or Targa (.TGA) visual files. Using the optional Workstation Package, the Presenter is also capable of creating its own visuals with all TVL Executive software creation functions. After the visuals are created, the system presents them with hundreds of special effects and transitions. And, because the Presenter is hard disk based, the size of visuals and length of presentation is never an issue.

Automatic Special Effects

The Presenter creates presentations with hundreds of automatic speed definable transitions and special effects such as true dissolves, wipes, pans and “living” charts that actually “grow” to focus audience attention on your data.

Truly “Live” Presentations

Special effects and transitions—“living” or “growing” charts and graphs, real “photographic” images and the ability to incorporate live video camera or tape—all combine to give you a powerful presentation.

Make Last Minute Changes

Because the Executive Presenter is electronic and has an optional Workstation Package for complete creation capabilities, all you need to do is attach your Presenter monitor, keyboard and mouse to easily make any last minute changes and updates. This represents a major competitive and cost advantage over taped productions, slide shows or any other electronic system available today.

TVL Compatibility

Besides being compatible with all images created on the TVL Executive and TVL Producer, the Presenter is also disk compatible with all PIC (VideoShow) and .TGA (Targa) file formats. This feature enables the Presenter to directly “play” images created on many popular software packages in use today.

Presentation Options

The Presenter delivers your presentation reliably with its own wireless remote control. The remote control functions include forward, reverse and a ‘menu’ listing of available shows in the system. It also can be directly wired to any permanent remote control system previously installed in a boardroom or presentation room.

Configuration Options

The Executive Presenter is available as a turnkey playback system complete with wireless remote control and rackmounting capabilities for permanent installations. In addition to playback, the Workstation Option gives the Presenter all the Executive creation capabilities by adding its own EGA monitor, keyboard and creation software.

Presentation Software

After presentations are created, the Presenter delivers your visuals with a variety of automatic, speed programmable transitions and special effects. The Presenter also accepts live video with its built-in real-time (1/30 second) image capture.

Special Effects

• True dissolves
• Pans
• “Living” or growing charts
• Cube turns
• Wipes
• Mosaics
• Highlights
• Tumbles

Workstation Option Software

The Executive Presenter Workstation Option software package offers a wide selection of style sheets to choose from and modify to tailor to each specific application. The software comes with its own Text, Chart and Draw packages, and creates real “photographic” visuals with its built-in image capture capability.

Executive Director

Adaptable—Characterized by a 32-bit true-color display • Video output boosted to 1024 lines (vertical) • MicroSoft Windows 3.0 operating system • High-speed image display • High-resolution text and graphics • Animated charts and graphs • Built-in image capture • Image cropping • Cut and paste • Graphics over live video • Live video in a box • Exciting special effects library • Wireless remote control • Imports Targa files (.TGA) • Imports VideoShow files (.PIC)

The Executive Director is a complete, desktop video creation and presentation system. With the Executive Director you can create eye-opening computer graphics and high-resolution video pictures and then present them with a variety of special effects. Designed for the corporate presenter as well as the upscale meeting producer, the Executive Director lets you transform even an everyday meeting into a dazzling special effects experience. With high-resolution text and graphics, animated charts and graphs, high-quality pictures, studio-quality special effects and the ability to put graphics over live video, the Executive Director can make you the star of the show.

Executive Director .......................................................... $11,995.00

Executive Director Workstation Option .................................. $9995.00

Executive Director Workstation Option (includes monitor, keyboard and mouse) .................................. 1000.00

Prices and Specifications Subject to Change Without Notice.
VanSan Corporation

Floor Model Lecterns

Encore Series 300

Versatility is the key feature of the Encore Series lectern. A unique two-part construction allows the top section to be removed for tabletop use. Clean architectural lines are accentuated with brown laminate reveal, base and work surface. Brass reveal and base are available as special order. Recessed wheels offer ready mobility. Encore options include self-contained AC/DC sound system and "Lectrajust" height control.

<table>
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Conference Series 500

This is the basic unit designed to function on a day-to-day schedule. Equipped with light and digital clock, plus recessed wheels for easy mobility. Available with self-contained AC/DC sound system.

<table>
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Classic Series 600


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</table>

President Series 700

With its deep reveal, a perfect accent to a modern wood decor. Available with "Lectrajust" height control and/or self-contained AC/DC sound system. Includes light and digital clock plus, recessed wheels for easy mobility.

<table>
<thead>
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Direction Series 2700

Multi-faced and multi-dimensional, this lectern expresses a clean architectural concept. Overhang design creates a larger work surface. Includes light and digital clock. Available with "Lectrajust" height control and/or self-contained AC/DC sound system.

<table>
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Table Model Lecterns

Models 1300-40, 1500-40, 1600-40, 1700-40...

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Optional Accessories

- Laser pointer: $418.00
- Microphone, low impedance: $175.00
- Microphone, dynamic lavalier: $325.00
- Microphone adaptor: $10.00
- Microphone support arm: $50.00
- Speaker, deluxe extension: $150.00
- Clock, LED with countdown timer: $60.00
- Light, incandescent: $50.00
- Light, incandescent with remote dimmer: $70.00
- Receptacle, electrical, 3 outlet: $50.00
- Battery, 12V rechargeable: $145.00
- Quilted Pad for lectern:
  - Model LE-22, LE-30, LE-86, LE-77: $80.00
  - Models 200, 300, 500, 600, 700: $150.00
  - Models 1300-32, 1500-32, 1700-32: $175.00

Prices and Specifications Subject to Change Without Notice.
DIGITAL VIDEO ADAPTORS

DVA-4000/Macintosh Full Motion Digital Video Adaptor for Apple Macintosh
- Outstanding picture quality at any window size
- Smooth video, graphics and audio integration
- Freedom to choose sources and standards
- Powerful image capture
- Leading multimedia applications support
- Multiple platform support

The DVA-4000/Macintosh full motion digital video adaptor integrates and displays high quality live video on any standard Macintosh II monitor. The DVA-4000/Macintosh provides full real-time manipulation of every aspect of moving video images, including size, position, brightness, saturation, contrast, sharpness and hue. It has been developed using advanced design and manufacturing techniques, making extensive use of proprietary VLSI and surface mount technology. The double scanned, non-interlaced output produces a very sharp, high resolution image with absolutely no text or graphics flicker. The DVA-4000/Macintosh accepts input from any source—VCR, camcorder, laserdisc player or tuner in both NTSC and PAL standards.

DVA-4000/Macintosh and M.I.C. System II software support leading Macintosh multimedia development tools such as HyperCard®, Authorware Professional®, MacroMind Director®, MacroMind MediaMaker® and many others, enabling you to select the right multimedia tool for each job.

With DVA-4000/Macintosh, video resides in a dedicated place and does not affect graphics. This makes it a straightforward process to convert existing 2-screen multimedia applications to a single screen by fading between separate graphics and video screens to show both on a standard Macintosh 13" RGB monitor. $2995.00

DVA-4000/ISA Full Motion Digital Video Adaptor for PC, XT and AT
- M.I.C. System software support
- Functionally compatible with DVA-4000/MCA
- Uses standard VGA computer monitors
- Full screen VGA overlay in all modes
- No penalty for video—flicker-free non-interlaced display
- Full motion digital video at 30 frames/second (NTSC) or 25 frames/second (PAL)
- Software controllable picture content, hue, saturation, contrast and brightness
- Video, audio and graphics mixing
- Software controllable color attributes—opaque, translucent and transparent available simultaneously
- Software controllable treble and bass
- 2 switchable input sources from NTSC, PAL, composite video, RGB, S-VHS
- Designed to work with future storage technologies such as CD-I and DVI
- Software selectable field or frame mode
- Identical aspect ratios between NTSC and PAL, providing a standards-independent publishing platform
- Image capture onto conventional magnetic media
- Video windowing, scaling, positioning
- Picture in picture
- Multiple live video windows
- Privileged screen areas
- Multiple stills per frame, e.g., quad splits
- Designed for hypermedia applications
- Over 1000 existing off-the-shelf generic applications to choose from

DVA-4000/ISA is based on Digital Video Architecture (DVA). It works with today’s analog technologies, such as videodisc, satellite feed, off-air TV and video cameras, and future digital storage technologies such as DVI, CD-I and CD-ROM/XA.

DVA-4000/ISA is designed for use with industry standard architecture (ISA) computers including IBM PC, XT, AT and compatibles with VGA graphics capabilities. More than a simple VGA overlay card, DVA-4000 is a powerful digital video adaptor providing full, real-time manipulation of every aspect of moving video images including size, position, brightness, saturation, contrast and hue. In addition, DVA-4000’s double scan, non-interlaced output produces a very sharp, high resolution image with absolutely no text or graphics flicker. Unlike other systems, DVA-4000 uses standard VGA computer monitors. High quality stereo audio support can be provided by attaching headphones or personal stereo speakers. $2495.00

Prices and Specifications Subject to Change Without Notice.
DVA-4000/MCA Full Motion Video Adaptor for PS/2

- Digital video adaptor for the IBM PS/2 and Micro Channel Architecture compatibles
- M.I.C. System software support
- No graphics card required—single slot
- Functionally compatible with DVA-4000/ISA
- Uses standard PS/2 monitors
- Full screen VGA overlay in all modes
- No penalty for video—flicker-free non-interlaced display
- Full motion digital video at 30 frames/second (NTSC) or 25 frames/second (PAL)
- Software controllable picture content, hue, saturation, contrast and brightness
- Video, audio and graphics mixing
- Software controllable color attributes—opaque, translucent and transparent available simultaneously
- Software controllable treble and bass
- 2 switchable input sources from NTSC, PAL, composite video, RGB, S-VHS
- Software selectable field or frame mode
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- Picture in picture
- Multiple live video windows
- Privileged screen areas
- Multiple stills per frame, e.g., quad splits
- Designed for hypermedia applications
- Over 1000 existing off-the-shelf generic applications to choose from

DVA-4000/MCA incorporates Digital Video Architecture (DVA). This technology integrates television sources including videodisc, off-air broadcasts and digital video sources, such as CD technologies, into the world of the personal computer. DVA-4000 has been designed for use with IBM's range of PS/2 computers which have built-in VGA graphics and an MCA bus. Far more than a simple VGA overlay card, DVA-4000 is a powerful digital video adaptor providing full manipulation of every aspect of live video images including size, position, brightness, saturation, contrast and hue in real time. In addition, DVA-4000's double scan, non-interlaced output produces an extremely sharp, very high resolution image with absolutely no text and graphics flicker. DVA-4000's overlay capability, using any standard VGA monitor, extends to all 17 VGA modes.

Until now, interactive video systems have provided a full screen video image, most of which could be overlaid with computer generated text and graphics (even though the size and position of an overlay differs between an NTSC and a PAL system).

Although windows could be placed anywhere on the screen, revealing the portion of the video beneath, current systems have not been able to scale the full screen of video into a window. DVA-4000 changes all this and revolutionizes interactive video by providing total manipulation of a full-motion video image: overlays can now cover the entire screen. NTSC and PAL overlays look exactly the same and a full screen of video can be scaled to any size and placed anywhere on the screen. DVA-4000 also controls video brightness, saturation, contrast and hue and provides fades, dissolves and other special effects available for the first time anywhere.

DVA-4000/MCA ........................................... $2495.00

DIGITAL VIDEO ADAPTORS

DVA-4000/MCA

Mediator

- Professional quality NTSC and PAL video output—VHS and S-VHS
- Automatic switching between Macintosh and VGA inputs
- Anti-flicker filtering
- Fast and easy setup
- Genlock facility
- Freeze frame
- Portable

Mediator converts standard analog RGB Macintosh or VGA graphics from your computer to a composite or S-Video signal in either NTSC or PAL. This allows you to record the output onto a wide range of videotape formats, including S-VHS, Hi8, VHS and Video 8. If you don’t want to make recordings, you can simply display the video output on a color video projector, LCD video projector, standard video monitor or domestic TV. Mediator is the first portable, multi-standard system which provides professional quality output at an affordable price. Mediator requires no special hardware or software to be installed in your computer and allows you to view the output simultaneously on your computer screen and video monitor.

