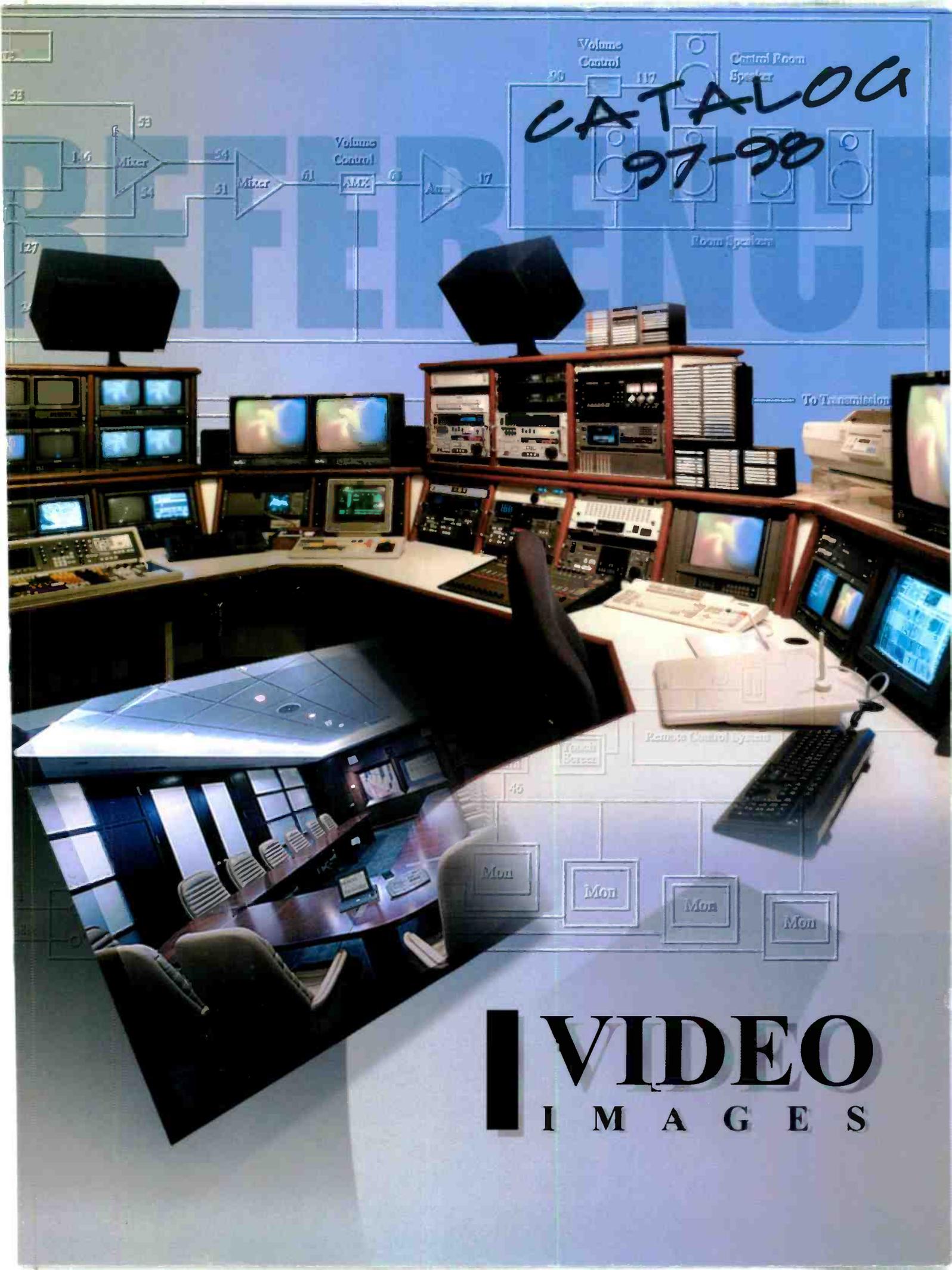
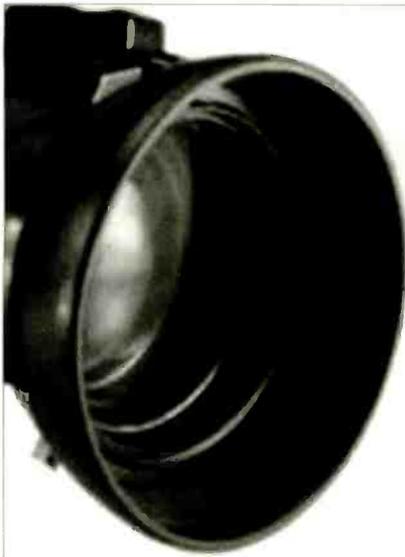


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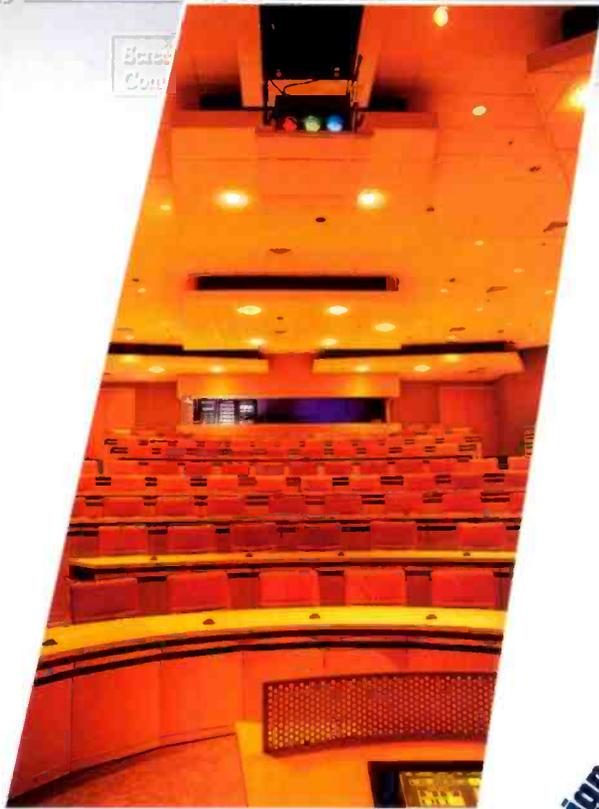
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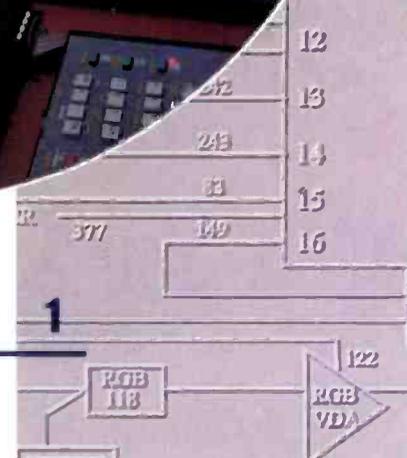
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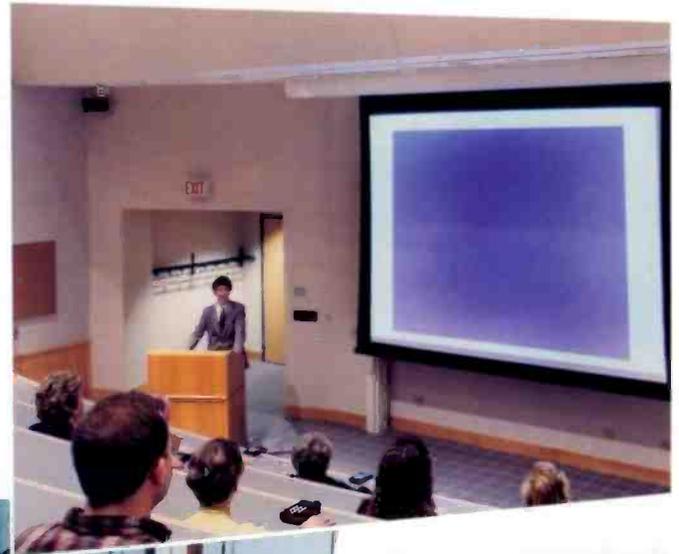
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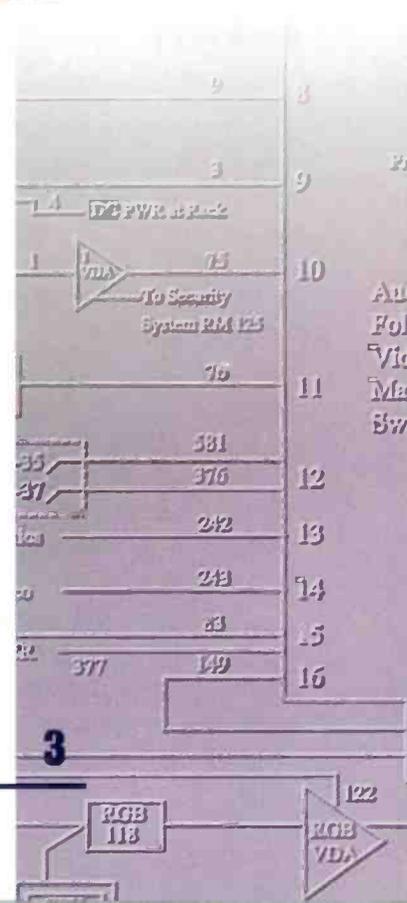


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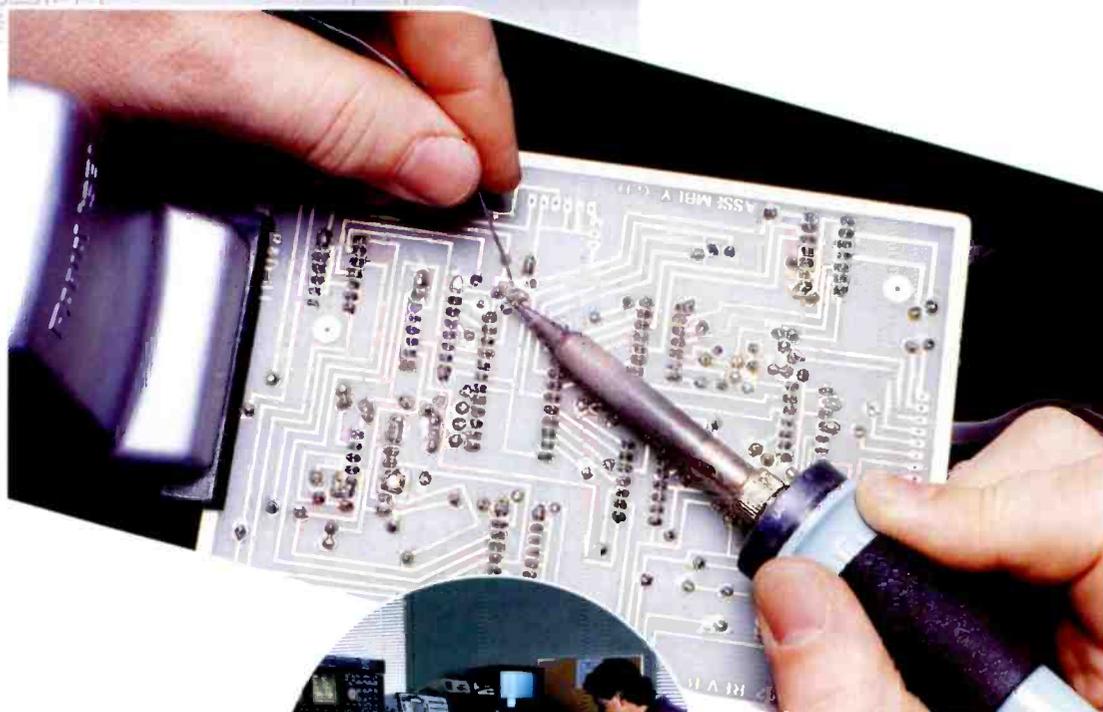
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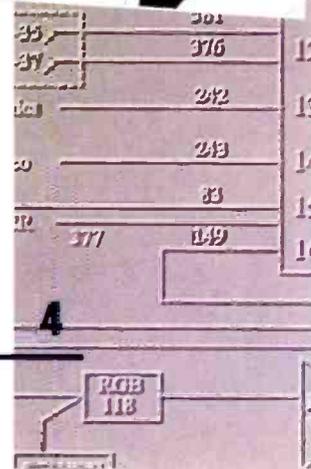
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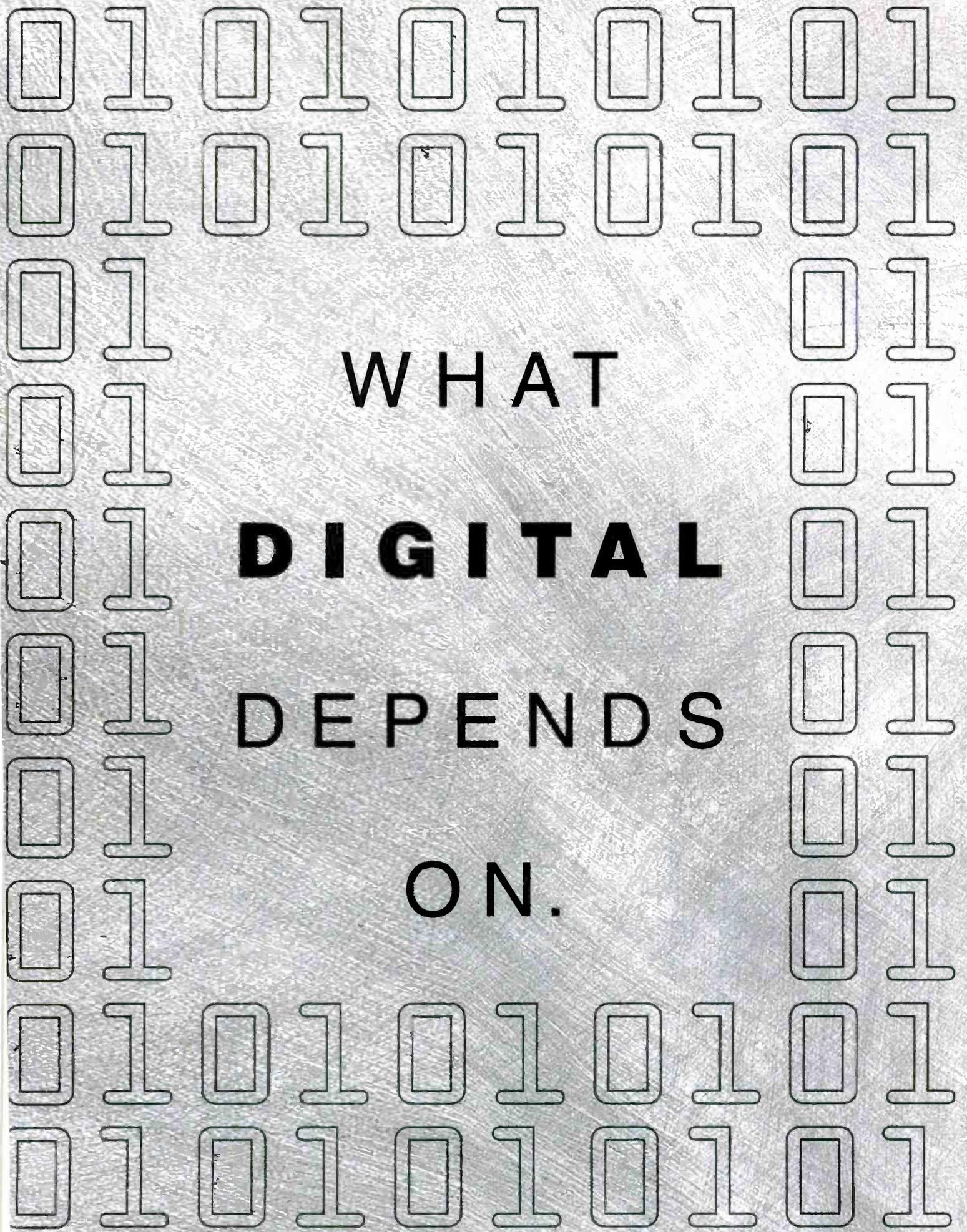


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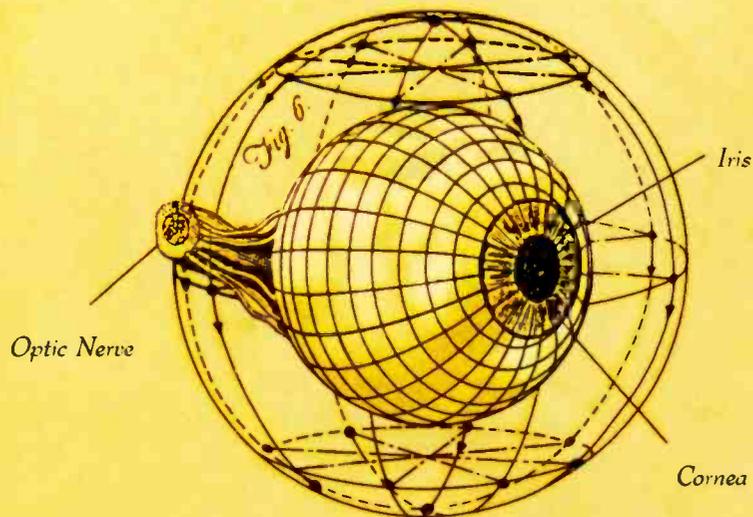
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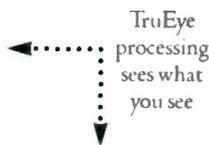
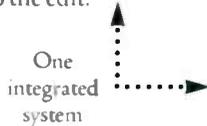




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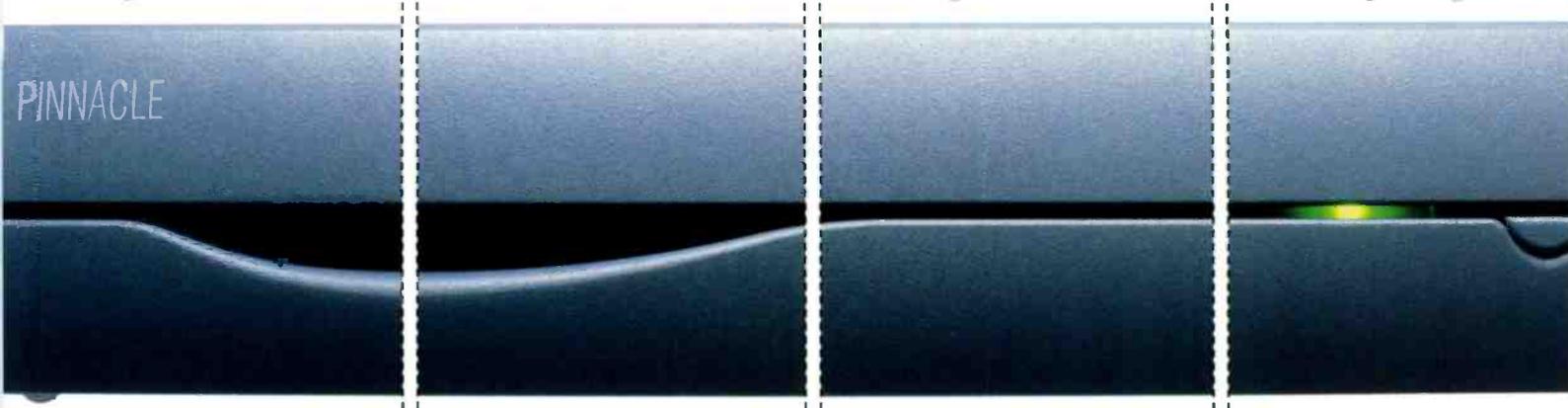
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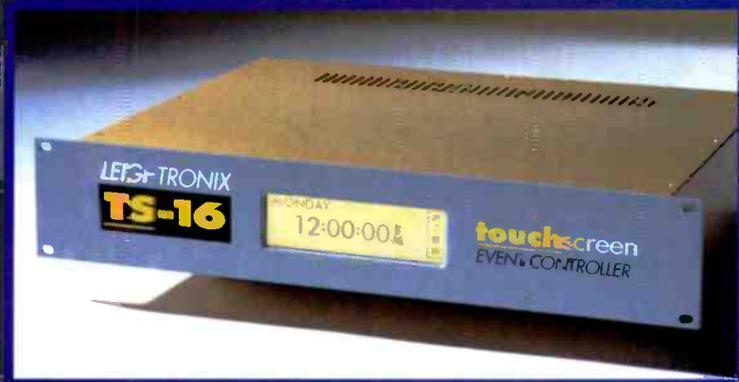
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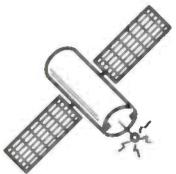
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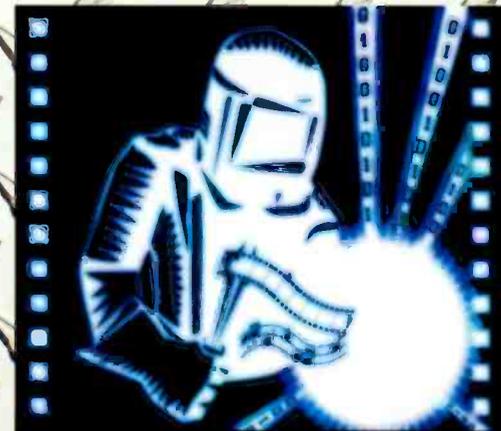
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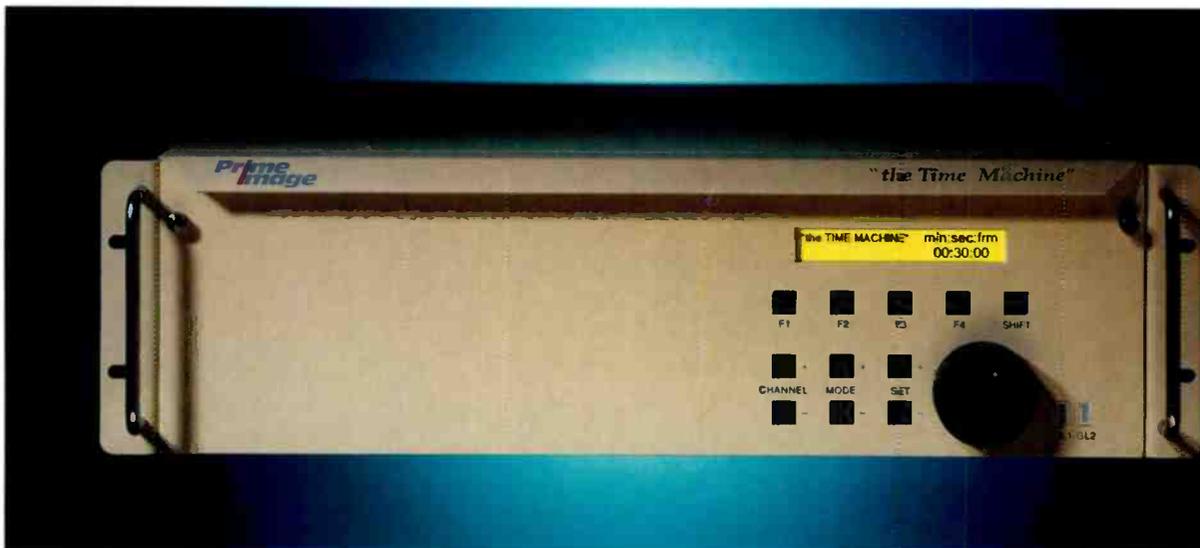
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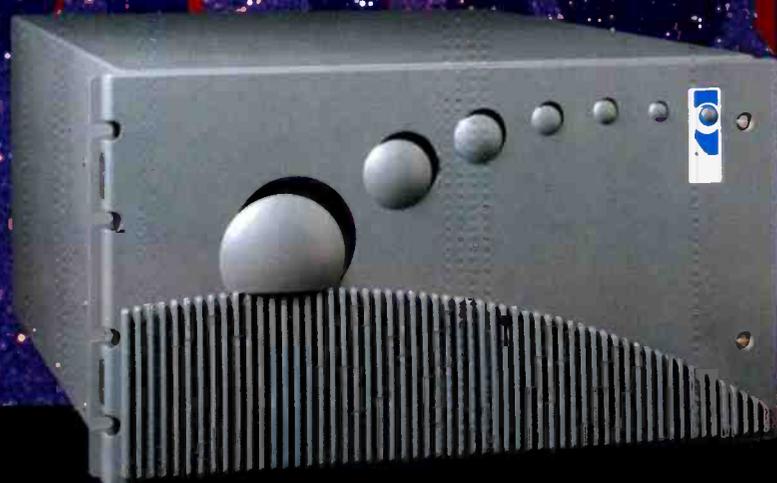
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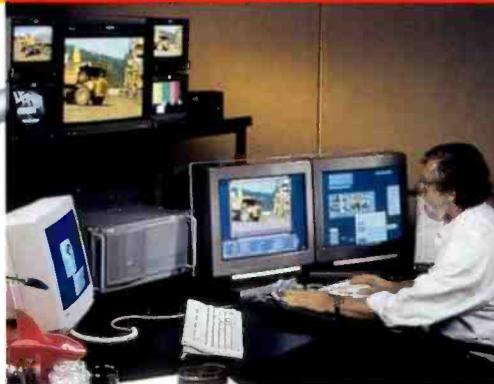
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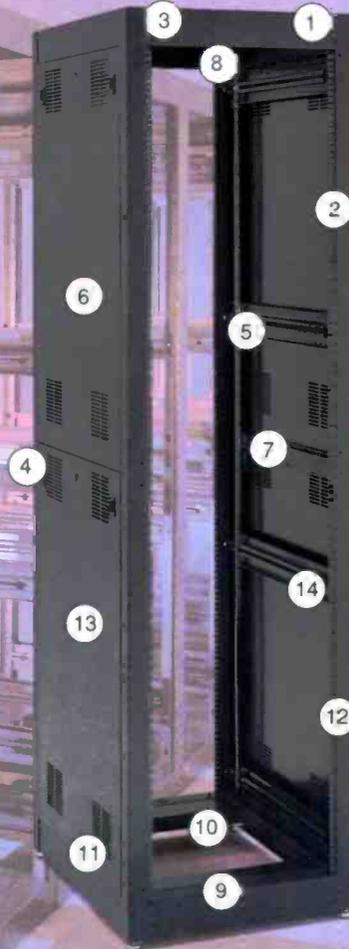
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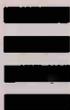
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A/B Roll: Videotape editing arrangement where scenes on tape are played alternately on VTRs A and B and recorded on VTR C. Typically, the final output recorded on VTR C contains some scenes from VTR A and some scenes from VTR B with transitions (cuts, mixes, wipes, etc.) between the scenes.

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

Absorption Loss: In telecommunications, attenuation of the optical signal within the fiber optic transmission medium. Usually specified in terms of dB/km.

AC/DC Coupling: May also be called simply DC coupling. Coupling between circuits which accommodates the passing of both AC and DC signals.

Adaptive Multichannel Prediction: A method of audio, multichannel data reduction exploiting statistical interchannel dependencies.

Adaptive Segmentation: A subdivision of the digital representation of an audio signal in variable segments of time.

Address: 1. A precise frame location on a videotape, usually identified by a time code number. 2. A memory location or device identifier in microprocessor and computer terminology.

ADSL (Asymmetrical Digital Subscriber Line): Technology that allows video to be sent over the phone company's twisted-pair copper wire to the home. Depending on a customer's distance from the central office, data rates of 1.5, 3 or 6Mbps can be achieved. Supports a low data rate return channel and concurrent unimpaired phone use while receiving video.

AES/EBU: Digital audio standard established by the Audio Engineering Society and European Broadcasting Union.

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 judder seen in standards converters with insufficient temporal filtering.
- ii) Raster scan aliasing—twinkling effects on sharp horizontal lines. 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.
See also: **Anti-aliasing.**

Amplitude: The magnitude of a signal in voltage or current. Frequently expressed in terms of peak, peak-to-peak or RMS.

Analog: 1. The characteristic of varying continuously along a scale as opposed to increasing or decreasing in fixed steps. Voltage, pressure, speed, etc., are often measured in analog terms. 2. A continuously variable system or device. Continuous tone film and a volume control on an average radio or record player are analog.

Analog-to-Digital Converter (ADC, A/D, A to D): A circuit that uses digital sampling to convert an analog signal into a digital representation of that signal.

ANSI: American National Standards Institute.

Anti-Aliasing: A procedure employed to eliminate or reduce, by smoothing and filtering, the *aliasing* effects. *Aliasing* is a disturbing effect created on a video image where vertical lines are too close together or where high frequency information is concentrated in a limited area of the screen (for example, from computer generated text and graphics) creates "beating," "crawling" and strobing interference.
See also: **Aliasing.**

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.

APL (Average Picture Level):—The average level of the active video (portion of video between blanking pulses) expressed as a percentage or in IRE. See also: **IRE.**

Archive: Long term off-line storage. In digital systems, pictures are generally archived onto some form of hard disk, 1/2" magnetic tape, floppy disk or 8mm cartridge.

Artifacts: Undesirable elements or defects in a video picture. These may occur naturally in the video process and must be eliminated in order to achieve a high quality picture. Most common are cross-color and cross-luminance.

ASCII (American Standard Code for Information Interchange):—This is the de facto world-wide standard for the code numbers used by computers to represent all the upper and lower-case Latin letters, numbers, punctuation, etc. There are 128 standard ASCII codes each of which can be represented by a 7 digit binary number: 0000000 through 1111111.

Aspect Ratio: 1. The ratio of television picture width to height. In NTSC and PAL video, the present standard is 4:3. 2. The ratio of wipe pattern width to height.

Asynchronous: Lacking synchronization. In video, a signal is asynchronous when its timing differs from that of the system reference signal. A foreign video signal is asynchronous before it is treated by a local frame synchronizer.

ATM (Asynchronous Transfer Mode):—A transporting and switching method in which information does not occur periodically with respect to some reference such as a frame pattern.

Attenuator: A circuit that provides reduction of the amplitude of an electrical signal without introducing appreciable phase or frequency distortion.

Audio Bridge: In telecommunications, a device that mixes multiple audio inputs and feeds back composite audio to each station, minus that station's input. Also known as a mix-minus audio system.

Audio-Follow-Video (AFV): An operational mode in which audio and video switchers are tied together so when the operator selects the video source, the audio simultaneously and automatically switches to the same source.

Axis: Relating to digital picture manipulation, the X axis is a horizontal line across the center of the screen, the Y axis is a vertical line and the Z axis is in the third dimension, perpendicular to the X and Y axes and indicating depth and distance.

B-picture: Bidirectionally Predictive-Coded Picture; an MPEG term for a picture that is coded using motion compensated prediction from a past and/or future reference picture.

Background Video: 1. Video that forms a background scene into which a key may be inserted. 2. A solid color video output generated by the background generator within a device, such as a production switcher, for use as background video in key effects.

Back Light: A fixture that is often not properly applied or overlooked completely. The main function of the back light is to separate the individual subjects from the background while giving them depth and dimension.

Back Porch: 1. The portion of a video signal that occurs during blanking from the end of horizontal sync to the beginning of active video. 2. The blanking signal portion which lies between the trailing edge of a horizontal sync pulse and the trailing edge of the corresponding blanking pulse. Color burst is located on the back porch.

Backward Compatibility: A new coding standard is backward compatible with an existing coding standard if existing decoders (designed to operate with the existing coding standard) are able to continue to operate by decoding all or part of a bitstream produced according to the new coding standard.





Bandwidth: How much "stuff" you can send through a connection. Usually measured in *bits-per-second*. A full page of English text is about 16,000 *bits*. A fast modem can move about 15,000 *bits* in one second. Full-motion full-screen video would require roughly 10,000,000 *bits* per second, depending on compression. See also: **Bit**, **T-1**.

Baseband: The frequency band occupied by the aggregate of the signals used to modulate a carrier before they combine with the carrier in the modulation process.

Baud: In common usage the "baud rate" of a *modem* is how many *bits* it can send or receive per second. Technically "baud" is the number of times per second that the carrier signal shifts value—so a 2400 *bit* per second modem actually runs at 300 baud, but it moves 4 bits per baud ($4 \times 300 = 1200$ bits per second). See also: **Bit**, **Modem**.

BBS: (Bulletin Board System)—A computerized meeting and announcement system that allows people to carry on discussions, upload and download files, and make announcements without the people being connected to the computer at the same time. There are many thousands (millions?) of BBS's around the world, most are very small, running on a single IBM clone PC with 1 or 2 phone lines. Some are very large and the line between a BBS and a system like CompuServe gets crossed at some point, but it is not clearly drawn.

Bearding: Video distortion that appears as short black lines extending to the right of bright objects within a scene.

BER: (Bit Error Rate)—The ratio of received bits that are in error relative to the total number of bits received. Used as a measure of noise induced distortion in a digital bit stream. BER is expressed as a power of 10. For example, a 1 bit error in 1 million (10^6) bits is a BER of 10-6.

Bias: Current or voltage applied to a circuit to set a reference operating level for proper circuit performance, such as the high frequency bias current applied to an audio recording head to improve linear performance and reduce distortion.

Binary: A base 2 numbering system using the two digits 0 and 1 (as opposed to ten digits [0-9] in the decimal system). In computer systems, the binary digits are represented by two different voltages or currents, one corresponding to zero and another corresponding to one. All computer programs are executed in binary form.

Bipolar: A signal containing both positive-going and negative-going amplitude. May also contain a zero amplitude state.

Bit: (Binary DigIT)—A single digit number in base-2, in other words, either a 1 or a 0. The smallest unit of computerized data. *Bandwidth* is usually measured in bits-per-second. See also: **Bandwidth**, **Byte**, **Kilobyte**, and **Megabyte**.

Bitmap: A pixel-by-pixel description of an image. Each pixel is a separate element. Also referred to as a raster image.

Bit Rate: Measured via Bytes (8-bits) per second (Bps) and bits per second (bps). This digital equivalent of bandwidth is used to express the rate at which the compressed bitstream is transmitted. The higher the bit rate, the more information that can be carried.

Black also Color Black, Blackburst: 1. A composite color video signal. The signal has composite sync, reference burst and a black video signal which is usually at a level of 7.5 IRE (0.05V) above the blanking level. 2. Fade-to-black between scenes.

Blanking (BLKG): 1. The time period in which picture information is shut off. Blanking is a voltage level which is at or below black picture level and acts as a signal to turn off the scanning beam. Synchronizing pulses which control invisible retrace of scanning are active during the blanking period. 2. A standard signal from a sync generator used to create blanking in video.

Blanking Level: 1. Also known as pedestal, the level of a video signal which separates the range that contains the picture information from the

range that contains the synchronizing information. 2. The level of the front and back porches. Zero IEEE units.

Blooming: 1. The defocusing of regions of a picture where brightness is excessive. 2. On video monitors, adjusting the white levels to the point of leaving gray and becoming white.

BNC: (Bayonet Neill-Concelman)—A cable connector used extensively in television and named for its inventor.

Bridge: 1. A type of network circuit used to match circuits to each other, ensuring minimum transmission impairment. 2. To place one circuit parallel to another.

Broadband: 1. Having an essentially uniform response over a wide range of frequencies. 2. Capable of handling frequencies greater than those required for high-grade voice communications (higher than 3 to 4kHz).

Buffer: 1. A circuit or component which isolates one electrical circuit from another. 2. A digital storage device used to compensate for a difference in the rate of flow of information or the time of occurrence of events when transmitting information from one device to another. 3. In telecommunications, a protective material used in cabling optical fiber to cover and protect the fiber. The buffer material has no optical function.

Burst (Color Burst): Seven to nine cycles (NTSC) or ten cycles (PAL) of subcarrier placed near the end of horizontal blanking to serve as the phase (color) reference for the modulated color subcarrier. Burst serves as the reference for establishing the picture color.

Burst Flag (BF): A pulse used to gate the color reference subcarrier (burst) onto the back porch of each horizontal blanking interval. Also called burst gate (BG).

Burst Vector: In composite video signals, the amplitude and angle of the color reference signal.

Bus: In computer architecture, a path over which information travels internally among various components of a system.

Bus Topology: 1. A conductor or group of conductors which provides an electronic pathway between two or more devices. 2. In data communications, a network in which stations are arranged along a linear medium (e.g., a length of cable).

Byte: Unit of memory in a computer consisting of eight bits. Generally, one byte expresses image intensity at one point (pixel) of an image in one channel. It can also represent one letter, number or symbol in the ASCII code.

C-Band: A range of microwave frequencies, 3.7GHz-4.2GHz, commonly used for satellite communications.

Cable Equalization: The process of altering the frequency response of a video amplifier to compensate for high frequency losses in coaxial cable.

Cable Ready: In accordance with the Cable Act of 1992, the FCC issued a new definition of "cable ready" in April, 1994 which included standards for: a decoder interface connector, the ability to tune all channels up to 1,002MHz and improved tuner performance and shielding.

Candlepower: The unit measure of an incident light.

CAP: (Competitive Access Provider)—Companies which offer telecommunication services to bypass the local phone company and tie directly into a long distance carrier. Services are usually used by large companies for high volume voice and data traffic. CAPs usually install fiber in major metropolitan areas. Teleport, a large CAP company, is now owned by Cox, TCI and other cable companies.

Capacitor: A device that stores electrical energy. It allows the apparent flow of alternating current while blocking the flow of direct current. The degree to which it allows AC current flow depends on the frequency of the signal and the size of the capacitor. Capacitors are used in filters, delay line components, couplers, frequency selectors, timing elements, voltage transient suppression, etc.



Cardioid: A type of microphone with sound pickup characteristics resembling a heart-shaped sphere. The cardioid microphone is used in specific applications where a pickup characteristic of this kind is needed.

Carrier Wave: A single frequency wave which, when transmitted, is modulated by another wave containing information.

CAV: (Component Analog Video)—A video format in which three separate video signals represent luminance and color information. Each signal consists of an analog voltage that varies with picture content. Also called analog component.

CCD: (Charge Coupled Device)—A device that stores samples of analog signals used in cameras and telecines as an optical scanning mechanism. Advantages include good sensitivity in low light and absence of burn-in and phosphor lag found in CRTs.

CCD Array: A device that mounts CCDs together to allow for the capture of multiple pixels simultaneously. Currently, four megapixel CCD arrays are in production. In such an array, 4,194,304 pixels of light can be converted into digital values at the same instant.

CCD Color Scanner: An input scanner using a lens and a linear CCD array to produce the scan raster. The array (one pixel wide by several thousand long) is "stepped" sideways across the focal point of the lens, each step producing one complete scan line signal.

CCIR 601: An international standard for component digital television that was derived from the SMPTE RP125 and EBU 3246E standards. CCIR 601 defines the sampling systems, matrix values and filter characteristics for both Y, Cr, Cb and RGB component digital television. It establishes a 4:2:2 sampling scheme at 13.5MHz for the luminance channel and 6.75MHz for the chrominance channels with eight-bit digitizing for each channel. These sample frequencies were chosen because they work for both 525-line 60Hz and 625-line 50Hz component video systems. The term 4:2:2 refers to the ratio of the number of luminance channel samples to the number of chrominance channel samples; for every four luminance samples, the chrominance channels are each sampled twice. The D1 digital videotape format conforms to CCIR 601.

CCIR 656: The international standard defining the electrical and mechanical interfaces for digital television equipment operating according to the CCIR 601 standard. CCIR 656 defines both the parallel and serial connector pinouts, as well as the blanking, sync and multiplexing schemes used in both parallel and serial interfaces.

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.

Checkerboard Assembly: In video editing, a nonsequential method of auto assembly. The computerized editing system records and edits from the videotape playback reels currently in use, leaving gaps that will be filled later by subsequent reels. Also called B-mode assembly.

Chip: An integrated circuit in which all the components are micro-fabricated on a tiny piece of silicon or similar material.

Chroma Crawl: An artifact of encoded video also known as dot crawl or cross-luminance. Occurs in the video picture around the edges of highly saturated colors as a continuous series of crawling dots and is a result of color information being confused as luminance information by the decoder circuits.

Chroma Gain (Chroma, Color, Saturation): In video, the gain of an amplifier as it pertains to the intensity of colors in the active picture.

Chromakey (Color Key): A video key effect in which one video signal is inserted in place of areas of a particular color in another video signal. For example, a weatherman stands in front of a blue wall with a camera focused on him. The camera signal feeds a chromakeyer which detects the blue in the blue wall and replaces it with video from another camera, such as video of a weather map. Thus, the finished key makes the weatherman appear to be standing in front of the weather map.

Chromaticity: 1. The attribute of light combining hue and saturation, independent of intensity. The color perceived is determined by the relative proportions of the three primary colors. 2. The color quality of light defined by wavelength and purity.

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

Chrominance-to-Luminance Intermodulation (Crosstalk, Cross-Modulation): An undesirable change in luminance amplitude caused by superimposition of some chrominance information on the luminance signal. Appears in a TV picture as unwarranted brightness variations caused by changes in color saturation levels.

Clamp, Clamping: The circuit or process that restores the DC component of a signal. A video clamp circuit, usually triggered by horizontal synchronizing pulses, re-establishes a fixed DC reference level for the video signal. Some clamp circuits clamp sync tip to a fixed level while others clamp back porch (blanking) to a fixed level. A major benefit of a clamp is the removal of low frequency interference, especially power line hum.

Clear Channel: A transmission path in which the full bandwidth is available to the user.

Clip: 1. In keying, the trigger point or range of a key source signal where the key or insert takes place. 2. The control that sets this action. To produce a key signal from a video signal, a clip control on the keyer control panel is used to set a threshold level to which the video signal is compared. 3. In digital picture manipulators, a menu selection that blanks portions of a manipulated image that leave one side of the screen and "wrap" around to enter the other side of the screen.

Clipping Level: An electronic limit to avoid overdriving the audio or video portion of the television 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 0.69" regardless of the kind of lens used.

CODEC: (Code/Decode)—An encoder plus a decoder is an electronic device that compresses and decompresses digital signals. CODECs usually perform A to D and D to A conversion.

Color Difference Format: A video signal set that includes color difference signals. Betacam and Mll, for example, are names of two widely used color difference formats.

Color Difference Signal: A video color signal created by subtracting luminance and/or color information from one of the primary color signals (red, green or blue). In the Betacam color difference format, for example, the luminance (Y) and color difference components (R-Y and B-Y) are derived as follows:

$$\begin{aligned} Y &= 0.3 \text{ Red} + 0.59 \text{ Green} + 0.11 \text{ Blue} \\ R-Y &= 0.7 \text{ Red} - 0.59 \text{ Green} - 0.11 \text{ Blue} \\ B-Y &= 0.89 \text{ Blue} - 0.59 \text{ Green} - 0.3 \text{ Red} \end{aligned}$$

The G-Y color difference signal is not created because it can be reconstructed from the other three signals. Other color difference conventions include SMPTE, EBU-N10 and Mll. Color difference signals should not be referred to as component video signals. That term is reserved for the RGB color components. In informal usage, the term component video is often used to mean color difference signals.

Color Field: In the NTSC system, the color subcarrier is phase-locked to the line sync so that on each consecutive line, subcarrier phase is changed 180° with respect to the sync pulses. In the PAL system, color subcarrier phase moves 90° every frame. In NTSC this creates four different field types, while in PAL there are eight. In order to make clean edits, alignment of color field sequences from different sources is crucial.



Color Frame: In color television, four (NTSC) or eight (PAL) properly sequenced color fields compose one color frame.

Color Phase: The timing relationship in a video signal which is measured in degrees and keeps the hue of a color signal correct.

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.

Color Temperature: Indicates the hue of the color. It is derived from photography where the spectrum of colors is based upon a comparison of the hues produced when a special metal body is heated from red through yellow to blue, which is the hottest. Color temperature measurements are expressed in Kelvin.

Comb Filter: An electrical filter circuit that passes a series of frequencies and rejects the frequencies in between, producing a frequency response similar to the teeth of a comb. Used on encoded video to select the chrominance signal and reject the luminance signal, thereby reducing cross-chrominance artifacts or conversely, to select the luminance signal and reject the chrominance signal, thereby reducing cross-luminance artifacts. Comb filtering successfully reduces artifacts, but may also cause a certain amount of resolution loss in the picture.

Component: The normal interpretation of a component video signal is one in which the luminance and chrominance are sent as separate components, e.g., analog components in MII and Betacam VTRs, digital components YCRCB in CCIR 601. RGB is also a component signal. Component video signals retain maximum bandwidth, unlike composite systems.

Component Analog: An unencoded video signal consisting of three primary color signals (RGB) that together convey all necessary picture information.

Component Digital: A digital representation of component analog signal set, most often Y, B-Y, R-Y. The encoding parameters are specified by CCIR 601 (ITU-R BT.601).

Composite: A composite 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 Analog: An encoded video signal, such as NTSC or PAL video, that includes horizontal and vertical synchronizing info.

Composite Digital: A digitally encoded video signal, such as NTSC or PAL video, that includes horizontal and vertical synchronizing info.

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 blacks 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 Frame Pulse: A pulse laid down on videotape by a videotape recorder to identify the frame locations. This enables the VTR to lock-up correctly framed during playback.

Cross-Color: This defect manifests itself as spurious rainbow patterns on highly textured objects like 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.

Crosstalk: 1. Undesired transmission of signals from one circuit into another circuit in the same system. Usually caused by unintentional capacitive (AC) coupling. 2. Signal interference from one part of a videotape to another.

CT/Continuous Tone: A picture file, also called a contone. CT files are created by either scanning a picture into the system, or by generating a CT image internally. Each pixel in a CT file uses one byte each for its red, green and blue values, allowing up to 256 density levels per color and more than 16 million different mixture colors.

Cyclorama Lights: Cyclorama lights are designed to create a smooth lighting effect on a backdrop or cyclorama.

D1: A component digital videotape recording format that conforms to the specifications set in the CCIR 601 standard.

D2: An eight-bit composite digital videotape recording format in which the composite video signal is digitized by sampling it at the rate of four times the frequency of subcarrier (4fsc). The 4fsc frequency in NTSC is 14.3MHz, and 17.7MHz in PAL.

D3: An unofficial term for a composite digital videotape recording format invented by Panasonic.

D5: A component digital videotape recording format that conforms to the specifications set in the CCIR 601 standard; Panasonic format.

D to A Converter (DAC): A device used to convert digital signals to analog signals.

D-Picture: DC-coded Picture. A picture that is coded using only information from itself (intra-field or intra-frame coded). Of the DCT coefficients in the coded representation, only the DC-coefficients are present. Proposed use is to enable viewable pictures in fast forward and rewind.

DAT: (Digital Audio Tape)—A system developed initially for recording and playback of digitized audio signals, maintaining signal quality equal to that of a CD. Recent developments in hardware and software might lead to a similar inexpensive system for video recording and playback.

Data Broadcasting: Use of NTSC TV signals to deliver high volume digital data. Currently broadcasters use the VBI to carry low volume data.

Data Communications: 1. The movement of encoded information by means of electronic transmission systems. 2. The transmission of data from one point to another over communications channels.

Data Compression: A technique that provides for the transmission or storage, without noticeable information loss, of fewer data bits than were originally used when the data was created.

DAW: Digital Audio Workstation.

dB (decibel): A measure of voltage, current or power gain equal to 1/10 of a Bel. Given by the equations $20 \log V\text{-out}/V\text{-in}$, $20 \log (I\text{-out}/I\text{-in})$, or $10 \log (P\text{-out}/P\text{-in})$.

DBS: (Direct Broadcast Satellite)—The provision of broadcasting from a satellite directly to a consumer user, usually using a small aperture antenna.

DCT: (Discrete Cosine Transform)—Mathematical algorithm which is used to generate frequency representations of a block of video pixels. The DCT is an invertible, discrete orthogonal transformation between time and frequency domain. It can be either forward discrete cosine transform (FDCT) or the inverse discrete cosine transform (IDCT).

DCT Coefficient: The amplitude of a specific cosine basis function.

Decoded Stream: The decoded reconstruction of a compressed bitstream.

Decoder: 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, such as composite chromakeying of color correction equipment, etc.

Decryptor: A descrambler or decoder designed to restore a scrambled and encrypted signal to its original form.



Degauss: To demagnetize recording and playback heads and 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.

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.

Dequantization: The process of rescaling the quantized DCT coefficients after their representation in the bitstream has been decoded and before they are presented to the inverse DCT.

Deserializer: A device that converts parallel digital information to serial.

Differential Gain: A change in subcarrier amplitude of a video signal caused by a change in luminance level of the signal. The resulting TV picture will show a change in color saturation caused by a simultaneous change in picture brightness.

Differential Phase: 1. A change in the subcarrier phase of a video signal caused by a change in the luminance level of the signal. 2. The hue of colors in a scene change with the brightness of the scene.

Digital: Circuitry in which data carrying signals are restricted to either of two voltage levels, corresponding to logic one or zero. A circuit which has two stable states: high or low, on or off.

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

Digital Disc Recorder: A system mainly intended for post-production purposes, allowing a person to record short scenes on a digital disc. The advantages of this system for editing purposes are extremely fast access to any point on the disc, elimination of dropout and very fast shuttle speed back and forth. Several digital formats of data storage exist, developed specifically for the disc recorder by the manufacturer without a universal standard.

Digitizing Pad: A device that translates drawings from a tablet and stylus to a digital video format.

Dispersion: The characteristic of a light-conducting medium that causes the medium to transmit light of different frequencies at different velocities. Dispersion causes the refractive index of a given medium to vary as a function of wavelength. As it relates to optical fiber, this property influences both the effective numerical aperture and the bandwidth of an optical fiber.

Display Order: The order in which the decoded pictures should be displayed. Normally this is the same order in which they were presented at the input of the encoder.

Distortion: Changing the size of a file in a nonproportional manner. Also known as "Anamorphic Scaling."

Distribution Amplifier (DA): A device used to replicate an input signal typically providing six outputs, each of which is identical to the input. May also include delay and/or cable equalization capabilities.

Dither: A low level which is added to an analog signal prior to sampling. Typically consists of the white noise of one quantizing level peak-to-peak amplitude.

DLC: (Digital Loop Carrier)—Multiplexed digital circuits which deliver digital information from a CO to an end user over a twisted-pair of copper wire phone lines.

Dolby: A technique developed by Dolby™ Laboratories which improves the signal-to-noise ratio of a recording by a nonlinear raising of the volume of specific frequencies in quiet passages before recording, and a lowering to their original levels during playback. The lowering process automatically reduces any noise that was introduced as a result of recording or playback.

Domain Name: The unique name that identifies an Internet site.

Domain Names always have 2 or more parts, separated by dots. The part on the left is the most specific, and the part on the right is the most general. A given machine may have more than one Domain Name but a given Domain Name points to only one machine. Usually, all of the machines on a given network will have the same thing as the right-hand portion of their Domain Names, e.g.

gateway.gbnetwork.com

mail.gbnetwork.com

www.gbnetwork.com

and so on. It is also possible for a Domain Name to exist but not be connected to an actual machine. This is often done so that a group or business can have an Internet e-mail address without having to establish a real Internet site. In these cases, some real Internet machine must handle the mail on behalf of the listed Domain Name. See also: IP Number.

Dot Pitch: The distance in millimeters between individual dots on a monitor screen. The smaller the dot pitch the better, since it allows for more potential dots to be displayed resulting in better resolution.

Downlink: The communications path from a satellite to its ground station, or from a transmitter to a studio.

Downstream Keyer: A keyer that inserts the key after the effects system video output. This enables the key to remain on-air while the background and effects keys are changed behind it.

DPI or DPM: Dots Per Inch (Pixels Per Inch) or Dots Per Millimeter. Can either relate to pixels in an input file or line screen dots (halftone screen) in a prepress output film.

DRAM: (Dynamic Random Access Memory)—DRAM has to be refreshed at a periodic rate. See also: SRAM.

Drop-Frame Time Code: SMPTE time code format that continuously counts 30 frames per second but drops two frames from the count every minute except for every tenth minute (drops 108 frames every hour) to maintain synchronization of time code with clock time. This is necessary because the actual frame rate of NTSC video is 29.94 frames per second rather than an even 30 frames. See also: Nondrop Frame Time Code.

Dropout: A momentary loss or deterioration of video or audio during playback on a tape machine. Caused by momentary loss of tape contact with the playback head or by flaws in the tape.

DS0: (Digital Service, Level 0)—A standard for digital communications channels in North America which communicate at 64Kbps.

DS1: A telephone company format for transmitting information digitally. DS1 has a capacity of 24 voice circuits at a transmission speed of 1.544Mbps.

DS3: A telephone company format for transmitting information digitally. DS3 has a capacity of 672 voice circuits at a transmission speed of 44.736Mbps.

Dubbing: Transcribing from one recording medium to another.

DVE: (Digital Video Effects)—A registered trademark of Nippon Electric Company.

Dynamic Range: The difference between the smallest amount and the largest amount that a system can represent. The dynamic range of an EIM system is the difference between the lightest highlight and the D-Max that the system can scan, manipulate and write.

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

EDL: Edit Decision List.

E-E Mode: This stands for "electronics to electronics" and is a VTR mode in which the VTR processes the signals it would normally use during recording, but does not actually record onto the tape.



EEPROM: (Electrically Erasable Programmable Read-Only Memory)—A type of memory chip that can hold data even when power is removed. The memory can be erased electronically so new data can be stored.

EIA: Electronic Industries Association (formerly RMA or RETMA). The organization that determines recommended audio and video standards in the United States.

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

E-mail: (Electronic Mail)—Messages, usually text, sent from one person to another via computer. E-mail can also be sent automatically to a large number of addresses (Mailing List).

Encoded: The encoded video signal is formed by 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.

Encryption: The rearrangement of the bit stream of a previously digitally encoded signal in a systematic fashion to make the information unrecognizable until restored upon receipt of the necessary authorization key. This technique is used for securing information transmitted over a communication channel with the intent of excluding all other than authorized receivers from interpreting the message. Can be used for voice, video and other communications signals.

Equalizer: 1. Equipment designed to compensate for loss and delay frequency effects within a system. 2. A component or circuit which allows for the adjustment of a signal across a given band.

Ethernet: A local area network used for connecting computers, printers, workstations, terminals, etc., within the same building. Ethernet operates over twisted wire and coaxial cable at speeds up to 10Mbps. Ethernet specifies a CSMA/CD (Carrier Sense Multiple Access with Collision Detection). CSMA/CD is a technique of sharing a common medium (wire, coaxial cable) among several devices.

External Key: A video key that uses an external key signal (a signal coming from a source outside the device in question) to cut the key hole and a separate fill signal to fill the hole.

Fast Ethernet: Fast Ethernet runs at speeds up to 100Mbps on 100 BaseT [Category 5 UTP (Unshielded Twisted-Pair)]. See also Ethernet.

FDDI: FDDI is a 100 Mbps fiber optic LAN. It is an ANSI standard. It uses a "counter-rotating" token ring topology, and is typically used as a "backbone" LAN. FDDI's theoretical maximum is 170,000 pps (packets per second).

Fiber Optic: A transmission designed to transmit signals in the form of pulses of light. Fiber optic cable is noted for its properties of electrical isolation and resistance to electrostatic and electromagnetic interference.

Field: 1. One-half of a television picture. 2. 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: In video keying, the fill is the video signal inserted into the "hole" cut in the background video by a key signal. See also: Key.

Film Recorder: A device for converting digital data into film output. Continuous tone recorders produce color photographs as transparencies, prints or negatives. Halftone recorders produce film with halftone dots that can be used to make printing plates.

Fireware: See IEEE-1394.

FITL: (Fiber In The Loop)—Telco term for fiber deployment in the local subscriber loop.

Flash Memory: Nonvolatile, digital storage. Flash memory has slower access than SRAM or DRAM.

Flat Bed Scanner: An optical scanner that moves the original image and keeps the sensors (usually a CCD array) in place.

Flicker: An annoying picture distortion, mainly related to vertical syncs and video fields display. Some flicker normally exists due to interlacing; more apparent in 50Hz systems (PAL). Flicker also shows when static images are displayed on the screen such as computer generated text transferred to video. Poor digital image treatment, found in low quality system converters (going from PAL to NTSC and vice versa), creates an annoying flicker on the screen. There are several electronic methods to minimize flicker.

Focal Length: The distance from the center of the lens to a plane at which point 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.

Forced Foreground: A feature of some keyers. Uses a mask to force key fill video to appear wherever the mask occurs and completely inhibit background video.

Format: In recording of video, C, U-Matic, Betacam, M, Betacam SP, MII, D1, D2, D3, D5, Digital Betacam, Beta, VHS, Hi8, 8mm, S-VHS, DVC PRO and digitals are all current formats.

Forward Compatible: A new coding standard is forward compatible with an existing coding standard if new decoders (designed to operate with the new coding standard) continue to be able to decode bitstreams of the existing coding standard.

Frame: 1. The total area of the picture which is scanned while the picture signal is not blanked. 2. A complete TV picture consisting of two fields. A total scanning of all 525 lines of the raster area which occurs every 1/60 of a second (625 lines, 1/50 sec., in Europe and many other countries).

Frame Buffer: Memory used to store a complete frame of video.

Frame Rate: The rate at which frames are being displayed.

Frame Relay: A type of fast packet switching technology with simplified error detection capability. It requires more intelligence to reside in the receiving terminal.

Frame Synchronizer: A digital buffer that, by storage and comparison of sync information to a reference, and timed release of video signals, can continuously adjust the signal for any timing errors.

Frequency: The number of complete cycles of a periodic waveform that occur in a given length of time. Usually specified in cycles per second (Hertz).

Frequency Modulation (FM): Modulation of a sine wave or "carrier" by varying its frequency in accordance with amplitude variations of the modulating signal.

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

Front Porch: The blanking signal portion which lies between the end of the active picture information and the leading edge of horizontal sync.

FSN: (Full Service Network)—A switched digital network system that combines voice, data and video delivery over a single "pipe."

F-Stop: 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.





FTP: (File Transfer Protocol)—A very common method of moving files between two Internet sites. FTP is a special way to login to another Internet site for the purpose of retrieving and/or sending files. There are many Internet sites that have established publicly accessible repositories of material that can be obtained using FTP by logging on using the account name "anonymous," thus these sites are called "anonymous ftp servers."

FTTC: (Fiber To The Curb)—Installation of optical fiber stopping just short of the home.

Gain: Any increase or decrease in strength of an electrical signal. Gain is measured in terms of decibels or number of times of magnification.

Gamma Correction: A process used with video and computer graphic's images to correct brightness and internal micro-contrast within the image. Gamma correction allows a change of ratio between the brightest red component of an image and the weakest red.

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, crosstalk or other distortions.

Gate: 1. A signal used to trigger the passage of other signals through a circuit. 2. A digital logic device whose output state depends on the states of the logic signals presented to its inputs.

Gateway: The technical meaning is a hardware or software set-up that translates between two dissimilar protocols, for example Prodigy has a gateway that translates between its internal, proprietary e-mail format and Internet e-mail format. Another, sloppier meaning of gateway is to describe any mechanism for providing access to another system, e.g. AOL might be called a gateway to the Internet.

Gbps: (Gigabits per second) A billion bits per second.

General Purpose Interface (GPI): 1. A parallel interconnection scheme that allows remote control of certain functions of a device. One wire per function. 2. May also refer to any nonspecific interface between equipment. Usually refers to a serial connection (RS-232 or RS-422 format) between computer modules.

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.

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.

Geostationary Orbit: An orbital location of a communications satellite fixed above the earth's equator at 22,300 miles out. The satellite's position is constant relative to a point on the earth.

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.

GHz: (GigaHertz)—One billion cycles per second.

Gigabyte: Unit of computer memory consisting of about one thousand million bytes (a thousand megabytes). Actual value is 1,073,741,824 bytes.

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

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

Ground Loop: A condition when two or more paths to ground exist and a voltage is induced unequally in these paths, causing interference, such as hum, buzz or noise.

GUI: (Graphic User Interface)—A computer software system that relies on menus, icons, and a pointing device (mouse) for user interaction. The foundation for the Macintosh™ personal computer and IBM PCs operating with Microsoft Windows™ 3.0.

H Blanking Width: The width in terms of time occupied by horizontal blanking. The period of time from the end of active video of one line to the beginning of active video of the next line. During this time, the electron beam in a camera or monitor is turned off as it returns or retraces to the other side of the raster to begin a new scan.

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; tri-level syncs.

Headend: The electronic equipment located at the start of a cable television system, usually including antennas, earth stations, preamplifiers, frequency converters, demodulators, modulators and related equipment.

Helical Scan: A method of recording video information on a tape, most commonly used in home and professional VCRs.

Hi8: 8mm professional NTSC recording format.

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: Chrominance and luminance resolution (detail) expressed horizontally across a picture tube. This is usually expressed as a number of black to white transitions or lines that can be differentiated. Limited by the bandwidth of the video signal or equipment.

Horizontal Retrace: At the end of each horizontal line of video, a brief period when the scanning beam returns to the other side of the screen to start a new line.

Horizontal Sync Pulse: The synchronizing pulse at the end of each video line that determines the start of horizontal retrace.

House Sync: Television sync generated within the studio and used as a reference for generating and/or timing other video signals.

H Phase: 1. The horizontal phase relationship of one piece of equipment to another for studio timing purposes. 2. The phase of horizontal sync in relation to subcarrier. See also: **SC/H Phase**.

HTML: (HyperText Markup Language)—The coding language used to create Hypertext documents for use on the *World Wide Web*. HTML looks a lot like old-fashioned typesetting code, where you surround a block of text with codes that indicate how it should appear. Additionally, in HTML you can specify that a block of text, or a word, is "linked" to another file on the Internet. HTML files are meant to be viewed using a *World Wide Web* Client Program, such as Mosaic. See also: **WWW**.

Hue (Tint, Phase, Chroma Phase): One of the characteristics that distinguishes one color from another. Hue defines color on the basis of its position in the spectrum, i.e., whether red, blue, green or yellow, etc. Hue is one of the 3 characteristics of television color: see also **Saturation and Luminance**. In NTSC and PAL video signals, the hue information at any particular point in the picture is conveyed by the corresponding instantaneous phase of the active video subcarrier.

Humbucker: A circuit (often a coil) that introduces a small amount of voltage at power line frequency into the video path to cancel unwanted AC hum.

Hybrid Circuit: A circuit that looks very much like a subminiature printed circuit board and is composed of a mix of thick film and surface mounted components. Hybrids make possible improved performance, extended reliability and economy of space. Use of hybrids permits design of equipment such as entire processing amplifiers (GVG 7510 Series) on single PC modules.

GLOSSARY



Icon: In a Graphical User Interface (GUI), an on-screen symbol that represents a program file, data file or some other computer entity or function.

IEEE: Institute of Electrical and Electronic Engineers.

IEEE-1394: High-speed serial interface providing real time transfer of video and audio data between devices such as digital video cameras and VTRs to computer products. Designed to be the worldwide multimedia connection for many digital products.

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

Impedance: The total of the resistive and reactive opposition, measured in ohms, that a circuit presents to the flow of alternating current at a given frequency.

Interactive: Involving the active participation of the user in directing the flow of the computer or video program. A system that exchanges information with the viewer, processing the viewer's input in order to generate the appropriate response within the context of the program—as opposed to a linear program in which the viewer passively watches from beginning to end.

Interface: 1. To connect two or more components to each other so the signal from one is supplied to the other(s). Feeding a signal between units that run on different standards. 2. The place where two systems or a major and a minor system meet and interact with each other.

Interlaced: Short for interlaced scanning. Also called line interlace. A system of video scanning whereby the odd- and even-numbered lines of a picture are transmitted consecutively as two separate interleaved fields.

Interlaced Scanning: A bandwidth reducing technique in which each adjacent line of a complete picture (one frame) is transmitted, processed and displayed in alternate fields.

Intermodulation Distortion: (IMD)—Distortion that results when two or more pure tones produce new tones with frequencies representing the sum and/or difference of the original tones and their harmonics.

Internet: The vast collection of inter-connected networks that all use the TCP/IP protocols and that evolved from the ARPANET of the late 60s and early 70s. The Internet now (July 1995) connects roughly 60,000 independent networks into a vast global *internet*. See also: *Internet*.

internet: Any time you connect 2 or more *networks* together, you have an *internet*—as in inter-national or inter-state. See also: *Network*.

Interpolation: In digital video, the creation of new pixels in the image by some method of averaging the values of neighboring pixels. This is necessary when an image is digitally altered, such as when the image is expanded or compressed.

IOD: Information On Demand.

IP Number: Sometimes called a "dotted quad." A unique number consisting of 4 parts separated by dots, e.g. 165.113.245.2 Every machine that is on the *Internet* has a unique IP number—if a machine does not have an IP number, it is not really on the Internet. Most machines also have one or more *Domain Names* that are easier for people to remember. See also: *Domain Name*, *Internet*.

IRC: (Internet Relay Chat)—Basically a huge multi-user live chat facility. There are a number of major IRC servers worldwide which are linked to each other. Anyone can create a "channel" and anything that anyone types in a given channel is seen by all others in the channel. Private channels can (and are) created for multi-person "conference calls."

IRE: (Institute of Radio Engineers)—Units of measurement dividing the area from the bottom of sync to peak white level into 140 equal units. 140 IRE equals 1V p-p. The range of active video is 100 IRE.

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 f of the lens divided by the diameter of the aperture at that setting. This ratio is called the f -number.

ISDN: (Integrated Services Digital Network)—Basically a way to move more data over existing regular phone lines. ISDN is only slowly becoming available in the USA, but where it is available it can provide speeds of 64,000 bits-per-second over a regular phone line at almost the same cost as a normal phone call.

ITV: (Interactive TV)—A service to allow viewers to interact with televised programming. For example, a viewer could play along with a game show, choose which camera to view during a sports event, or request additional information from an advertiser.

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.

JPEG: Standard of storage and retrieval of compressed still and video images, as used in multimedia, video and computer graphics applications. The standard is based on specific hardware and software algorithms.

Kbps: (Kilobits Per Second)—Thousand bits per second.

Kelvin: Also expressed as Kelvins 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.

Key: 1. Also called key source or key cut. A signal that can be used to electronically "cut a hole" in a video picture to allow for insertion of other elements such as text or another video image. The key signal is a switching or gating signal for controlling a video mixer, which switches or mixes between the background video and the inserted element. 2. The composite effect created by "cutting a hole" in one image and inserting another image into the hole.