Mediator can be used together with digital video adaptors such as VideoLogic's DVA-4000 series to produce high quality multimedia presentations at a fraction of the cost of conventional production methods. Applications such as Macromind MediaMaker®, Macromind Director®, Authorware Professional®, IBM Storyboard Live® and Autodesk Animator® are ideal for use with Mediator.

Mediator can be used in many desktop video application areas including:
- Recording multimedia presentations
- Large screen, live computer/video presentations
- Producing training and promotional videotapes
- TV broadcasting

An intuitive menu ensures that Mediator can be easily set up to give high quality output in a variety of popular formats. The front panel display and 5-button keypad give you control over:
- TV output standard—NTSC or PAL
- Overscan/underscan
- Flicker reduction
- Picture sharpness
- Gamma correction
- Test pattern selection
- Graphics alignment
- Returning to factory settings
- Freeze frame

Mediator automatically detects whether you have connected an Apple Macintosh or an IBM PC XT/AT® or PS/2® (or compatible) VGA computer, thus eliminating any complicated setup procedure. The correct TV aspect ratio is maintained for all supported graphics modes in NTSC and PAL.

Mediator ........................................... $2995.00

Prices and Specifications Subject to Change Without Notice.
SCAN CONVERTERS/ ENCODER

CVS-910 Scan Converter
- Automatically adjusts to various types of computer RGB signals and converts these into broadcast-quality NTSC or PAL television standards
- Both analog and TTL inputs from non-interlaced and interlaced computers are automatically accepted, as well as horizontal scan frequencies of 15kHz-40kHz
- Works with CGA, EGA, PS/2, Macintosh and IBM 8514A
- Offers vertical and horizontal sizing and positioning by front panel controls or remote RS-232C
- With its capability of adjusting the height and width of the converted picture, the CVS-910 solves the gap problem created when converting EGA graphics (350 lines high) to NTSC video (480 visible lines high)
- Zoom function allows you to enlarge the graphics output of PC-level computers, thus increasing the legibility of text and smaller images which are often difficult to see when converted to NTSC
- Built-in flicker elimination
- Freeze and broadcast genlock sync generator and color encoder conform completely to EIA RS-170A or EBU standards

CVS-910

CVS-950A Scan Converter
- Real time auto scan converter
- Adjustment-free, automatically converts any high resolution non-interlaced workstation to NTSC RS-170A or EBU
- Horizontal scan frequency: 47kHz-80kHz, automatic locking non-interlaced
- Automatic locking to sync on green, HD/VD, composite
- Adjustable aspect ratio and picture position
- Flicker elimination
- 8-bit real time processing
- Color bar output
- Broadcast quality encoder conforms to EIA, RS-170A and EBU standards
- Genlock and superimpose functions
- Outputs: Beta/M1, ED Beta, S-VHS, VHS, 2 channels each of composite and superimpose
- Frame interpolation to convert all pixels

CVS-950A

CVS-970 Automatic Down Converter
- Converts high resolution computer graphics and CAD drawings from workstations to HDTV and 30kHz interlaced and non-interlaced formats
- Real time 24-bit processing
- Accepts horizontal scan frequencies from 47kHz-80kHz
- Picture size adjustment to HDTV 16:9 (or any aspect ratio)
- 16-step flicker elimination, freeze
- Outputs: RGB/sync, Y, P_r, P_b, HD sync, VD sync

CVS-970

CVS-980 Scan Converter
- Wide range auto-locking scan converter for all interlaced and non-interlaced computers
- Real time 24-bit processing
- Accepts horizontal scan frequencies of 15kHz-80kHz from PCs, workstations and mainframes
- Zoom, 4-position memory, picture size adjustment of height and width
- 16-step flicker elimination and color encoder
- Outputs: RGB/sync, Y/C, Y, R-Y, B-Y and composite

CVS-980

ENC-3000 Color Encoder
- Internal genlock sync generator
- Sync locked subcarrier function for genlocking to computer output
- RGB, Y, R-Y, B-Y and Beta input compatibility
- 4 encoded outputs
- Automatic sync and burst detector
- Internal color bar generator
- Meets EIA RS-170A or EBU standards

ENC-3000

SW-950 Routing Switcher
- 4 inputs by 1 output for RGB, sync, HD/VD signals
- 100MHz bandwidth
- High isolation relay switching

SW-950

DIA-950 Distribution Amplifier
- Wide bandwidth
- 1 input by 4 isolated outputs for distribution of RGB, sync, HD/VD, 80MHz + .5dB 75 ohms
- Companion unit for SW-950

DIA-950

Prices and Specifications Subject to Change Without Notice.
Zenographics

GRAPHICS SOFTWARE

DOS Compatible Products

Mirage V 5.22
A complete working environment for users who need top quality output for a wide variety of presentation graphics requirements. ........................................ $1795.00

SuperFonts V 1.0
22 scalable typefaces for Mirage users. With Mirage, provides the simulation of 35 typefaces found with PostScript printers ...................... $195.00

EasyData V 1.0
Adds the facility to visually select and import Lotus, dBase and ASCII data into Mirage (5.2 and above). Permits capturing, compiling and editing data for Mirage charting ......................... $295.00

ImPort V 4.0
Provides the facility to import images into Mirage (5.2 and later) from a variety of sources, including Harvard Graphics, Lotus Freelance, AutoCad, VideoShow and others ...................... $295.00

ImPort Plus V 1.0
The functionality of ImPort, with the added ability to preview images and output them to a specific graphics device.
For HP PaintJet series ................. $395.00
For Tektronix 4693DX .................... 495.00

ImPort Plus Option V 1.0
Adds "Plus" functions to ImPort 1.0 for a specific graphics output device.
For HP PaintJet series ...................... $100.00
For Tektronix 4693DX ....................... 200.00

Speaker Support Library V 1.0
A library of over 300 speaker support symbols, including images of meetings, people, safety, hands, background templates and health related images. For use with Mirage 5.2 and above or Pixie 2.0 and above ......................... $195.00

Windows 3.0 Compatible Products

ImPort for Windows
Provides the facility to import images into Windows 3.0 from a variety of sources, including Harvard Graphics, Lotus Freelance, AutoCad, VideoShow and others ...................... $295.00

SuperPrint V 1.1
Fast, high quality output of text and graphics for non PostScript printers. Sharp, on-the-fly, WYSIWYG screen fonts. Virtually any typeface available to you in any size. Fast background printing.

Pixel V 2.0
Full color business graphics and presentation package for Windows 3.0. Flexible charting, color background sweeps, 3-D images, spell checking, Dynamic Data Exchange with Excel—all with direct manipulation of objects ......................... $295.00

SuperFonts Typefaces

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Prices and Specifications Subject to Change Without Notice.
BRETFORD

COMPUTER WORKSTATIONS

EC4 Computer Workstation is an “all-in-one” unit with enough roomy shelves to house your entire system. Keyboard and printer rest on roll-out, locking shelves. Keyboard shelf adjusts from 25-27” height. Printer shelf adjusts from 14-18” height and includes slot for paper feed.

EC4 24”W x 33”H x 18”D  50 lbs.  $223.00
EC4E 30 lbs.  $258.00

EC2 Computer Workstation (not shown) is a two-shelf model featuring a height-adjustable locking keyboard shelf (25-27”). Sliding shelf provides plenty of leg room.

EC2 24”W x 33”H x 18”D  28 lbs.  $159.00
EC2E 30 lbs.  $194.00

EC5-PB Computer Workstation (not shown) includes all the great features and design of the model EC10-PB, with the exception of the top shelf. Work surface: 36”W x 24”D. Putty finish only.

EC5-PB 36”W x 27”H x 24”D  59 lbs.  $292.00

EC7-PB Computer Workstation (not shown) is identical to model EC5, plus we’ve added a four-outlet electrical assembly with surge protection (as on the EC15-PB). Putty finish only.

EC7-PB 36”W x 27”H x 24”D  59 lbs.  $333.00

IF YOUR WORKSPACE REQUIRES A SMALLER TABLE FOR YOUR COMPUTER, TRY ONE OF THESE. ALL FEATURES 1” SQUARE TUBULAR STEEL LEGS AND STEEL FRAME. DIE-PRESSED SHELVES. 4” CASTERS (2 LOCK). ALL MODELS EXCEPT EC20 SHIP UPS. DURABLE PUTTY BEIGE POWDER PAINT FINISH. “E” MODELS INCLUDE A UL LISTED, TWO-OUTLET ELECTRICAL UNIT WITH 20-FT. GROUNDED CORD AND BUILT-IN CORD WINDER. ALL ITEMS SHIP DISASSEMBLED.

EC20-PB Computer Workstation also acts as a security center for your equipment when not in use. Adjustable interior shelf. Ventilated back panel. Medium oak wood doors swing back against putty beige cabinet and are held in place. Includes a 3 outlet electrical assembly, 20 ft. grounded cord and built-in cord winder. Cabinet interior: 36”W x 32”H x 24”D. Work surface is a 27” typing height. Top shelf measures 36”W x 15”D. Dependable two point locking system. Shown with WSPS1 sold below.

EC20-PB 36”W x 58”H x 25”D 146 lbs.  $574.00

Accessories

EC4PCB Paper Catch Basket for the model EC4. Attaches easily to the back of the unit and neatly catches printer output.

EC4PCB 24”W x 7”H x 13”D  4 lbs.  $33.00

WSPS1 Mini Printer Stand (shown on model EC20-PB) raises printers with 9½” paper capacities above the work surface. Slotted to accept bottom feed printers. Ships UPS assembled.

WSPS1 14 ½”W x 4½”H x 13”D  7½ lbs.  $29.00

WSPS2 Mini Printer Stand raises printers with 15” paper capabilities. Identical design to the model WSPS1.

WSPS2 21”W x 4½”H x 13”D 11 lbs.  $40.00

All prices FOB Schiller Park, IL. Prices are subject to change without notice

Quick ship items for immediate delivery (12-90)
BRETFORD

Heavy-gauge formed steel, arc-welded joints

TV MOUNTS

TVM I Video Ceiling Mount Bracket holds 17" to 26" monitors on the ceiling for large audience viewing. Load rated to hold up to 200 lbs. when securely mounted. Telescoping center beam allows the width of the yoke to be extended from 20" to 34½"—adjustable lower arms let the yoke extend down from 15" to 27". Mounting plates bolt to lower arms—literally locking monitor cabinet to mount. 20 degree maximum tilt.

TVM4/ TVM4VCR complete with safety belt

Adjustable platform holds up to 26" monitors

Textured Black Powder Paint finish

TVM4 Platform Video Wall Mount Bracket features a broad platform to hold and secure the monitor. Ideal for eye-level viewing situations. Platform adjusts to hold up to 26" diagonal monitors and features a 12 degree forward tilt. Load rated to hold up to 150 pounds when securely fastened. Complete with Bretford safety belt for extra security.

TVM4 21 lbs. $206.00

TVM4VCR Platform Video/VCR Wall Mount allows you the opportunity to mount your VCR directly below your monitor and place all your controls in one location. Identical features as the TVM4. VCR shelf adjusts from 8"-21" wide and accepts front-load or top-load models. Safety belt included.

TVM3 Video Wall Mount Bracket encompasses all the features of the TVM1 and adds a wall bracket adapter for secure wall mounting.

TVM3 37 lbs. $290.00

BRETFORD'S LINE OF "UNIVERSAL" TV MOUNTS MEANS YOU DON'T HAVE TO SWITCH YOUR MOUNTING HARDWARE WHEN YOU CHANGE MONITORS—BECAUSE THESE MODELS ADJUST TO FIT UP TO 26" DIAGONAL SCREENS.