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.

Key Frame: An effect that has been stored in memory, similar to a snap-shot photograph. Individual key frames can be strung together to create an overall key frame effect similar to animation.

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

K Factor: A specification rating method that gives a higher factor to video disturbances that cause the most observable picture degradation.

kHz: (Kilohertz)—A thousand Hertz.

Kilobaud: A unit of measurement of data transmission speed equalling 1000 *baud*. See also: *Baud*.

Kilobyte: A thousand *bytes*. More precisely, 1024 (2^{10}) *bytes*. See also: *Byte*, *Bit*.

LAN: (Local Area Network)—A computer network limited to the immediate area, usually the same building or floor of the building. See also: *Ethernet*.

LASER: Stands for Light Amplification by Stimulated Emission of Radiation. A device that utilizes the natural oscillations of atoms or molecules between energy levels for generating coherent electromagnetic radiation in the form of light waves generally in the ultraviolet, visible or infrared regions of the spectrum.



Latency: Signal delays introduced due to end-to-end signal processes (e.g., codec signal processing, protocol conversions, etc.).

Layering: Combining several video sources into an effect at one time. Each layer of video can be cropped, keyed, sized, positioned or made transparent to expose the source video of the next lower layer.

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).

Level: In MPEG, a level is a defined set of constraints on the values which may be taken by the parameters of this specification within a particular profile. A profile may contain one or more levels.

Level 1 Gateway: Video dial tone related term defined by the FCC. A telco's Level 1 Gateway service provides basic tariffed common carrier service (including transport, switching and interconnection) between a customer and a video programming service provider.

Level 2 Gateway: Video dial tone related term defined by the FCC. The Level 2 Gateway is an optional telco video gateway offering enhanced services which are not subject to tariff regulation. A telco cannot provide its own video programming, but it can determine which video programmers participate in its video dial tone gateway. Level 2 Gateway may include premise equipment (e.g., set top box) as part of the service offering to customers.

Light-Emitting Diode (LED): A junction device that emits light when biased in the forward direction.

Linear Key: A luminance key effect in which the shaping of key source edges is preserved to take full advantage of anti-aliased character generators and digital video effects devices which generate shaped key signals. A linear (input/output) key control signal from an external device controls the multiplier that is inserting the key.

Line Time Linear Distortion: An unwarranted change in video signal amplitude that occurs in a time frame between one and 20 μ s. The result is a gradual left-to-right shading of the TV picture.

Liquid Crystal Display (LCD): A screen for displaying text/graphics based on a technology called liquid crystal, where minute currents change the reflectiveness or transparency of the screen. The advantages of LCD screens are: very small power consumption (can be easily battery driven) and low price of mass-produced units. The disadvantages are: narrow viewing angle, slow response (a bit too slow to be used for video), invisibility in the dark unless the display is back lighted, and difficulties displaying true colors with color LCD displays.

Local Loop/Local Subscriber Loop: Telecom circuit providing connectivity between subscriber and the local central office switching center.

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

Loss Budget: 1. The amount of anticipated signal loss over a given fiber optic path, including attenuation, connector loss, splice loss and other losses. 2. The amount of signal loss fiber optic transmission equipment can sustain before exceeding the operating specifications.

LTC: (Longitudinal Time Code)—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.

Luminance: The measurable, luminous intensity of a video signal. Differentiated from brightness in that the latter is nonmeasurable and sensory. The color video picture information contains two components: luminance (brightness and contrast) and chrominance (hue and saturation). The photometric quantity of light radiation.

Luminance Key: A key effect in which the portions of a key source that are greater in luminance than the clip level cut a hole in the background video.

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

MII (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.

Mask: A temporary stencil restricting the action of various functions to a selected area within the picture. Masks can be drawn manually (with a stylus or mouse) or created automatically keyed to specific density levels or hue values in the picture, similar to photographic lith masking in an enlarger. In some systems the mask is also referred to as a feature.

Match-Frame Edit: An edit in which a scene already recorded on the master is continued with no apparent interruption.

Matrix: A logical network configured in a rectangular array of intersections of input/output leads. In routing switchers, a signal switching frame configured such that any frame input may be selected at any frame output. In a color television set or an encoded chromakeyer, the section that combines the luminance and color signals and transforms them into individual red, green and blue signals. In the TV set, these signals are then applied to the picture-tube grids. In the encoded chromakeyer, these signals are used to generate a chromakey.

Matte: A solid color signal that may be adjusted for chrominance, hue and luminance. Matte is used to fill areas of keys and borders.

Matte Generator: A video generator that produces a solid color output, which can be adjusted for hue, chroma and luminance.

MBps: (Megabytes Per Second)—A million bytes per second or 8 million bits per second.

Mbps: (Megabits Per Second)—A million bits per second.

Megabyte: A million bytes. A thousand kilobytes. See also: Byte, Bit, Kilobyte.

Megahertz (MHz): One million hertz.

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

MFM: (Multicarrier Frequency Modulation)—FM radio and TV are examples of MFM.

Microsecond (μ S): One millionth of a second. 1×10^{-6} or 0.000001 sec.

Microwave: Electromagnetic waves with frequencies above one GHz. Used for line-of-sight, point-to-point or point-to-multipoint transmission of signals.

Mix/Effects: (M/E)—A subsystem of a video production switcher where a composite of two or more images can be created. Each M/E typically includes crosspoint buses, keyer(s) and mixer.

MMDs: (Multipoint Multichannel Distribution Systems)—A video delivery system that uses microwave radio channels to broadcast signals over relatively small distances.

Modem: Modulator/demodulator. A device that uses frequency shift keying to modulate a low rate digital signal onto a carrier suitable for telephone line transmission. It can also receive low rate digital signals by demodulating the received carrier.

Modulation: The process by which some characteristic (i.e., amplitude, phase) of one RF wave is varied in accordance with another wave (message signal).



Moire: 1. 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. 2. Optical disturbance caused by interference of similar frequencies.

Monochrome: Black-and-white video. A video signal that represents the brightness values (luminance) in the picture, but not the color values (chrominance).

Montage Effect: In digital picture manipulators, a recursive effect that develops over time. A composite picture made up of several different key frame pictures.

Mosaic Effect: In digital picture manipulators, an effect where the picture seems to be made up of a number of small squares or tiles.

MPEG1: Standard (1991) for compressing (in principle) progressive scanned images. Bit rate is 1.5 Mbps.

MPEG2: Standard for compression of progressive scanned and interlaced video signals over a large range of compression rates with a range of bit rates from 1.5 to 100 Mbps.

Multiplex: 1. A technique for transmitting two or more signals at the same time or on the same carrier frequency. 2. To combine two or more electrical signals into a single composite signal.

Multiplexer: An optical system allowing a number of film and slide projectors to feed video information into the same video camera.

Multiscan Monitor: A monitor (mainly for computer uses) which synchronizes to different sync frequencies, allowing the use of different graphics formats on a single monitor, provided the proper graphics card is used.

Muse: One kind of MUD—usually with little or no violence.

Musicam: MPEG1/MPEG2 sanctioned audio encoding system.

Nanometer: 1×10^9 meter. Used in telecommunications as a measurement of signal wavelength.

Narrow Band: A narrow frequency band typically comparable to the 3KHz bandwidth of a telephone channel.

Network: Any time you connected 2 or more computers together so that they can share resources you have a computer network. Connect 2 or more networks together and you have an *internet*. See also: *Internet*, *internet*.

Newsgroups: The name for discussion groups on Usenet.

Node: Any single computer connected to a *network*. See also: *Network*, *Internet*, *internet*.

Noise Gate: Sophisticated circuitry which discriminates between unwanted low energy noise signals and the signal being processed. Noise gates and automatic noise gates are integrated into high quality processing devices.

Nondrop Frame Time Code (NTSC): SMPTE time code format that continuously counts a full 30 frames per second. Because NTSC video does not operate at exactly 30 frames per second, nondrop frame time code will count 108 more frames in one hour than actually occur in the NTSC video in one hour. The result is incorrect synchronization of time code with clock time. Drop frame time code solves this problem by skipping or dropping 2 frame numbers per minute, except at the tens of the minute count.

Noninterlaced: The process of scanning whereby every line in the picture is scanned during the vertical sweep.

Nonlinearity: The amount by which the measured output video signal, subjected to any load within its capacity, differs from an ideally linear output.

Notch Filter: An arrangement of electronic components designed to attenuate a specific frequency band. Also called a "band stop filter."

NTSC: (National Television Systems Committee)—Organization that formulated standards for the NTSC television system. Now describes the American system of color telecasting which is used mainly in North America, Japan and parts of South America. NTSC television uses a 3.57945MHz subcarrier whose phase varies with the instantaneous hue of the televised color and whose amplitude varies with the instantaneous saturation of the color. NTSC employs 525 lines per frame and 59.94 fields per second.

NTSC Color Bars: A pattern generated by the NTSC Generator, consisting of eight equal width color bars. Colors are white (75%), black (7.5% setup 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).

Numerical Aperture: A number that defines the light gathering ability of a specific fiber. The numerical aperture is equal to the sine of the maximum acceptance angle.

NVOD: (Near Video On Demand)—Transmission of a program such as a movie at frequent intervals so that the wait time is minimized. The availability simulates VOD although true VCR functionality such as pause, fast forward, and rewind are not available. A pseudo-pause may be offered by allowing the viewer to switch to the next closest scheduled playing time if they wish to pause their viewing.

Off-Line Editing: Editing that is done using inexpensive, nonbroadcast quality equipment to produce an edit decision list (EDL) which will be used later for assembling a broadcast quality program using more expensive, high quality equipment.

Ohm: The unit of resistance. The electrical resistance between two points of a conductor where a constant difference of potential of 1V applied between these points produces in the conductor a current of 1A, the conductor not being the source of any electromotive force.

Online Editing: Final editing session in which the finished program master is assembled from the original production material.

Online Storage: Storage of large amounts of digital data on devices that are permanent parts of the network, thus permitting rapid retrieval of the data. Magnetic discs that provide "random access" are usually used for this purpose.

Optical Scanner: A device that analyzes the light reflected from or transmitted through copy, art or film, and produces an electronic signal proportional to the intensity of the light or color. The scanner converts each picture element into a number.

Output Impedance: The impedance a device presents to its load. The impedance measured at the output terminals of a transducer with the load disconnected and all impressed driving forces taken as zero.

Overscan: A video monitor condition in which the raster extends slightly beyond the physical edges of the CRT screen, cutting off the outer edges of the picture.

P-picture: (Prediction-Coded Picture)—An MPEG term to describe a picture that is coded using motion compensated prediction from the past reference picture.

Packet Switching: A type of data communications in which small defined blocks of data, called packets, are independently transmitted from point to point between source and destination, and reassembled into proper sequence at the destination.

PAL: (Phase Alternate Line)—The name of the color television system in which the E_v component of burst is inverted in phase from one line to the next in order to minimize hue errors that may occur in color transmission. PAL-B (also called PAL-I) is a European color TV system featuring 625 lines per frame, 50 fields per second and a



4.43361875MHz subcarrier. Used mainly in Europe, China, Malaysia, Australia, New Zealand, the Middle East and parts of Africa. PAL-M is a Brazilian color TV system with phase alternation by line, but using 525 lines per frame, 60 fields per second and a 3.57561149MHz subcarrier.

Peak-to-Peak (p-p): The amplitude (voltage) difference between the most positive and the most negative excursions (peaks) of an electrical signal.

Pedestal: 1. In the video waveform, the signal level corresponding to black. Also called setup. 2. A pulse (usually with a flat peak) that elevates the base level of another waveform.

Perspective: A digital picture manipulator effect that modifies an object's shape in order to create the illusion of disappearing points.

Phase (Chroma Phase, Hue, Tint): The relative timing of a signal in relation to another signal. If the time for one cycle of a signal is represented as 360° along a time axis, the phase position for the second signal is called phase angle expressed in degrees. The subcarrier phase of TV colors can be adjusted and this changes the hue of the colors themselves.

Phase Locked Loop (PLL): A circuit containing an oscillator whose output phase or frequency locks onto and tracks the phase or frequency of a reference input signal. To produce the locked condition, the circuit detects any phase difference between the two signals and generates a correction voltage that is applied to the oscillator to adjust its phase or frequency.

Photo Multiplier (PM): A highly light-sensitive device. Advantages are its fast response, good signal-to-noise ratio and wide dynamic range. Disadvantages are fragility (vacuum tube), high voltage and sensitivity to interference. PM scanners give higher resolution, better shadow and highlight detail and faster productivity than other types. PMT/Photo-multiplier tube technology is basically older vacuum tube technology.

Pixel or Picture Element: The smallest visual unit that is handled in a raster file, generally a single cell in a grid of numbers describing an image (see Raster). In a component system, care should be taken to define a pixel as each individual sample of luminance or chrominance or "Picture Element." "Square" pixels result when an image is scanned with equal resolution in both directions, i.e., the scanning frequency (number of scan lines per inch) is equal to the sampling frequency (number of samples per inch along the scan line). When scanning frequency is not equal to sampling frequency, rectangular pixels result.

PLUGE (Black Set): Abbreviation for Picture Line-Up Generation. Equipment used for aligning monitors and other video devices. In some versions of color bars, PLUGE is the black set at the bottom of the red bar that contains bars that are blacker than black, black, and whiter than black. Used to adjust monitor brightness by watching the PLUGE so that the whiter than black bar is just visible and both the black and blacker than black bars are no longer distinct.

PON: (Passive Optical Network)—Fiber in the loop technology for splitting the signal strength of a laser transmitter to serve multiple photo detector receivers.

POP: "Point of Presence" and "Post Office Protocol". 1. "Point of Presence" usually means a city or location where a network can be connected to a second meaning. 2. "Post Office Protocol" refers to the way e-mail software such as Eudora gets mail from a mail server.

Port: 1. A place where information goes into or out of a computer, or both, e.g. the "serial port" on a personal computer is where a modem would be connected. 2. On the Internet, "port" often refers to a number that is part of a URL, appearing after a colon(:) right after the domain name. Every service on an Internet server "listens" on a particular port number on that server. Most services have a standard port number, e.g. web servers normally listen on port 80. Services can also listen on non-standard ports, in which case the port number must be specified in a URL when accessing the server, so you might see a URL of the form: gopher://peg.cwis.uci.edu:7000/ which shows a gopher server running

on a non-standard port (the standard gopher port is 70). 3. "Port" also refers to translating a piece of software to bring it from one type of computer system to another, e.g. to translate a Windows program run on a Macintosh. See also: Domain Name, Modem, Server, URL.

Posterize, Posterization: A digital video effect where all possible colors are converted to as few as 4 different colors, producing a poster effect.

POTS: Plain Old Telephone Service.

PPP: (Point to Point Protocol)—most well-known as a protocol that allows a computer to use a regular telephone line and a modem to make a TCP/IP connection and thus be really and truly on the Internet. PPP is gradually replacing SLIP for this purpose. See also: IP number, Internet, SLIP, TCP/IP.

Preroll: A specific amount of time allowed for tape machines to run prior to an edit in order to get them up to speed and synchronized for the edit. In preparation for the edit, tapes are cued to a point ahead of the edit point to provide a proper preroll. The amount of preroll required varies with each type of VTR.

Preview Bus: A standard function on better quality video special effects generators which allows the operator to select any of the video sources attached to the device and to set up and preview all special effects prior to actual use. The preview bus is operated through a series of switches on the special effects generator, each of which is assigned to a specific input. Each input signal can be previewed on its own monitor by pressing the relevant switch. This is a rapid and effective method to check work before going on the air.

Primary Colors: A small group of colors that, when combined, can produce a broad spectrum of other colors. In television, red, green and blue are the primary colors from which all other colors in the picture are derived.

Program Bus: In video and audio switchers, a row of crosspoint pushbuttons used to select the on-air video or audio background output of the switcher or mix/effects. Also called program background bus.

Programmable General Purpose Interface (GPI): An interconnection scheme (usually serial) that allows remote control of certain selectable functions of a device by some other device that can be programmed to select the desired functions.

PROM: Abbreviation for Programmable Read Only Memory. A ROM that can be programmed by the equipment manufacturer (rather than the PROM manufacturer).

Protocol: A specific set of rules, procedures or conventions relating to format and timing of data transmission between two devices. A standard procedure that two data devices must accept and use to be able to understand each other. The protocols for data communications cover such things as framing, error handling, transparency and line control.

Pulse: A current or voltage that 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.

QAM: (Quadrature Amplitude Modulation)—Method for modulating two carriers. The carriers can be analog or digital.

Quantizing: The process of sampling an analog waveform to convert its voltage levels into digital data.

Radio Frequency: (RF)—A term used to describe incoming radio signals to a receiver or outgoing signals from a radio transmitter (above 150Hz). Even though they are not proper radio signals, TV signals are included in this category.



RAM: (Random Access Memory)—The part of a computer's memory that may be used for temporary storage of information, with data accessible independent of position on the mass storage medium. This is the computer's "work area." A higher RAM memory usually offers faster image manipulation or faster background processing in high resolution retouching systems.

Ramp: A video test signal that graduates from low luminance to high luminance used to measure luminance linearity.

Raster: Pixel based image information file, in which the image is expressed by a very fine grid of numerical brightness values. Each grid cell, or pixel, is stored as a set of numbers for CMYK, RGB, or intensity, hue and saturation values. Content of image, tint and hue are recorded pixel by pixel in order of location.

Read-Before-Write: A feature of some videotape recorders that plays back the video or audio signal off of tape before it reaches the record heads, sends the signal to an external device for modification, and then applies the modified signal to the record heads so that it can be re-recorded onto the tape in its original position.

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

Registration: An adjustment associated with color sets and projection TVs to ensure that the electron beams of the 3 primary colors of the phosphor screen are hitting the proper color dots/stripes.

Repeater: 1. A receiver/transmitter that receives a signal from another transmitter and relays (retransmits) it to another receiver or a receiver/transmitter. 2. In fiber optics, a device that converts a received optical signal to its electrical equivalent, reconstructs the source signal format, amplifies and reconverts it to an optical output signal. The purpose is to restore the light amplitude, compensating for normal loss in fiber.

Resolution: A measure of the ability of a camera or television system to reproduce detail—the number of picture elements that can be reproduced with good definition.

Retrace: The return of the electron beam in a CRT to the starting point after scanning. During retrace, the beam is typically turned off. All of the sync information is placed in this "invisible" portion of the video signal. May refer to retrace after each horizontal line or after each vertical scan (field).

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 interconnect standard.

Ring Topology: A network in which nodes are connected to a closed loop with no terminators required because there are no unconnected ends.

RIP: (Raster Image Processor)—Used to convert vector images to raster images in computers using both kinds of image files.

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.

RMS: (Root Mean Square)—A measure of effective (as opposed to peak) voltage of an AC waveform. For a sine wave it is 0.707 times the peak voltage. For any periodic waveform, it is the square root of the average of the squares of the values through one cycle.

ROM: (Read Only Memory)—A memory device that is programmed only once with a permanent program or data that cannot be erased.

Router: A special-purpose computer (or software package) that handles the connection between two or more networks. Routers spend all their time looking at the destination addresses of the packets passing through them and deciding which route to send them on. See also: Network, Packet Switching.

Routing Switcher: An electronic device that routes a user-supplied signal (audio, video, etc.) from any input to any user-selected output. Inputs are called sources. Outputs are called destinations.

RP-125: An SMPTE parallel component digital video standard.

RS-170A: A document prepared by the Electronics Industries Association describing recommended practices for NTSC color television signals in the United States.

RS-232: A standard, single-ended (unbalanced) interconnection scheme for serial data communications.

RS-250B: In telecommunications, a transmission specification for NTSC video and audio.

RS-422: A standard, balanced interconnection scheme for serial data communications.

Safe Title Area: 80% 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.

Satellite Downlink: The communications path from a satellite to its ground station.

Satellite Uplink: The communications path from a ground station to its satellite.

Saturation (Chroma, Chroma Gain, Color): 1. The intensity of the colors in the active picture. The voltage levels of the colors. The degree by which the eye perceives a color as departing from a gray or white scale of the same brightness. A 100% saturated color does not contain any white; adding white reduces saturation. In NTSC and PAL video signals, the color saturation at any particular instant in the picture is conveyed by the corresponding instantaneous amplitude of the active video subcarrier. 2. The point on the operational curve of an amplifier at which an increase in input amplitude will no longer result in an increase in amplitude at the output.

Scalability: Characteristic of a compression algorithm that permits the decoding of subsets of the total stream. In the case of scalable video decoding, the picture quality of the decoded subset is commensurate with the amount of information bits that the subset carried. In MPEG, the minimum subset that can be decoded is called the base layer. Each of the other bitstreams in the set is called an enhancement layer.

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-for-line manner across the photo sensitive surface which produces or reproduces the video picture. When referred to a video surveillance field, it is the panning or the horizontal camera motion.

SC/H Phase: (Subcarrier to Horizontal Phase)—In NTSC video, the phase relationship of the subcarrier to the leading edge of horizontal sync. SC/H phase is correct when the zero crossing of subcarrier is aligned with the 50% point of the leading edge of sync. In PAL video, the SC/H phase is defined as the phase of the E_U component of the color burst extrapolated to the half amplitude point of the leading edge of synchronizing pulse of line 1 of field 1.

SCSI: Small Computer Systems Interface.

SECAM: Sequential Couleur Avec Memoire (sequential color with memory). A color television system with 625 lines per frame and 50 fields per second developed by France and the U.S.S.R. Color difference information is transmitted sequentially on alternate lines as an FM signal.



Sepia: A process used in photography to generate a brownish tone in pictures, providing an "antique" appearance. The same idea has been electronically adapted in video special effects generation. A color picture or a black-and-white picture can be colored in sepia.

Sequential Assembly: In video editing, a sequential method of auto assembly. The computerized editing system records all edits listed in the edit decision list in order from first to last, requesting source tapes as they are needed. Also called A-mode assembly.

Serial: Time-sequential transmission of data along a single wire. Analogous to a railroad train, where each car (data bit) follows the other in single file.

Serial Digital: Digital information that is transmitted in serial form. Often used informally to refer to serial digital television signals.

Serial Interface: A digital communications interface in which data is transmitted and received sequentially along a single wire or pair of wires. Common serial interface standards are RS-232 and RS-422.

Serializer: A device that converts parallel digital information to serial.

Serial Port: A computer I/O (Input/Output) port through which the computer communicates with the external world. The standard serial port is RS-232 based and allows bidirectional communication on a relatively simple wire connection as data flows serially.

Server: A computer, or a software package, that provides a specific kind of service to client software running on other computers. The term can refer to a particular piece of software, such as a *WWW* server, or to the machine on which the software is running, e.g. "Our mail server is down today, that's why e-mail isn't getting out." A single server machine could have several different server software packages running on it, thus providing many different services to clients on the *network*. See also: *Network*, *WWW*.

Setup (Black Reference, Black Level): 1. The specified base of the active picture signal which is at reference black level. Called setup because it is placed 7.5 IRE units above blanking (zero IRE) in NTSC video. 2. The basic operating configuration of a system.

SGO: (Second Generation Original or Second Original)—Usually refers to a film output made from a computer data file that represents image quality as good as the original camera transparency or negative.

Sidebands: The frequency bands on both sides of a carrier within which the energy produced by the process of modulation is carried.

Signal-to-Noise Ratio: (S/N)—A 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.

Single-Mode Fiber: An optical glass fiber that consists of a core of very small diameter (usually 2-10 microns) and a cladding approximately 20 times the thickness of the core. Such fibers are normally used only with laser sources because of their very small acceptance cone. Since the cone diameter approaches the wavelength of the source, only a single mode is propagated.

Skewing: Due to loss or distortion of equalizing pulses and serrations found mainly in multigeneration videotapes, the upper third of the video picture is "flagging" sidewise or skewing. To overcome the problem for consumer equipment, the television is equipped with an "A/V channel." Selecting this channel for VCR viewing purposes changes certain time constants in the sync regeneration circuits, allowing viewing without skewing. In the professional studio this problem is solved using a TBC.

SLIP: (Serial Line Internet Protocol)—A standard for using a regular telephone line (a "serial line") and a *modem* to connect a computer as a real *Internet* site. SLIP is gradually being replaced by *PPP*. See also: *Internet*, *Modem*, *PPP*.

SMPTÉ: Society of Motion Picture and Television Engineers.

SMPTÉ Time Code: Time code that conforms to SMPTÉ standards. It consists of an 8-digit number specifying hours: minutes: seconds: frames. Each number identifies one frame on a videotape. SMPTÉ time code may be of either the drop-frame or non-drop frame type. In *GVG* editors, the SMPTÉ time code mode enables the editor to read either drop-frame or non-drop frame code from tape and perform calculations for either type (also called mixed time code).

Snow: 1. Random noise on the display screen, often resulting from dirty heads. 2. TV signal breakup caused by weak video reception.

Soft Edge Masking: A process used in image processing to increase the apparent sharpness of an image. The computer analyzes the pixels and makes soft edges of objects into sharp edges.

SONET: (Synchronous Optical NETWORK)—A telecommunications standard.

Spectral Bandwidth: In telecommunications, the spectral bandwidth for single peak devices is the difference between the wavelengths at which the radiant intensity is 50% (or 3dB) down from the maximum value.

Spectrum Analyzer: An instrument that measures the amplitudes of the components of a complex waveform throughout the frequency range of the waveform.

Split Edit: An edit in which the audio in-edit point is different from the corresponding video in-edit point.

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.

SRAM: (Static Random Access Memory)—SRAM does not have to be refreshed so it can operate in standby mode resulting in lower power consumption than *DRAM*. See also: *DRAM*.

Staircase: A pattern generated by the NTSC generator, consisting of equal width luminance steps of 0, +20, +40, +60, +80, and +100 IEEU units and a constant amplitude chroma signal at color burst phase. Chroma amplitude is selectable at 20 IEEU units (low stairs) or 40 IEEU 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 SMPTÉ or EBU). Others are determined by equipment vendors and/or users.

Star Topology: A topology in which all phones or workstations are wired directly to a CSU (Central Service Unit) or workstation that establishes, maintains and breaks connections between workstations. (Phone switch, hub, switching hub).

Start Bit: A bit preceding the group of bits representing a character used to signal the arrival of the character in asynchronous transmission.

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 2V in amplitude, and having a frequency of 3.579545MHz. Subcarrier is usually divided down from a primary crystal running at 14.318180MHz, 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 they maintain their correct relationship during recording, transmission and reproduction.

S-Video: Superior Video, a widely accepted set of Y/C signals used to connect video equipment, providing a higher quality signal free of the cross luminance/color problems associated with composite video signals.



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: The portion of an encoded video signal that occurs during blanking and is used to synchronize the operation of cameras, monitors and other equipment. Horizontal sync occurs within the blanking period in each horizontal scanning line and vertical sync occurs within the vertical blanking period.

Sync Generator (Sync Pulse Generator, SPG): Device that generates synchronizing pulses needed by video source equipment to provide proper equipment or studio timing. Pulses typically produced by a sync generator include subcarrier, burst flag, sync, blanking, H & V drives, color frame identification and color black.

T-1: A digital transmission link with a capacity of 1.544Mbps. Telephone cameras may also offer fractional T-1 services. T-1 uses 2 pairs of normal twisted wires. T-1 lines are used for connecting networks across remote distances. Bridges and routers are used to connect LANs over T-1 networks.

T Channels: A series of standardized data channels, originally devised to carry digital voice. Includes the T1 and T3 channels.

T1 Channels: 1. In North America, a digital transmission channel carrying data at a rate of 1.544 million bits per second. In Europe, a digital transmission channel carrying data at a rate of 2.048 million bits per second. 2. AT&T term for a digital carrier facility used to transmit a DS-1 formatted digital signal at 1.544Mbps.

T3 Channels: In North America, a digital channel which communicates at 45.304 Mbps commonly referred to by its service designation of DS-3.

Tally: 1. A lamp that lights to indicate that the associated video source is in use. Typical locations of tally lamps are on the front of video cameras and in the crosspoint pushbuttons of video switchers. 2. The acknowledgement returned to the control panel or terminal that an operation has been executed.

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

TCM: (Time Compression Multiplexing)—A technique for video storage in which chrominance information is compressed and time multiplexed with the uncompressed luminance signal.

TCP/IP: (Transmission Control Protocol/Internet Protocol)—This is the suite of protocols that defines the Internet. Originally designed for the UNIX operating system, TCP/IP software is now available for every major kind of computer operating system. To be truly on the Internet, your computer must have TCP/IP software. See also: IP number, Internet, UNIX.

TDM: (Time Division Multiplex)—A time-sharing of a transmission channel by assigning each user a dedicated segment of each transmission cycle.

TDMA: (Time Division Multiple Access)—Uses TDM to allow multiple signal originators to contend for access to use the transmission media.

Tearing: A lateral displacement of the video lines due to sync instability. Visually it appears as though parts of the images have been torn away.

Telecine: A device mainly designed to convert film to video. The movie film in advanced telecine machines is sampled digitally and converted to video, frame after frame, in real time. One of the most popular digital systems used in professional telecine machines is called "flying-spot," allowing almost a transparent conversion to video. The main problem encountered in film-to-video conversion is the frame rate. Movie film has a frame rate of 18 or 24 frames per second, and neither the PAL nor NTSC systems has a similar frame rate. In order to have a good conversion, interpolation and other techniques are used in the telecine device.

Teleconferencing: Electronically linked meeting conducted among groups in separate geographic locations.

Teleprompting: Text shown on a television monitor to assist a performer or speaker.

Terabyte: Billion bytes or 8 billion bits.

Terminal: A device that allows you to send commands to a computer somewhere else. At a minimum, this usually means a keyboard and a display screen and some simple circuitry. Usually you will use terminal software in a personal computer—the software pretends to be ("emulates") a physical terminal and allows you to type commands to a computer somewhere else.

Terminate, Termination: To complete a circuit by connecting a resistive load to it. A video termination is typically a male BNC connector which contains a 75 ohm resistive load. When there are looping inputs, any unused looping input must be terminated in 75 ohms to ensure proper signal levels and to minimize reflections.

Test Pattern: Optical guide for TV camera reference alignment.

Texture Mapping: The ability of a digital picture manipulator to create textured surfaces that can be applied to shapes.

TFT Screen: TFT stands for Thin-Film-Transistor. This technology is used mainly for manufacturing flat computer and video screens that are superior to the classic LCD screens. Color quality, fast response time and resolution are excellent for video.

Time Base Error: Horizontal rate flutter of a video signal caused by tape stretch and inherent imperfections in the tape transport mechanism of a videotape recorder.

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.

Timeline: An effects control feature that enables the operator of a switcher or digital picture manipulator to preprogram a series of timed events, such as auto transitions, E-MEM recalls and GPI triggers, and then replay them.

Token Ring (4/16Mbps): A ring type of LAN (Local Area Network) in which a supervisory frame, or token, must be received by an attached terminal or workstation before the terminal or workstation can start transmitting. The workstation with the token ring then transmits and uses the entire bandwidth of whatever communications media (shielded or unshielded twisted-pair) the token ring is using. A token ring is a baseband network. A token ring network can be wired as a circle or a star, with all workstations wired to a central wiring center or multiple wiring centers. The most common wiring scheme is called a star-wired ring.

Topology: The geometric physical or electrical configuration describing a local communications network—the shape or arrangement of the system. The most common distribution system topologies are the bus, ring and star.

T-Pulse to Bar: A term relating to frequency response of video equipment. A video signal containing equal amplitude T-pulse and bar portions is passed through the equipment and the relative amplitudes of the T-pulse and bar are measured at the output. A loss of response is indicated when one portion of the signal is lower in amplitude than the other.



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

Transcoder: A device that converts one form of encoded video to another, e.g., to convert NTSC video to PAL. Sometimes mistakenly used to mean translator.

Transducer: A device that converts one form of energy into another. For example, in fiber optics, a device that converts light signals into electrical signals.

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

Transponder: The electronics of a satellite that receives an uplinked signal from the earth, amplifies it, converts it to a different frequency, and returns it to the earth.

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

TTL: (Transistor-Transistor Logic)—A term used in digital electronics mainly to describe the ability of a device or circuit to be connected directly to the input or output of digital equipment. Such compatibility eliminates the need for interfacing circuitry. TTL signals are usually limited to two states, low and high, and are thus much more limited than analog signals.

TVRO: (Television Receiver Only)—Consists of an antenna, a preamplifier and a satellite receiver. Also refers to the C-band backyard earth station user base.

Twinx: A connector which has two insulated inner contacts (male and female) surrounded by a common ground.

Twisted-Pair: A cable composed of two small insulated conductors twisted together. Since both wires have nearly equal exposure to any interference, the differential noise is slight.

Unbalanced: 1. Frequently, a circuit having one side grounded. 2. A circuit, the two sides of which are electrically different.

Underscan: Decreases raster size H and V so that all four edges of the picture are visible on the monitor.

UNIX: A computer operating system (the basic software running on a computer, underneath things like word processors and spreadsheets). UNIX is designed to be used by many people at the same time (it is "multi-user") and has *TCP/IP* built-in. It is the most common operating system for servers on the Internet. See also: *Internet, Server, TCP/IP*.

Upstream: 1. Placed ahead of other devices in a video signal path. 2. Describes the location of keyers in a mix/effects level or in the overall switcher architecture. 3. Relates to the priority of the video signals as they are combined through the video production switcher.

URL: (Uniform Resource Locator)—The standard way to give the address of any resource on the Internet that is part of the *World Wide Web* (WWW). A URL looks like this:

<http://www.matisse.net/seminars.html>

or <telnet://well.sf.ca.us>

or <news:new.newusers.questions>, etc.

The most common way to use a URL is to enter into a WWW browser program, such as Netscape, or Lynx. See also: *WWW*.

UTP: (Unshielded Twisted Pair Wiring)—A cable medium with one or more pairs of twisted insulated copper conductors bound in a single sheath. Now the most common method of bringing telephone and data to the desktop.

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 transcoded to a new format.

Variable Bit Rate: Operation where the bit rate varies with time during the decoding of a compressed bit stream.

Vector Image: An image system that uses basic geometric shapes like rectangles, lines, circles, ellipses and polygons to create a graphic image. The vector image usually contains very little data, like the starting point (pixel) of the object, what kind of object it is, its size and color. When the image is rasterized, the vector information is converted into a bitmap using an RIP (Raster Image Processor). Rescaling can be performed with greater accuracy than with raster data. Also called "object oriented."

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

Velocity of Propagation: Speed of signal transmission. In free space, electromagnetic waves travel at the speed of light. In coaxial cables, this speed is reduced due to the dielectric material. Commonly expressed as percentage of the speed in free space.

Vertical Interval: The portion of the video signal that occurs between the end of one field and the beginning of the next. During this time, the electron beams in the cameras and monitors are turned off (invisible) so that they can return from the bottom of the screen to the top to begin another scan.

Vertical Interval Switching: When one video signal is replaced by another, the switching process causes a random interruption in the first video signal (which may be in the midst of a frame) and a random entrance into the second video signal (also in the middle of a frame). The result is a jump in the picture when the edited tape is played. This situation is amplified when the tape is copied, and the disturbance on playback is much more serious. To avoid this problem, switching is performed at a very specific point—during the vertical blanking retrace period—which is also known as the vertical interval. This allows complete replacement of a whole frame by a second whole frame and the switching process is very smooth.

Vertical Resolution: Chrominance and luminance detail expressed vertically in the picture tube. Limited by the number of scan lines.

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 6 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 ½ line to achieve interlaced scan).

Vestigial Sideband Transmission: A system of transmission wherein the sideband on one side of the carrier is transmitted only in part.

VGA: Video Graphics Array.

Video Bandwidth: The highest signal frequency that a specific video signal can reach. The higher the video bandwidth, the better the quality of the picture. A video recorder that can produce a very broad video bandwidth generates a very detailed, high quality picture on the screen. Video bandwidths used in studio work vary between 3MHz and 12MHz.

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 Gain (White Level, White Bar, Reference White): The range of light-to-dark values of the image which are proportional to the voltage difference between the black and white voltage levels of the video signal. Expressed on the waveform monitor by the voltage level of the whitest whites in the active picture signal. Video gain is related to the contrast of the video image.

GLOSSARY



Videowall: A videowall is a large screen made up of several monitors which are placed close to one another, so when viewed from a distance, form a large video screen or "wall."

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.

VITC: (Vertical Interval Time Code)—Contains 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.

VITS: (Vertical Interval Test Signal)—A signal that may be included during the vertical blanking interval to permit on-the-air testing of video circuit functions and adjustments.

VOD: (Video On Demand)—A service which allows a user to view whatever program they want whenever they want it with VCR-like control capability such as pause, fast forward, and rewind.

VR: (Virtual Reality)—Computer generated images and audio which are experienced through high-tech display and sensor systems and whose imagery is under the control of a "viewer."

VSB/AM: (Vestigial Sideband AM)—Amplitude modulation generates an upper and a lower sideband. To save spectrum space, most of the lower sideband in a TV signal is filtered out. The remaining, lower or vestigial, sidebands (approximately 1.75MHz) are kept to avoid impairment of the television signal.

WAN: Wide Area Network.

Waveform Monitor: Oscilloscope used to display the video waveform.

Wavelet: A particular class of filters that are used for signal decomposition in sub-band coding based compression systems.

White Balance: An electronic process used in video cameras to retain true colors.

Wideband: Large bandwidth, capable of carrying many TV signals and large quantities of data; typically a signal of 6MHz.

Wow and Flutter: Wow refers to low frequency variations in pitch while flutter refers to high frequency variations in pitch caused by variations in the tape-to-head speed of a tape machine.

Write: A function of copying a file from disc to tape. Also sometimes used to describe the transfer of information from the internal computer memory to a disc.

WWW: (World Wide Web)—1. (Loosely used) The whole constellation of resources that can be accessed using Gopher, FTP, HTTP, telnet, Usenet, WAIS and some other tools. 2. The universe of hypertext servers (HTTP servers) which are the servers that allow text, graphics, sound files etc. to be mixed together. See also: FTP, URL.

Y/C: A set of video signals that contain a separate Y, which is luminance, and C, which is chroma. Usually the chroma is at 3.58MHz, as in the S-Video signal, but it can also be at 688kHz in the 1/2" dub format.

Y, C1, C2: A generalized set of CAV signals: Y is the luminance signal, C1 is the first color difference signal and C2 is the second color difference signal.

Y, I, Q: The set of CAV signals specified for the NTSC system: Y is the luminance signal, I is the first color difference signal and Q is the second color difference signal.

Y, P_B, P_R: A version of Y, R-Y, B-Y specified for the SMPTE analog component standard.

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 first color difference signal and B-Y is the second color difference signal.

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

Z Axis: The Z axis is in the third dimension, perpendicular to the X and Y axes and indicates depth. See also: Axis.

Zero Dispersion Point: In telecommunications, the wavelength where material dispersion is minimal. With standard fiber optic cable, that wavelength is 1310 nanometers.

Zero Suppression: In telecommunications, techniques that limit the number of consecutive data zeros that may be transmitted. For DS1 without B8ZS, 15 data zeros is the maximum allowed.

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



DVCPRO: NEXT GENERATION VIDEO



Courtesy of: Panasonic Broadcast & Digital Systems Company

DVCPRO is the component digital format breakthrough that is changing news, production and professional video operations across the country. Innovative DVCPRO products are full-featured and competitively priced. Lightweight ENG and EFP camcorders, studio editing and professional decks integrate easily into today's news systems, and exciting new products like the AJ-LT75 laptop editing system and NewsBYTE nonlinear editing systems are uniquely DVCPRO. It is a revolution in the making.

Based on the requirements of professional users, Panasonic developed the robust DVCPRO format that improved on the physical specifications defined by the DV consortium while maintaining electronic and data compatibility. DVCPRO is a "super-set" of DV, capitalizing on the developments of the DVC consortium, which includes the world's leading electronics companies.

In order to ensure robustness, metal particle tape was selected as the DVCPRO media. All of today's professional tape formats use well-proven, widely-accepted, cost-effective metal particle tape. Metal particle tape accommodates analog recording for cue and control tracks; not possible on metal evaporated. The control track enables fast servo system lock-up and robust editing with short pre-roll times. The DVCPRO cue track gives the user a third audio channel (analog), yielding audio in high-speed search mode when the digital audio is unrecoverable. These are necessary features for many professional editing and post production applications.

In addition, since DVCPRO can also playback DV recordings on metal evaporated tape, DVCPRO is downwardly compatible with DV and DVCAM products.

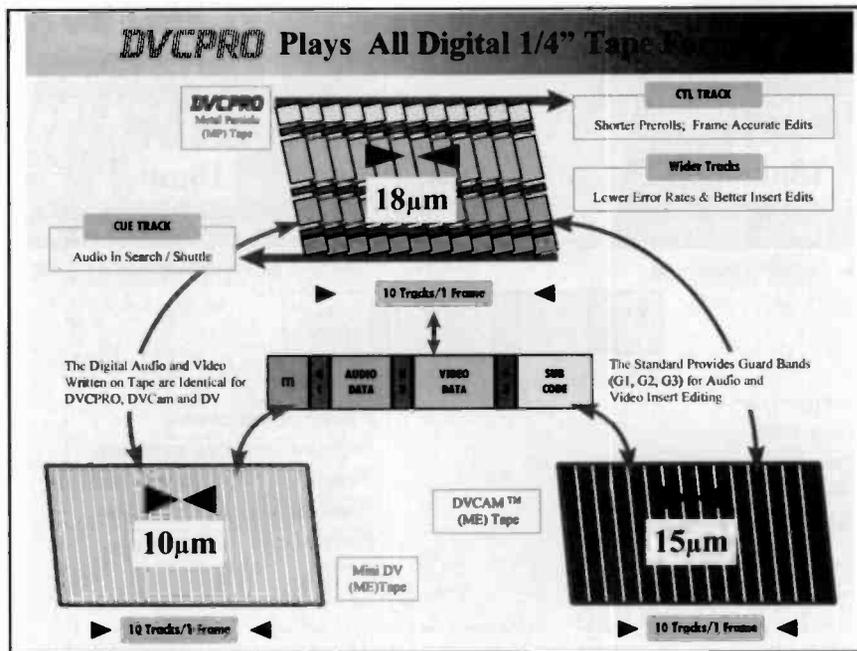
Perhaps the most striking development is the playing time of DVCPRO's remarkably small, quarter-inch cassettes—a cassette the size of an audio "compact" cassette holds more than four hours of video. DVCPRO's large 123-minute cassette has a total data storage capacity of 23 gigabytes! The 6.35mm video transport is correspondingly compact, and this miniaturization of the media and mechanism yields astonishing design potential as demonstrated by the NewsBYTE nonlinear system. The DV transport mechanism in

NewsBYTE is about the size of a full-height 5.25-inch disk drive. And NewsBYTE's power and size requirements are such that it is installed in a computer drive bay.

Equally revolutionary is the video quality, and hence the compression scheme. Careful analysis of all the possible tradeoffs—compression artifacts, motion, data rate, subjective picture performance, robustness, multigeneration performance—produced an optimum system with a hierarchy for standard and high definition.

For standard definition the signal structure is digital component 4:1:1. In addition to the widely recognized benefit of component transparency, by keeping the luminance component at the full sample rate, picture resolution is the equal of studio formats like D-1, D-5 or Digital Betacam. By reducing the chrominance sampling rate to half the studio standard, the absolute data rate was reduced but chroma detail remained better than NTSC or PAL. This signal structure allows two significant advantages: The compression system could operate intra-frame, i.e., there would be no motion artifacts because each frame would stand on its own (unlike MPEG, for example); and frame-accurate control and editing would be facilitated. Note that DV automatically selects frame and field mode compression depending on the amount of picture change between fields, but never exceeds the one frame boundary. Second, the compression ratio could be reduced to 5:1, assuring that compression artifacts would be kept to a minimum and the "payload" video data rate held to about 25Mb/s.

It cannot be overemphasized that the compression scheme is a completely defined standard, agreed upon by the DVC consortium, which now numbers 60 plus companies. It can be packaged in several economical integrated circuits, making compact field equipment like the AJ-LT75 laptop editor possible, and audio/video file exchange is possible between equipment of various manufacturers. DVCPRO compressed video and full bit audio can be recorded in a portable file format on tape, disk and RAM. DVCPRO browse/edit mode over ethernet and playback over IEEE 1394 or serial digital interfaces makes it an extremely flexible format for digital post-production and archiving.





DVCPRO Is An Open System

New and existing DVCPRO products reflect Panasonic's commitment to an "open systems" approach. To date, more than 28 industry companies have endorsed the use of DVCPRO for digital video image acquisition with their own hardware and software systems. Panasonic has announced the formation of a DVCPRO Partners Program to support these companies, which include industry leaders such as Avid Technology, Silicon Graphics, Mercury Computer, and Truevision.

DVCPRO 50: Future-Ready 4:2:2 Format

Panasonic DVCPRO 50 is for those customers needing higher video quality and improved chroma resolution for high-end post-production, albeit at the price of increased tape consumption and higher equipment cost. While the DVCPRO product line has been broadened to make it even more affordable and broadly applicable, users' requests made the potential for a compatible 4:2:2 version clear. DVCPRO 50 has a 4:2:2 signal processing platform, a data rate of 50Mb/s, 3.3:1 DV-based intra-frame compression, and four 16-bit 48kHz uncompressed audio channels. This is achieved by using dual sets of DV compression chips plus a special parsing chip to allocate the video signal between the two processing paths. The first 4:2:2 products will be marketed for the high-end EFP arena, and for use as an acquisition tool for component digital systems like D-5. They are the AJ-D950, a DVCPRO 50 VTR that is switchable between the original 25Mb/s 4:1:1 signal and the 50Mb/s 4:2:2 signal, and a companion DVCPRO 50 camcorder, the AJ-D900, that records 4:2:2 video in 4:3 or 16:9 aspect ratio.

By introducing a dual-standard VTR offering compatibility between the two DVCPRO signal structures, Panasonic answers the demands of those customers who need to migrate to 4:2:2, while providing a

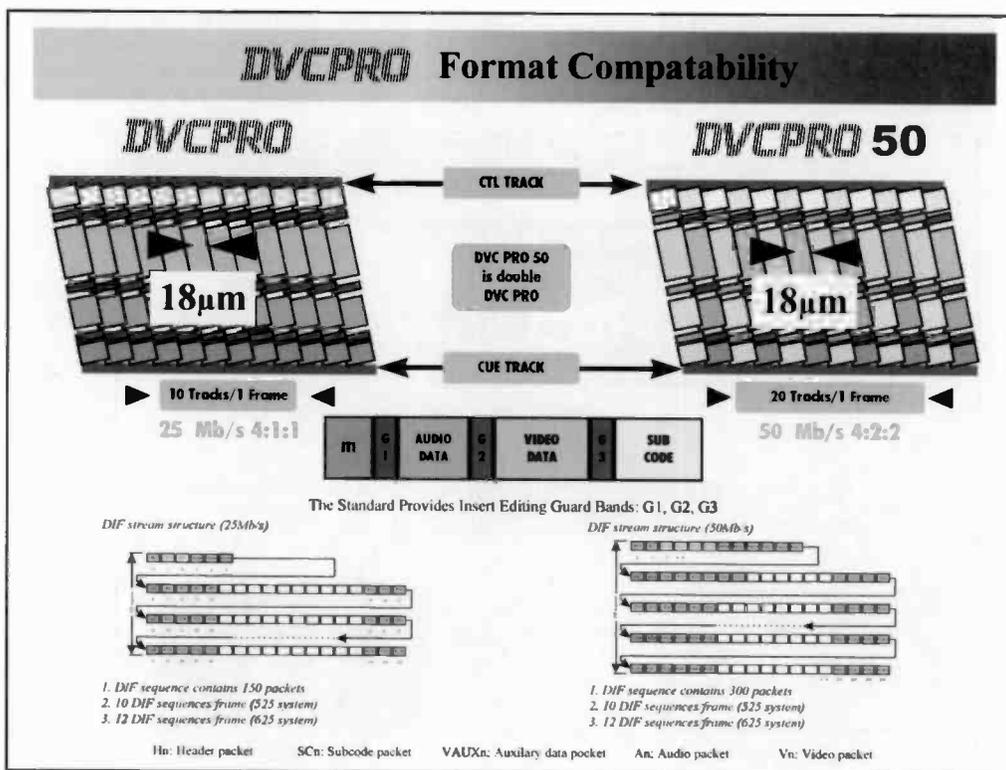
natural upgrade path for those using 4:1:1 products. In addition, one can clearly see the family relationship in the compression hierarchy between DVCPRO and DVCPRO 50. Many users, especially in Europe, have determined that 4:1:1 acquisition is fully adequate so long as the post-production work is done in 4:2:2. This use of a "higher format" for production is directly analogous to the "bumping up" done traditionally in the analog world, but with DVCPRO the files are completely compatible.

While DVCPRO is a perfect choice for most acquisition uses, a compatible 4:2:2 alternative for high post-production is available. DV 4:2:2 is the compression engine of DVCPRO 50, and it is finding extensive application in the products developed by the DVCPRO Partners for high-end nonlinear and server applications.

Conclusion

DVCPRO provides field acquisition, recording, production and archiving equipment that utilizes the latest advances in technology produced by the video and computer industries. The format incorporates provisions for future systems integration, allowing users to change and improve the fundamental production process. With the critical assistance of the many DVCPRO Partners who are participating in DVCPRO development work, Panasonic is producing innovative, open systems solutions that offer higher quality, more efficiencies and greater cost-containment than any previous or current generation of video equipment. DVCPRO has inspired the creativity and imagination of the video industry, and we are confident that the format will provide broad video production solutions well into the 21st century.

To learn more about DVCPRO, phone 1-800-524-0864 to obtain a copy of a technical white paper.





Courtesy of Sony Electronics Inc.
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Introduction

Sony's new DVCAM™ Camcorders and VTRs are about to overturn every previous notion of digital video cost/performance, features and functionality. The capabilities are tremendous. Scenes marked "OK" or "NG" in-camera. Hyperspeed digitizing. Digital picture quality that lasts for generations.

To help you understand how these new products can do what they do, Sony has prepared two documents. The first, entitled *DVCAM Basics*, covers the DV format and the professional DVCAM format. You have in your hands the second: *DVCAM Technology*. Here you'll find the inside story on the key features of Sony DVCAM equipment—some features never seen before in video.

Integrated Acquisition and Editing

A traditional weakness of nonlinear editing systems is the need to first load the video program onto the hard drive. This step, somewhat misleadingly called "digitizing," puts a hurdle in front of every production. For a long-form program, digitizing can tie up a person—not to mention an editing system—for hours of unproductive make-work. With an all digital, totally integrated production system, Sony doesn't simply lower this barrier. Sony demolishes it. Sony's approach is completely new and unprecedented, integrating videotape acquisition and nonlinear editing as never before. Two new features—ClipLink™ Memory and up to 4X Real-Time Signal Transfer via QSDI™—represent a breakthrough in the video production process.

ClipLink™ Operation

Thanks to Sony's new ClipLink system, you can mark your scenes "OK" or "NG" in-camera. And you can do it in the field, on-the-fly, while you're still involved in shooting. The feature takes advantage of the IC memory chip located on-board Sony DVCAM cassettes. The following ClipLink Log Data is recorded for every scene:

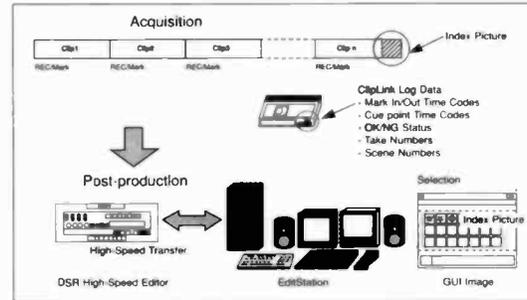
1. Mark In/Out (or Rec In/Out) Time Code
2. Cue point Time Code
3. OK/NG status
4. Reel number
5. Scene number
6. Take number

There's more. For each scene, the ClipLink system records an Index Picture onto a special area at the end of the tape. When the time comes to transfer your DVCAM acquisition footage into Sony's EditStation™ System, these Index Pictures become available for drag-and-drop editing.

With the DSR Series High-Speed Editing VTR connected to Sony's companion EditStation Editing System, all ClipLink Log Data, including Index Pictures, is transferred first. Then your selected footage can be transferred automatically—without tying up an operator. Figure 1 shows how the ClipLink system connects acquisition to editing.

More than any previous videotape recording feature, the Sony ClipLink system blurs the age-old distinction between acquisition and post production. It enables the shooter to accomplish important editing functions in-camera, in the field. It speeds the transfer from videotape to hard drive by enabling editors to automatically transfer only the selected scenes. And it facilitates nonlinear editing on the Sony EditStation system, by providing Index Pictures right off the tape.

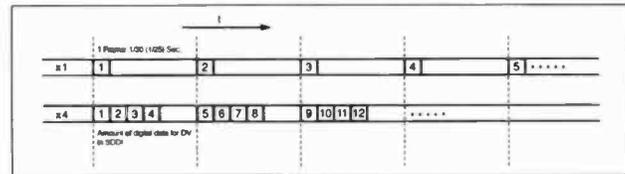
Thanks to the ClipLink system, video productions can be edited faster, with vastly increased efficiency and far less time wasted on the boring, unproductive business of "digitizing."



(Figure 1: ClipLink Operation)

4X Real-Time Signal Transfer

The ClipLink system cuts down on the bulk of video you need to transfer onto the editing system's hard drive—eliminating the out-takes and leaving only the selected scenes. Sony's 4X Real-Time Signal Transfer goes one step further. It cuts down on the time it takes to import every one of your selected scenes. Previous nonlinear editing systems employ real-time tape transfer, which hardly needs explanation: one hour of video takes one hour to transfer. Sony's 4X real-time system accomplishes the seemingly impossible: a one-hour shoot takes just 15 minutes to transfer!



(Figure 2: High-Speed data transfer through QSDI interface)

The high-speed transfer takes place between the Sony DVCAM High-Speed Editing VTR and the Sony EditStation Editing System. The transfer uses the high-speed connection known as QSDI. Figure 2 shows the data structure of 4X Real-Time Signal Transfer over the QSDI connection. Normal speed transfer requires one frame of data for each 1/50 second time period (1/25 second in 625/50 countries). As the figure shows, the QSDI interface has the capacity to carry four frames of data during the same time period. It is important to note that Sony's EditStation System stores the video and audio on the hard drive just as it is stored on a DVCAM VTR tape, therefore no conversion or "digitizing" of the digital signal is required.



	Description	Transfer Speed	Connector	Maximum Cable Length
SDI Serial Digital Interface (4:2:2 Processing)	Broadcast standard serial interface for component (D-1)/composite (D-2) digital signals. (Uncompressed Video & Audio)	X1	BNC	Up to 200m
QSDI for DVCAM Professional Digital Interface (4:1:1 or 4:2:0 Processing)	Serial Digital Interface handling 1/2" Digital Compressed Video + Uncompressed Audio & Data (Sub Code). It uses the same physical layer as SDI.	X1 & High-Speed	BNC	Up to 200m
DV I/O Consumer Digital Interface (4:1:1 or 4:2:0 Processing)	Serial Digital Interface handling 1/2" Digital Compressed Video + Uncompressed Audio & Data (Sub Code) + VTR control.	X1	Multi	4.5m

(Table 1: Digital Interfaces)

QSDI

QSDI forms the connection that makes 4X Real-Time Signal Transfer possible. It may sound new, but QSDI is based on SDI, the Serial Digital Interface that is widely accepted in digital video production facilities. In fact, SDI has been standardized as SMPTE 259M.

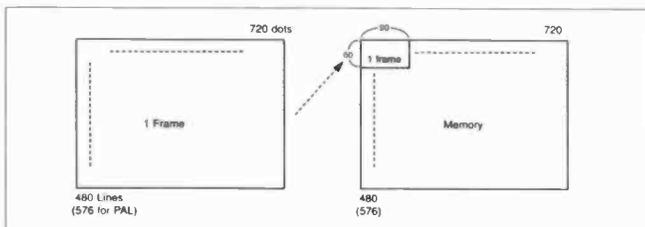
Compared to SDI, the QSDI interface uses the same coaxial cables and the same ultra-reliable BNC connectors. The maximum data transfer speed, 270 Mbps, is the same. So is the extra-long maximum cable run: 200 meters (over 650'). The QSDI interface can even use the same routing switchers already found in today's SDI facilities. These benefits make QSDI an ideal transport medium for DVCAM footage.

Table 1 shows a summary of digital interfaces that have been developed for broadcast, professional and consumer applications. Sony professional Digital DVCAM DSR Series equipment uses QSDI, as indicated on the line "QSDI DVCAM Professional Digital Interface."

Dockable Recorder

The first model in Sony's new DSR Series is called the DSR-1 Dockable Recorder in NTSC countries, the DSR-1P in PAL countries. We will refer to the recorder here as the DSR-1/P. This digital video recorder embodies breakthroughs in cost/performance, portability, durability, features and systems design.

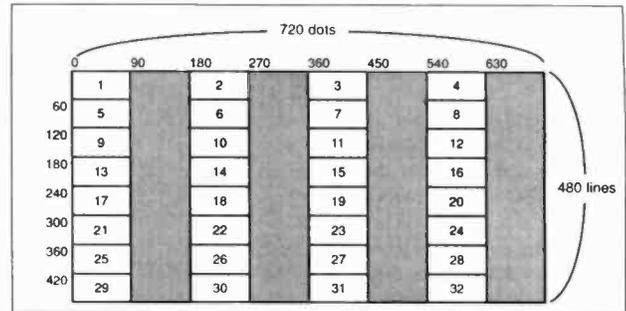
Index Picture Recording



(Figure 3: Index Picture Storing)

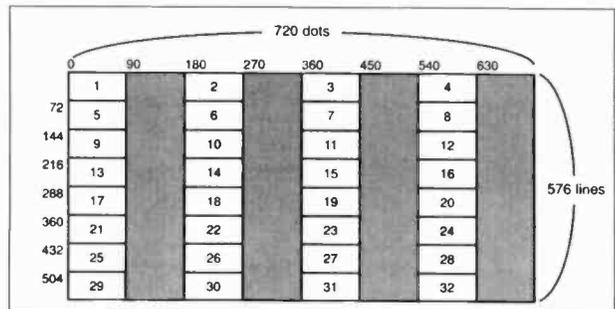
As part of ClipLink operation, the DSR-1/P stores an Index Picture for each recorded scene. The Index Pictures become the key ingredient in easy, intuitive drag-and-drop editing on the Sony EditStation Editing System. Each Index Picture is first stored in IC memory, either on the Cassette Memory or on the Dockable Recorder itself. Then, before the cassette is ejected, the Index Pictures are recorded onto the tape.

Figure 3 shows the sample structure of the Index Picture. One video frame is reduced to an Index Picture of 90 samples (H) times 60 samples (V) for the 525/60 system.



(Figure 4: Recorded Pattern of Index Picture [NTSC])

Several Index Pictures can fit into the space of one video frame on the tape. Figure 4 shows how 32 Index Pictures are recorded onto a single frame in NTSC.



(Figure 5: Recorded Pattern of Index Picture [PAL])

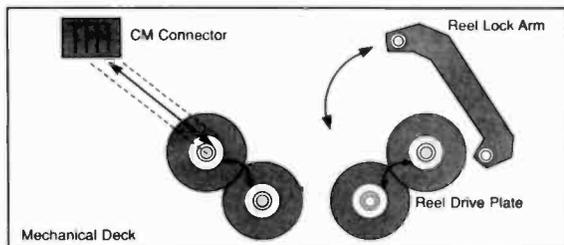
Figure 5 shows the corresponding picture configuration in PAL. For the purposes of optimum DCT compression and decompression, each Index Picture is separated by a band of gray. This makes the high-frequency content of the total frame easier to handle.

The total capacity for Index Pictures depends on the specific recorder and the size of the Cassette Memory. For example, using the DSR-1/P and Sony consumer DV cassettes (4 kilobits of Cassette Memory) yields 45 Index Pictures. In contrast, stepping up to Sony professional DVCAM cassettes (16 kilobits of Cassette Memory) yields 198 Index Pictures.



Dual-Cassette Mechanism

Professional VTR conventions dictate that when the tape format offers small and large cassettes, the portable equipment will only accept the small cassette. That's the way it was in Sony Betacam® camcorders, plus portable U-matic® and D-2 VTRs. This is one more time-honored tradition that the Sony DSR-1/P ignores. The capacity of the DVCAM Standard-size cassette is huge: up to 184 minutes of video. Yet in physical size, the DVCAM Standard cassette is not much bigger than an 8mm videocassette. So it's extremely well-suited to field acquisition and portable recording. For this reason, Sony engineers decided that the DSR-1/P should accommodate both DVCAM



(Figure 6: Dual Cassette Mechanism)

Standard and Mini cassettes. Thus, the Sony DSR-1/P becomes the first camcorder to accept two industry standard sizes of cassettes. Figure 6 shows how the DSR-1/P mechanism adjusts for both cassette sizes. The reel drive plates, Cassette Memory connector and reel lock arm shift within 0.3 seconds after you insert a cassette. The adjustment is quick, convenient, and totally transparent to the user.

Compact and Lightweight

When you load a Standard DVCAM cassette into the DSR-1/P Dockable Recorder, you can enjoy up to three hours of recording time. Yet the recorder still achieves remarkably small size and light weight. In these categories, the DSR-1/P is comparable to Sony's highly acclaimed EVV-9000/P Hi8™ Dockable Recorder. To accommodate the Standard DV cassette, the DSR-1/P is slightly longer. But thanks to the magnesium body of the DSR-1/P, both recorders weigh nearly the same.

Dual-Interface Mechanism

As a dockable recorder, it is important for the DSR-1/P to be compatible with the wide range of existing docking cameras. That's why Sony engineers gave the DSR-1/P the standard analog 50-pin docking interface. But the DSR-1/P is also designed to work with a new generation of DSP cameras, including the Sony DXC-D30. As a result, the DSR-1/P also has a new, digital 76-pin docking interface. The Sony DXC-D30 76-pin digital interface is a CCIR REC601 10-bit Digital Component (4:2:2) signal. The analog and digital connectors are mounted to a common panel that turns like a revolving door.

High-Speed Editing VTR

The second model in the Sony DSR Series is the DSR-85 Editing VTR (NTSC version), also known as the DSR-85P (PAL version). We'll refer to it here as the DSR-85/P. This remarkable deck has the mechanical refinements that make 4X Real-Time Signal Transfer possible. It also has the mechanical durability and robustness that mark it as a full-blooded Sony professional VTR.

High-Speed Signal Recording

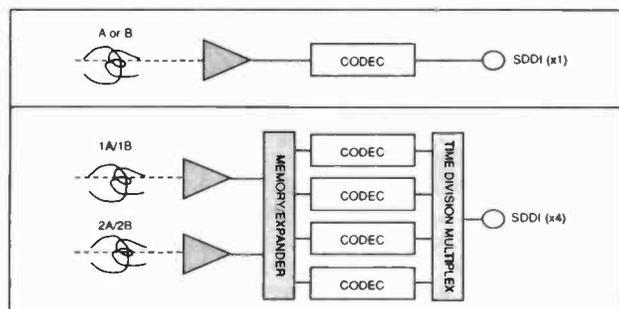
Given a format's track pattern on the tape, engineers have a wide range of choices in designing a VTR capable of 4X playback speed. Sony investigated different numbers of heads and different head drum rotation speeds before deciding on the design of the DSR-85/P.

We could have kept the head number constant, and simply quadrupled the drum speed (from 9,000 to 36,000 rpm). But we quickly found that this was unrealistic both mechanically and electronically. For example, the resulting transfer rate of 167.4 Mbps was beyond the capacity of a single head pair.

Sony's solution was to double the number of heads. The resulting drum spins at half the standard speed (4,500 rpm) during normal record/play. And it spins at twice the standard speed (18,000 rpm) for 4X record/play. Table 2 shows how the normal mechanism compares with the high-speed mechanism.

	X1 Normal Speed Model	High-Speed Editor	
		X1 Mode	X4 Mode
Head	1 Pair	2 Pair	
Drum Rotation Speed	9000 rpm	4500 rpm	18000 rpm
Tape Speed	X1	X1	X4

(Table 2: High-Speed Editor head pair and drum rotation)



(Figure 7: Signal process for high-speed data transfer)

The mechanism was just one part of the solution. The electronics also had to be redesigned to accommodate 4X Real-Time Signal Transfer. Figure 7 compares normal speed playback (top) with high-speed playback (bottom).

In normal speed playback, the new mechanism uses half the normal drum rotation speed. Each head rotation takes twice as long, but two tracks are traced at once. At 4X normal speed, four times the amount of signal is decoded (or encoded) in parallel, using four decoder/encoder ICs. After combining decoded signals through the time division multiplexing process, the data are ready for 4X Real-Time Transfer through the QSDI interface.



SPECIAL REPORT: BETACAM SX



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By Steve Epstein

The Basics

The Betacam SX machines take advantage of much of the technology developed for Digital Betacam. However, while Digital Betacam uses a 2:1 bit-rate reduction, Betacam SX has a more aggressive 10:1 compression ratio using the 4:2:2 Profile. The 4:2:2 Profile used in Betacam SX is a part of the MPEG-2 4:2:2 Profile at Main Level. The same compression algorithm is used throughout the SX product line so there is no fear of having your video turn to mud due to different algorithms. Digital component video (8-bit) is recorded and 507 lines of active video are compressed. VBI information is preserved. Along with video, four channels of uncompressed 16-bit/48kHz audio and time code (LTC and VITC) can be recorded. The video compression results in longer record times, thereby making the low-cost metal particle tapes even more cost-effective. Small cassettes can record up to 60 minutes, with large cassettes providing up to 184 minutes of recording time.

Betacam SX studio decks have the added feature of built-in hard drives. Recordings can be made on either tape or disk and from tape to disk or disk to tape. Two 4GB drives offer 40 minutes of record time (DNW-A45). For increased storage time, two 9GB drives offer 90 minutes (DNW-A50/A100). An external SCSI connection provides for additional storage (of up to six hours) on external drives (from Sony). To make the disk (and tape) recordings reasonably efficient, the video data rate is held to 18Mb/s. However, internal bandwidth is much wider, and transfer from tape to disk and back can be done four times faster than real time (DNW-A100).