SELECT WALL OR CEILING MOUNT CONFIGURATION. EACH IS CRAFTED FROM DURABLE, FORMED SOLID STEEL WITH A TEXTURED BLACK POWDER COATING FOR TOTAL STRENGTH AND RELIABILITY. ALL HAVE FULL LEFT/RIGHT SWIVEL CAPABILITY FOR ACCURATE VIEWING POSITION. TILT FEATURE ANGLES SCREEN TO AUDIENCE. ALL MODELS SHIP UPS, DISASSEMBLED. MOUNTING HARDWARE NOT INCLUDED.

All prices FOB Schiller Park, IL. Prices are subject to change without notice. Quick ship items for immediate delivery (12.90)
BRETFORD

VIDEO SECURITY CONSOLES

VTRCSOE Video Security Console is our mid-size unit featuring three adjustable shelves and twin dark oak locking doors which run the full length of the black metal cabinet. Recommended for use with up to 19” diagonal monitors. Cabinet interior: 28¼” W x 45½” H x 22½” D.

VTRC70E Video Security Console is our largest cabinet. Four locking dark oak wood doors divide the black cabinet—making it ideal for monitor storage on top with VCR and accessories below. Three adjustable shelves. Recommended for use with up to 26” diagonal monitors. Cabinet interior (top and bottom) measures 31” W x 29” H x 24½” D.

VTRC40E Video Security Console (not shown) features the same look as the unit above, but provides one-half the storage space. Two adjustable shelves behind two dark oak locking doors. Cabinet interior: 31” W x 29” H x 24½” D. Recommended for use with up to 19” diagonal monitors.

YOUR EXPENSIVE AV EQUIPMENT CAN BE LOCKED UP SAFE AND SECURE WITH A BRETFORD SECURITY CONSOLE. THEN WHEN YOU’RE READY TO GO TO WORK, SIMPLY UNLOCK AND FOLD BACK THE DOORS TO REVEAL YOUR EQUIPMENT.

EACH UNIT HAS IMPORTANT FEATURES LIKE ADJUSTABLE SHELVES, LOCKING DOORS ON PIANO HINGES, VENTILATED BACK PANELS, HEAVY-DUTY 4” BALL BEARING CASTERS (2 LOCK) AND A UL-LISTED, 2-OUTLET ELECTRICAL UNIT WITH 20-FT. GROUNDED CORD. EACH MODEL SHIPS DISASSEMBLED. ALL ARE MADE OF DURABLE STEEL.

VTRCSOE
30” W x 54” H x 23” D
$861.00

VTRC70E
33” W x 68” H x 25” D
$1244.00

VTRC40E
33” W x 38” H x 25” D
$719.00

Accessories

RAS Rolling Accessory Shelf fits models VTRC70E and VTRC40E and mounts easily—slides out of the way when not in use. Mounting hardware included.

RAS
32 lbs.
$80.00

RS Rolling Shelf fits model VTRC50E to provide easy access to your equipment. Complete with mounting hardware.

RS
16 lbs.
$74.00

All prices FOB Schiller Park, IL. Prices are subject to change without notice.

Quick ship items for immediate delivery

(12.90)
TV CARTS

VTR20 TV Cart features a recessed top shelf and wider bottom shelf. 2" ball casters. Top shelf is 30" W x 16" D—13" between shelves.

- VTR20
  - 30" W x 32" H x 20" D
  - 34 lbs.
  - $130.00

- VTR20E
  - w/ e-unit
  - 36 lbs.
  - $165.00

MP54DX-P4 TV Cart (shown with big wheel) has five full shelves for the ultimate mobile videotape editing or duplicating rack. 10" between shelves.

- MP54DX-P4
  - 30" W x 54" H x 20" D
  - 77 lbs.
  - $242.00

- MP54DX-E4
  - w/ e-unit
  - 79 lbs.
  - $277.00

- MP54DX-PW
  - w/ big wheel
  - 87 lbs.
  - $284.00

- MP54DX-EW
  - w/ e-unit & big wheel
  - 89 lbs.
  - $319.00

TS54-P4 TV Cart (not shown) features a glare-free top slant shelf. Three shelves—23" from top to middle shelf, 20" from middle to bottom shelf.

- TS54-P4
  - 28" W x 54" H x 24" D
  - 77 lbs.
  - $242.00

- TS54-E4
  - w/ e-unit
  - 79 lbs.
  - $277.00

- TS54-PW
  - w/ big wheel
  - 70 lbs.
  - $272.00

- TS54-EW
  - w/ e-unit & big wheel
  - 71 lbs.
  - $307.00

TS48-P4 TV Cart (not shown) also has top slant shelf feature. Top to middle shelf—17". Middle to bottom—20".

- TS48-P4
  - 28" W x 48" H x 24" D
  - 55 lbs.
  - $221.00

- TS48-E4
  - w/ e-unit
  - 57 lbs.
  - $236.00

- TS48-PW
  - w/ big wheel
  - 66 lbs.
  - $263.00

- TS48-EW
  - w/ e-unit & big wheel
  - 69 lbs.
  - $298.00

T5411-P4 TV Cart (not shown) carries all the features of the model listed above—with a 54" height. Top to middle shelf—23". Middle to bottom shelf—20".

- T5411-P4
  - 28" W x 48" H x 24" D
  - 55 lbs.
  - $221.00

- T5411-E4
  - w/ e-unit & big wheel
  - 57 lbs.
  - $236.00

- T5411-PW
  - w/ big wheel
  - 66 lbs.
  - $263.00

- T5411-EW
  - w/ e-unit & big wheel
  - 69 lbs.
  - $298.00

T48-P4 TV Cart is a 48" high model. Top to middle shelf—17". Middle to bottom shelf—20".

- T48-P4
  - 28" W x 48" H x 24" D
  - 57 lbs.
  - $210.00

- T48-E4
  - w/ e-unit
  - 59 lbs.
  - $245.00

- T48-PW
  - w/ big wheel
  - 67 lbs.
  - $252.00

- T48-EW
  - w/ e-unit & big wheel
  - 69 lbs.
  - $287.00

T42-P4 TV Cart has three flat shelves. Top to middle shelf—14". Middle to bottom shelf—17".

- T42-P4
  - 28" W x 42" H x 24" D
  - 54 lbs.
  - $205.00

- T42-E4
  - w/ e-unit
  - 56 lbs.
  - $240.00

- T42-PW
  - w/ big wheel
  - 64 lbs.
  - $247.00

- T42-EW
  - w/ e-unit & big wheel
  - 66 lbs.
  - $282.00

T54-P4 TV Cart (not shown) features a glare-free top slant shelf. Three shelves—23" from top to middle shelf, 20" from middle to bottom shelf.

- T54-P4
  - 28" W x 54" H x 24" D
  - 59 lbs.
  - $221.00

- T54-E4
  - w/ e-unit
  - 61 lbs.
  - $256.00

- T54-PW
  - w/ big wheel
  - 69 lbs.
  - $263.00

- T54-EW
  - w/ e-unit & big wheel
  - 71 lbs.
  - $298.00

Accessories

MPS Slant Bar attaches to top shelf of the MP54DX-P4 TV Cart to help eliminate glare from overhead lights.

- MPS
  - 4.5 lbs.
  - $13.00

All prices FOB Schiller Park, IL. Prices are subject to change without notice.

Quick ship items for immediate delivery (12.90)
**Bretford AV Carts**

**CLS Cable Lock Security System** secures your video equipment to the cart. Includes two 2 3/4" x 3/8" adhesive-backed mounting plates, 5' vinyl-coated steel cable with aluminum lock nuts, theft-proof screws and wrench key.

<table>
<thead>
<tr>
<th>Model</th>
<th>Dimensions</th>
<th>Weight</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLS</td>
<td>1 lb.</td>
<td>$27.00</td>
<td></td>
</tr>
</tbody>
</table>

**MP34-P4, MP42-P4, MP26-P4 AV Carts** (pictured left to right) are all equipped with 20" W x 18" D shelves. Each of these "mini pak" tables has two shelves. Top to bottom shelf measures: MP26-P4: 17"; MP34-P4: 13"; MP42-P4: 21".

<table>
<thead>
<tr>
<th>Model</th>
<th>Dimensions</th>
<th>Weight</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>MP26-P4</td>
<td>20&quot; W x 26&quot; H x 18&quot; D</td>
<td>28 lbs.</td>
<td>$119.00</td>
</tr>
<tr>
<td>MP26-E4</td>
<td>w/ e-unit</td>
<td>28 lbs.</td>
<td>$154.00</td>
</tr>
<tr>
<td>MP34-P4</td>
<td>20&quot; W x 34&quot; H x 18&quot; D</td>
<td>28 lbs.</td>
<td>$126.00</td>
</tr>
<tr>
<td>MP34-E4</td>
<td>w/ e-unit</td>
<td>30 lbs.</td>
<td>$161.00</td>
</tr>
<tr>
<td>MP42-P4</td>
<td>20&quot; W x 42&quot; H x 18&quot; D</td>
<td>30 lbs.</td>
<td>$131.00</td>
</tr>
<tr>
<td>MP42-E4</td>
<td>w/ e-unit</td>
<td>32 lbs.</td>
<td>$166.00</td>
</tr>
<tr>
<td>MP30-P4</td>
<td>20&quot; W x 30&quot; H x 20&quot; D</td>
<td>35 lbs.</td>
<td>$163.00</td>
</tr>
<tr>
<td>MP30-E4</td>
<td>w/ e-unit</td>
<td>37 lbs.</td>
<td>$198.00</td>
</tr>
</tbody>
</table>

**MP30-P4 AV Cart** has wider shelves than the "mini pak" tables for bigger loads. Two shelves — 14" between.

<table>
<thead>
<tr>
<th>Model</th>
<th>Dimensions</th>
<th>Weight</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>MP30-P4</td>
<td>20&quot; W x 30&quot; H x 20&quot; D</td>
<td>35 lbs.</td>
<td>$163.00</td>
</tr>
<tr>
<td>MP30-E4</td>
<td>w/ e-unit</td>
<td>37 lbs.</td>
<td>$198.00</td>
</tr>
</tbody>
</table>

**MP42-P4 AV Cart** (shown with big wheel) is one of Bretford’s "traditional" mobile equipment tables — designed for a variety of AV applications. Three shelves. Top to middle shelf — 13". Middle to bottom shelf — 11". Includes ribbed rubber mat.

<table>
<thead>
<tr>
<th>Model</th>
<th>Dimensions</th>
<th>Weight</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>MP34-P4</td>
<td>24&quot; W x 34&quot; H x 18&quot; D</td>
<td>38 lbs.</td>
<td>$144.00</td>
</tr>
<tr>
<td>MP42-E4</td>
<td>w/ e-unit</td>
<td>40 lbs.</td>
<td>$179.00</td>
</tr>
<tr>
<td>MP42-PW</td>
<td>w/ big wheel</td>
<td>48 lbs.</td>
<td>$186.00</td>
</tr>
<tr>
<td>MP42-EW</td>
<td>w/ e-unit &amp; big wheel</td>
<td>50 lbs.</td>
<td>$221.00</td>
</tr>
</tbody>
</table>

**42-P4 Traditional AV Cart** (not shown) also has three shelves. Top to middle shelf — 14 1/2". Middle to bottom shelf — 17 1/2". Available with big wheels.

<table>
<thead>
<tr>
<th>Model</th>
<th>Dimensions</th>
<th>Weight</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>42-P4</td>
<td>24&quot; W x 42&quot; H x 18&quot; D</td>
<td>39 lbs.</td>
<td>$150.00</td>
</tr>
<tr>
<td>42-E4</td>
<td>w/ e-unit</td>
<td>41 lbs.</td>
<td>$183.00</td>
</tr>
</tbody>
</table>

**26-P4 Traditional AV Cart** (not shown) features two shelves — 17 1/2" between. Available with big wheels.

<table>
<thead>
<tr>
<th>Model</th>
<th>Dimensions</th>
<th>Weight</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>26-P4</td>
<td>24&quot; W x 26&quot; H x 18&quot; D</td>
<td>31 lbs.</td>
<td>$130.00</td>
</tr>
<tr>
<td>26-E4</td>
<td>w/ e-unit</td>
<td>33 lbs.</td>
<td>$165.00</td>
</tr>
</tbody>
</table>

**16-P4 Traditional AV Cart** (not shown) is a two-shelf model with 7 1/2" between shelves. Each of these traditional models includes the same construction as the model 34-P4 pictured. Available with big wheels.

<table>
<thead>
<tr>
<th>Model</th>
<th>Dimensions</th>
<th>Weight</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>16-P4</td>
<td>24&quot; W x 16&quot; H x 18&quot; D</td>
<td>25 lbs.</td>
<td>$124.00</td>
</tr>
<tr>
<td>16-E4</td>
<td>w/ e-unit</td>
<td>27 lbs.</td>
<td>$159.00</td>
</tr>
</tbody>
</table>

**Accessories**

**CLPA Cable Lock Accessory Kit** includes two extra mounting plates for securing additional equipment.

<table>
<thead>
<tr>
<th>Model</th>
<th>Dimensions</th>
<th>Weight</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLPA</td>
<td>1 lb.</td>
<td>$14.00</td>
<td></td>
</tr>
</tbody>
</table>

All prices FOB Schiller Park, IL. Prices are subject to change without notice.

*Quick ship items for immediate delivery ($12.90)*
Textured Black Powder Paint finish is 3-5 times more durable than baked enamel finishes.

- **VTRP44-P8 AV Cart** is Bretford's largest monitor stand—holding up to 35" diagonal screens. 8" plate-mounted pneumatic wheels (2 lock) support the heaviest of loads. Top shelves—24" D x 37" W. Bottom shelf—27½" D x 37" W. 10½" between top shelves.
  - VTRP44-P8: 37" W x 44" H x 27½" D, 89 lbs. $495.00
  - VTRP44-E8: w/ e-unit, 91 lbs. $530.00

- **BBPN48-P8 AV Cart** will hold up to 26" monitors. Also features 8" pneumatic wheels for easy transport. Three shelves. Top to middle shelf—12". Middle to bottom shelf—23".
  - BBPN48-P8: 32" W x 48½" H x 27" D, 79 lbs. $490.00
  - BBPN48-E8: w/ e-unit, 81 lbs. $525.00

**Accessories**

- **SB Safety Belt** surrounds your monitor like a seat belt and attaches to cart for extra support.
  - SB: 2 lbs. $30.00

- **BBS Slant Bar** attaches to top shelf of "BB" tables. Allows monitor to rest at an angle to lessen overhead glare.
  - BBS: 6 lbs. $16.50

- **ES Unit** can be substituted for the standard E-unit on any Bretford cart. Includes three outlets, 20' cord, UL-listed.
  - ES-Unit: 3 lbs. $46.00

If your presentation equipment includes a 35" monitor, Bretford has the cart to carry it and move it from one room to the next with ease. Our 8" pneumatic wheel carts are strong enough for your biggest loads.

All are manufactured from rugged, heavy-duty steel with a textured black powder paint finish. Our wide-body "BB" carts feature the pyramid-design famous for extra stability. "E8" models include a UL listed two-outlet electrical assembly with 20-ft. grounded cord and cord winder. All models ship UPS, disassembled.

All prices FOB Schiller Park, IL. Prices are subject to change without notice.

Quick ship items for immediate delivery.
BRETFORD

AV CARTS

BBUL44 UL Listed AV Cart holds up to 27" diagonal televisions. Three shelves. Top shelves measure 32" W x 22" D (10½" between shelves). Bottom shelf measures 32" W x 27" D (23" between shelves). Safety belt included. Meets UL safety standards for institutional AV carts.

<table>
<thead>
<tr>
<th>Model</th>
<th>Dimensions</th>
<th>Weight</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>BBUL44</td>
<td>32&quot; W x 44&quot; H x 27&quot; D</td>
<td>58 lbs.</td>
<td>$220.00</td>
</tr>
<tr>
<td>BBUL44E</td>
<td>w/ e-unit</td>
<td>60 lbs.</td>
<td>$255.00</td>
</tr>
</tbody>
</table>

BB44-P4 AV Cart (not shown) has the same dimensions as the UL listed model above. Wide body design. Three shelves. Top to middle — 12". Middle to bottom — 23".

<table>
<thead>
<tr>
<th>Model</th>
<th>Dimensions</th>
<th>Weight</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>BB44-P4</td>
<td>32&quot; W x 44&quot; H x 27&quot; D</td>
<td>58 lbs.</td>
<td>$204.00</td>
</tr>
<tr>
<td>BB44-E4</td>
<td>w/ e-unit</td>
<td>60 lbs.</td>
<td>$239.00</td>
</tr>
</tbody>
</table>

BB54-P4 AV Cart (not shown) adds 10" to the model BB44. Three shelves. Top to middle — 12". Middle to bottom — 32½". Recommended for use with up to 26" monitors.

<table>
<thead>
<tr>
<th>Model</th>
<th>Dimensions</th>
<th>Weight</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>BB54-P4</td>
<td>32&quot; W x 54&quot; H x 27&quot; D</td>
<td>60 lbs.</td>
<td>$212.00</td>
</tr>
<tr>
<td>BB54-E4</td>
<td>w/ e-unit</td>
<td>62 lbs.</td>
<td>$247.00</td>
</tr>
</tbody>
</table>

MP48-P4 AV Cart features a straight leg design with square lock assembly. Recommended for use with up to 19" diagonal monitors. Three shelves. Top to middle shelf — 17". Middle to bottom shelf — 20".

<table>
<thead>
<tr>
<th>Model</th>
<th>Dimensions</th>
<th>Weight</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>MP48-P4</td>
<td>30&quot; W x 48&quot; H x 20&quot; D</td>
<td>52 lbs.</td>
<td>$182.00</td>
</tr>
<tr>
<td>MP48-E4</td>
<td>w/ e-unit</td>
<td>54 lbs.</td>
<td>$217.00</td>
</tr>
<tr>
<td>MP48-PW</td>
<td>w/ big wheel</td>
<td>62 lbs.</td>
<td>$224.00</td>
</tr>
<tr>
<td>MP48-EW</td>
<td>w/ e-unit &amp; big wheel</td>
<td>64 lbs.</td>
<td>$259.00</td>
</tr>
</tbody>
</table>

MP54-P4 AV Cart (not shown) is crafted with the same design features as the MP48-P4 listed above, 54" high. Three shelves. Top to middle shelf — 23". Middle to bottom shelf — 20".

<table>
<thead>
<tr>
<th>Model</th>
<th>Dimensions</th>
<th>Weight</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>MP54-P4</td>
<td>30&quot; W x 54&quot; H x 20&quot; D</td>
<td>52 lbs.</td>
<td>$189.00</td>
</tr>
<tr>
<td>MP54-E4</td>
<td>w/ e-unit</td>
<td>54 lbs.</td>
<td>$224.00</td>
</tr>
<tr>
<td>MP54-PW</td>
<td>w/ big wheel</td>
<td>62 lbs.</td>
<td>$231.00</td>
</tr>
<tr>
<td>MP54-EW</td>
<td>w/ e-unit &amp; big wheel</td>
<td>64 lbs.</td>
<td>$266.00</td>
</tr>
</tbody>
</table>

Accessories

BBS Slat Bar attaches to top shelf of "BB" tables — monitor rests at an angle.

<table>
<thead>
<tr>
<th>Model</th>
<th>Weight</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>BBS</td>
<td>6 lbs.</td>
<td>$16.50</td>
</tr>
</tbody>
</table>

MPS Slat Bar attaches to top shelf of "MP" carts — holds monitor at an angle to lessen overhead glare.

<table>
<thead>
<tr>
<th>Model</th>
<th>Weight</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPS</td>
<td>4½ lbs.</td>
<td>$13.00</td>
</tr>
</tbody>
</table>

All prices FOB Schiller Park, IL. Prices are subject to change without notice.

Quick ship items for immediate delivery ($12.90)
THESE STURDY CARTS ARE DESIGNED TO TRANSPORT YOUR EQUIPMENT FROM ROOM TO ROOM PLUS, EACH FEATURES A LOWER LOCKING CABINET TO STORE VALUABLE SUPPLIES.

FEATURES INCLUDE STEEL CONSTRUCTION WITH SMOOTH, ROUNDED EDGES, TEXTURED BLACK POWDER PAINT FINISH, 4" CASTERS (2 LOCK), LOCKABLE SECURITY CABINET WITH TWO KEYS. ALL "BB" MODELS SHIP UPS, DISASSEMBLED—ALL OTHERS SHIP ASSEMBLED. "E4" MODELS INCLUDE UL LISTED, 2-OUTLET ELECTRICAL UNIT WITH 20-FT. EXTENSION CORD AND CORD WINDER. "PW" MODELS INCLUDE TWO 5" CASTERS AND TWO 8" RIGID BIG WHEELS FOR EXTRA MOBILITY.

BBULC48 UL Listed TV Video Cabinet holds up to 32" diagonal monitors. Two shelves—32" W x 22" D (20" between shelves). Cabinet interior: 30" W x 16¼" H x 26" D. Safety belt included. Meets UL safety standards for institutional AV Carts.

C42-P4 TV Video Cabinet (shown with big wheel) measures 14" between shelves. Cabinet interior: 23" W x 17" H x 17" D. Holds up to 19" diagonal monitors.

C34-P4 TV Video Cabinet (not shown) carries over same cabinet features as model C42 with 6½" between shelves.

C26-P4 TV Video Cabinet (not shown) measures 26" high—identical cabinet features as the model C42-P4.

BBC54-E4 TV Video Cabinet features wide body stability to hold up to 26" diagonal monitors. 26¼" from top to middle shelf. Cabinet measures 30" W x 16¼" H x 25" D.

BBC48-E4 TV Video Cabinet (not shown) has the same dimensions as the UL listed model. Includes electrical unit. Wide-body, pyramid design holds up to 26" monitors.

All prices FOB Schiller Park, IL. Prices are subject to change without notice.

Quick ship items for immediate delivery (12.90)
**TV VIDEO CABINETS**

MPVC40-E2 TV Video Cabinet features 2" ball casters. Adjustable cabinet shelf. Top shelf: 30" W x 16" D (13" between shelves). Cabinet interior: 28" W x 17" H x 18" D. PAPVC40-E2 30" W x 40" H x 20" D 85 lbs. $ 411.00

VIRC30-E TV Video Cabinet is 32" high for desk-height use. 2" ball casters. Top shelf: 30" W x 16" D (13" between shelves). Cabinet interior: 28" W x 10" H x 18" D. VTRC30E30" W x 32" H x 20" D 66 1/2 lbs. $ 382.00

VTRC29-E4 TV Video Cabinet provides maximum storage capacity and a wide top shelf to transport your equipment. Cabinet interior: 35" W x 21" H x 17" D. 4" casters (2 lock). VTRC29-E4 36" W x 29" H x 18" D 68 lbs. $ 378.00

VTRC54-E4 TV Video Cabinet (not shown) incorporates a slanted top shelf to lessen glare from overhead lights. 4" casters (2 lock). Top shelf measures 28" W x 17" D (24" between shelves). Cabinet interior: 28" W x 17" H x 21" D. VTRC54-E4 28" W x 34" H x 24" D 82 lbs. $ 410.00

**ACCESSORIES**

SS Safety Belt surrounds your monitor like a seat belt and attaches to cart for extra support.

SS 2 lbs. $ 30.00

*All prices FOB Schiller Park, IL. Prices are subject to change without notice.*

Quick ship items for immediate delivery.
TRIPOD PROJECTION SCREENS

Series 300 Spectator Tripod Screen features a built-in keystone eliminator that allows the viewing surface to tilt forward to avoid distortion often found in slide presentations. High-low adjustable capability lets you match the projector height while screen holds steady where you set it. Die-cast handle and steel slat with tension bar. Strong aluminum legs with secure magnetic locks. Available in three sizes.