Beyond the Basics

The 18Mb/s data rate is an important design criteria within the format. It is low enough to allow real-time transmission over a variety of existing paths including analog microwave. Using the Sony DSM-T1/R1 digital satellite modulator/demodulator, two 18Mb/s signals can be sent in real time, or one signal can be transmitted at 2x real time. Using Sony Digital Data Interface (SDDI), signals can be transmitted at 4x real time between Betacam SX recorders and SX-compatible A/V servers.

The Betacam SX family of products includes studio decks, several camcorders, a dockable VTR, portable field editor and a digital satellite demodulator and modulator. The studio decks have internal editing capabilities and in addition, studio editors will be available soon.

Although the system is primarily designed for the fast-paced news environment, it can serve a variety of production and on-air functions, as well. Because it is backward compatible to Betacam, aging Betacam decks can be replaced with little or no loss of functionality. The new SX decks are not capable of dynamic tracking playback from tape, but they can playback noiseless video from SX tape at jog or variable speeds or from disk at speeds other than play speed. The venerable BVW-75 protocol has been expanded for these new decks to provide access to the additional capabilities of the disk drives.

With Betacam SX, Sony is hoping to provide broadcasters and video professionals with a clear upgrade path from their current equipment to a future that is likely to include widespread networks and video servers. In many ways, the DNW-A100 hybrid recorder is an ideal bridge. Tapes can be played from the deck directly into a server. The deck provides the transport, control and conversion required to do this in an automated and cost-effective fashion.

Non-Linear Editing On Tape?

Well, not really. Non-linear editing *with* tape is probably more accurate. Tape equipment, despite its rugged reliability, has taken a beating the past few years at the hands of non-linear desktop proponents. Many of the blows have centered on the high cost of maintaining tape machines.

A good deal of the cost is parts and labor for head replacement and transport alignment. In the DNW series, head prices are significantly lower, because the decks have no DT heads. Head replacement time is reduced as many of the adjustments required after a head replacement have been eliminated through the use of Sony's Automatic Alignment System. The automatic system minimizes the need for time-consuming manual equalization and servo system adjustments.

In a stand-alone mode, the decks are capable of non-linear playback from disk and editing direct from tape to disk. Editing from tape to disk can be done in manual and automated batch modes. The batch mode can be set up from the deck's front panel or simplified through the use of the DLE-110 Live Editor. The editor is a desktop computer that offers a GUI-based editing environment, much like many of today's non-linear systems. However, thumbnails, rather than actual video, are all that go through the system. This reduces the demands on the editor and does not subject the video to additional compression because of editor bandwidth constraints. The DNE-50 portable editor is based on an IBM laptop, and offers much of the same capability in a compact package that can be easily taken on the road.

Moving Toward the Future

Many stations are faced with moving their news and production operations to digital. For example, CNN/SI recently purchased 29 of the DNW-A50 hybrid recorders for use in a joint venture with Time Warner. Plans call for the facility to use all-digital server technology fed by hybrid VTRs. One of the factors that led to the decision was the positive experience CNN had during the national political conventions with Betacam SX camcorders and studio decks. WPIX, New York, purchased the first DSM-T1/R1 digital satellite modulator/demodulator for use in its SNG truck.

The transition to digital is a slow process that will take years, not days. As this migration unfolds, it's sometimes difficult to identify long-range equipment goals while you're in the midst of rapidly changing technology. Professional broadcast equipment is costly and stations must use every piece of gear to its fullest potential. Because of this, most equipment purchases need to be made in the context of existing equipment and future needs. Technology that offers a bridge between the two is sometimes easier to swallow than systems that call for radical change.



Steve Epstein is a Broadcast Engineering Technical Editor.

DIGITAL-S: A NEW DIGITAL VIDEO TAPE RECORDING SYSTEM



Courtesy of JVC Professional Products Company

By Neil Neubert

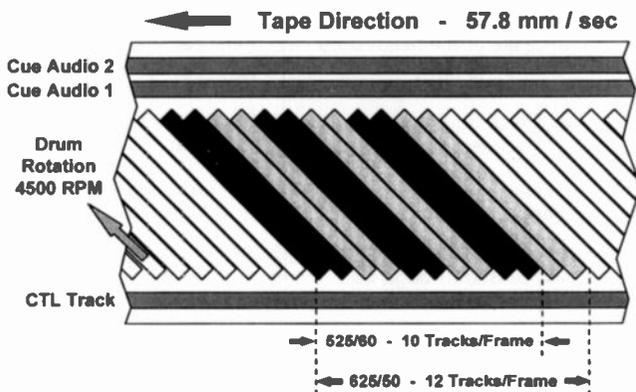
DIGITAL-S VIDEO TAPE RECORDING FORMAT

Recording System

"DIGITAL-S" employs the azimuth ($\pm 15^\circ$) recording system to suppress crosstalk from adjacent tracks. A flying (rotary) erase head is incorporated to erase-and-record each segment and helical track individually during editing to assure reliable, frame accurate insert and assemble mode edit capability.

The modulation system uses S-INRZI/24-25 modulation with the PR4 detection method. The required recording density is achieved utilizing a track width of $20\mu\text{m}$, a 2-bit length of $.587\mu\text{m}$, and recording clock frequency set at 49.5MHz. The error correction system employs a double-encoded correction method using Reed-Solomon code. This format makes concealment of playback errors possible even when one of the heads malfunctions, as data can be interpolated using the playback data of the previous frame from the other head.

The digital video signal, digital audio signals, and subcode (including system data) are written in the helical tracks recorded by the rotating heads. Sectors are recorded in the order of: Video 0, Subcode, Audio 1/3, Audio 4/2, Video 1. Edit gaps are provided between sectors to enable independent editing of each sector.



The system uses a two-track, parallel recording system with a pair of heads on each side of the drum, aligned exactly opposite each other (180°).

One frame of video is recorded on 10 tracks for 525/60 systems, and 12 tracks for 625/50 systems. The longitudinal tracks at the edges of the tape include two auxiliary (cue) audio tracks and a CTL (control pulse) track for tracking function.

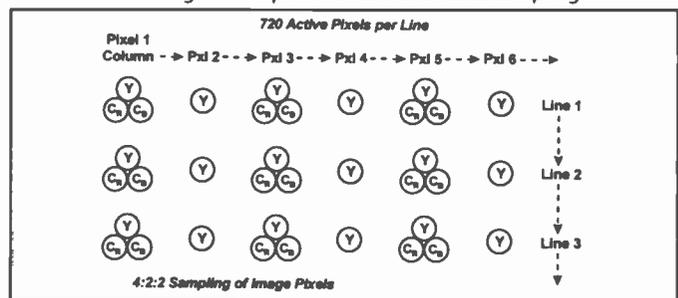
Signals

Digital-S applies 4:2:2 image sampling as specified in the ITU-R BT.601-4 Standard and records the resulting 4:2:2 component digital video signals on video tape. Of the several color component sub-sampling methods, experts acknowledge that 4:2:2 image sampling is required to preserve the color component sharpness and resolution necessary for the best digital component picture quality, and especially for satisfactory performance of chromakey and other color resolution dependent post-production processes. A foremost Digital-S design goal is excellent picture quality. Compromised image sampling to 4:1:1 or 4:2:0 was never even a consideration for Digital-S!

The figures that follow show a group of pixels in the upper left corner of a video picture and illustrate the difference between 4:2:2, 4:1:1, and 4:2:0 image sampling. The 4:2:2 method samples color components "C_R" and "C_B" at every second luminance ("Y") sample on every horizontal scanning line as specified by the ITU-R BT.601-4 Standard. The 4:1:1 and 4:2:0 methods halve the color component samples of 4:2:2 and, therefore, significantly reduce color resolution and detail in the resulting picture. The resolution reduction resulting from 4:1:1 and 4:2:0 color component sample elimination is readily apparent when the following figures are viewed together on the page.

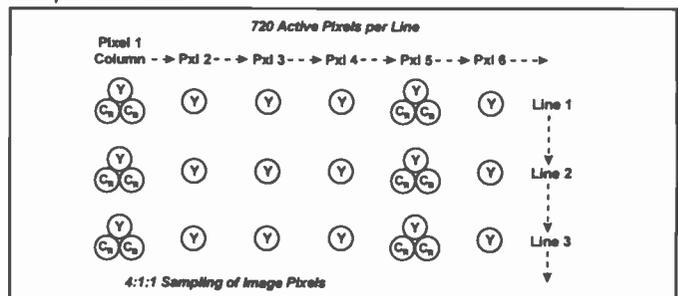
4:2:2 Image Sampling Structure

Full 4:2:2 color component sub-sampling complies with ITU-R BT.601-4 and yields optimal color component resolution. Digital-S and most other digital component VCRs use 4:2:2 sampling.



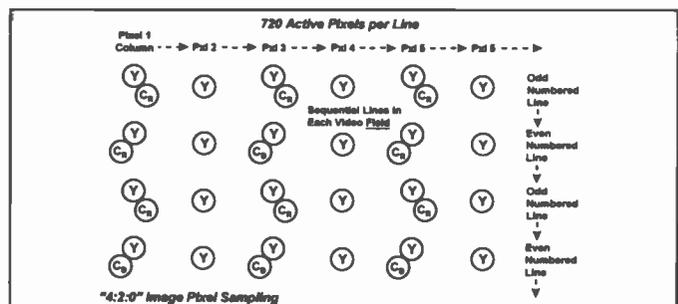
4:1:1 Image Sampling Structure

4:1:1 color component sub-sampling results in reduced color component resolution, half that of Digital-S and most other digital component VCRs.



4:2:0 Image Sampling Structure

Combining two interlaced fields for one video frame results in pairs of lines possessing just one single color component. Vertical color resolution is half that of Digital-S and most other digital component VCRs.





The active picture in the 525/60 system is 720 pixels by 480 lines, and 720 pixels by 576 lines in the 625/50 system. For both systems, the uncompressed 4:2:2 source data rate is approximately 166 Mbps. The following equations show how this data rate is determined.

Y Luminance: 720 Pixels/Line x 482 Lines/Frame x 30 Frames/Sec x 8 Bits/Pixel = 83 Mbps

C_R Component: 360 Pixels/Line x 482 Lines/Frame x 30 Frames/Sec x 8 Bits/Pixel = 41.5 Mbps

C_B Component: 360 Pixels/Line x 482 Lines/Frame x 30 Frames/Sec x 8 Bits/Pixel = 41.5 Mbps

4:2:2 Total Bit Rate = 166 Mbps

The uncompressed 4:1:1 source data rate is approximately 124.5 Mbps. The source data rate is reduced, thus relieving the burden of compression, merely by discarding half of the color component samples (and color detail and resolution in the picture). Once discarded, the color detail information contained in the discarded samples can never be recovered or accurately reconstructed and reproduced. For example, a video data rate of 25 Mbps has been compressed at a ratio of 6.6 to 1 when the source is 4:2:2 ITU-R BT.601-4 component digital video (166 Mbps). Almost 42 Mbps is eliminated in the conversion from 4:2:2 to 4:1:1 even before compression is applied to the signal. With sample rate conversion (reduction) applied as an initial "compression" process, the actual DCT based compression process need only be a 5 to 1 compression ratio.

Y Luminance: 720 Pixels/Line x 428 Lines/Frame x 30 Frames/Sec x 8 Bits/Pixel = 83.00 Mbps

C_R Component: 180 Pixels/Line x 428 Lines/Frame x 30 Frames/Sec x 8 Bits/Pixel = 20.75 Mbps

C_B Component: 180 Pixels/Line x 428 Lines/Frame x 30 Frames/Sec x 8 Bits/Pixel = 20.75 Mbps

4:1:1 Total Bit rate = 124.5 Mbps

Similar analysis can be applied to the 4:2:0 sampling model.

Digital-S does not eliminate color component samples from the 4:2:2 ITU-R BT.601-4 component digital video source signal. Digital-S preserves all samples and color details through the entire input/output and record/playback processes. Digital-S compresses the 4:2:2 signals directly, at a light compression ratio of only 3.3 to 1, to a 50 Mbps video/audio data rate for recording on video tape. Digital-S utilizes a DCT based intra-frame compression method. A "V AUX" area for video ancillary data is also provided within the video data.

As a video tape recording *format*, Digital-S has the capacity to record two or four channels of the highest quality audio, all sampled at 47kHz, and quantized linearly at 16 bits per sample. The digital audio data is not compressed before recording on the video tape. While the Digital-S format supports four full-performance PCM digital audio channels, initial products will possess only two-channel PCM audio capability. An "A AUX" area for audio ancillary data is also provided within the audio data.

For editing purposes, two auxiliary (cue) audio signals can be recorded on two longitudinal tracks located at one edge of the video tape. These permit an editor to hear sound cues while the VCR is moving the video tape at search and shuttle speeds. SMPTE/EBU Time Code signals (VITC and LTC data) can be recorded in the subcode data.

Digital-S Video Tape Transport

The Digital-S tape transport is adapted from the same mechanisms used in the most Professional S-VHS VCR's. Many of the specifications differ, however. Tape speed is set at 57.8mm/s, resulting in a maximum recording time of 104 minutes (124 minutes when used with a thin-type tape that will be available in the future). Drum rotation speed is 4500 rpm. The tracking servo is the same as that of the Professional S-VHS system using the CTL signal (1 pulse per frame) on a longitudinal video tape track as the reference signal. The table on page 7 shows many of the tape transport specifications for 525/60 and 625/50 systems, and compares them to their S-VHS counterparts.

A foremost design goal for Digital-S is the realization of a very high quality, but also a very economical digital video tape recording system. Adaptation of the proven Professional S-VHS tape transport is a major element for the realization of both very high quality and economy. Complete design goals for the Digital-S tape transport are as follows:

- * Cost effectiveness
- * Simultaneous record/playback function enabling pre-read editing
- * Maintaining excellent tape track linearity over the full life of the mechanism and head drum
- * Good service life of the heads used with metal particle tape
- * Backward compatibility for playback of S-VHS recordings (tape)

The following techniques are incorporated in the tape transport and head drum to achieve the design goals listed above:

- * Cost effectiveness is achieved by utilizing the proven tape transport and mechanism used in the most Professional S-VHS VCR's.
- * The record and playback signal transmission lines from the heads are divided and passed through both the lower and upper portion of the drum to maintain sufficient isolation and enable pre-read editing.
- * Tape pattern linearity is maintained for an extended period by use of upper and lower sections of the drum made of an aluminum alloy material with high silicone content. This greatly reduces wear and minimizes tape path change. The new material is also used in the tape guide flanges located at the drum entrance and exit to minimize tape path change due to aging.
- * Long head service life is ensured, even with metal particle tape, by use of a video tape cleaner to prevent particle accumulation that can cause head wear. In addition, the relationship between heads has been optimized for greater precision and the shape of the edges on the rotating middle drum are refined for less wear.
- * Playback compatibility with S-VHS recorded tapes is maintained by employing a rotating middle drum system. The upper and lower sections of the drum are fixed and do not rotate. In addition, the tape tension around the drum has been established at a level that is optimized for both the Digital-S mode and the S-VHS mode.

Video Tape and Cassette

The video tape used in the Digital-S cassette is a high-density metal particle tape similar to that used in the W-VHS HDTV system and other modern digital video tape recorders. Appearance and dimensions of the cassette are the same as those of VHS. However, the cassette housing features a newly developed dust-proof structure and a safety system to prevent loading it into conventional VHS and S-VHS decks.



KEY DIGITAL-S TECHNOLOGIES

Bit Rate Reduction

Some items that must be considered in the selection and design of a bit rate reduction technique are as follows:

- * Picture quality
- * Accommodation of all edit functions
- * Full performance search and shuttle operation
- * Compression efficiency
- * Error handling and effect correction

The bit rate reduction technique selected for use in the Digital-S video tape recording format is based on the widely used DCT (Discrete Cosine Transform) compression method. Intra-frame compression was chosen to achieve the best compression efficiency, and because frame accurate editing is required for Digital-S.

Variable-Speed Playback

Digital-S can play back complete and noise-free forward and reverse pictures over a great range of slow motion speeds between $\pm\frac{1}{2}$ normal PB speed without the need to utilize moving PB head technology. Variable-speed playback reads burst data picked up by the scanner from the video tape that is moving at search speed. The burst data is used to recompose the picture in much the same way as in an analog VTR. Consequently, video signals from different frames are combined to form single visible frames during variable speed playback. For the best picture quality during search operation playback, the entire image must be renewed from a series of data blocks very rapidly. This is accomplished by dividing the picture into blocks and compressing the data from each image unit block as fixed-length data. The compressed lengths of data representing each image unit block are combined sequentially, corresponding to the order that they were scanned from the video tape tracks at variable speed, to make up a single visible frame. This compressed data length is required to be shorter than the burst length read from each track on the video tape. Maximum search speed is limited by the condition that burst length is longer than the compressed data length corresponding to each block. The compressed data length for each image block is inversely proportional to search speed, the shorter the compressed data length, the faster the maximum possible search speed. Conversely, compression efficiency is directly proportional to compressed data length. As it becomes shorter, compression efficiency is reduced.

In digital VTR systems, the minimum decodable data unit is referred to as a sync block. In the Digital-S format, compressed data length corresponding to the minimum decodable data unit is kept as short as possible, virtually the same as the sync block. Consequently, jog/shuttle search functions in a manner similar to that of an analog VTR. Data rate for the entire image is set at a sufficiently high level to compensate for the reduced compression efficiency.

Error Handling and Correction

The process of video recording makes it impossible to avoid errors. Error correction is essential if picture distortions and dropouts are to be avoided. Digital-S employs the Reed-Solomon Product Code for correction of errors typical of digital video recording and playback. Error concealment using interpolation from data contained within the same frame is extremely difficult to accomplish using DCT based compression systems. Intra-frame compression permits, and Digital-S employs, interpolation from previous and subsequent frames to conceal errors for which the Reed-Solomon correction is not effective. In general, better results are achieved from small interpolation blocks. These result in minimum error propagation. Digital-S sets the interpolation block at macro block size (almost the same as the sync block).

Summary—Bit Rate Reduction

Intra-frame compression was selected to achieve frame accurate editing, and good error correction and concealment performance. The compressed fixed-length unit is set at the shortest possible value to yield good search speed operation and minimum error propagation. Consequent compression data rate is set at 50 Mbps which is an approximate ratio of 3.3 to 1. This results in excellent picture quality for multi-generation dubbing, and 104 minute recording capability with current Digital-S cassettes. New Digital-S video tape and cassettes will yield full two-hour record/playback capacity in the near future.

CONCLUSION

The Digital-S Video tape Recording Format was designed to satisfy the requirements of a great variety of video recording applications. It is a perfect complement and companion with professional analog recording products and systems currently in service, and offered by JVC Professional Products Company and others. Digital-S possesses, however, exceptional features, performance, and specifications, that will satisfy the video recording needs and requirements of tele-producers, broadcasters, and video professionals alike. In addition, Digital-S promises to satisfy all of these requirements at a significant new level of economy, unknown to digital video tape recording before now.



DTV QUESTIONS AND ANSWERS

Courtesy of: Comark Communications, Inc.



I. How Does DTV Differ from NTSC?

- A. NTSC is an analog service which was developed for the purpose of broadcasting a single picture and sound program. As the designation DTV (Digital Television) might imply, digital media will provide viewers a whole host of new, user-friendly innovative programming and viewing opportunities.
- B. NTSC power levels are referenced to the peak of sync level. DTV is referenced to an average power level which remains constant. While there is a peak power requirement placed on the transmission system, the actual peak level is statistically defined and variable. It is generally understood that the minimum peak to average level for the 8-VSB (8-level Vestigial Sideband) modulation format of DTV is 6.4dB for 99.9% of the time.
- C. DTV will employ an MPEG-2 transport stream to packetize and multiplex digital video, digital audio and ancillary data over a single 6MHz RF channel, at about 19.4Mb/s throughput.

II. What is the Difference Between HDTV and DTV?

- A. HDTV (High Definition Television) is but one of the many programming opportunities offered through DTV. HDTV is most commonly associated with picture resolutions of 1920 pixels horizontal and 1080 pixels vertically, giving an aspect ratio of 16:9.
- B. DTV is capable of supporting HDTV and many other ATV (Advanced Television) services as discussed below. This is possible because of the MPEG (Motion Picture Expert Group) related compression and various multiplexing methods.

III. What Does DTV Offer for Services?

DTV can carry a varied mix of HDTV, SDTV (Standard Definition Television), and many data related services. The limitation is the data delivery rate that the ATSC standard will support (19.4Mb/s). It is possible to offer these multiple capabilities on an opportunistic or deterministic basis based on the data requirements for the different service offerings. This means that at various points during the broadcast day it will be possible to offer many unique blends of available program content.

IV. Is the Service Area any Different than NTSC?

One of the distinctive differences is that, unlike NTSC which slowly degrades with the addition of noise ("snow"), DTV offers perfect reception up to the limits of the service area. While this can be an advantage, the potential problem is that viewers in marginal receiving areas may get intermittent reception (known as the "digital cliff effect"). Just where this may occur is the subject of debate, and the ongoing support and experimentation of early implementers should lead to an understanding of concerns and the potential for resolution.

V. Is Anyone Broadcasting DTV Today?

There are several experimental stations operating. Only one comes close to being a complete broadcasting facility. WHD-TV, "The Model HDTV Station Project" hosted by NBC's WRC-TV, is broadcasting and receiving a variety of pre-recorded and live program material. The Technical Committee of this project is in the process of defining how to implement a meaningful plan that meets the many varied needs of its membership.

VI. When Will I be Required to Start DTV Service?

- A. The FCC adopted on April 3, 1997, and released on April 23, 1997, its SIXTH REPORT AND ORDER which contained a table of channel and power level allotments. It is this set of allotments which defines the starting point for the simulcast period. The FCC issued at the same time the final version of the FIFTH REPORT AND ORDER which put forth its general view of how DTV services will be defined.
- B. The broadcast industry is stating that it will be possible to cover over 40% of the top markets within 24-30 months of the DTV start date.
- C. The FCC has ordered network affiliates in the top 10 markets to begin transmitting digital signals by May 1, 1999. Affiliates in the top 30 markets will have to be broadcasting digitally by Nov. 1, 1999. Noncommercial (public) stations must have digital transmissions by May 1, 2003. Every station, large and small, is required to be digital by the same date in 2006.

VII. What is Meant by "The Simulcast Period" and How Long Will it Last?

- A. The simulcast period refers to the time during which both NTSC and DTV are "on-the-air". Broadcasters will be issued a second license and allowed the use of two channels during this period. At the end of this period the NTSC channel will return to the FCC.
- B. While "simulcast" was initially understood to mean the providing of the same programming content for NTSC and DTV, this is no longer viewed as a requirement. NPRM #6 made specific mention of broadcasters offering differing data and program possibilities.
- C. Until most recently the broadcast industry believed that the simulcast period would last 10-15 years. What is being increasingly discussed is a "compressed" implementation period which will allow an early return of the NTSC channels. Under this compressed implementation plan broadcasters may be asked to convert to DTV over a transitional period lasting only 6-8 years.

VIII. Will NTSC Television Sets be Able to Receive a DTV Signal?

- A. Special digital receivers (televisions) will be required for DTV reception. While it is anticipated that full receivers will be to market first, digital converters should follow in a short period of time. These digital converters will not support true HDTV but will allow many of the other DTV (multi-program and data) capabilities to be accessed with an NTSC television.

IX. What is the Availability of DTV Receivers?

Latest industry estimates indicate that receiver manufacturers will debut their first DTV consumer products in time for Christmas of 1998. Given that the industry is stating that a large portion of top markets will have at least one DTV provider within 18-24 months of the DTV start date, it is quite likely that the demand for DTV receivers will grow quickly.



X. Will I Someday be Using My Computer to Receive DTV?

- A. There is a large part of the broadcast industry which believes that early revenues may be derived from the offering of a diverse combination of data services. These services could possibly be offered by providing inexpensive PC cards/boards. Broadcasters are developing an understanding of this new market opportunity with the development of several NTSC based "datacasting" technologies.
- B. The concession which was reached between representatives of the computer industry, filmmakers, consumer electronic manufacturers and broadcasters in December of 1996 has set the stage for anticipated computer interoperability.

XI. Can an NTSC Transmitter be Used to Broadcast DTV?

- A. It may be possible to convert portions of many current transmitter systems. These possibilities need to be weighed against many factors. Some of the questions that must be answered are:
 1. Can the existing system provide NTSC on-air requirements without one or more of the existing amplifiers?
 2. Will the amplifier to be converted support the required channel and power level?

XII. What DTV Transmitter Technologies are Competitively Available Now?

- A. Transmitter Power Output (TPO) levels must first be determined. To do so in the broad context for this discussion requires some general assumptions. For UHF broadcasters it is reasonable to assume an antenna/transmission line system gain of 20 (13dB). This would be based on an antenna vertical gain of 30 (14.7dB) and a transmission line efficiency of approximately 67% (loss of 1.7dB). (These values can obviously be defined for specific sites.)

B.	DTV/ERP	TPO	Amplifier Technology
	50kW	2.5kW	Solid-State
	100kW	5.0kW	Solid-State/Tube
	300kW	15kW	Solid-State/Tube
	500kW	25kW	Tube (IOT)
	1,000kW	50kW	Multiple Tubes

- C. For VHF DTV broadcasters the clear solution remains solid-state. In most cases the requirements for VHF are well below 4kW DTV, easily accommodated with present solid-state VHF technology.

XIII. What are Some Options for Antenna Systems?

- A. There are many possible solutions. In general, the major limitation for antennas is in the vertical elevation characteristics. Due to possible degradation of the radiated signal, vertical gains should in general be limited to 14.7dB (gain factor of 30). Center fed designs may be preferred for high elevation gains. As well, it is a good practice to provide a good level of null fill to ensure consistent elevation coverage. Azimuth (pattern gain) requirements will be determined on specific directional needs, much as they are matched to current coverage needs.
- B. Some manufacturers offer "stacked" arrays which offer solutions for top-mount antenna positions. Top-mount antenna positions offer fewer coverage problems and are generally acknowledged as the most desirable location.
- C. Broader bandwidth slot antenna types offer some possible solutions for stations where the allocation of the DTV channel is adjacent to the existing NTSC channel. Details relative to combiner techniques are under investigation but certainly offer a real challenge for passive RF system designers.

XIV. Does DTV Provide an Advantage for the Transmission of Motion Pictures?

The 16:9 format reflects a broad worldwide consensus as to the best balance between resolution, bandwidth, receiver cost, and compatibility with existing formats. Accommodating an 18:9 broadcast in a 16:9 transmission would require only very marginal "letter-boxing" to present the whole picture, and as long as movies continue to be produced in a variety of formats, letterboxing of some will be a fact of life. The Motion Picture Association of America (MPAA) was a party to the consensus on the 16:9 format and continues to support it.



DIGITAL VIDEO DISC: THE COMING REVOLUTION IN CONSUMER ELECTRONICS



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By: Alexandre Balkanski, President and CEO

Executive Summary

Digital Video Disc (DVD) is the first video distribution medium designed for digital video. The superior audio and video quality, interactivity and distribution control incorporated in this new medium will revolutionize video distribution in the US, Japan and Europe. This White Paper describes the new format and the technology behind it.

Introduction

Digital video changes everything.

From its inception, video has been recorded and transmitted as analog electrical signals. While analog video transmitters and receivers can be built inexpensively, analog video is very expensive to transmit and store. Further, today's powerful digital computers cannot process analog signals, so analog information cannot be easily sorted, searched or edited.

Digital video also dramatically increases transmission efficiency, which means that communications networks, from the public telephone system to coaxial cable television systems to telecommunications satellites, will be able to carry from six to ten times more channels of video programming than was possible before, dramatically increasing consumer choice. The ability to transmit video over the public switched telephone network will also allow video conferencing, accelerating the work-at-home movement that is changing the way we are all employed.

One of the first products to be based on digital video technology will be the Digital Video Disc or DVD. These discs are the size of today's audio CD, yet hold up to 17 billion bytes of data, 26 times the data on an audio CD.

Digital Video Disc, a Definition

Digital Video Disc (DVD) is a new media for the distribution of from 4.7 to 17 billion bytes of digital data on a 120mm (4.5 inch) disc. This huge volume of data (today's CD can store 680 million bytes of data) can be used to store up to nine hours of studio quality video and multichannel surround-sound audio, highly interactive multimedia computer programs, 30 hours of CD-quality audio, or anything else that can be represented as digital data.

A DVD looks like today's CD: it is a silvery platter, 4.75 inches in diameter, with a hole in the center. Like a CD, data is recorded on the disc in a spiral trail of tiny pits, and the discs are read using a laser beam. The DVD's larger capacity is achieved by making the pits smaller and the spiral tighter, and by recording the data in as many as four layers, two on each side of the disc. Figure 1 compares the pit size of audio CD to that of DVD.

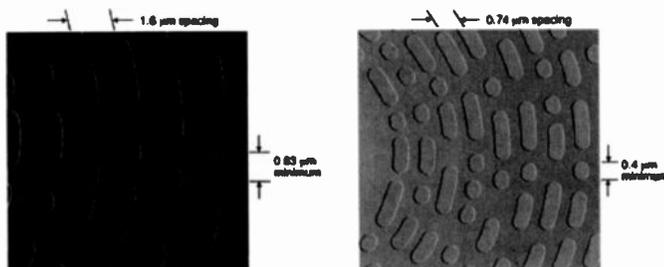


Figure 1. CD and DVD Feature Sizes

To read these tightly packed discs, lasers that produce a shorter wavelength beam of light are required, as are more accurate aiming and focusing mechanisms. In fact, the focusing mechanism is the

technology that allows data to be recorded on two layers. To read the second layer, the reader simply focuses the laser a little deeper into the disc, where the second layer of data is recorded.

Not only are 2-layer discs possible, but so are double-sided discs. The availability of four layers is what gives DVD its 17 gigabyte capacity. However, since a 135-minute movie fits on a single DVD layer, single-layer DVDs will be the most common. Table 1 summarizes the differences between the audio CD and DVD formats.

Table 1. Comparing DVD and CD Characteristics

	DVD	CD
Diameter	120mm	120mm
Thickness	0.6mm	1.2mm
Track Pitch	0.74nm	1.6nm
Minimum Pit Length	0.40nm	0.834nm
Laser Wavelength	640nm	780nm
Data Capacity (per layer)	4.7GB	0.68GB
Layers	1, 2, 4	1

Digital Video Disc for Movies

While any kind of digital data can be distributed on a DVD, the first application of this new media will be movie distribution for sale and rental. As a movie medium, DVD has many advantages over today's VHS tape and laser disc.

The first advantage is quality. The video from a DVD is excellent: sharp and clear, with saturated color. And the multichannel audio is of theater quality.

The First Wide-Screen Video Format

DVD will be the first medium to present movies in wide-screen format. When television was developed in the 1930s, a movie picture was mostly square: four units wide and three high. Television screens were sized to match this ratio, and viewers have been stuck with the squarish 4:3 aspect ratio ever since. Movies have evolved, however, getting much wider over the years. Today, movies have aspect ratios of either 16:9 or 20:9, neither of which fits very well on a 4:3 TV screen, no matter how large. Figure 2 illustrates the three aspect ratios.

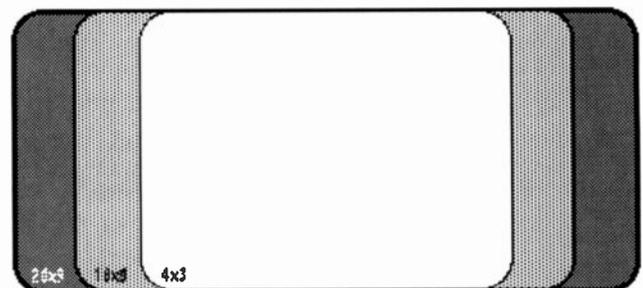


Figure 2. Aspect Ratios

DVD is designed to deliver wide-screen movies to today's new enhanced definition televisions (EDTV), which have 16:9 aspect ratio screens. While widely available in Japan and Europe, where 16:9 broadcasts are available, 16:9 TVs are rare in the US because wide-screen programming is not broadcast there. The availability of DVD players and titles will certainly drive the sales of EDTV monitors in the US, dramatically lowering the cost for these superior TVs.



For those who do not have a 16:9 TV, the DVD player will either crop the wide-screen video to fit a 4:3 screen or put it in letterbox format.

Interactivity

Because DVD is a disc-based medium rather than tape, it is possible for the player mechanism to seek any place on the disc and begin playing. It can also pause, play in slow motion or fast forward easily, and with a much clearer picture than can a tape player. These random access features allow all manner of interesting applications from multiple endings for a movie, to interactive video games, to multiple camera angles.

Parental Control

Related to interactivity, parental control allows parents to password protect programs that they do not want children to view. A variation of this lockout facility will allow different versions of a movie to be stored on the same disc: the director's cut, an R-rated version and a PG-13 version, for example.