<table>
<thead>
<tr>
<th>Model</th>
<th>Screen Size</th>
<th>Weight</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3050-M</td>
<td>50&quot; x 50&quot;</td>
<td>22 lbs.</td>
<td>$215.00</td>
</tr>
<tr>
<td>3060-M</td>
<td>60&quot; x 60&quot;</td>
<td>26 lbs.</td>
<td>$236.00</td>
</tr>
<tr>
<td>3070-M</td>
<td>70&quot; x 70&quot;</td>
<td>30 lbs.</td>
<td>$260.00</td>
</tr>
<tr>
<td>3050-L</td>
<td>50&quot; x 50&quot;</td>
<td>22 lbs.</td>
<td>$226.00</td>
</tr>
<tr>
<td>3060-L</td>
<td>60&quot; x 60&quot;</td>
<td>26 lbs.</td>
<td>$246.00</td>
</tr>
<tr>
<td>3070-L</td>
<td>70&quot; x 70&quot;</td>
<td>30 lbs.</td>
<td>$271.00</td>
</tr>
</tbody>
</table>

Series 375 Commodore Tripod Screen (not shown) includes many of the same features as the Series 300 with the exception of the keystone eliminator.

<table>
<thead>
<tr>
<th>Model</th>
<th>Screen Size</th>
<th>Weight</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3750-M or -B</td>
<td>50&quot; x 50&quot;</td>
<td>19 lbs.</td>
<td>$145.00</td>
</tr>
<tr>
<td>3760-M or -B</td>
<td>60&quot; x 60&quot;</td>
<td>22 lbs.</td>
<td>$179.00</td>
</tr>
<tr>
<td>3770-M or -B</td>
<td>70&quot; x 70&quot;</td>
<td>25 lbs.</td>
<td>$201.00</td>
</tr>
<tr>
<td>3750-L</td>
<td>50&quot; x 50&quot;</td>
<td>19 lbs.</td>
<td>$155.00</td>
</tr>
<tr>
<td>3760-L</td>
<td>60&quot; x 60&quot;</td>
<td>22 lbs.</td>
<td>$188.00</td>
</tr>
<tr>
<td>3770-L</td>
<td>70&quot; x 70&quot;</td>
<td>25 lbs.</td>
<td>$210.00</td>
</tr>
</tbody>
</table>

A PORTABLE TRIPOD SCREEN IS THE EASIEST WAY TO MOVE YOUR PRESENTATION FROM ONE ROOM TO THE NEXT. BRETFORD TRIPOD SCREENS ARE AVAILABLE IN A VARIETY OF SIZES—SELECT THE BEST ONE BASED ON THE SIZE OF YOUR AUDIENCE.

Each screen features a choice of viewing surfaces (M-Matte White, B-Glass Beaded, or L-Silver Lenticular) and a textured black steel case. Case length shown in chart. Series 300 and 375 ship UPS.

Series 450 Super Vista Tripod Screen (not shown) is Bretford’s largest portable tripod screen. Suitable for large room viewing. Extruded aluminum legs provide superior strength yet are lightweight for carrying. Positive plunger lock provides secure and accurate height adjustments.

<table>
<thead>
<tr>
<th>Model</th>
<th>Height</th>
<th>Width</th>
<th>Weight</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>4577-M</td>
<td>91&quot;</td>
<td>84&quot; x 84&quot;</td>
<td>38 lbs.</td>
<td>$377.00</td>
</tr>
<tr>
<td>4577-B</td>
<td>91&quot;</td>
<td>84&quot; x 84&quot;</td>
<td>38 lbs.</td>
<td>$377.00</td>
</tr>
<tr>
<td>4588-M</td>
<td>103&quot;</td>
<td>96&quot; x 96&quot;</td>
<td>42 lbs.</td>
<td>$470.00</td>
</tr>
<tr>
<td>4588-B</td>
<td>103&quot;</td>
<td>96&quot; x 96&quot;</td>
<td>42 lbs.</td>
<td>$470.00</td>
</tr>
</tbody>
</table>

Accessories

4002 Keystone Eliminator for Series 375 screens allows you to tilt screen to eliminate distortion.

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>4002</td>
<td>$15.00</td>
</tr>
</tbody>
</table>

Carrying Cases for tripod screens hold your screen in one neat package—opening for handle to slip through for easy carrying.

<table>
<thead>
<tr>
<th>Model</th>
<th>Screen Size</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>4105</td>
<td>50&quot; screen carrying case</td>
<td>$29.00</td>
</tr>
<tr>
<td>4106</td>
<td>60&quot; screen carrying case</td>
<td>$34.10</td>
</tr>
<tr>
<td>4107</td>
<td>70&quot; screen carrying case</td>
<td>$38.00</td>
</tr>
</tbody>
</table>

All prices FOB Wood Dale, IL. Prices are subject to change without notice. Quick ship items for immediate delivery.
FOR CLASSROOM OR OFFICE, SELECT A MANUAL WALL SCREEN THAT CAN BE MOUNTED ON THE WALL, ON A MAP RAIL OR FROM THE CEILING WITH BUILT-IN MOUNTING RINGS OR ACCESSORY MOUNTING BRACKETS.

A RANGE OF SIZES MEETS THE NEEDS OF ANY SIZE AUDIENCE. SELECT FROM A VARIETY OF VIEWING SURFACES (M-MATTE WHITE, B-GLASS BEADED OR L-SILVER LENTICULAR). TEXTURED BLACK SOLID STEEL CASE. CASE LENGTH SHOWN IN CHART. ALL MODELS SHIP UPS EXCEPT FOR SERIES 500.

**Series 65 Monitor Wall Screen** is our most economical screen—perfect for classroom use. Three convenient sizes.

- **6550-M** 51 1/4" x 50" x 50" 10 lbs. $57.00
- **6560-M** 61 1/4" x 60" x 60" 12 lbs. $74.00
- **6570-M** 71 1/4" x 70" x 70" 14 lbs. $92.00

**Series 100 Commentator Wall Screen** (not shown) includes wall brackets that hold screen 4" from the wall for easy access to screen tension adjustment. Taut projection surface eliminates waves.

- **1050-N** 53 1/4" x 50" 16 lbs. $138.00
- **1060-M** 63 1/4" x 60" 19 lbs. $157.00
- **1070-M** 73 1/4" x 70" 22 lbs. $182.00

**Series 200 Mercury Wall Screen** (not shown) features a matching slat that fits into the case opening to keep out dust and dirt. Strong, durable design provides years of lasting use.

- **2050-M** 53 1/4" x 50" 12 lbs. $86.00
- **2060-M** 63 1/4" x 60" 15 lbs. $109.00
- **2070-M** 73 1/4" x 70" 18 lbs. $140.00

**Series 250 Conference Wall Screen** (not shown) is recommended for large group viewing. Intermediate sizes make this screen ideal for small auditoriums and conference centers.

- **2557-M** 89" x 84" 24 lbs. $217.00
- **2577-M** 89" x 84" 25 lbs. $226.00
- **2568-M** 101" x 96" 29 lbs. $247.00
- **2588-M** 101" x 96" 33 lbs. $283.00

**Series 500 Auditorium Wall Screen** (not shown) is our largest manually operated wall screen. Installs easily on mounting rings built right into the heavy gauge steel case with textured black powder paint finish. Accommodates up to 400 viewers.

- **5057-M** 7' 5 1/4" x 7' x 7' 43 lbs. $331.00
- **5077-M** 7' 5 1/4" x 7' x 7' 45 lbs. $359.00
- **5066-M** 8' 5 1/4" x 6' x 8' 48 lbs. $364.00
- **5089-M** 9' 5 1/4" x 7' x 9' 60 lbs. $403.00
- **5099-M** 9' 5 1/4" x 7' x 9' 60 lbs. $418.00
- **5080-M** 10' 5 1/4" x 8' x 10' 73 lbs. $466.00
- **5000-M** 10' 5 1/4" x 10' x 10' 78 lbs. $532.00
- **5092-M** 12' 5 1/4" x 8' x 12' 84 lbs. $618.00
- **5022-M** 12' 5 1/4" x 12' x 12' 91 lbs. $672.00

**Accessories**

KW18 and KW6 Wall Mounting Brackets are sold in pairs and hold up to 35 pounds. KW18—18" adjustable brackets. KW6—6" fixed brackets.

- **KW18** 4 lbs. $25.00
- **KW6** 1 lb. $12.00

Borders surround your screen with a black edging to guide the eye and enhance overall screen image.

Borders, black, price per square foot of screen surface $ .70

*All prices FOB Wood Dale, IL. Prices are subject to change without notice.*

Quick ship items for immediate delivery ($12.90)
## ELECTRIC PROJECTION SCREENS

BRETFORD ELECTRIC PROJECTION SCREENS

### Series 700 Auditorium Electric Screen

- Designed for small to mid-size viewing areas, features are identical to the Series 900 with the exception of the down-limit switch and the Series 700 features a steel case.

<table>
<thead>
<tr>
<th>Model</th>
<th>Size</th>
<th>Weight</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>7055-M or -B</td>
<td>6' 4¼&quot; x 60&quot;</td>
<td>52 lbs</td>
<td>$813.00</td>
</tr>
<tr>
<td>7066-M or -B</td>
<td>7' 2¼&quot; x 70&quot;</td>
<td>54 lbs</td>
<td>$829.00</td>
</tr>
<tr>
<td>7057-M or -B</td>
<td>8' 4¼&quot; x 5' 7&quot;</td>
<td>58 lbs</td>
<td>$847.00</td>
</tr>
<tr>
<td>7077-M or -B</td>
<td>8' 4¼&quot; x 7' 7&quot;</td>
<td>64 lbs</td>
<td>$879.00</td>
</tr>
<tr>
<td>7068-M or -B</td>
<td>9' 4¼&quot; x 6' 8&quot;</td>
<td>67 lbs</td>
<td>$893.00</td>
</tr>
<tr>
<td>7088-M or -B</td>
<td>9' 4¼&quot; x 8' 8&quot;</td>
<td>70 lbs</td>
<td>$913.00</td>
</tr>
<tr>
<td>7079-M or -B</td>
<td>10' 4¼&quot; x 7' 9&quot;</td>
<td>76 lbs</td>
<td>$952.00</td>
</tr>
<tr>
<td>7099-M or -B</td>
<td>10' 4¼&quot; x 9' 9&quot;</td>
<td>78 lbs</td>
<td>$996.00</td>
</tr>
<tr>
<td>7080-M or -B</td>
<td>11' 4¼&quot; x 8' 10&quot;</td>
<td>81 lbs</td>
<td>$1049.00</td>
</tr>
<tr>
<td>7000-M or -B</td>
<td>11' 4¼&quot; x 10' 10&quot;</td>
<td>85 lbs</td>
<td>$1100.00</td>
</tr>
<tr>
<td>7092-M or -B</td>
<td>13' 4¼&quot; x 9' 12&quot;</td>
<td>99 lbs</td>
<td>$1120.00</td>
</tr>
<tr>
<td>7022-M or -B</td>
<td>13' 4¼&quot; x 12' 12&quot;</td>
<td>104 lbs</td>
<td>$1188.00</td>
</tr>
</tbody>
</table>

### Series 900 Auditorium Electric Screen

- Recommended for large auditoriums, conference centers and meeting facilities. Removable motor module and adjustable down-limit switch for presetting screen length. Black, square wooden case houses screen and 120V AC 60Hz motor. Motor is prewired with plugs for two switches — low voltage control standard. Three-position wall switch.