Closed Captioning and Multiple Languages

DVD may be the first truly international video distribution standard. Able to store multiple sound tracks (each with multiple channels), the format can support up to eight languages for a single movie. In addition, the format supports 32 closed caption tracks, for multiple language applications, for the deaf or any other commentary (for example, a director's comments).

Great Video

As its name suggests, DVD is the first digital disc media created just for video. And it represents a complete break with video's analog past. When television was invented in the late 1930s, it was intended to be a broadcast medium, like radio. Broadcast was, in fact, the only distribution technology available (the video tape recorder was not invented until the late 1950s). Matching their broadcast standard to the capability of cameras and picture tubes at the time, RCA's engineers allocated 6 MHz of bandwidth to each TV channel. Television delivered only black and white pictures, and was designed to be viewed a distance equal to five times the diagonal measure of the screen. When TV picture tubes were only a foot across, that meant you could comfortably watch it from the other side of a small room.

In 1954, an industry consortium called the National Television Standards Committee (NTSC) added color to television. In order to maintain compatibility with the millions of black and white TVs already sold, NTSC grafted color information (chroma) on to the black and white signal (luma) by encoding it on a sub carrier.

The problem with this sub carrier scheme is that it is very difficult to implement well and inexpensively. Poor NTSC encoders cause the color information to interfere with the luma information, a problem called cross chrominance interference. If you look closely at almost any TV, you can see this interference: it appears as "crawlies" at the edge of any sharply defined object (look at graphics).

The other problem with NTSC is bandwidth. Although 6 MHz was plenty when TV was invented, camera and monitor technology have not stood still since the 1930s. Today's studio cameras can capture images at resolutions of up to 600 television lines with a high degree of color saturation and fidelity, and today's color monitors can reproduce these signals. NTSC, however, limits

resolution to about 300 lines and severely restricts color bandwidth (it is limited to only half the dynamic range of the luma signal).

Digital video eliminates these problems by keeping the luma and chroma information separate at every stage of the transmission train, from the camera's eye to your eye. It also eliminates the severe bandwidth limits of NTSC, allowing viewers to receive the full resolution that the camera captures, with colors that have the same dynamic range as the brightness information.

Theater Quality Audio

As any film enthusiast will attest, the image is only half of the experience of a movie: audio is what puts the theater experience in a different league. Today, the reference standard in theater audio is six-channel digital sound. There is a center channel for dialog, left and right front channels for music, two rear channels for effects and one bass channel.

For the home, consumers have made do with Dolby ProLogic Surround Sound, a matrix audio scheme that allows four channels of sound to be encoded on a normal stereo pair. The four break up as center, front left, front right, and rear (although the rear channel is typically divided between two speakers). While Dolby ProLogic provides a much richer experience than stereo alone, audiophiles complain of poor imaging (sounds don't appear to come from a distinct spot on the stage) and steering problems (a sound appears to move around on the stage when it's not meant to).

DVD ends all these problems by incorporating either Dolby's AC3 Surround Sound or MPEG-2 audio. AC3 provides six channels and MPEG-2 provides up to eight, each channel completely separate from the others. All of the experts agree: the sound produced by AC3 or MPEG-2 rivals that of a theater.

To maintain compatibility with the installed base, DVD players will include a Dolby ProLogic Surround Sound encoder to translate the AC3 or MPEG-2 tracks into a format that can be played through a standard stereo amplifier or an older surround sound system.

Understanding The DVD System

Like all consumer electronics formats, DVD is a system that consists of a mastering system, a physical distribution medium (the disc itself) and a player. DVD is arguably the most complex consumer electronics product ever introduced.

DVD Mastering

In its raw state, digital video is so voluminous that a feature-length movie would require 40 DVDs at 4.7 billion bytes each. Fortunately, digital video has many redundancies, elements that are the same or nearly so, which can be identified and removed. This process is called encoding and can eliminate over 97 percent of the data required to represent the video without noticeably affecting image quality. DVD uses the MPEG-2 digital video encoding standard.

To deliver the high image quality of DVD while fitting a movie into the 4.7 gigabyte capacity of a single DVD layer, a process called variable bit rate encoding is used. MPEG encoding compresses video by eliminating redundancies. When a picture is very complex—for example, a picture of leafy trees—it does not have as many redundancies as a picture of a cloudless sky. Figure 3 is a graph of the amount of data used to represent a movie over a movie's run length, showing how a DVD encoder uses more data to encode difficult sequences and less data for simple ones, constantly varying the amount of data used to represent the video. The average data rate for video on a DVD is about 3.7 million bits per second.

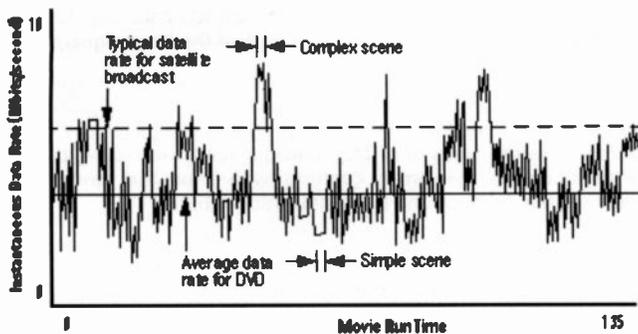


Figure 3. Variable Bit Rate Encoding

Other digital video distribution techniques, such as satellite broadcast, cannot vary the data rate at which video is transmitted, so satellite system operators must set a higher bit rate to achieve the same quality as DVD, usually around 6 million bits per second (see dashed line in Figure 3).

The Digital Video Disc

A digital video disc is made up of a reflective aluminum foil encased in a clear plastic. Data is stored on the foil as a series of tiny pits formed in a tight spiral on the disc. The pits are formed in the foil by stamping it with a glass master. In the case of a single-sided DVD, the stamped disc is backed by a dummy, which may contain graphics advertising the contents of the disc. For a double-sided disc, two halves, each with their foil full of data, are bonded back to back.

A combination of the techniques used to make today's audio CDs and laser discs (also a double-sided medium), this process is well understood. Disc replicators estimate that the cost of a single-sided single layer DVD will be comparable to an audio CD, or about \$0.80, including the packaging.

This cost model, in addition to the lower transportation, warehousing, and retail shelf space requirements, is one of the key attractions of DVD. This low-cost model (a VHS tape costs about \$3.00 to make and distribute) may also make new distribution models possible, such as pay-per-view.

The Players

Of course, all this mastering and disc replicating is for nothing if there are no players or if they cost too much. And these players will be among the most complicated consumer electronics products ever produced. Simply, the players consist of the following major components.

With its 1 million logic transistors, the audio/video decoder is by far the most complex component of a DVD player. This device has three essential functions as listed here:

- Separate and synchronize audio and video data
- Decode the video data and format it for display on a television monitor
- Decode the audio data and format it for amplification by a home audio system

In addition to these basic functions, the audio/video decoder must implement on-screen display (OSD) for graphics, encode the six-channel audio into Dolby ProLogic format, implement legacy formats such as VideoCD 2.0 and CD-Digital Audio, and so on.

Players will cost less than \$500 in 1997, dropping to \$400 in 1998 and \$300 by 1999.

Putting it All Together

Digital video disc must be viewed as a system. The mastering system formats the audio and video and joins them together in a single data file. In addition, the mastering system codes segments of the movie for parental lockout, manages multiple language tracks, formats closed caption text and associates it with certain video sequences, and encrypts the video and audio if necessary.

To implement this multiple version facility, the whole movie is stored on the disc, including those scenes which would cause the film to have an NC17 rating (the director's cut) or an R rating. To effectively "reduce" the rating on a film to a PG-13, the player must skip the objectionable material. While this sounds easy, in practice skipping material without a pause in the playback of the audio or video is very difficult. The player must be constructed with a buffer (temporary memory) large enough to keep the audio and video playing while the player mechanism is moving the laser to skip the censored scene. And the mastering system that is used to prepare the movie for distribution on DVD must know how large the buffer is and maximum time it will take to skip the objectionable material (a matter of seek times and sector locations).

This link between the player and the mastering system is why DVD must be broadly viewed as a system, including the mastering platform, the format of the disc and the player.

Hollywood and DVD

The vast majority of marketable movie titles are controlled by a handful of movie studios, collectively known as Hollywood. Naturally, getting Hollywood's support for a new movie distribution format is a necessity, and Hollywood has been deeply involved in the creation of the DVD standard.

The introduction of DVD has many implications for Hollywood: DVD has the potential to change the balance between rental and sell-through revenue streams, there are copy protection and distribution control issues, and DVD offers some interesting new mechanisms for charging consumers for the movies they watch.

Video Rentals and Sell-Through

Hollywood earns billions of dollars more from home video than it does from theatrical ticket sales, so the Home Video divisions of the studios wield considerable influence in Hollywood.

A few years ago, the standard wisdom was that consumers would rather rent than buy movies, and the studios set the prices of films high as a result. Disney, however, has proved that consumers will buy well-liked films if priced appropriately, and other studios have followed suit. Today, movies priced for sell-through (consumers) retail for about \$20; movies priced for rental sell for between \$80 and \$90.

Hollywood would like to expand its sell-through business, but the market for sell-through is extremely price elastic: a film that simply gathers dust on the shelf at \$25 may fly off the shelves at \$18. Since the cost of duplicating and distributing a VHS tape is fairly high (\$3.50), a movie must be guaranteed block-buster before a studio will price it for sell-through, because if a studio was forced to lower the price of a movie to encourage sales, their margins would drop to unacceptable levels.

By lowering the cost of duplication and distribution to about \$1, DVD can substantially affect the sell-through model by giving the studios more price flexibility, without lowering margins to unacceptable levels.



Pay-per-View

While DVD promises to lower costs, its digital nature offers options for generating revenue that analog distribution formats cannot. The problem with VHS tape and laser disc is that it is impossible to control who watches them or how often, whereas the data on a DVD can be encrypted or scrambled, allowing the distributor to control viewing.

For example, in a pay-per-view model, a consumer buys a DVD at a nominal cost, perhaps less than \$10. His DVD player is equipped with a modem and connected to a telephone line. When the consumer plays the movie, the DVD player calls the distributor of the movie, and the consumer's account is charged \$2.

There are several possible variations on this theme. Since a DVD can hold up to four feature-length movies, it is possible to have the entire Indiana Jones or Star Wars trilogy on a single disc. The consumer could buy the first movie of the series outright, and then buy the other two via credit card from home.

It would also be possible to store other kinds of digital data on the disc with the movie; for example, a movie-inspired computer game. Like the sequels discussed above, this game would be encrypted. To play it, the consumer would call the distributor with a credit card number and receive a decryption code in return.

Copy Protection

Because the video quality of DVD is very high, movie content owners are concerned that counterfeiters will be able to either use DVD movies as masters for VHS tape or simply copy the data on to another disc using a computer. By encrypting or "scrambling" a movie when it is mastered and putting a decryption circuit in consumer DVD players, digital copying can be prevented. In addition, DVD players can be designed with a copy protection feature that prevents a movie from being copied on to video tape without a severe degradation in quality. This feature does not interfere with playback to a TV monitor.

DVD on Personal Computers

Today nearly all personal computers are sold with a CD-ROM drive. When CD-ROM was first proposed in 1986, 680M bytes was many times the capacity of a typical hard disk drive, and there were no programs that would completely fill a CD. This is no longer true. Many personal computers come with disk drives that hold over a gigabyte of data and many games with multimedia content are too big to fit on a single CD.

As a consequence, personal computer makers are looking forward to putting DVD-ROM drives into PCs, and when they do so, adding a DVD decoder is all that is necessary to bring DVD's excellent video and audio to the PC for entertainment, games, education, training and promotional applications.

For the reasons outlined above under "Copy Protection," movie content owners are concerned about DVD movie playback on the PC. If the decryption of the movie data is done by the computer's central processor, then decrypted data could be stored on one of those large hard disk drives that many PCs possess. Once there, the data could be easily copied on to another media.

Three schemes have been proposed to prevent copying:

- Eliminate the "Save As" function from "Movie Player" applications. This scheme is simple to implement, but not too difficult to circumvent. Some Hollywood studios want stronger safeguards.

- Modify the computer's basic operating system such that it will recognize DVD data and prevent copying by any application running on the computer. All of the studios approve of this scheme, but modifying operating systems is not trivial. Windows 97 will purportedly implement this feature sometime in 1998.
- Arrange the computer hardware such that the DVD data never flows over the main bus (PCI Bus), which prevents it from being decrypted by the CPU and recorded on a hard disk or tape. Figure 4 is a block diagram of such a PC, which shows the relationship of the subsystems. In addition to making copying difficult, this system is potentially the most efficient, keeping both compressed and uncompressed audio and video data from overloading the PC's main bus.

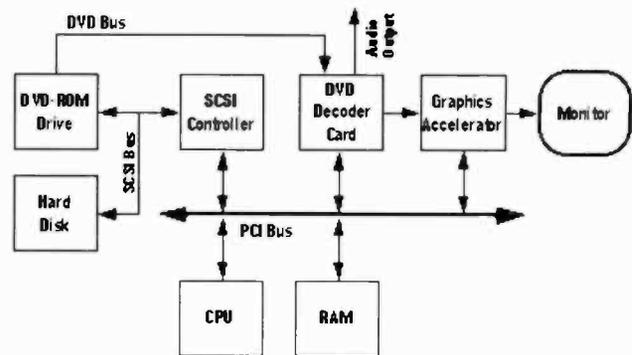


Figure 4. A Personal Computer with a DVD-ROM Player

Convergence and DVD

As can be seen from the discussion of DVD players, the DVD decoder chip is the heart of a DVD player. And DVD is based on the MPEG-2 standard for digital video distribution, as are most direct to home satellite systems and wireless cable systems. In fact, the DVD decoder chip is a super set of the video and audio decoder chips required to build a home satellite receiver or a wireless cable settop box.

The Convergence Box

Because DVD players have much in common with satellite receivers and cable settop boxes, it is likely that one or more of these devices may converge in a single unit, a so called convergence box. In fact, the PC is a kind of convergence box as well.

DVD and the Internet

One PC application is browsing the Internet; however, a DVD player also contains almost all of the circuitry required to support an Internet browser, making full-fledged PC unnecessary. While at first the synergy between the browser and DVD player may not be obvious, the combination offers a wealth of opportunities.

For example, it would be possible to showcase all of the clothes in all of the departments in a department store, complete with video of much of the merchandise on a DVD. The connection to the Internet would allow the customer to get current prices, order merchandise, communicate (via email) with a personal shopper or pay their bill. Such a service via the Internet alone is not practical: the low bandwidth available to users would make the "catalog" intolerably slow and limit the audio and image quality that the catalog could deliver. A DVD-based catalog would deliver great interactive performance with a rich audio and video experience, but at \$1 to duplicate and deliver, a DVD catalog would be far cheaper than today's print media.



This combination of DVD and Internet can be extended to other applications as well, including education, training and on-line games.

DVD and Game Platforms

DVD versions of today's gaming platforms will also likely appear. Today's Sega Saturn, Sony and 3DO platforms use CD technology as the delivery platform for their games. However, the single-speed CD drives used in these machines limit interactive performance, which in the twitch game world is everything. DVD provides access and data transfer rates that are ten times faster than single-speed CD-ROM, and the video experience DVD brings can significantly expand the scope and quality of the games, not to mention the utility of the game machine itself.

We at C-Cube do not know which, if any, of these merged devices will become popular. Certainly devices with decidedly different applications are likely to remain separate. Take the PC for example. While a PC can be made into a perfectly good DVD viewing system with the addition of a DVD-ROM drive and a DVD decoder chip, the PC is likely to remain in the study or den because of its other applications—word processing, tax return preparation, electronic mail and the like—and the need for a desk-bound keyboard.

On the other hand, stand-alone DVD players and satellite receivers will be attached to the TV in the family room, making these two devices good candidates for convergence, especially in Europe where the Digital Video Broadcast (DVB) standard is guaranteeing compatibility between satellite receivers from various manufacturers.

Summary

DVD is to VHS tape what audio CD was to the long-playing record. Consumers were motivated to switch from LP to audio CD by the superior sound quality and durability of the new medium. DVD offers a similar increase in quality and durability for video, and much more: parental control, interactivity, wide-screen support, multiple-camera angles, multiple languages, just to name a few.

Further, Hollywood is committed to DVD, both for the increased revenue it represents and the greater control over distribution it provides. And personal computer makers need DVD for its larger capacity and enhanced video and audio.

We at C-Cube see the introduction of DVD as the continuation of a rapid transmission from analog to digital video, bringing consumers not only better quality audio and video, but far more choices and control over what they and their families see on television.



C-Cube Microsystems is located in Milpitas, CA. C-Cube designs and markets integrated circuits that implement international standards for digital images and video. Phone: 408-944-6300, [www/URL:http://www.c-cube.com](http://www.c-cube.com)





Introduction

The professional video and film industry includes high-end post production houses, service bureaus, production companies as well as cable and broadcast TV networks. While analog is still the prevalent form of video, both the video professional and consumer sectors are rapidly moving toward digital video manipulation and distribution. The purpose of this paper is to present in greater detail the potential of digital video distribution in general, and MPEG distribution in particular, for the professional video market. This paper will discuss the demands of the professional video industry, the merits of digital video distribution over analog video distribution and the advantages of MPEG digital video as opposed to other digital compression formats.

The Digital Video Equation

One way of approaching digital video is to view it as an equation made up of four factors:

- * Playback rate
- * Quality
- * Storage capacity
- * Cost

These issues are closely interconnected since playback rates (or bandwidth limitations) affect the compression quality of video. The higher the bandwidth, the better the quality and the bigger the storage capacity required for an hour of digital video. At the same time, the better the quality the higher the video transmission and production costs. For this reason, the cost of an application, to a large extent, dictates what quality of digital video it can afford. Using the correct digital video compression format can optimize the equation and thus contribute to the development of better digital video applications. An overview of digital video compression formats appears in the following section.

The 150K Byte/Sec Threshold

The section below discusses the different compression formats in use today and applications that are limited to a playback rate of 150K bits/s (1.2M bits/s).

There are several compression formats suited to this playback rate. The most well known are MPEG-1, Indeo (usually used in AVI architecture) and Cinepac (usually used in Quicktime architecture).

Cinepac and Indeo are CODECs (compression/decompression) solutions that usually only compress 15 frames per second, half of the regular VHS playback rate which is 30 (NTSC) or 25 (PAL) frames per second. These CODECs suffer from other major disadvantages. They are not always real time compression solutions. In addition, they are not cross-platform. These formats cannot be played back through set-top boxes for display on TV monitors. Because they are not cross-platform their accessibility is limited. To sum, Cinepac and Indeo do not meet the quality standards of MPEG, nor are they as widely accepted across the computer and entertainment industry.

Why Choose MPEG-1?

The decision to choose MPEG-1 compression over other formats depends on several factors. MPEG-1 is a digital video compression format that was defined by the Motion Pictures Experts Groups which

is part of the International Standards Organization. MPEG-1 was defined by industry leaders to provide the best quality at playback rates of up to 150K bytes/sec. MPEG-1 compresses full-screen full-motion NTSC or PAL (30 or 25 frames per second). Because it offers better quality, MPEG is suitable for a far broader range of applications than software-only compression formats. Most important, MPEG-1 is cross-platform.

One of the most important advantages of MPEG-1 is the fact that it is an official ISO standard. This means that MPEG digital video is interoperable, i.e., it can play back across different components and systems from different manufacturers or service providers. MPEG-1 can be played back on set-top boxes that connect to TV monitors, video-CD players, CD-i players, CD-ROM drives and PCs. Thus it is the best digital video format for the home and business environment. MPEG is to digital video what VHS is to analog video: the standard that symbolizes broad industry acceptance, high quality and interoperability.

Another prerequisite for choosing a digital format is ease of use. To the credit of video CODEC developers, most compression systems are very easy to use and navigate. The fact that MPEG compression systems are hardware based might cause some users to perceive MPEG as being more difficult to use than software-only compression formats. But once the slight inconvenience of installing boards is overcome, encoding MPEG is just as easy as encoding any other format. And in the era of plug-and-play hardware, installation hassles are reduced to a minimum.

The Computer and Movie Industry Vote for MPEG

The computer industry's belief in the need for high quality desktop digital video pushed it to develop a software-only MPEG decompression solution that would be available to mass consumers. This belief was put into practice when Microsoft announced that Windows 95 would include MediaMatic's MPEG-1 software decompression capability and Compaq announced it would ship Pentium PCs with MPEG playback capability. Major computer manufacturers such as IBM, Packard Bell and Panasonic also provide MPEG playback capability with their new models. Indeed, computer manufacturers are following a very clear path of packaging multimedia systems which includes a CD-ROM drive, sound card, MPEG playback capability and built-in speakers. This means that full multimedia capability, CD-quality sound and VHS-like video will be available to millions of PC users in the office and at home.

Moreover, the Multimedia PC Working Group, a unit of the Software Publishers Association, has been successful in defining its MPC mark for multimedia equipment. The MPC3 certification defines systems that include support for MPEG-1 hardware or software playback.

Another show of strength for MPEG-1 was the result of a recent study funded by AT&T, Network Systems, Bell Atlantic Video Services, NYNEX and Pacific Telesis Video Services. 400 randomly selected viewers were asked to compare MPEG-1, MPEG-2, and VHS clips. Results show that consumers preferred MPEG-1 and MPEG-2 quality to VHS video. The study was carried out to determine the best standard for the digital compression of movies (Video Technology News).

The High Speed Digital Video Domain

In the previous section we discussed digital video that is limited to a playback rate of 150K bytes/sec (~1.2M bits/sec). This section will



discuss applications that are not limited by bandwidth and which therefore do not need to sacrifice quality to bandwidth limitations. Because these applications require higher bandwidths and better quality, they are more expensive to produce.

Following the successful adoption of MPEG-1, the Motion Pictures Expert Group decided to extend the range of applications for digital video distribution by defining a standard that would determine compression rates for broader bandwidths. As was mentioned previously, MPEG-1 was designed to provide a video compression solution for applications that are limited by bandwidths. MPEG-2, on the other hand, provides a compression solution for applications that are not limited by bandwidths (3 to 15M bits/sec). Such a broad compression range means that it is not necessary to sacrifice quality to compression rate limitations.

Because digital video applications are versatile, MPEG-2 is being used as a generic standard with specific definitions (called profiles) for specific groups of applications. The MPEG-2 Main Profile was defined to support digital video transmissions at 3 to 15 Mbits/sec over cable, satellite and other broadcast channels. This profile also refers to digital storage media.

MPEG-2 Technicalities

Some of the main technical aspects of MPEG-2 are discussed below.

Backward Compatibility

MPEG-2 is the preferred standard for digital video compression at high bit rates and is becoming increasingly prevalent. This does not mean that MPEG-1 will disappear from the compression landscape. The digital video equation will continue to exist, and applications that are not cost effective with MPEG-2 will continue to use MPEG-1. The MPEG-2 standard covers this requirement. MPEG-2 is backward compatible with MPEG-1 and therefore it supports all MPEG-1 applications. But because MPEG-2 compression is not limited by bandwidth, it is suitable for a broader range of applications. MPEG content (movies, games, music videos) can be stored on double or quad speed CD-ROMs, super density disks or Digital Versatile Disks (DVDs).

Resolution

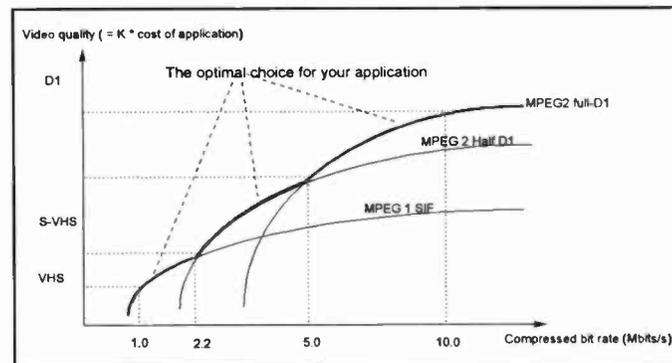
The MPEG standard is a total digital video solution because it optimizes the digital video equation. It allows application developers to create customized trade-offs between playback rate, quality, storage capacity and cost. The input resolution of a digital video stream directly affects compression quality. The section below discusses MPEG input resolutions.

The international recommended digital representation of a CCIR-601 video signal is known as D-1. This recommendation refers to a resolution of 720 x 576 pixels (PAL). The MPEG-2 standard recommends that the input resolution of the signal before compression be D-1. Thus no image information is lost before compression. This input is used for high-end digital video applications such as satellite broadcasting networks where quality plays a prominent role in the digital video equation. Other factors such as bandwidth limitation and cost are less significant.

The recommended input resolution for MPEG-1 is SIF which is one quarter of D-1. This means that only one quarter of the original image is compressed. SIF resolution is used in applications such as video games and video kiosks where the dominant production factor is wide distribution and cost.

Another input resolution covered by the MPEG-2 standard is Half D-1, which is half of the original D-1 source. Although a Half D-1 input resolution means that only half the image is compressed, the loss in quality is barely detectable to the average viewer. Half D-1 compression creates greater flexibility in the video equation. Based on cost and quality needs, content developers can choose between MPEG-1, MPEG-2 Half D-1 or MPEG-2 D-1. An example of this kind of trade-off is evident in a survey funded by 4 industry leaders (Pacific Telesis Video Services, AT&T, Bell Atlantic Video Services and NYNEX) who want to set up an interactive television service. Results of the survey found that consumers far preferred MPEG-1 and MPEG-2 to VHS. MPEG-2 Half D-1 video delivered at 3.0 Mbits/s was chosen as the best quality. This bit rate was subsequently adopted as the encoding standard for movies.

The diagram illustrates the correlation between input resolution, bandwidth, compression rate and video quality.



Conclusion

The evolution of professional digital video publishing is the result of two parallel developments: the broad prevalence of a computerized infrastructure in corporations and organizations; and the growing accessibility of cost effective decompression solutions. This latter development is breaking the famous chicken/egg syndrome. Until recently the lack of playback potential depressed MPEG content development. Finally this cycle has been broken. Broader MPEG playback availability is pushing demand for quality MPEG-1 and MPEG-2 content development. It is into this landscape that the MPEG Forge™ and the MPEG Fusion™ blend. Because they are MPEG-1 compatible, support MPEG-2 Half D-1 and MPEG-2 D-1, they cover the entire spectrum of the professional video industry's MPEG encoding needs.



VIDEO COMPRESSION



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By Ken Freed

For Many, It's the Holy Grail for Digital Media Transport.

Digital set-top boxes and high-speed cable modems are commercial at last. The FCC finally has approved a standard for digital television. And digital compression, squeezing more stuff into less space, is becoming a proven technology.

Which types of compression equipment are best-suited to what applications? Compressed video in a production setting has different requirements than signals backhauled for uplink elsewhere. Compression standards and techniques vary, but the basics remain the same. Digital video typically contains pixels that remain constant from frame to frame, like the stationary background in a talking head shot. Compression reduces or eliminates much of this redundant information.

THE BOTTOM LINE: As compression systems become common, engineers and managers become more comfortable with their use. When properly implemented, today's sophisticated algorithms can deliver high-quality video using reduced bandwidth. Because compression systems can offer cost-effective video delivery over new and existing channels, their use should be considered whenever appropriate. \$

MPEG-2

The Moving Picture Experts Group (MPEG) of the International Standards Organization (ISO) first adopted MPEG-1 and then MPEG-2 as international digital compression standards for transmitting video. The original MPEG-1 standard handled transport of signals at CD-ROM rates of 1.5 to 4Mb/s. Limited TV applications for MPEG-1 prompted development of MPEG-2 (ISO 13818). The MPEG-2 datastream can be divided into two or more coded bitstreams, which is vital for multichannel transmissions.

MPEG-2 is capable of coding interlaced source video at full bandwidth while reducing storage and bandwidth costs. This is one reason MPEG-2 has been adopted for head-end transmitters and receiver terminals in DSS and DVB satcasting, cable and wireless cable systems and the new digital TV standard. However, MPEG-2 remains a less-than-ideal choice for production because individual frames are hard to access due to larger groups of pictures (GOPs). The 4:2:2 Studio Profile was designed to address this issue.

A prominent example of MPEG-2 deployment is the new \$20 million digital upgrade to the broadcasting network of Canadian Satellite Communications. Cancom uses station feeds from Boston, Detroit, Minneapolis, Seattle, Edmonton and Hamilton, along with the network feeds of ABC, NBC, PBS, CBS and Fox to create regional programming packages for 2,500 cable head-end operators.

The MPEG-2 system is replacing Cancom's analog transmission network. Cancom now distributes analog programming to Canadian cable companies from 25 uplinks across the top of North America to about 14,000 Scientific-Atlanta MPEG-2 digital satellite receivers in subscriber homes. Its new Scientific-Atlanta network management system enables the company to control 15 uplinks and 25 encoding systems from one location. "Cancom's use of our MPEG system is a textbook application of the cost saving and increased programming options available with digital video compression," said Dwight Duke, president of Satellite television networks at Scientific-Atlanta. "By increasing the amount of programming without driving up their transponder costs, Cancom has great potential for increased growth in revenue."

PROFILES

	SIMPLE PROFILE	MAIN PROFILE	SIGNAL TO NOISE RATIO	SPATIALLY SCALABLE	HIGH PROFILE	STUDIO PROFILE
HIGH (1820 Lines)		4:2:0			4:2:0/ 4:2:2	
HIGH (1440 Lines)		4:2:0		4:2:0	4:2:0/ 4:2:2	
MAIN (720 Lines)	14:2:0	4:2:0	14:2:0		4:2:0/ 4:2:2	4:2:0/ 4:2:2
LOW (352 Lines)		4:2:0				

Studio Profile MPEG-2

For anyone involved in video production, from local stations to world-class post houses to global network operations centers, the biggest and perhaps best compression news at the start of 1997 is the 4:2:2 Studio Profile at main level. Content producers have long complained that MPEG-2 video lacked sufficient quality for studio applications.

Dave Elliot, vice president of engineering services for the ABC Television Network explains, "Standard MPEG and MPEG-2 use a 4:2:0 sampling scheme, which means it takes a full sample of the luminance, but it tosses out half of the chrominance information, specifically the color coordinate on one axis of the color grid. Studio Profile MPEG increases the chrominance sample to 4:2:2, thereby accounting for both axes on the color grid by sampling every other element, providing better replication of the original signal. The 4:2:0 sampling is all right if a signal's going straight out because there's little risk of picture degradation from transmission," Elliot says. "But the 4:2:2 sampling is better for multiple iterations of a video signal where the video will be compressed, decompressed and recompressed several times before it finally goes out to viewer's homes."

ABC Television deployed the MPEG-2 4:2:2 Studio Profile at main level in its national broadcasts from the Republican National Convention in San Diego. Transported over AT&T long-distance fiber lines from the convention center to network studios in New York City, the technology allowed ABC to double its transmission capacity. Using Sony equipment and MPEG-2 4:2:2 compression, two broadcast-quality video channels were sent on a single 45Mb/s DS3 fiber line. Alternatively, the system could be used to send one video channel over DS3 at twice the speed.

For the San Diego broadcast, Sony provided the prototype of two new products, the DSM-M1 multiplexer and its companion unit, the DSM-M1 de-multiplexer, which were used with a prototype "LinkRunner" Box from Lucent for protocol transfer into DS3 framing. AT&T media industries marketing director Jack Gelman says that the 4:2:2 system is a "vast improvement" over an NTSC codec using a 45Mb/s line to carry a composite analog video signal. "When you can get two digital component video signals in the same bandwidth or when you can use a 45Mb/s pipe in half the time, such as an ENG crew sending a 30-minute tape in 15 minutes, you not only can reduce transmission costs, but you can get recorded footage to the network faster than ever before."

Motion-JPEG

The Joint Photographic Experts Group developed JPEG for compressing color or gray-scale images, such as photographs and naturalistic artwork. JPEG generally is unsuited for text and line art because of the amount of image content lost upon decompression. Based on what tests show the human eye can't detect, JPEG uses



"color-independent" 8-bit and 12-bit sampling in combinations that can progressively scan frequency, amplitude and other factors.

Motion-JPEG algorithms compress individual video frames without considering adjacent frames in a video sequence. "JPEG is a well-established technology with viable applications in television," says Peter Symes of Tektronix, manager of advanced technology for Grass Valley products. "Yet to make the compression technique more useful, the JPEG committee is now in the process of formulating a new JPEG standard that will be published by both the ISO/IEC and ITU." A draft specification is expected this year.

"The new M-JPEG will be backward-compatible," Symes Says, "and it will offer more flexibility with the use of basic tools like MPEG. The main improvement will be the quantizing matrices (QMs), which JPEG now defines for the whole image. The new JPEG specification will define different QMs within one picture, so you get different compression in different parts of the picture, according to your needs."

Selecting a compression method

When selecting a compression method for a given application, many factors need to be weighed including: infrastructure requirements, network interoperability and capital budget restraints. To nudge your thoughts in a helpful direction, here are a few questions that could be raised in any meeting where the purchase of compression systems is being considered.

Is the compression method scalable for varying transfer rates and memory demands? Is the method well-suited to the type of information being sent? If being used for production, does the compression method support random access for frame-accurate video editing? Does it allow for editing on-the-fly? Does the image update fast enough? Does the method support progressive decoding for fast previews? Does the system properly support progressive and/or interlaced images? What are the sampling structures used (4:2:2, 4:1:1, 4:2:0) and are they consistent with your image and quality requirements?