<table>
<thead>
<tr>
<th>Model</th>
<th>Size</th>
<th>Weight</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>9001-M or -B</td>
<td>15' 6¼&quot; x 14' 10&quot;</td>
<td>275 lbs</td>
<td>$1802.00</td>
</tr>
<tr>
<td>9002-M or -B</td>
<td>15' 6¼&quot; x 14' 14&quot;</td>
<td>290 lbs</td>
<td>$1925.00</td>
</tr>
<tr>
<td>9003-M or -B</td>
<td>17' 6¼&quot; x 16' 12&quot;</td>
<td>307 lbs</td>
<td>$2106.00</td>
</tr>
<tr>
<td>9004-M or -B</td>
<td>17' 6¼&quot; x 16' 16&quot;</td>
<td>322 lbs</td>
<td>$2288.00</td>
</tr>
<tr>
<td>9005-M or -B</td>
<td>19' 6¼&quot; x 18' 13&quot;</td>
<td>343 lbs</td>
<td>$2334.00</td>
</tr>
<tr>
<td>9006-M or -B</td>
<td>19' 6¼&quot; x 18' 18&quot;</td>
<td>372 lbs</td>
<td>$2554.00</td>
</tr>
<tr>
<td>9007-M or -B</td>
<td>21' 6¼&quot; x 20' 15&quot;</td>
<td>387 lbs</td>
<td>$2580.00</td>
</tr>
<tr>
<td>9008-M or -B</td>
<td>21' 6¼&quot; x 20' 20&quot;</td>
<td>400 lbs</td>
<td>$2840.00</td>
</tr>
<tr>
<td>9009-M or -B</td>
<td>23' 6¼&quot; x 24' 12&quot;</td>
<td>460 lbs</td>
<td>$3679.00</td>
</tr>
</tbody>
</table>

### Series 400 Electric Screen

- Smaller and lighter and features a low-voltage transformer for simple installation. Hand-held, three-position switch controls screen.

<table>
<thead>
<tr>
<th>Model</th>
<th>Size</th>
<th>Weight</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>4060-M</td>
<td>60&quot; x 60&quot;</td>
<td>27 lbs</td>
<td>$419.00</td>
</tr>
<tr>
<td>4070-M</td>
<td>70&quot; x 70&quot;</td>
<td>30 lbs</td>
<td>$433.00</td>
</tr>
</tbody>
</table>

### Accessories

- **Borders** surround your screen with a black "frame" to guide the eye and enhance overall screen image.

<table>
<thead>
<tr>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Borders, black, price per square foot of screen surface</td>
<td>$0.70</td>
</tr>
</tbody>
</table>

- **Wireless Remote Control Package** allows you to control the action of the screen from anywhere in the room.

<table>
<thead>
<tr>
<th>Package Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wireless Remote Control Package</td>
<td>$348.00</td>
</tr>
</tbody>
</table>

- **Designer Slot** can be added to the Series 700 or Series 900 Electric Screen. This feature allows the screen to be totally hidden from view when retracted. The slat can be finished to match your ceiling.

<table>
<thead>
<tr>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Designer Slot</td>
<td>$103.00</td>
</tr>
</tbody>
</table>

### Switching Options

- **3-position key switch** for Series 700 & 900 Electric Screen
- **3-position wall switch** for Series 700 & 900 Electric Screen

### All prices FOB Wood Dale, IL. Prices are subject to change without notice (12.90)
**BRETFORD**

**ELECTRIC PROJECTION SCREENS**

Rollfix Electric Screens feature a variety of sizes, screen fabrics and accessories. Your choice of square or video formats. Custom sizes are also available. Blankana (BK) with 1.0 gain or Novalux (NO) with 2.0 gain surface fabrics.

![Electric Screen](image)

**For the ultimate in design and viewing standards, select a Bretford Rollfix or Rollfix Trap Door Electric Screen. These handsomely styled screens add to the decor of a room. Plus, our "trap door" model allows you to totally hide the screen from view when not in use.**

Rollfix Screens feature Motor-in-the-roller technology and an adjustable limit switch that allows the screen to be fully extended or retracted as well as stopped at any intermediate position. Light grey steel case can be installed in the ceiling or on a wall.

<table>
<thead>
<tr>
<th>Screen Type</th>
<th>Size</th>
<th>Weight</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>RE0606-BK</td>
<td>60&quot; x 60&quot;</td>
<td>40 lbs.</td>
<td>$702.00</td>
</tr>
<tr>
<td>RE7076-BK</td>
<td>70&quot; x 70&quot;</td>
<td>43 lbs.</td>
<td>$720.00</td>
</tr>
<tr>
<td>RE0707-BK</td>
<td>7&quot; x 7&quot;</td>
<td>47 lbs.</td>
<td>$753.00</td>
</tr>
<tr>
<td>RE0808-BK</td>
<td>8&quot; x 8&quot;</td>
<td>65 lbs.</td>
<td>$857.00</td>
</tr>
<tr>
<td>RE0909-BK</td>
<td>9&quot; x 9&quot;</td>
<td>76 lbs.</td>
<td>$914.00</td>
</tr>
<tr>
<td>RE1010-BK</td>
<td>10&quot; x 10&quot;</td>
<td>86 lbs.</td>
<td>$944.00</td>
</tr>
<tr>
<td>RE0607-BK</td>
<td>5&quot; x 7&quot;</td>
<td>45 lbs.</td>
<td>$1023.00</td>
</tr>
<tr>
<td>RE0607-BK</td>
<td>5&quot; x 7&quot;</td>
<td>45 lbs.</td>
<td>$720.00</td>
</tr>
<tr>
<td>RE0608-BK</td>
<td>6&quot; x 8&quot;</td>
<td>56 lbs.</td>
<td>$1275.00</td>
</tr>
<tr>
<td>RE0808-BK</td>
<td>6&quot; x 8&quot;</td>
<td>56 lbs.</td>
<td>$807.00</td>
</tr>
<tr>
<td>RE0909-BK</td>
<td>9&quot; x 9&quot;</td>
<td>70 lbs.</td>
<td>$1444.00</td>
</tr>
<tr>
<td>RE0708-BK</td>
<td>7&quot; x 8&quot;</td>
<td>70 lbs.</td>
<td>$857.00</td>
</tr>
<tr>
<td>RE0810-BK</td>
<td>8&quot; x 10&quot;</td>
<td>81 lbs.</td>
<td>$1617.00</td>
</tr>
<tr>
<td>RE0810-BK</td>
<td>8&quot; x 10&quot;</td>
<td>81 lbs.</td>
<td>$914.00</td>
</tr>
</tbody>
</table>

Accessories

Borders surround your screen with a black edging to guide the eye and enhance overall screen image.

<table>
<thead>
<tr>
<th>Type</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wireless Remote Control Package</td>
<td>$348.00</td>
</tr>
<tr>
<td>Designer Slot</td>
<td>$103.00</td>
</tr>
</tbody>
</table>

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Quick ship items for immediate delivery.

P. Quick ship items for immediate delivery.
**BRETFORD ADJUSTABLE STANDS**

Ribbed rubber mat on top shelf prevents sliding

Arc-welded caster sockets for maximum stability

**CA2642 Adjustable Stand** (not shown) adds a lower locking cabinet to the model A2642 above. Cabinet interior: 23" W x 15½" H x 17" D.

- **CA2642** 24" W x 26-42" H x 18" D 55 lbs. $260.00
- **CA2642E** w/ e-unit 57 lbs. $295.00
- **CA2642-PW** w/ big wheel 63 lbs. $302.00
- **CA2642-EW** w/ e-unit & big wheel 67 lbs. $337.00

**Accessories**

- **TVS Slant Bar** attaches to top shelf and lets you angle monitor to overcome glare from overhead lights.
  - **TVS** 4 lbs. $15.00

- **SB Safety Belt** surrounds your monitor like a seat belt and attaches to stand for extra support.
  - **SB** 2 lbs. $30.00

**CA2642 Adjustable Stand** (not shown) adds a lower locking cabinet to the model A2642 above. Cabinet interior: 23" W x 15½" H x 17" D.

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  - **SB** 2 lbs. $30.00
DURABLE, VERSATILE BRETFORD PLASTIC UTILITY Carts are ideal for a variety of situations. Use them to transport AV equipment, lab materials, mailroom supplies. Tough, high-density polyethylene plastic makes them lightweight for easy portability—resistant to scratches and stains.

Black PVC pipe legs. Textured finish on shelves.

Heavy duty 4” casters (2 lock). Recommended for use with up to 19” diagonal monitors. “E” models include 4 outlet electrical assembly with 20 ft. grounded cord. “PW” models include two 5” casters and two 8” rigid big wheels.

BPE Plastic Utility Cart Electrical Unit can also be purchased separately. UL listed four outlet electrical unit with a 20 ft. grounded cord attaches easily out-of-the-way under top shelf. Roomy, obstruction-free handle acts as a built-in cord winder.

All prices FOB Schiller Park, IL. Prices are subject to change without notice.

Quick ship items for immediate delivery.

(12.90)
OVERHEAD PROJECTOR TABLES

**OH29 OH Table** is desk height for easy access. Folding drop leaves (11" W x 20" D) on either side of projector well. Putty finish. Projector shelf adjusts from 5" to 7 1/8" from top of unit. Projector well: 22 1/2" W x 20" D.

- **OH29**
  - 22 1/2" W x 29" H x 20" D
  - 26 lbs.
  - $146.00
- **OH29E**
  - w/ e-unit
  - 28 lbs.
  - $181.00

**OH39 OH Table** (not shown) is 10" higher than the OH29 and includes a lower storage shelf.

- **OH39**
  - 22 1/2" W x 39" H x 20" D
  - 30 lbs.
  - $164.00
- **OH39E**
  - w/ e-unit
  - 32 lbs.
  - $199.00

**UCS700-GM OH Workstation** is designed for OH/ computer applications. Table easily adjusts from 22 1/2" — 33 1/2" H. Gray finish. Shown with optional UCSAMS (sold under accessories). Projector well: 17 1/2" W x 20 1/2" D.

- **UCS700-GM**
  - 48" W x 22 1/2" — 33 1/2" H x 30" D
  - 110 lbs.
  - $456.00

**AOH2741-P4 Adjustable OH Table** can be adapted to stand up or sit down presentations. Work surface adjusts from 27" to 41" high in 2" increments. Projector well adjusts from 6" — 10" in 1" increments and measures 17 1/2" W x 20 1/2" D. Textured Black finish.

- **AOH2741-P4**
  - 37" W x 27 — 41" H x 22 1/2" D
  - 59 lbs.
  - $271.00
- **AOH2741-E4**
  - w/ e-unit
  - 61 lbs.
  - $306.00

**Accessories**

**UCSAMS** Adjustable Monitor Shelf for the model UCS700 holds monitor at an easy-viewing height. Tilts to allow monitor to be better positioned.

- **UCSAMS**
  - 23" W x 13" H x 11" D
  - 18 lbs.
  - $105.00

**3560 Surge-Protected Power Strip** for the model UCS700 provides 4 grounded outlets, single on/off switch and 20 ft. cord. UL listed.

- **3560**
  - 4 lbs.
  - $70.00

All prices FOB Schiller Park, IL. Prices are subject to change without notice.

Quick ship items for immediate delivery.

(12.90)
STANTRON VIDEO

PREASSEMBLED CONSOLES, CABINETS, RACKS AND ACCESSORIES FOR THE VIDEO INDUSTRY

PREDESIGNED CONSOLES

New line of preassembled, modular consoles that include a wide range of up-to-the-minute colors with the choice of light or dark oak wood trim.

CONSOLES COMPLETELY MODULAR • STANTRON HAS A CONSOLE TO MEET THE REQUIREMENTS OF ALL SYSTEMS

- PREASSEMBLED • WELDED FOR STRENGTH • TAPPED RAILS • CHOICE OF 17 COLORS

VCAS6019  $1470.00

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VCAS6003  $2339.00

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VCAS6007  $3778.00

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*Prices subject to change without notice

CONTACT YOUR DEALER FOR FULL-LINE CATALOG
STANTRON VIDEO

VERTICAL EQUIPMENT RACKS

PREASSEMBLED • WELDED FRAMES • TAPPED (10-32) RAILS • CHOICE OF COLORS
• KNOCK-DOWN CABINETS AVAILABLE

VC200 SERIES

CABINETS AVAILABLE IN 25", 30" DEPTHS

ORDERING CHART

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MODEL NUMBER EXPLANATION

VC = Video Cabinet
SF = Square Frame
200 = Series
78 = Inside Rack Space
30 = Depth
SS = Side Panels
P = Panel
L = Louvered

SEE BACK PAGE FOR ACCESSORIES

*Prices subject to change without notice

PREDESIGNED VERTICAL EQUIPMENT RACKS

VCAS4991

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$879.00

VCAS4993

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$1517.00

VCAS4994

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$2276.00

VCAS6008

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$1611.00

VCAS6018

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$4488.00

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$2747.00

CONTACT YOUR DEALER FOR FULL-LINE CATALOG
MODULAR WORK STATIONS

- TOTAL MOBILITY - FIT THROUGH STANDARD DOORWAYS.
- CAN BE SET UP FOR A/B ROLL - CASTERS INCLUDED.

DESIGNED FOR 1/2" and 3/4" FRONT LOADING VTR's

VCMEC48
48" WIDE, 35 1/2" HIGH, 29" DEEP
$408.00

VCMEC72
72" WIDE, 35 1/2" HIGH, 29" DEEP
$570.00

CONSULT DEALER FOR OTHER CONFIGURATIONS & PRICES - PRICES SUBJECT TO CHANGE WITHOUT NOTICE.

VCAS7001
QTY. CATALOG NO. DESCRIPTION
1 VCMEC72 MODULAR WORK STATION MONITOR BRIDGE SLIDING EDITOR SHELVES
4 VCTS24SL

VCAS7002
QTY. CATALOG NO. DESCRIPTION
1 VCMEC72 MODULAR WORK STATION MONITOR BRIDGE FIXED EDITOR SHELVES
3 VCM924

VCAS7003
QTY. CATALOG NO. DESCRIPTION
1 VCMEC72 MODULAR WORK STATION MONITOR BRIDGE EDITOR SHELF
1 VCTS72
1 VCTS24

VCAS7004
QTY. CATALOG NO. DESCRIPTION
1 VCMEC72 MODULAR WORK STATION MONITOR BRIDGE EDITOR SHELF
1 VCTS72
1 VCTS24

VCAS5628

MONITOR BRIDGE CONSOLES

- TOTAL WIDTH IS 23 1/4"
- NOTE: When ordering, specify height by adding it to the end of the catalog number. For example, if you are ordering a 24" high monitor bridge console, your order number would read: VCMB9000-24.
- The Monitor Bridge is adjustable in height from 19" to 32".
- Base Cabinet panel space: 19 1/8" x 21" high (front/ rear).
- Monitor Bridge Cabinet will accept:
  - A 10 1/2" x 19"
  - A 3 1/2" x 19"
  - An additional 3 1/2" x 19"
- Vertical supports may be used as electrical raceways.
- Base Cabinet and Monitor Bridge Cabinet both have removable rear perforated panels for ventilation and access to equipment. Part # VCP14P. Laminate top for base cabinet is included.
- 3" swivel casters (2 with brake) are included.
- Finish:
  - Vertical supports: Bright chrome
  - Cabinets: Black textured
  - Laminate top: Black

VCMB9000 $1925.00

MOBILE VTR RACKS

These HIGH QUALITY RACKS feature the added safety of our exclusive ANTI-TIP* extensions which should be used whenever a component is slid forward. SLIDING SHELVES feature POSI-LATCH™ to further protect your equipment.

VCAS5016

CATALOG NO. DESCRIPTION
1 VCRK6323 RACK
6 VCF523 FIXED SHELVES
1 VCC5 5" CASTERS

$930.00

CONSULT DEALER REGARDING OTHER MODELS, PRICES & SPECS.

*PRICES SUBJECT TO CHANGE WITHOUT NOTICE.
VIDEO ACCESSORIES

RACK SLIDE KITS

VCSSK2700
For Sony's BVH-2000
and BVH-2500 VTR's.
Designed to be installed in 25 1/4" deep cabinets.
$266.00

VCSSK2705
For Sony's Type 5 VTR's.
Designed to be installed in 25 1/4" deep cabinets.
$234.00

VCSSK2708
For Sony's Type 8 VTR's.
Designed to be installed in 25 1/4" deep cabinets.
$240.00

VCSS23-11
For VTR Dubbing Racks.
$218.00

SLIDING SHELVES

FOR VIDEO EQUIPMENT

Support up to 75 lbs. Include positive stops. All sliding equipment includes ball bearing slides. Slides bolt to mounting angles. Finish: Black.

VCSSL90025A
$70.00

FOR VTR/DUBBING RACKS

Positive latch 75 lb capacity. Includes ball bearing slides.

VCSS23-11
$218.00

LOW NOISE FAN TRAY

VCSTA686
$386.00

HIGH AIR FLOW - UNFILTERED - VOLTAGE 115
1.75" and 3.5" panel heights, 19" and 24" panel widths. EIA notched - Field adjustable fan strips. and rear support brackets, 115 & 230 VOLTS AC and 12, 24 & 48 VOLTS DC.

SUPPORTING ANGLES VIDEO EQUIPMENT

Finish: CADMIUM PLATING
1/4" x 2" x 12 GA STEEL

VCSSA22A
$37.00

PHILLIPS HEAD PANEL SCREWS

VCH100
$26.00

For 1/8" thick flat panels. Screw length 5/8".

FACE MOUNTED DOORS

PLAIN
LOUVERED
PLEXIGLAS

VCD60017
$87.00

VCPI
$10.00

All panels and doors are 16 gauge steel. Left or right hand hinged doors. They include a key lock with two keys and recessed handles. All doors are installed at the factory. unless otherwise specified, all doors will be installed L.H. All short doors will be installed at the top of panel openings.

FORMED PANELS

PLAIN
LOUVERED

VCPA 4001
$10.00

For front, rear, top and bottom openings in cabinets. All formed panels are 16 gauge steel, 5/8" flanges on all four sides. Fit into recess panel openings.

LOW NOISE FAN TRAY

VCSTA686
$386.00

HIGH AIR FLOW - UNFILTERED - VOLTAGE 115

SUPPORTING ANGLES VIDEO EQUIPMENT

Finish: CADMIUM PLATING
1/4" x 2" x 12 GA STEEL

VCSSA22A
$37.00

PHILLIPS HEAD PANEL SCREWS

VCH100
$26.00

For 1/8" thick flat panels. Screw length 5/8".

FACE MOUNTED DOORS

PLAIN
LOUVERED
PLEXIGLAS

VCD60017
$87.00

VCPI
$10.00

All panels and doors are 16 gauge steel. Left or right hand hinged doors. They include a key lock with two keys and recessed handles. All doors are installed at the factory. unless otherwise specified, all doors will be installed L.H. All short doors will be installed at the top of panel openings.

FORMED PANELS

PLAIN
LOUVERED

VCPA 4001
$10.00

For front, rear, top and bottom openings in cabinets. All formed panels are 16 gauge steel, 5/8" flanges on all four sides. Fit into recess panel openings.

STANTRON VIDEO CATALOG VC-89 HAS THE FULL LINE SHOWING OF ALL VIDEO PRODUCTS AND ACCESSORIES. CONTACT YOUR DEALER FOR CATALOG & PRICE LIST.

A STANTRON ENGINEERING STAFF IS READILY AVAILABLE TO DESIGN RACKS and CABINETS FOR YOUR SPECIAL APPLICATIONS.

PRESSEASSEMBLED DELIVERY
**A Model 88612**

$2641.00

**rk Four Bay 10¼" Slope Console With 19¾" Top Modules angled forward for easy viewing of monitors. This system displays a special mounting cradle for the edit controller and a shroud for rack mounting VTRs vertically. Dove Grey and Pearl Grey enamel finish.**

Model K8634 complete. Shpg. wt. 737 lbs $4299.00

**B Two Bay 10½" Slope Console.** A compact editing system that can be expanded easily for future growth. The front work shelf slopes for operator comfort and the top racks tilt back for easy access to mounted electronics. Dove Grey and Pearl Grey enamel finish.

Model K8621 complete. Shpg. wt. 268 lbs $1523.00

**C Three Bay Non-Rack Mount VTR Edit Console.** VTRs can be placed in this console with their side panels still on and pulled out on shelves for quick maintenance. Flat, padded work surface offers vast room for electronics and paper work. Monitors of all sizes can rest on top of the console allowing for easy viewing. Dove Grey and Pearl Grey enamel finish.

Model K8612 complete. Shpg. wt. 468 lbs $2641.00

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**Rack Mount Slide Kits**

Order separately. Not included in console prices.

1. **Model F8501.** Rack slide kit. For use with Sony's "Type 5" VTRs. Equivalent to Sony's RMM-501 kit.
   Shpg. wt. 9 lbs. $235.00

2. **Model F8521.** Rack slide kit. For use with Sony's 5020, 7000 and 9000 series VTRs. Equivalent to Sony's RMM-507 kit.
   Shpg. wt. 9 lbs. $260.00

3. **Model F8526.** Rack slide kit. For use with Sony's BVU-950 VTRs. Equivalent to Sony's RMM-950 kit.
   Shpg. wt. 9 lbs. $235.00

4. **Model F8801.** Rack slide kit. For use with Sony's "Type 800 series" BVW-15 and BVW-40 VTRs. Equivalent to Sony's BK-805 kit.
   Shpg. wt. 10 lbs. $235.00

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Call us for additional Rack Kits.
Video Furniture Systems

We'll customize a wood trimmed console any way you want it.

Choose laminates and stains to match your studio decor. Other colors on request.

Space-Saving Custom Corner Consoles

Model K8529
$5403.00

A Three Bay Corner Console. 10½” slope console with 14” top modules wedged 15° for viewing monitors. System includes a cradle kit for the edit controller and a 56” vertical rack for rack mounting VTRs. Comfortable padded shelves are angled for operator convenience. All consoles can contain 45° corner fillers as shown, utilizing all available floor space.

Model K8632
Shpg. wt. 776 lbs..............................................$4279.00

B Atlantis Blue With Light Oak Trim Custom Corner Console. Wrap-around design keeps all the electronics within reach of a single operator. Customized wood trim creates an elegant, contemporary console whether the racks are old or new. The shelf extension along one side of the console produces space for the non-rack mountable equipment. Work shelf has a beveled oak edge for comfort and durability.

Model K8529
Shpg. wt. 870 lbs..............................................$5403.00

C Burgundy With Light Oak Trim Custom Console. New bridge concept makes room for any size controller or audio board. Upper 14” rack space places the monitors at eye level for easy viewing. Corner design keeps all electronics within access of one operator. With the custom wood trim pieces available, any console design can be produced.

Model K8642
Shpg. wt. 862 lbs..............................................$5184.00

New Winsted Decorator Top & Side Panels
Give Your Console A Handsome New Look
Compact “mini” editing consoles for both ½” and ¾” front loading VCRs

A Compact, Mobile Editing System fits most VCRs. Top monitor shelf measures 16”D x 48”W. VCR shelves are 23½”D x 20”W; edit shelf is 16”D x 24”W—adjusts in 1” increments. Includes glides and 3” casters for mobility. Baked on enamel finish in Putty and Pearl Grey. Overall size 35¾”H x 28”D x 48”W.

Model E4950. Shpg. wt. 159 lbs $664.00

B Three Bay Editing/Post Production Console. Features 48” wide controller shelf for additional work surface. 23½”D x 20”W VCR shelves can be positioned on the right or left hand side of the console. Both glides and 3” casters are included with the console.

Model E4984. Shpg. wt. 208 lbs $904.00

An economical series of compact editing consoles. All shelves adjust on 1” increments for editing efficiency and user comfort. Pull-out shelf pulls out 13” for use with your VCR or character generator. Compact in size, only 28” deep and rolls easily through doorways.