Given the potential delays from compression and decompression procedures at even the highest speeds, will the codec equipment support essential real-time operations? In the case of interactions on subscription TV services, does the compression technology support information integrity? Is it compatible with favored encryption methods? Is transaction security guaranteed? In the final analysis, when the images are presented to the viewer, do they meet your quality requirements? Will the system save or earn more cash than it costs?

A recent M-JPEG variation is a new "lossless" mode, a mathematical construct for more efficient coding using less bits, which is similar to data compression programs like PKZIP. "The new JPEG lossless mode will allow you to get back exactly what you put in," Symes says. "It uses statistical prediction to compare pixels next to each other and select the shortest code possible to represent each pixel, thereby reducing the amount of code about 2:1."

Symes notes that Tektronix already has a "successful JPEG implementation" in the Profile line of compressed disk recorders, which soon will be enhanced with Studio Profile MPEG-2 at 4:2:2 sampling, which Symes says was a Tektronix initiative. "The Tektronix staff did a lot of the drafting toward the end."

MPEG-4 and Beyond

Because high-speed digital transmission remains beyond the fiscal reach of many TV operations, an effort has been made to provide

reliable video compression at lower speeds. One valuable answer may be MPEG-4, a standard for coding audio-visual content at low bit rates. Work on MPEG-4 (ISO 14496) officially began at the MPEG meeting in Brussels in September 1993, and the initiative has been approved by unanimous ballot of all national bodies of ISO/IEC JTC1. A draft specification is expected in 1997 with adoption foreseen for November 1998.

MPEG-4 requires engineers to develop fresh solutions. According to J. Ostermann at the University of Hannover, chairman of regional coordinators for the MPEG organization, the techniques considered so far have included model-based image coding, human interaction with multimedia environments and low bit-rate speech coding.

"When completed," Ostermann says, "the MPEG-4 standard will enable a whole spectrum of new applications, including interactive mobile multimedia communications, videophones, mobile audio-visual communication, multimedia electronic mail, remote sensing, electronic newspapers, interactive multimedia databases, multimedia videotext, games, interactive computer imagery and sign language captioning. Because the primary target for these applications is bit rates of up to 64kb/s at good quality, it's anticipated that new coding techniques allowing higher compression than traditional techniques may be necessary.

This effort is in the early stages. Morphology, fractals, mode-based techniques are all in the offering." MPEG-4 to date is loosely being defined with a sampling grid having dimensions of 176 by 144 at 10Hz with coded rates between 4,800 bits and 64kb/s. A target application at this rate could be video conferencing or home videophones over POTS lines.

Compression in Perspective

Name any TV delivery system—terrestrial and satellite broadcasting, microwave wireless, optical fiber, coax cable, hybrid fiber-coax, utility power line, even POT lines using twisted pairs of copper wires—and there are compression products available for video transport. Name any conventional or non-linear production house, and suitable compression products are announced and ready to ship.

Not all the bugs have been worked out, and wondrous innovations hiding behind the corner may knock current thinking for a loop, but the state of compression at the start of 1997 can be called realistically optimistic. The dream is coming true. City by city, town by town, county by county, thanks to digital compression, the United States and the rest of the world is about to have access to more information in a second than our ancestors ever had in a lifetime.

Time is money in digital transport, so investing in compression equipment increasingly makes fiscal sense. In the emerging open marketplace of digital services, the companies that can reliably compress the most content with the most quality and least signal degradation will have a competitive advantage.



Ken Freed is a media trade journalist specializing in cable and interactive television and a Broadcast Engineering Contributing Editor.

TESTING DIGITAL SYSTEMS



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By Kenneth Hunold

Testing today's new digital signals requires a whole new way of thinking.

THE BOTTOM LINE: As TV stations and production facilities replace analog systems with digital ones, test and measurement requirements can become much more complex.

Troubleshooting can mean simply swapping out a board to complex digital signal analysis. Knowing what level of repair you need to do is only the first step. The second is knowing what equipment is needed to perform that task. *Testing Digital Systems* will show you what signal parameters must be measured and what equipment you'll need to confidently complete the task.

With today's chaos of VTR formats, compression schemes, color spaces and sampling structures, sure bets are elusive. One thing, however, is certain: tomorrow's formats and standards will be digital. Engineers are faced with converting their facilities to digital, regardless of what the future may hold. And just as surely as the digital sun will rise tomorrow, these digital systems must be tested and maintained.

For some parameters, new testing methods (or at least new to the broadcast engineer) must be employed. Oddly enough, most of the parameters measured are analog, however, they convey digital information. Generally, the most useful test equipment for digital systems is the type that gives a number of indications—whether the signal is good/bad, present/absent, etc. If all of the indicators are good, the system is most likely operating properly. If any indicators show potential problems, the test equipment should provide the tools needed to investigate further.

A set of reference-quality A/D and D/A converters is indispensable for testing digital circuits. These allow you to perform the battery of tests already developed for composite and component analog systems. Although frequency response might be a non-issue for most of today's digital gear, measuring traditionally analog parameters provides a quick "reality check." Eventually, all test equipment will operate with digital inputs, and digital generators will provide all the signals needed for testing in the digital domain. This will remove the extra stage (and inaccuracies) of external converters.

The first digital systems used a parallel digital interface (SMPTE 125M). A twisted pair of wires was required for each of the (up to) 10 bits of data, plus additional pairs for clock and status signals. Today, the most popular digital interface is the *serial digital interface* (SMPTE 259M or SDI). This is transmitted down a single 75 ohm coaxial cable, an enormous advantage over the bulky parallel cable and large 25-pin "D" connector. For simplicity, from now on we will only describe the serial interface.

Serial Digital Bitstreams

An important parameter of the serial bitstream is the transmitted voltage level, also known as the launch level. SMPTE 259M specs the peak-to-peak output voltage at $800\text{mV} \pm 10\%$. (See Figure 1.) The digital data representing the video signal is coded in this analog waveform. The SMPTE standard includes composite and component digital systems. In the composite digital system, the entire analog composite signal is sampled at 4x the appropriate subcarrier frequency, including sync and color burst. Therefore, the data rate varies according to the sampling rate and is 143Mb/s for NTSC and 177Mb/s for PAL.

The luminance and color-difference components are sampled individually for component digital signals. Once sampled, the data is serialized into a 270Mb/s datastream. The luminance component is

sampled at 13.5MHz and the two color-difference components are sampled at 6.75MHz. The resultant reduction in chroma resolution is acceptable because of the lower color acuity of the human eye.

Along with voltage, another important parameter is jitter. This is the time difference between the observed transition and a transition of the original or ideal 270MHz clock signal. In devices where the digital signal is processed, such as reclocking DAs, jitter can be introduced in the reclocking or reshaping of the signal.

Originally, the maximum permissible jitter was 0.5ns. Recently, the standard was modified to describe jitter tolerances in *unit intervals* (UI), which is a fraction of the clock period. The standard now states that jitter should be less than 0.2UI. The maximum jitter allowed is, therefore, different for each data rate (143, 177 or 270Mb/s). Using an oscilloscope with sufficient bandwidth (1GHz), jitter is measured by overlaying many transitions of the 270Mb/s signal and triggering with a stable 270MHz source. The scope cursors can then be used to measure the "width" of the accumulated rise and/or fall times. Jitter can also be easily determined using special test equipment specifically designed for measuring SDI jitter.

When observing the waveform of the serial digital bitstream, it is important to note that a high state does not always equal a logic 1. Rather, a logic 1 is indicated by a transition from one state to another (high to low or low to high). Also, the basic type of coding used is, strictly speaking, not self reclocking. While the transitions occur at clock intervals, there is not a transition for every clock cycle. To increase the number of transitions (and aid the process of clock recovery), the data is randomized or scrambled. Equipment that breaks the serial signal down to the parallel format for internal processing (DVEs, processing devices, videotape and disk recorders) must extract the clock signal to properly de-serialize the data. This is often done with a phased lock loop (PLL) that tracks the signal. Certain data patterns stress the PLL's response and ability to recover the serializing clock. Two of these two signals are combined into an SDI checkfield and are specified in SMPTE RP178.

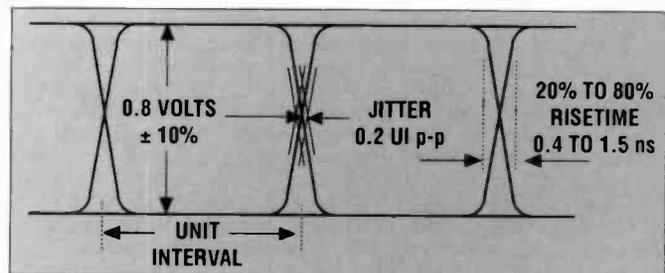


Figure 1. The waveform used for serial digital transmission has a peak-to-peak voltage of $0.8\text{V} \pm 10\%$. New specs call for jitter to be less than 0.2UI (unit intervals).

Ancillary Data

In addition to video, other information is coded into the digital signal. In component digital signals, sync pulses are not digitized. Rather, they are replaced by end and start of active video (EAV and SAV) pulses, which use special reserved codes. If these codes are used by video data, receiving equipment could incorrectly assume that a scan line has ended or that a new scan line has just begun. In between the EAV and SAV signal (the old horizontal blanking interval), other ancillary data can be encoded into the signal. These include audio signals (embedded audio) and error detection and handling SMPTE RP165 (EDH). Not all equipment handles ancillary data the



same way, either passing the data or properly re-formatting it depending on the function of each device.

The standard allows multiple audio channels to be included, or embedded, into the serial digital bitstream (up to 16 for component serial digital signals). This allows single-wire distribution of video and audio. Many digital VTRs will accept audio signals embedded in the serial digital bitstream and some will also embed them into the output. If you intend to use audio signals embedded in the digital bitstream, make sure they are preserved as the signal passes through DAs or frame synchronizers.

Error detection and handling is a system of including a checksum and reporting mechanism into the serial datastream. Briefly, the system works as follows: at the signal source a Cyclical Redundancy Code (CRC) is generated and coded into the ancillary dataspace. Two CRCs are generated per video field, one for the active picture area and one for the "full field," including the vertical interval. At the input of a receiving device that supports EDH, the CRC computation is repeated and compared to the value extracted from the ancillary data. If the received CRC matches the transmitted CRC, it is assumed the transmission was error-free. If not, an error flag mechanism is used to indicate when an error is detected and equipment is alerted downstream.

A few special situations require some interpretation of the CRCs. In digital processing equipment that changes the image (such as a DVE), alters the "video gain" or changes the position of the picture in the raster, the output CRC will be different from the input CRC due to image differences. This requires a new CRC to be calculated and inserted into the digital data.

EDH is a powerful tool for testing and evaluating digital video systems. Therefore, EDH errors will often be detected before any errors are observed in the picture. Using EDH means errors can be detected by unattended monitors, letting you know if any errors have occurred over a long period of time.

Recall that the serializer clock must be recovered from a digital signal. And, while digital DAs also can automatically adjust input equalization to compensate for cable lengths, they must be used properly if the clock is to be correctly recovered. This is another area where the SDI checkfield signal can be used. Because of its ability to stress the equalizer and clock PLL, it makes a good stimulus for determining how close to the digital "cliff" you are operating.

Typically, serial digital receiver chips are capable of equalizing up to 300 meters of high-quality coaxial cable. Depending on the type of cable used, "your mileage may vary." Test your system (using a generator that supports EDH) with one of the pathological signals (e.g., the SDI checkfield). Then, using equipment that indicates EDH errors, see if any EDH errors are detected. If any are detected, then some work needs to be done. Possible solutions include using a higher-quality cable (with less high-frequency loss) or, if feasible, installing an equalizing and reclocking DA at a convenient midpoint in the link. If no EDH errors are detected, add approximately 50 meters of cable to the link and retest. If no errors are detected with the additional cable, you can be reasonably sure that you are operating with enough margin. The error rates in digital TV circuits are such that if no errors are reported in a few minutes of operation with the extra 50 meters of cable, it will probably operate for years without error on the actual shorter length of cable.

Is Serial Digital RF?

The serial digital interface is designed to operate with a coaxial cable interface. This cable must have a characteristic impedance of 75 ohms.

One of the primary frequencies of interest in serial digital circuits is approximately one half the serializer clock frequency or 135MHz for a 270Mb/s component digital signal. The many harmonics of this rectangular wave extend to more than 1GHz. Because of the frequencies involved, serial digital video is more like an RF signal than a low-frequency (6MHz) baseband video signal. As such, impedance mismatches can cause reflection on the transmission line (coaxial cable). The accuracy of the 75 ohm interface impedance is specified by the "return loss." SMPTE 259M specifies a return loss of greater than 18dB at one half the serializer clock frequency. This equates to a VSWR of 1.28:1. The eye pattern and an eye opening are used as an aid in monitoring digital circuits. (See Figure 2.) If this eye is closed or reduced by reflections, low-frequency smearing, overshoots or other effects, the receiver may not be able to recognize a transition or determine a digital high or low state.

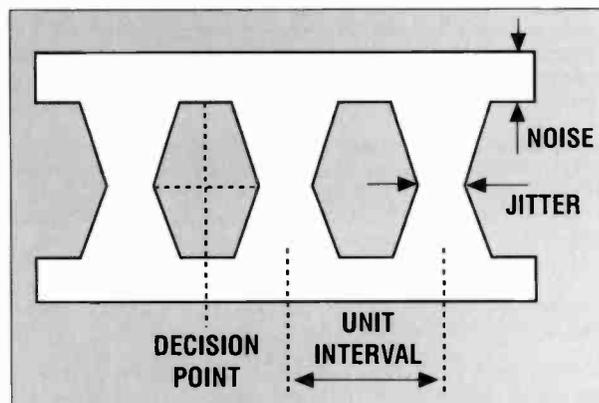


Figure 2. Once the serial datastream reaches the receiver, it is equalized. The amount of noise and jitter on the signal will determine the size and shape of the eye pattern, and if the receiver can properly retrieve the digital data.

Much has been written about the impedance of connectors, cables, feed-throughs and patch panels. Will a single 50 ohm connector bring down a serial digital link? Probably not, but that's not the point. The effect of mismatched components is cumulative. Use the correct impedance connectors, cable, etc. whenever possible, according to good engineering practice.

Contrary to popular belief, digital transmission will not be the solution to all the world's problems. Digital recording and transmission do offer dramatic improvements in the ability to store and distribute consistently high-quality copies of the original signal. However, the need for testing has not been eliminated. What has happened is that some of the analog impairments have been replaced by digital impairments. The focus of testing procedures must, therefore, shift to reflect these new parameters.

Armed with an understanding of the digital and analog factors that affect the performance of digital video systems, you can now incorporate these methods into your overall testing and maintenance program. This will allow you to keep your digital system operating at peak reliability into the next millennium, regardless of what the relentless technological advances bring.



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SDI HEADROOM AND THE DIGITAL CLIFF



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By Jim Boston and Jim Kraenzel

Digital systems operate in two ways: perfectly or not at all.

THE BOTTOM LINE: Digital systems' consistently high performance under a wide range of operating conditions may seem a panacea, but it can become a troubleshooter's nightmare. Digital paths give no indication of gradual degradation, so complete failure often comes with little warning. Growing experience has recently yielded some new methods of determining how "close to the edge" a digital signal path is running.

It is well-known today that digital signals are non-linear. To state the obvious, it is the "high" or "low" state of a serial digital signal along with its transition time that determines the state of a data bit cell in a serial digital bitstream. The transition area between the high and low states is undefined when determining the value of an individual bit. To maximize the chances of reliable detection, sufficient signal amplitude is required so noise or receiver inaccuracies don't cause errors, and small amounts of attenuation (e.g., 200 feet of cable loss) do not cause the high and low values to fall into the undefined middle area.

The transitions or "edges" between states are just as important. These transitions enable clock recovery from the bitstream in a self-clocking signal, such as SMPTE 259M. Without a clock at the receiving end, there is no way to know when to check the status of an arriving bit. An algorithm is used to scramble data before it leaves the transmitter to create as many edges as possible. This assists the receiver's PLL circuitry in generating a local clock synchronized to the transmit clock.

Error correction and error masking in modern digital equipment ensure that digital signals don't gradually degrade with increasing attenuation in the signal path as analog signals do. Instead, a digital transmission path continues to work perfectly up to the point where it suddenly doesn't work at all. This is the well-known "cliff effect." (See Figure 1.)

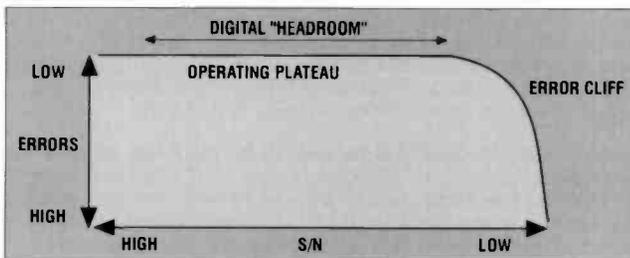


Figure 1. All digital systems experience the "cliff effect" in which performance remains optimal until S/N degrades beyond a certain limit.

Serial digital interface (SDI) signals that are experiencing few or no errors are somewhere on the operational plateau shown in Figure 1. Operation remains uneventful until you reach the error cliff. As the path traverses over the knee of this cliff, errors go rapidly from non-existent to enough to swamp recovery efforts, making the path unusable. As little as three extra feet of coax can be enough to send a signal over the cliff.

Many things determine where you are on that operational plateau. This article describes how to determine where you are on the plateau and how to stay away from the cliff. Although almost all the information presented can be applied to 4fsc composite signals (or most other bitstreams), this study centers on 4:2:2 component SMPTE 259M signals.

Bandwidth and signal requirements

Although the SDI signal is used in a "digital" way, many "analog" attributes of the signal can be used to predict how close to the error cliff a particular path is.

The SMPTE 259M datastream changes state at the start of each bit cell if the bit cell has a data value of "1". This coding scheme is known as *non-return-to-zero inverted* (NRZI), which implies that the receiver needn't worry about the polarity (high or low) of the incoming bitstream. NRZI yields a constant high or low if a string of zeros is encountered, however, so a bit-scrambling algorithm is added.

The peak-to-peak value of SMPTE 259M should be 0.8V, and the *rise time* (or transition time) should be between 0.75ns and 1.5ns. If the signal's transmission path had infinite bandwidth and no group delay, it would appear as a perfect square wave—but no transmission path is ideal.

Moreover, the successive "1"s in that example create a true square wave (50% duty cycle), but the typical SDI signal with a variety of "1"s and "0"s will actually create *rectangular waves* (<50% duty cycles), which require a denser spectrum of harmonics to properly define. This means that a considerable amount of low and high frequency harmonics will be present in the SDI signal.

Consider also that many elements in the SDI signal still happen at traditional TV rates. Pairs of *start of active video* (SAV) and *end of active video* (EAV) timing reference signals occur at the horizontal line rate. The patterns encountered during the vertical interval still occur at the field rate. All of this ensures that considerable energy will occur at fairly low frequencies.

Spectral Analysis

While a 6MHz bandwidth sufficed for analog video, serial digital video requires more than 50 times that spectrum. In short data paths, SDI harmonic content can approach 1.5GHz. Figure 2A shows the spectrum of a typical SMPTE 259M datastream.

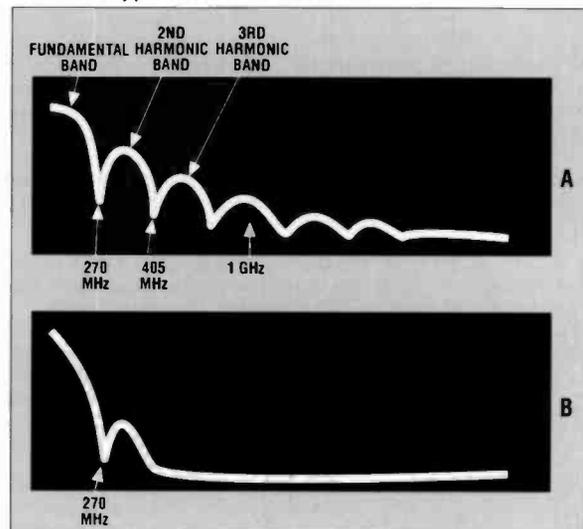


Figure 2. The spectrum shown in (A) represents a healthy SMPTE 259M (component) signal, while (B) shows the same signal after passing through 1,000' of coax.



The weak link in most serial digital systems is the path from the transmitter in one device to the receiver in the next device. The physical layer used to transport the data between devices is comprised mostly of coax (although some connectors and perhaps a jackfield might also be included). Coax provides the greatest exposure to problems for a video datastream. It can be thought of as an infinite network of inductive and resistive components in series, with distributed shunt capacitance. This works out to be a low-pass filter whose poles increase in number and move closer to zero with length. Therefore, the longer the cable, the greater the attenuation of all frequencies, with the rolloff increasing as a function of frequency.

Such attenuation with increasing frequency creates losses in the upper harmonics of the SDI signal, while its substantial low-frequency energy remains relatively strong. This causes the signal's square waves to look more like sine waves. Adding 1,000 feet of coax to the SMPTE 259M signal shown in Figure 2(A) makes its spectrum look like Figure 2(B). The signal in the latter graph is just about at the error cliff.

Cable Recommendations

To minimize this problem, coax that is robust at high frequencies is required in a digital facility. The center conductor should be solid copper (which offers better skin effect than stranded types), the shield should be braided (with a coverage figure near 100%), and the shield should also include a layer of foil (again for better skin effect at higher frequencies).

The dielectric should produce as low a shunt capacitance value as possible, which will also serve to decrease the high-end rolloff and increase the velocity of propagation. However, note that some dielectrics achieve this by using air pockets to lower the dielectric constant, which can lead to center conductor migration. This, in turn, can cause changes in the impedance along the length of the cable, especially at sharp bends, leading to reflections.

Signal-to-Noise Measurements

One of the best ways to tell how far away a given path is from the error cliff is to determine the S/N ratio of one of the principle spectral elements in the SDI bitstream. The SMPTE 259M document states in its preamble that the standard applies until the fundamental frequency of the signal (135MHz for 4:2:2 component) has dropped 30dB in value. (Note that 135MHz is the fundamental of the SDI's square wave form, because each half-wavelength carries one bit of the 270 Mb/s SDI [component] data rate. Each bit cell represents one half of that square wave. The fundamental of a 135MHz is of a sine wave of the same frequency.)

Experience indicates that there are two spectral components whose S/N values are useful in determining SDI signal health. These are the SDI's fundamental frequency and its third harmonic (450MHz).

Using a spectrum analyzer, the third harmonic band is easy to observe. [See Figure 2(A)] The second harmonic component should not be used to determine an S/N value even though it is easily identifiable, because its initial value can vary from one piece of equipment to the next. Some users focus on the 270MHz second harmonic, and mistakenly believe it's a carrier. Bit scrambling ensures that SDI pulse trains are rich in odd harmonics, and even harmonics (like 270MHz) are not well-represented.

At the output of most SDI drivers, the third harmonic starts approximately 35dB above the noise floor (vs. 45 to 50dB above noise for the fundamental). After approximately 1,000 feet of high-grade coax, the third harmonic is approximately eight to 10dB above the noise floor. As this signal approaches some 6dB above the noise floor, clock recovery becomes unreliable and errors start occurring.

As this lower limit (the error cliff) is approached, the error rate will rapidly increase from one per day to one per frame over a range of only 3dB. Actual tests have shown the SDI signal going from low error rates to unusable due to a signal level drop of only 2dB. This is equivalent to adding a little less than 80 feet of coax to the path. Therefore, any passive path segment that indicates a third-harmonic S/N value of less than 10dB should be re-engineered.

Remembering that the overall level at low frequencies will not be significantly affected, a time-domain display of the SDI signal will show reduced amplitude on short-duration pulses, but normal levels on longer (i.e., lower-frequency) pulses). (See Figure 3.) Note that the signal also will float away from ground, dependent on pulse duty cycles because of the large low frequency and DC components that aren't rolled off as quickly.

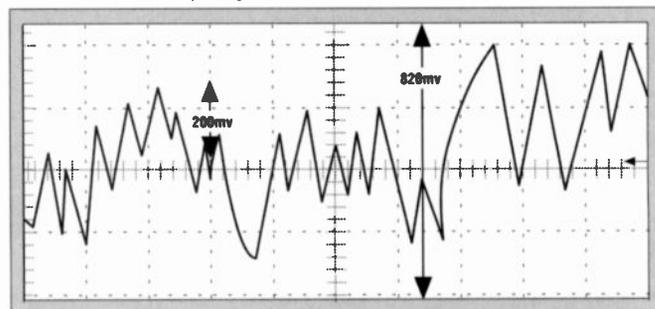


Figure 3. Time-domain display of an SDI signal that has passed through 1,000' of coax. Note lower amplitudes on shorter-duration pulses due to high-frequency attenuation by cable.

Pathological Testing

Another indication that you are near, but not yet at, the error cliff can be obtained through the use of so-called *pathological test signals*. As described earlier, an SDI receiver's circuitry must regenerate the clock signal. To help it do that, most ASICs devoted to receiving SDI signals equalize the incoming signal to boost the high frequencies, allowing easier clock regeneration and data-value determination. Pathological signals produce bitstreams that stress these circuits. Many devices produce these test signals, including some digital VTRs.

One common pathological signal stresses the clock regeneration and the equalizing circuitry by producing values for C and Y that force SDI bitscrambling circuits to produce a run of 19 zeros and a single one approximately every frame. With NRZI coding, the single one ensures a polarity reversal for the next run of 19 zeros. This stresses the equalizer circuitry in the receiver by providing a large DC component "blast" every so often. The fundamental of this signal is at 13.5MHz, which adds to the low-frequency energy component.

Other common types of pathological signals have C and Y values that produce runs of 20 ones, followed by 20 zeros periodically. This produces edges at only a 13.5MHz rate, which is 1/2 of the optimum zero-crossing rate. This stresses a receiver's clock recovery circuits by making the PLL "coast" for long periods of time. It should be understood that there are literally thousands of possible Y and C combinations that can produce pathological bitstreams.

Experimentally, results show that a path will fail with a pathological signal at received levels 2dB higher than where a non-pathological signal will fail. Therefore, pathological signals can help determine whether an SDI path is near the error cliff.



Jitter

Jitter is the time difference between when the next transition in the datastream *should* occur and when it *actually* occurs. SMPTE RP-184 is the document that covers the suggested method of measuring jitter in a 259M bitstream. The location of appropriate crossover points can either be determined by the previous crossover (PLL internal closed-loop control) or by an external reference signal. Jitter is caused mainly by a transmitter's crosstalk, signal saturation characteristics and its power supply, plus any jitter that was present in the parallel data before it was serialized. (Most digital circuits process digital video as parallel data and only serialize it immediately before transmission.)

The PLL clock circuit in the transmitter should also have a critically damped transient response so that it slews to a corrected frequency quickly without any overshoots (called *overdamping*). Invariably, the PLL will be underdamped at certain frequencies of jitter, and thus, the PLL response will ring at those component frequencies.

If an oscilloscope is used to measure the signal in the time domain by looking at zero crossings, incorrect conclusions will be gathered about the amount of jitter present. The time base (scope sweep rate) will act as a comb filter to cull out certain frequency components of the jitter. This is because various jitter frequency components are only happening at certain rates, and the scope is not looking at all bit cells. If we have a scope triggering on every 10th bit cell, we will not see the $\frac{1}{10}$ jitter component at all. Conversely, some jitter components will be seen at double their actual amplitude.

One accurate way of measuring jitter is to extract the clock and phase-demodulate (or discriminate) it. This is the only time that part of the SDI signal should be considered as a carrier. Once the clock—and its jitter—have been regenerated, the clock can be thought of as an FM signal with the jitter information as its payload. The baseband amplitude of this demodulated signal is the relative jitter. Some test equipment claims to take this approach, which allows a bar graph or gas gauge-type display that's easy to read.

Other test equipment uses the approach recommended in RP-184, which extracts a clock that is divided by some amount and used to trigger an "eye pattern" display. The divisor is typically the same value as the word size (usually 10 bits). This method will mask any word-related jitter, which is usually quite small.

The jitter components of frequencies above 10Hz should have less than 0.5ns of time-base jitter. The jitter components with low frequencies (generally called *wander*) could have errors as large as 6ns. Therefore, trying to deduce the jitter while looking at the total aggregate jitter is meaningless.

Reflections

Because it takes 1.24 μ s for a bit to propagate down 1,000 feet of Belden 1694 coax (velocity of propagation 82%), and a 3.70ns-long bit cell occupies approximately three feet of coax, there are 335 bit cells in 1,000 feet of coax at any given time. The same length of Belden 8281 (velocity of propagation 66%) has 416 bit cells (2.4 feet long each) within it at any given time. Conversely, a color subcarrier cycle in 8281 is 175 feet long (only 5.70 of those in 1,000 feet of Belden 8281 at any given time).

Any impedance mismatches that occur along the path cause reflections. In the analog video world, only long paths with impedance mismatches had the possibility of causing reflections that were bothersome. Reflections caused by improper impedance matches in cable were hard to discern. They showed up as nearly imperceptible ringing during transitions, providing unintentional enhancement or cancellation (in addition to the obvious incorrect level caused by non-terminated or double-terminated lines).

In the digital domain, however, a path that's only a few feet long with reflections could prove disastrous. In this case, it's not the incorrect level that usually draws attention when incorrect terminations are applied to a path. Rather, it's the *total loss* of recovered video because reflections have made recovery of the embedded clock impossible. Impedance mismatches as small as 20% can cause errors. Even tees with short lengths of unterminated cable can cause complete loss of signal. Patches, connectors or barrels can increase errors or cause signal loss, as well.

Problems can develop particularly in older installations, because until a few years ago, most BNC connectors had a characteristic impedance of only 51 ohms. Subsequently, the amount of polyethylene or Teflon dielectric was reduced to increase the characteristic impedance to 75 ohms. Early 75-ohm connectors were manufactured by reducing the diameter of the center conductor pin, making them unable to mate properly with 50-ohm connectors. But newer 75-ohm connectors ("reduced dielectric") will mate reliably with the 50-ohm connector, allowing them to keep turning up at older facilities.

Although a time-domain reflectometer (TDR) is the best tool for finding impedance mismatches along a path, a digital oscilloscope set to a long persistence will give hints that reflections are occurring. The receiver looking at this datastream will probably report many errors, if it is able to recover data at all. Reflected energy, not only out of phase, but possibly many bit cells behind the current data, is creating a ringing effect at transitions.

Also consider that impedance is not constant with frequency. The value of an impedance is represented by a complex number, which has not only magnitude, but also direction (or phase). It is the ratio of resistance and inductive plus capacitive reactance that determine the magnitude of direction (or phase angle) of the resulting impedance. When impedance in one segment of a digital path is not equal to impedance of the next segment of that path, reflections result. Reflections cause power to be reflected back to the source, lowering the transmitted power and causing transmission loss.

Patchfields and mismatched connections are common causes of serious reflection problems. These can greatly reduce the distance a digital signal can travel without errors. Note that reflections can totally shut down a digital path, even when all the other attributes of the path are normal and healthy. Casual observation of the eye pattern generated by the data passing through a mismatched path might not indicate any serious problems. This is where network analyzers of TDRs are more helpful, but lacking these, you should remain critical of the analog attributes of the eye pattern. Just because a system is now "digital" doesn't mean that its group delay, ringing and pre/post overshoots are no longer important and need not be monitored.

Good engineering during the design and implementation portions of a digital video project should ensure that your data paths are some distance from the error cliff. In addition, determining the signal's amplitude above the noise floor (especially at higher frequencies), ensuring that jitter is as low as possible and that there are no reflections along your paths should provide proof that you have a well-engineered and trouble-free digital system.



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AN INTRODUCTION TO FIBRE CHANNEL AND ITS APPLICATIONS FOR DIGITAL VIDEO



Courtesy of: MountainGate
By Harry Aine, Product Manager

I. Introduction

Undeniably, the last revolutionary event in broadcast technology was the advent of digital video. Digital technology changed the way we work with video, making nonlinear editing possible as well as providing unprecedented power in graphics creation and manipulation. Today, much of the work of creating, editing and finishing television content is done with machines that are essentially high-powered desktop computers rather than the dedicated hardware devices of old.

But like most technological revolutions, the practical applications that resulted from the digital video revolution came about rather gradually over a period of years. In fact, the revolution is still underway. Each new product development creates a new technological demand. The issue of the day (based on the amount of press coverage given to the topic in the last six months) would seem to be one of networking in digital video environments. When nonlinear editing was a new technology, it was quite enough for operators to perform their magic at isolated workstations. Nonlinear editing seemed so significantly better than what had come before that no one complained about having to copy huge files across sluggish networks that were not designed to handle video. They did not complain about having to actually carry hard disk drives between edit suites. After all, was it that much different than having to run a tape down to the machine room and slip it into the VTR?