C Extra Deep Dual Cabinet Edit Desk. Set up to fit most controllers. 49” of rack space below the work surface allow ample space for rack mounting electronics. 19¾” vertical racks along the back edge of the work surface offer space for primary control access and monitors. Dove and Pearl Grey enamel finish. Overall size 50¼”H X 72”W x 46”D.

Model E4835. Shpg. wt. 429 lbs $2177.00

D Computer Graphics Work Stations

A computer graphics furniture system that applies ergonomic solutions to everyday work place problems.

Model E4947. Shpg. wt. 135 lbs $855.00

Monitor Riser. Raises monitors 4” for better viewing. Overall size 4”H x 24”W x 16”D.

Model 49084. Shpg. wt. 12 lbs $55.00
**Ruggedly constructed, totally adaptable electronic equipment cabinets.** Featuring snap together instant assembly frames, designed to the industry standard of 19"W x 26"D. Open pedestal for cabling. Removable side panels. Some racks feature ventilated tops and open pedestals to keep electronics cool. Dove Grey frames with Pearl Grey side and top panels.

**Vertical Equipment Cabinets**

*With removable side panels for installation and servicing convenience.*

- **24½" Vertical Rack Cabinet.** Dove Grey and Pearl Grey baked enamel finish with vents in the sides for cooling. Overall dimensions: 31½"H x 22¾"W x 28"D.
  - Model V8603. Shpg. wt. 87 lbs .......................... $479.00

- **35" Vertical Rack Cabinet.** Dove Grey and Pearl Grey baked enamel finish with vents in the sides for cooling. Overall dimensions: 42½"H x 28"D x 22¾"W.
  - Model V8606. Shpg. wt. 107 lbs .......................... $625.00

- **56" Vertical Rack Cabinet.** Dove Grey and Pearl Grey baked enamel finish with vents in the sides for cooling. Overall dimensions: 63"H x 28"D x 22¾"W.
  - Model V8632. Shpg. wt. 146 lbs .......................... $682.00

- **70" Vertical Rack Cabinet.** Dove Grey and Pearl Grey baked enamel finish with vents in the sides for cooling. Overall dimensions: 79½"H x 28"D x 22¾"W.
  - Model V8601. Shpg. wt. 198 lbs .......................... $826.00

- **78¾" Vertical Rack Cabinet.** Dove Grey and Pearl Grey baked enamel finish with vents in the sides for cooling. Overall dimensions: 87¾"H x 28"D x 22¾"W.
  - Model V8691. Shpg. wt. 223 lbs .......................... $984.00

**Economy Rack Cabinets**

*Designed for easy servicing and maintenance.*

- **24½" Economy Rack Cabinet.** All steel construction with lift-off vented side panels for equipment installation. Open base for cooling and cable management. Pearl Grey with Dove Grey baked enamel finish. Overall dimensions: 29½"H x 22¾"W x 26"D.
  - Model V8609. Shpg. wt. 68 lbs .......................... $382.00

- **35" Economy Rack Cabinet.** All steel construction with lift-off vented side panels for equipment installation. Open base for cooling and cable management. Pearl Grey with Dove Grey baked enamel finish. Overall dimensions: 40"H x 22¾"W x 26"D.
  - Model V8607. Shpg. wt. 88 lbs .......................... $528.00

- **56" Economy Rack Cabinet.** All steel construction with lift-off vented side panels for equipment installation. Open base for cooling and cable management. Pearl Grey with Dove Grey baked enamel finish. Overall dimensions: 61"H x 22¾"W x 26"D.
  - Model V8634. Shpg. wt. 127 lbs .......................... $585.00

- **70" Economy Rack Cabinet.** All steel construction with lift-off vented side panels for equipment installation. Open base for cooling and cable management. Pearl Grey with Dove Grey baked enamel finish. Overall dimensions: 75½"H x 22¾"W x 26"D.
  - Model V8605. Shpg. wt. 173 lbs .......................... $678.00

- **78¾" Economy Rack Cabinet.** All steel construction with lift-off vented side panels for equipment installation. Open base for cooling and cable management. Pearl Grey with Dove Grey baked enamel finish. Overall dimensions: 83¾"H x 22¾"W x 26"D.
  - Model V8693. Shpg. wt. 193 lbs .......................... $836.00

**All Winsted rack cabinets have easy lift off side panels for quick servicing or installation of electronics.** Side panels are also vented to keep your valuable electronics cool. Leg levelers allow rack to be perfectly square even on the most uneven floors. Extra heavy gauge industrial strength steel construction. Plus you can order your rack with punched or tapped front rails.
To Design Your Own Add-A-Rack System

To design your own Add-A-Rack duplication system (1) Bolt together two or more single frames and/or double frames without side panels (2) Choose the proper shelves for your needs—stationary, 13" pull-out or 20" full suspension shelves (20" full suspension shelves are available for single width frames only and require an anti-tip base.) (3) Add side panels. Don’t forget to order your options.

Design Your Own Duplicating System Components

1 Model D8900. Single width frame without sides or shelves. Shpg. wt. 88 lbs. $316.00

2 Model 85088. Stationary shelf. Shpg. wt. 11 lbs. $35.00

3 Model 85091. 13" pull-out shelf. Shpg. wt. 16 lbs. $119.00

4 Model 85083. 20" full-suspension shelf. When using this shelf anti-tip base model 89061 must also be used. Shpg. wt. 19 lbs. $179.00

5 Model 89084. 2" x 5" VTR support brackets. Holds duplicating machines and allows full air circulation. Shpg. wt. 13 lbs. $22.00 pr.

Note: Duplicating racks do not include rack mount rails. Order rails separately.

Stationary & Movable Dubbing Racks for 1/2" and 3/4" Formats

A Double Wide Duplication Center. Set up to hold 16—1/2" duplicating machines. Open back allows easy access to the back of the machines for maintenance. Can be bolted together with another duplicating rack to form an in-line duplicating center. Overall size 78" H x 26" D x 42" W. Model D8945 shpg. wt. 315 lbs. $887.00

B Single Bay Duplication Console. Eight stationary shelves adjust in 1/2" increments to fit your VCRs. 1/4" rack rail included for rack mounting electronics. Overall size 78" H x 26" D x 23 3/4" W. Model D8912 shpg. wt. 224 lbs. $736.00

For full-line catalog of editing, production and dubbing consoles, tape and film trucks, film and videotape storage systems contact your Winsted dealer.
**Movable Storage Systems**

*In a variety of designs and 5” to 30” depths to serve your special storage needs.*

**Winsted Shelf Storage System.** Offers 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.

**“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.

**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.

**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.

**Free Planning Service...**

Let our analysts show you how you can save storage space and make your operations more efficient with Winsted’s movable storage systems. Just call or write and let us know the quantity and type of tapes to be stored, along with dimensions of available space. We will analyze your storage space problems and provide a design for your particular operation.

Call or write to:

**Winsted Tape Storage Design**
10901 Hampshire Ave. So.
Minneapolis, MN 55438
800-443-2257
### Model T7800


Shpg. wt. 120 lbs. $419.00

### Model T7700


Shpg. wt. 138 lbs. $464.00

### Model T7400

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: 34½"W x 83"H). Cocoa Brown cabinet with Beige interior.

Shpg. wt. 185 lbs. $519.00

### Optional Accessories

1. Model T70983. Molded plastic divider insert (¾" tapes) for use in T7400, T7600, or T7700.

   Shpg. wt. 3 lbs. $14.00


   Shpg. wt. 2 lbs. $13.00
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\(\frac{3}{4}\)"W x 18\(\frac{3}{4}\)"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.

**Model R3303**
34" High Video Stand. Features three shelves to fit all of your electronics. 11\(\frac{1}{2}\)" clearance between shelves leaves plenty of room for equipment access. Measures 34"H x 22"D x 32"W. Shpg. wt. 55 lbs.

**Model R3353**
Portable Video Stand. Ideal for setup anywhere. Three shelves make a space for your monitor, VCR and accessories. Measures 54"H x 22"D x 32"W. Shpg. wt. 60 lbs.

**Model R3405**
Low-Profile Video Center. Designed for smaller groups and individual use. Monitor shelf is set back slightly to permit easy access to VTR. Top shelf is 32"W x 15"D. Cabinet is 34\(\frac{1}{4}\)"H x 32"W x 22"D. Wt. 91 lbs.

**Model R3720**
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. 59\(\frac{1}{4}\)"H x 32"W x 22"D. Wt. 185 lbs.

**Model R3606**
Executive Conference Room Consoles

**Model R37509**
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 is comfortable and clean. Satin smooth hand rubbed finish with uncommon attention to detail.

**Model R3740**
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\(\frac{3}{4}\)"H x 31\(\frac{1}{2}\)"W x 28\(\frac{1}{2}\)"D. Wt. 276 lbs.

**Model R3740**
Executive Video Console. Rich medium oak woodgrain. Holds any \(\frac{3}{4}\)" or 1\(\frac{1}{2}\)" VTR machine and monitor of up to 25". Convenient shelf stores tapes and other video accessories.

For full-line catalog of editing, production and dubbing consoles, tape and film trucks, film and videotape storage systems contact your Winsted dealer.
# Equipment

## Alphabetical manufacturer listing:

<table>
<thead>
<tr>
<th>Category</th>
<th>Manufacturers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VIDEO TAPE</strong></td>
<td>3M Company, Sony, Panasonic, Sony</td>
</tr>
<tr>
<td><strong>VIDEO RECORDERS</strong></td>
<td>Panasonic, Sony Broadcast Products, Sony Professional Video</td>
</tr>
<tr>
<td><strong>TRANSITTERS &amp; RF</strong></td>
<td>Acrodyne Industries, Sony Broadcast Products, Sony Professional Video</td>
</tr>
<tr>
<td><strong>VIDEO CONFERENCING</strong></td>
<td>Grass Valley Telecom, Sony Conference &amp; Satellite Systems</td>
</tr>
<tr>
<td><strong>VIDEO CAMERAS</strong></td>
<td>Panasonic, Sony Broadcast Products, Sony Professional Video</td>
</tr>
<tr>
<td><strong>MONITORS &amp; RECEIVER</strong></td>
<td>Electrolux Limited, Mitsubishi, NEC Industrial, Panasonic, Sharp Electronics</td>
</tr>
<tr>
<td><strong>LENSES/FILTERS</strong></td>
<td>Canon, Fujinon, Hitachi, Sony Professional Video, Videotek</td>
</tr>
<tr>
<td><strong>LIGHTING</strong></td>
<td>Anten/Bauer, Channel One Lighting, Comprehensive Video Supply, LTM, Low-Light</td>
</tr>
<tr>
<td><strong>EDIT CONTROLLERS</strong></td>
<td>CV Technologies, Digital FX, Grass Valley Group, Image North Technologies</td>
</tr>
<tr>
<td><strong>SIGNAL PROCESSING</strong></td>
<td>Grass Valley Group, Microtime, Tektronix</td>
</tr>
<tr>
<td><strong>DVE/PAINT/CG</strong></td>
<td>CV Technologies, Dubner Computer Systems, Grass Valley Group, Knoc Video</td>
</tr>
<tr>
<td><strong>COMPUTER GRAPHICS</strong></td>
<td>Agfa Matrix, Atlas Corporation, Apple Computers, AST Computers, AT&amp;T GSL</td>
</tr>
<tr>
<td><strong>AUDIO</strong></td>
<td>Atlas/Soundolier, Bayer Dynamic, Broadcast Electronics, Crown, Diamond Audio</td>
</tr>
<tr>
<td><strong>COMMAND ANIMATION CONTROLLERS</strong></td>
<td>Channelmatic, Leghtronix, Matsco, Tech Electronics</td>
</tr>
<tr>
<td><strong>COMMERCIAL INSERTIONS</strong></td>
<td>Digital FX, Grass Valley Group, Image North Technologies (Inscriptor), Panasonic, Sony Broadcast Products, Sony Pro Plus, Sony Professional Video, Sony Still Image Systems</td>
</tr>
</tbody>
</table>