Today, after a number of years of actually working with digital video, there has been a general awakening, or realization, that there must be a better way to manage digital video in a facility. The problems that exist are simple to define. First, while digital video is wonderful to work with from a creative point of view, it leaves facilities with files that are so large they literally do not know where to put all of them. Second, the current setup of most facilities makes them a disjointed collection of editing stations, none able to effectively communicate with the others. In order for two or more editors and graphic artists to work on the same project, files have to be copied and hand carried around the facility on removable hard disk drives. The actual mechanics involved for editors in a facility to share a project are tedious and seem wholly inadequate to today's computer literate personnel.

The goal in developing a new networking solution for digital video applications has to be one of offering extremely high throughput, massive storage capacity, shared access and reasonable price. In the remainder of this paper, we will briefly review some of the competing networking storage solutions that are emerging, discuss the possible benefits of each, and explain why Fibre Channel is quickly taking the lead in the race for a new industry standard. We will explain what Fibre Channel is and then examine the practical applications that are available today using Fibre Channel as well as present a glimpse into the future potential that the technology has to offer.

II. Current and Emerging Network Technologies

Fibre Channel technology appears to have moved to the forefront and is already considered by many to be the hands-down winner in the race to establish a new networking solution in video environments—a solution that would replace the nearly ubiquitous Ethernet and SCSI systems. Before discussing Fibre Channel in detail, it is important to be aware that a number of networking technologies currently exist or are emerging.

The current client-server architectures in digital video and nonlinear environments segregate data and networking traffic. That is, Ultra SCSI lines move data traffic at up to 40 megabytes per second (MB/sec) and separate Ethernet, FDDI, or ATM lines move networking traffic typically at 7 or 8MB/sec. The "cooking metaphor" is commonly used to illustrate this. The two elements necessary are the ingredients and the recipe. The recipe is the data (EDLs, for instance) that describes how the ingredients go together. The ingredients are the actual video and audio source material that will make up the content of a spot or show. Current networks are quite adequate for sending the recipe, but too slow to adequately handle these larger video and audio elements. The network produces a bottleneck in the performance of the overall system.

To get past this bottleneck while also putting the recipe and the ingredients on the same system, a number of new networking technologies have been proposed. The leading contenders at this time are ATM, Gigabit Ethernet, Serial HiPPI, FireWire, SSA and Fibre Channel.

ATM (Asynchronous Transfer Mode)

ATM was designed to simplify and standardize international telecommunications. It was conceived as a method for transporting audio and video using the telephone network, with a large geographic range in mind. It was developed to provide as much bandwidth as possible over a wide area network, and only later was it considered as a method for transporting digital video over a local network.

ATM currently provides 155 megabits per second (Mb/sec), which puts it in the race about even with FDDI (Fibre Distributed Data Interface) and Fast-Ethernet. The next ATM standard (OC-12) in development will bring the technology all the way to 622Mb/sec. At this time it is not generally felt that ATM will be a contender in desktop connectivity, though it will have a strong future in wide area networks with a few specialized LAN applications.

Gigabit Ethernet

Simply because there is such a large installed base of Ethernet and Fast-Ethernet users, Gigabit Ethernet has to be considered as an alternative, and it will probably be adapted as a faster LAN in the general networking market. Presently the technology is not fully developed, but it is not likely to ever have the ability to transport the full gigabit data streams demanded by digital video.

Serial HiPPI

The High Performance Parallel Interface (HiPPI) originated from an initial need to interconnect LANs composed of supercomputers. The physical standard was approved as an ANSI standard in 1991. HiPPI has been seen as an excellent point-to-point, large file transfer mechanism. It offers the throughput necessary for working with the digital video, but has high cost and cumbersome cabling requirements.

FireWire

The specification of FireWire, also referred to as IEEE 1394, allows for transfer rates of up to 400 megabits per second with plans to extend it to 1Gb/s. Primarily sponsored and developed by Apple, this standard promised isochronous service while providing the bandwidth needed for audio, imaging, video, and other streaming





data. FireWire offers a standard, simple connection to all types of consumer electronics, including digital audio devices, digital VCRs and digital video cameras. Even computer peripherals like optical drives and hard disk drives were planned to have FireWire interfaces. Up to 63 devices can be plugged into a single configuration without termination, similar to plugging a phone into a phone jack. This standard was initially targeted to replace SCSI. FireWire as a standard, however, has not had the support needed from the professional quality equipment manufacturers. Jitter problems with isochronous transactions at high bandwidth has caused design concerns. Disk drive manufacturers have not come forth thus far to support FireWire as an interface standard. FireWire is likely to remain a consumer quality interface.

SSA

Primarily developed and promoted by IBM and more recently by Pathlight, SSA was introduced in the 1993-1994 period as the next generation high-speed interface for storage devices. SSA initially offered 40MB/sec: 20MB/sec read and 20MB/sec write. It offered over 4000 I/Os per second. Isochronous transfers were allowed for in the early specification. Compared to Fibre Channel, SSA comes up short in many areas. Fibre Channel allows for absolute addressing versus a relative addressing scheme. On SSA, if a device malfunctions or is turned off, all future addressing to existing devices on an SSA loop must change, including commands to units specified in the command queue. With Fibre Channel any I/O to a device will return status independent of any other device's status. On a loop, SSA can only tolerate a single device failure. SSA devices can be "islanded" with multiple failures on a loop. Fibre Channel supports transmission distances up to 10km, whereas SSA supports only 340 meters at 40MB/sec Dual arbitrated Fibre Channel configurations support "balance" controller schemes where multiple controllers and target devices are assigned to each other based on a balance of activity. In an SSA configuration, SSA devices can only communicate with their immediate neighbors, and the balance scheme is not possible. Fibre Channel supports a multitude of communication protocols, not just SCSI. In fact, Fibre Channel can serve as a network connection and virtual backbone.

While SSA seemed to be a promising technology when it was introduced, its shortcomings have prevented its general acceptance. Namely, multiple failure modes are not acceptable, the distance capabilities are restrictive and the fact that only a single disk manufacturer has supported SSA makes the availability of the product questionable. At the same time that the excitement over SSA has been waning, the interest in Fibre Channel and the actual implementation of Fibre Channel has been steadily increasing.

Fibre Channel

Fibre Channel technology meets the data rate requirements of digital video, offering 100MB/sec or 200MB/sec full duplex (meaning it can transmit and receive at the same time). The development of Fibre Channel goes back to 1988 when the need was recognized to develop a high-performance serial link for data transfer between mainframes, supercomputers, workstations and intelligent peripheral devices. Fibre Channel is a family of standards that define a communications interface for the transfer of large amounts of data between a variety of hardware systems. In short, it was designed to handle the large data requirements of digital video specifically in application environments that resemble the modern post-production house or broadcast facility.

III. Fibre Channel Background Concepts

The purpose of this paper is not to provide exhaustive detail on the fine points of Fibre Channel technology, but rather to provide an overview for people who are responsible for moving video around a facility. In some facilities, this could include any number of people from the chief engineer to the video editor. Video editors may have an interest in knowing something about emerging technologies such as this because each time an editor copies a file onto a removable hard disk and takes it somewhere else, that editor is acting as a computer system administrator. Fibre Channel will not only affect the engineering staff of a facility, it will directly impact the facility's creative talent as well. The presentation of Fibre Channel in this section will provide a basic background in the terminology and technical detail as they are directly relevant to understanding Fibre Channel's applications in digital video.

Defining Fibre Channel

Fibre Channel is a method of connecting a number of workstations and storage devices in a facility to provide fast transport of video files and to allow shared access to source material. It is the perfect solution for allowing editors and graphic artists in a post-production facility to work together.

Channels vs. Networks vs. Fibre Channel

To understand Fibre Channel, it is useful to define it in terms of well-known I/O interfaces. The two basic I/O interfaces for external device communication are channels and networks.

The term "channel" has traditionally referred to a peripheral I/O interface that transports a large amount of data between devices. An SCSI connection between a host computer and a disk storage device is an example of a channel. Most data transfer is done in hardware with little or no software involvement. The simplicity of channels makes them very fast, at the expense of flexibility and connectivity.

From the digital video perspective, channels offer the element of speed. But there is a downside. With channels, data rates are dependent on distance, offering very fast rates over short distances, but becoming less functional with greater distance. There is also a limit to the number of devices on the system. SCSI systems, for instance, are limited to 16 devices.

In contrast, the term "network" refers to a network I/O interface that supports many devices interconnected by a common transmission method. All devices on a network are connected by the same wire (or fiber line). For video applications, the ability to allow a number of users to function on the same network is advantageous. However, networks generally rely on software involvement, and when there are high volumes of traffic on the networks, the networks can run slow. As more devices are added to a network, more data collisions occur and traffic slows or even comes to a halt.

Existing installed systems today support one or both of these two types of I/O interfaces. For instance, a workstation in a post house may use SCSI as a channel interface to disk storage, and use Ethernet for network requirements.

Fibre Channel combines the best of the two worlds, providing a single I/O interface to handle both channel and network requirements. Fibre Channel provides the same ability of a network to connect multiple devices over a distance, and at the same time it

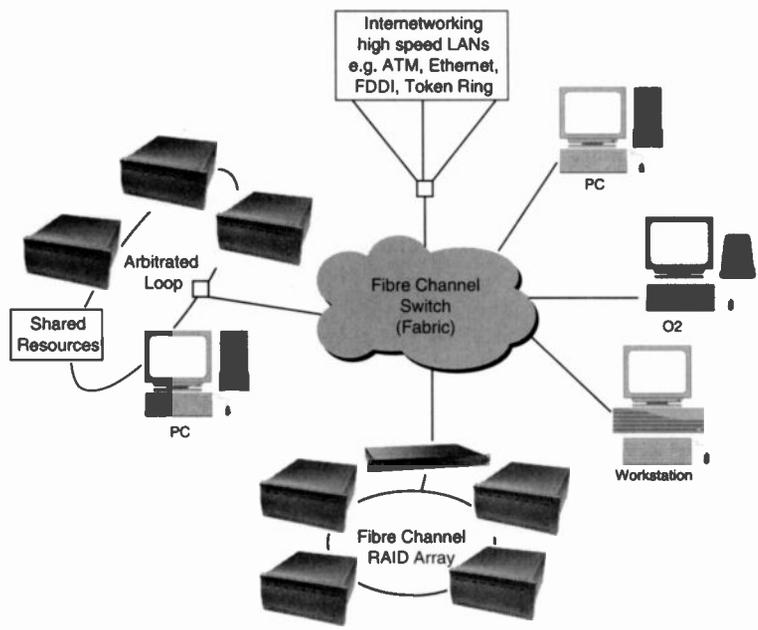


Figure 1. Universal Protocol Support

provides the simplicity of a channel, the reliable delivery of a channel, and the speed of a channel.

A Universal Port

Unlike traditional I/O channels, Fibre Channel can transport a number of other channel and network protocols, such as ATM, FDDI, Ethernet, HiPPI, SCSI and IPI, over a single medium and with the same hardware connection. This universal aspect is one of Fibre Channel's unique qualities.

Fibre Channel is most simply viewed as a transport mechanism. To use an analogy, it functions like a FedEx package. That is, you can put whatever you want in the package (SCSI commands, ATM commands, etc.) and it is delivered to the desired destination.

Fibre Channel Topologies

There are three topologies available for Fibre Channel: point-to-point, arbitrated loop, and switched fabric.

Point-to-point topology is a simple direct connection between two devices. It can be used when connecting a single workstation to a disk array or another workstation.

The arbitrated loop allows a number of devices to be connected in a loop on a Fibre Channel network. The arbitrated loop will support up to 126 devices on the network. Post-production and broadcast facilities are likely to adapt the arbitrated loop topology for small workgroups because it is cost-effective and provides the necessary network speed for their applications. With an arbitrated loop topology, a facility can easily connect a number of workstations together so that they can function together. Using copper cabling,

devices can be thirty meters apart—for example, all workstations and disk arrays can extend thirty meters from a Fibre Channel hub (see Figure 2 in the next section for an example of a typical post-production setup). If fiber optic cable is employed in the arbitrated loop, the distance between devices can extend to 10km, giving post houses the ability to work with facilities that are across town, for example.

The third type of Fibre Channel topology, the switched fabric, has the potential to provide greater flexibility for digital video applications, especially for working in large organizations and over larger physical areas. Switched fabric solutions with full 1.062Gb rates are expected to be announced this year. In concept they will provide a service that operates in a similar manner to a telephone routing system. The fabric is capable of making multiple point-to-point connections between devices and Fibre Channel arbitrated loop workgroups. The size limit on switched fabrics is 16 million addresses.

While the switched fabric offers potential for the future, Fibre Channel point-to-point and arbitrated loop topologies are operational today, providing a greatly improved network solution when working with digital video.

IV. Capabilities of Fibre Channel: Applications in Broadcast and Post-Production

Today, Fibre Channel is the only network architecture that meets all the requirements for working with digital video. It provides the necessary speed and high capacity storage requirements, comes at a reasonable price, and facilitates shared access to source material in a central disk array. All of this adds up to providing post-production houses and even nonlinear boutiques with





a more efficient way of working—a way of working that is more in tune with the creative process.

To illustrate the advantage of Fibre Channel, let's look at what would be a typical Fibre Channel configuration in a small post-production house. Figure 2 shows a post house that has two nonlinear editing stations, a workstation dedicated solely to digitizing source material, a graphics workstation, and a central disk array for storage.

The system allows all three editing stations to access the central disk array as if it were a local drive at each workstation. The great advantage that Fibre Channel provides is that two editors (or more) could work on the same project at the same time. Once the source material is digitized, all workstations on the system have access to that material. So, for instance, if you were asked to cut three different promos from the same source material, all of your editors could go to work at the same time without having to waste time copying the source files.

From a system administrator's point of view, Fibre Channel networks greatly simplify back-up routines. Instead of having to back-up a number of workstations in a Fibre Channel system where everyone is working off a central disk array, the central storage is the only back-up that is required.

One of the most challenging applications—possibly, *the* most challenging application imaginable for those who work in film and video—is film editing over a network. Today's advanced digital graphics systems have provided the film industry with a wonderful means for creating absolutely spectacular special effects. The one bottleneck that remains is transporting digitized film images between scanners, disk storage and workstations.

A single frame of digitalized film requires about 40MB of disk storage. Since film runs at 24 frames per second, we don't have to even bother to do the calculation—quite plainly, working with film requires massive amounts of storage and very fast network speeds.

Average projects will require many gigabytes. But to compound the problem, many special effects projects are created by layering multiple digital images, and thus multiplying the amount of data involved.

Fibre Channel provides speed that is orders of magnitude better than existing networks, doubling or even tripling the amount of time that the workstation is available to actually perform useful creative work.

V. Making Fibre Channel a Reality

Fibre Channel brings to market the high-performance, easy-to-use, low-cost network and storage solution required for managing digital video in broadcast and post-production applications. Fibre Channel enables facilities to set-up work groups with high-speed links to massive storage systems at significantly lower costs than previously available. This gives workstations in post-production facilities access to real time, full-motion video over a network and allows workstations to share source material in a central disk storage system. Applications in other industries, such as medical imaging, visualization, simulation, and other graphical applications will also benefit from Fibre Channel technology.

With its expertise in storage and videodisc recorders, its experience with the broadcast and post-production markets, and its respected position in the market, MountainGate was the one company perfectly positioned to bring together all the necessary companies and existing Fibre Channel components to make a working Fibre Channel solution. The culmination of a number of technological developments and strategic alliances by MountainGate has resulted in the first commercially available Fibre Channel network and storage system.

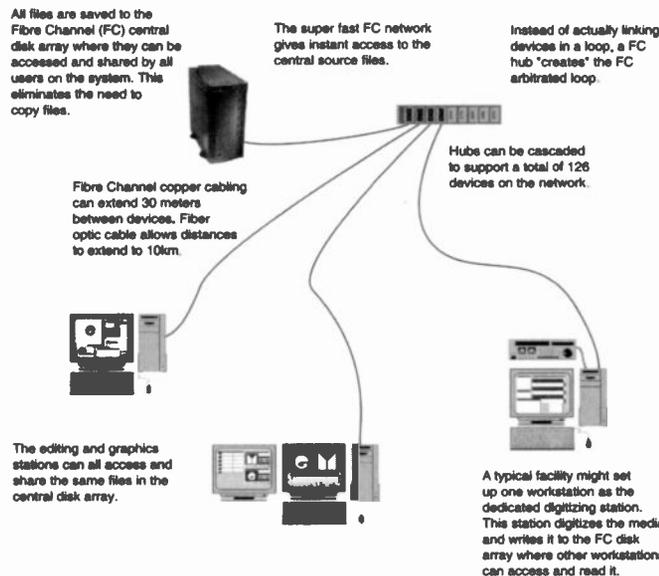


Figure 2. A Fibre Channel Configuration in a Typical Post-Production setup

THE COMPONENTS OF VIDEO SERVERS

Courtesy of: Hewlett-Packard Company

By Lynn Chroust



Much has been written about video servers at a conceptual level but little has been written about the key components of a video server and the fundamental rules under which these components operate. This article will endeavor to explain these components, how they work together and their limitations. It will become evident how and why certain broadcast applications are feasible today, while others are on the verge of possibility.

A video server can be represented by five key components:

1. RAID disk array.
2. A real time controller for traffic management on the bus.
3. I/O cards.
4. High speed internal data bus.
5. Disk scheduling that configures the video server for specific applications.

Video servers must contain storage, and a common choice today is rigid magnetic disks. In nonlinear editors, a single disk drive may be used to store the compressed video as it is digitised. Broadcast applications demand multiple, simultaneous channels accessing the same material and require data protection.

A RAID (redundant array of inexpensive disks) satisfies both these requirements. RAID was invented in the early 1970s to increase the reliability of a disk system in case of a drive failure. RAID levels 0 through 5 are now defined but the most common are RAID 0, 3 and 5.

RAID 0: Stripes the data across the array. No data protection.

RAID 3: Calculates parity as the data is striped across the array. One drive in the array is reserved for the parity information. Any single drive failure will not result in a loss of data.

RAID 5: The same as RAID 3 in operation but the parity data is striped across the array instead of stored on one disk.

RAID 0: is unacceptable for broadcast applications because a single drive failure will result in the loss of all data. Most systems today employ RAID 3 or 5 with no operational difference between them.

While RAID does protect the data, the RAID specification does not guarantee uninterrupted operation when the disk fails, hot swap capability or transparent disk rebuild capability. Obviously in critical broadcast applications, all these capabilities are required and should be separately called out by the manufacturer in the video server specification.

While disk arrays are obviously needed for storage and reliability, they are also necessary for creating the bandwidth to support multiple channels. If a server is specified as allowing a certain number of channels to access the same data simultaneously, then there must be enough available bandwidth within that array for the total number of channels specified. A disk array with RAID provides both increased bandwidth (for example, in RAID 3 configurations approximately the individual disk bandwidth multiplied by the number of drives in the array minus parity drives) as well as data protection.

Traffic Management Control

A controller internal to the server manages the movement of data on and off the disks to the appropriate I/O channels. This controller should also accept house time and real time commands input via the automation or other application software. In addition to real time

commands such as play and record, the internal controller may also interface with the external application for database checking. For example, in an ad insertion application where traffic has given the automation a playlist, the automation software needs to ensure that all material is available on the server, or otherwise notify the operator. This is accomplished by passing the playlist to the server to check with its internal database for inclusion of all those records.

Obvious choices for controllers today are real time Unix systems and PC platforms. Both have their advantages and disadvantages. Real time Unix systems are designed to manage multiple simultaneous processes (i.e. multiple video channels streaming on and off disks) with a precise allocation of time to individual processes, however, they are more expensive than PC platforms. PC platforms are widely available, hence less expensive, but their operating software is not designed for real time interrupts and multiple simultaneous processes, and more effort must be spent in finding robust real time operating systems for PCs. The choice is really up to the manufacturer.

I/O Cards

I/O cards configure a server for a specific application. They are responsible for taking incoming information, video and audio, formatting it correctly, compressing and then moving it onto the high speed bus, or vice versa for outgoing channels. In a modular design, all other components of the video server are completely independent of the I/O card. Upgrading the server for new video formats or compression algorithms should be a matter of changing only the I/O card. For example, when introduced, the HP Broadcast Video Server used I/O cards with MPEG-1 compression chips. Since then, the MPEG-2 chip set has become available and all customers were upgraded by simply changing the I/O cards. All other components of the systems remained unchanged.

High Speed Internal Data Bus

The purpose of the internal data bus is to move data as fast as possible from the disk array to the I/O cards and vice versa. A video server does no computation on the video stream, unlike an effects generator or other device that manipulates video. Therefore, a bus that bypasses the internal controller is optimal. By not going through the CPU, the server is optimized for the fastest possible data transfer between the disks and I/O.

Common backplanes today are PCI and VME. These buses are standard in the computer industry and have a large number of supported configurations and manufacturers. A proprietary bus may be created of course, but that increases expense for the end user. The advantage of using a standard bus as a backplane is in the availability to the manufacturer of higher volume components, hence lower cost, rather than designing a specialized low volume item. In addition, a standard backplane lends itself to third party development of additional cards provided the manufacturer adheres to the backplane specification.

Current practical maximum speeds of the PCI and VME buses are approximately 320Mb/s. In evaluating these bandwidths, it becomes apparent that they are a potential bottleneck of channel capacity in a server. Forgetting physical limitations, using a JPEG compressed signal at 48Mb/s or an MPEG compressed signal at 10Mb/s, a server can only theoretically contain 6 to 30 channels respectively. Using a server with MPEG's bandwidth advantage for the same picture quality, most transmission applications can be satisfied with current standard backplanes.



Scheduling

The key to making all the components of a video server work together smoothly is disk scheduling. Disk scheduling is the movement of data to and from the specific disk drives in the correct order and the placement of that data in real time on the internal data bus. Disk scheduling algorithms for the demanding requirements of broadcast applications are designed by each manufacturer. Today, they are one of the most likely components to limit the bandwidth of a video server, even more so than the internal data bus because a scheduling algorithm reduces available bandwidth to guarantee that each channel has adequate bandwidth. In doing so, the maximum available bandwidth from the disk array cannot be used. Manufacturers continually strive for improvements in scheduling algorithms to better use the available disk array bandwidth.

Networking

In looking at the individual components that make up a video server, we have seen two areas that are potential bottlenecks for a server with very high channel capacity: disk scheduling and the internal data bus. Digital technology will continue to advance and new capabilities will become available over time to help eliminate these problems. But, at the same time, broadcasting requirements will also increase, both in number of channels and quality (i.e. HDTV). Given this, how do we create solutions?

Networking features are of crucial value to a video server because they provide: connectivity between multiple servers, wide area networking for global material movement, redundancy configurations and system expandability. There are two types of networking. An "inter-system network" connects multiple video servers together. A "wide area network" (WAN) provides global connectivity, allowing data to be moved across vast geographic distances.

In the current HP BVS, FDDI running at 100Mb/s is used to interconnect multiple servers. Future high speed networks such as Fibrechannel running at 1 gigabit/s will increase this capability significantly. For wide area networking, an ATM interface at 155Mb/s is an existing standard for non-real time transfer between servers.

Network interfaces connecting video servers provide a total higher channel solution and allow data transfer across wide distances. In addition, with standard network interfaces, newer video servers can be added to a facility with complete leverage of the existing video server system via the network interface. This is similar today to having different generations of PC platforms running on the same LAN.

The benefit of the newer system can be utilized without replacing the older systems. As time continues, we can be sure to expect that the video servers will evolve, but through a standard networking interface we can maintain stability in our facilities that allows us to enjoy the advantages of newer capability without removing existing systems.



RAID DISK ARRAYS OF VIDEO SERVERS

RAID Systems Are Far More Than Just a Bunch of Disks.

THE BOTTOM LINE: Moving from tape to disk equipment can be expensive. The trade-offs include reduced maintenance and higher reliability, however, in today's business climate that is not enough. New systems must be cost-effective. In addition, video servers, like most broadcast equipment, must provide some level of redundancy. How that redundancy is implemented can affect system performance. Poorly optimized systems are usually not cost-effective.

The convergence of video production, broadcast, communications and digital computing has spawned a new class of computing system—the video server. The video server is related to its cousin, the file server, because both "serve" data to fulfill requests from clients. *Serve* refers to the action of retrieving data from digital storage and forwarding it to the user via a communication's network. Video servers, not withstanding their similarities to file servers, have performance demands placed on them that make the architectures employed unique. A key component of these architectures is high performance, redundant disk storage.

The Video Server Paradigm

Video servers are used to deliver digitized video data to a communication outlet (for distribution of the video) in real time. Upon request or on a pre-programmed schedule, the video server must retrieve video (which has been digitized and compressed) from on-line storage and forward it through system buffers to a

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By Bill Moren

communication outlet for transmission to the viewer. This process must be performed in real time to ensure the video is delivered at a continuous rate of 30 frames per second (fps). A typical video server environment is shown in Figure 1.

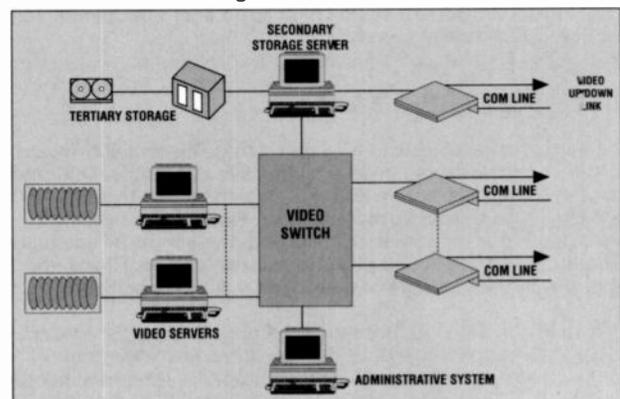


Figure 1. Video servers are used in conjunction with video switches, communication links, administrative systems and various methods of downloading content.

The video server is typically a powerful workstation with hardware and software designed to deliver video in real time. The hardware architecture of video servers must allow for many streams of video to move from the on-line disk storage through internal system buffers



and out through communications connections. While any of these components could limit the server's performance, it is the disk subsystems which, if improperly designed, have the potential to degrade performance by 50% or more. Furthermore, because the disks in a video server account for about 50% of the server's cost, anything less than optimal configurations can dramatically impact the server's cost-effectiveness.

Unlike file servers, which manipulate data of any type, the video server's sole task is to retrieve video data. The video data stored on a video server consists of programming that has been digitized and compressed. Typically, there will be a large number of different titles stored in the video server, of arbitrary length (depending on the type of video—movies, news, commercials, etc.). Each title may be played at differing times. Also, multiple copies of the same title may be active simultaneously. Advanced server software, typically found on systems serving metropolitan areas, may schedule multiple requests for the same title into slots, eliminating redundant data requests. For each slot, regardless if single or multiple video requests are being serviced, the video server must supply a single video stream.

The sequence of digitized data that comprises a piece of video, when transferred in such a fashion as to satisfy a viewer's request, is said to be a stream. A stream is sequential, in terms of chronology and not how it is organized, on a disk subsystem. In practice, video streams are typically stored sequentially for performance reasons. If a viewer pauses or rewinds, a new stream is generated when the playback resumes (at least from the video server's perspective). Video servers typically support numerous simultaneous streams. For performance modeling, a random distribution between streams is often assumed. Video streams also have isochronous characteristics. Specifically, each frame in a video stream must be delivered every 33ms (time per frame at 30fps). For acceptable video playback, the server can't deliver video on an average of 30fps (e.g. 60fps for one second, 0fps the next). Within the server, the method used to provide isochronous performance may accommodate some components' inability to operate truly in an isochronous mode. For instance, system buffering may allow disk subsystems to load a sequence of video into the server at a rate much faster than 30fps. The server then transfers out of the buffer at precisely 30fps. Fault tolerance is another key video server trait. It is not unusual for video server applications to operate 24 hours per day, seven days per week.

Video Server Disk Storage

The fundamental objectives for video storage are straightforward. First, the storage should be as cost-effective as possible. This implies that the storage subsystem employs an architecture that delivers the highest stream to spindle ratio possible. This ensures maximum performance for the lowest cost. Second, there must be adequate capacity for the total content to be available on-line. Finally, the storage must be fault tolerant, enabling real-time operations.

Individual disk drives do not satisfy the objectives set for a video server's storage. A single drive delivers only a few streams of compressed video. To determine the number of streams a disk can deliver, several variables need to be considered: the request size of the stream, the drive's sustainable bandwidth, the drive's access latencies and system overhead.

The total numbers of streams (S) a drive can support is the ratio of the time per request at the compressed video rate (Tv) and the time per request at the sustainable disk rate (Td) (S=Tv/Td). A request is the transferring of an arbitrary amount of data in a unitary disk operation and typically encompasses many frames of video.

Tv (time at video rates) is simply the amount of data requested (L) divided by the video stream rate (Rv), after compression (typically 1-15Mb/s). Td (time at disk rates), on the other hand, consists of the sum of the drive's latencies and the time for the actual data transfer (Tx). A drive's latencies consist of a seek (Ts), a rotational period (Tr) and overhead (To). Data transfer time (Tx) is request length (L) divided by the drive's data rate (Rd).

Expressed algebraically, the total number of streams a single drive can support is: $S=L/((L/Rd+Tx+Tr+Ts+To)*Rv)$

For example, a 7,200rpm drive with average access times of around 13ms and transfer rates of around 6MB/s will support approximately 15 streams of video compressed to a rate of 3Mb/s. This same drive, if worst-case performance is evaluated (full-throw seeks, full-revolution rotational latencies), only supports about 10 streams of video at the same compression rate. For better-quality video streams (e.g. lower compression), which require higher data rates, the number of streams supported by this class of drive drops. Figure 2 depicts graphically the performance of this type of drive for varying data request lengths (L).

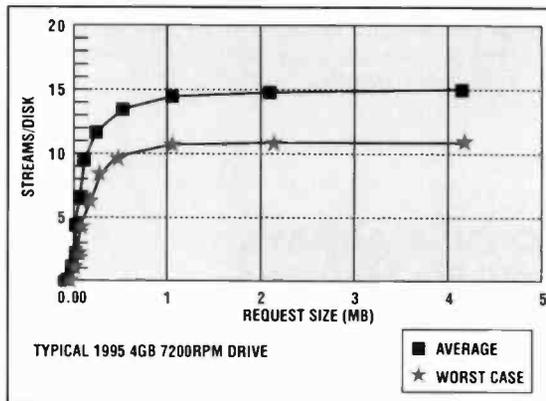


Figure 2. Average and worst-case performance of a 7,200rpm drive when supporting multiple 3Mbps video streams.

While a single drive has modest stream performance at best, the capacity is also rather small in the context of video. Video compressed to 3Mb/s requires more than 22MB of storage for one minute of playback. On a 4GB disk, approximately 180 minutes of capacity are available, enough for only about one and half movies. For a server with any reasonable total capacity, many spindles (drives) will be required.

Regardless of the total number of drives used in a video server, media redundancy is required to ensure on-air real-time playback. Even though mainstream drives have high mean time between failures (MTBF) ratings, they do fail and at a rate that may be surprising. For a family of drives with an MTBF of 800,000 hours, the expected failure rate over the service life of the drives is more than 5%. This analysis assumes no drive design failures in either the hardware or microcode, nor any manufacturing process problems endemic to a particular lot or facility.

RAID For Video Servers

A storage technology referred to as redundant arrays of independent disks (RAID) addresses the performance, capacity and redundancy needs of video servers. RAID was conceptually presented in a paper published by the University of California at Berkeley in the mid-1980s.



The paper offered a series of data storage architectures that provided media redundancy, large capacity and high performance. The architectures are colloquially referred to as RAID levels and were arbitrarily numbered one through five to identify each level.

RAID level 1 (RAID 1) is disk mirroring. Mirroring is a technique common to mainframe storage architectures and pre-dates the RAID paper. It was used as a frame of reference in the paper for the other RAID levels presented. Mirroring provides redundancy by simply duplicating each disk in the storage system. The remaining RAID levels incorporate a data-striping technique in which data is evenly divided across a group of data drives. Error correction information, which can be used to regenerate the data on a failed drive, is stored on a redundant drive. RAID levels 2 and 3 stripe the most elemental unit of data, the disk block, across all data drives. The difference between these two levels is the redundancy technique, in which RAID 2 uses multiple redundant drives, while RAID 3 uses a single drive. Because RAID 2 offers no significant benefit over RAID 3 and has higher costs, it has not been considered a commercially viable alternative, and won't be considered further. RAID levels 4 and 5 stripe blocks with a single or group of blocks entirely contained on a single drive. Like RAID 2 and RAID 3, the difference between RAID 4 and RAID 5 is in the method of redundancy. RAID 4 stores its error-correction data on a dedicated drive while RAID 5 distributes this information across all drives. Although RAID 4 may be easier to implement, it offers lower performance and no cost savings as compared to RAID 5, and it too will not be considered further.

RAID 1, RAID 3 and RAID 5 share a common trait; any single drive in a RAID configuration may fail and all the data stored in the RAID will remain accessible. The similarities end there. Each of the RAID levels have differing levels of normal performance, performance after a failed drive and media costs. These differences define the suitability of these RAID levels for video server applications.

Selecting RAIDs For Video Servers

While the old adage "your mileage may vary" is appropriate when considering different vendors' RAID implementations, a good understanding of the underlying RAID principles will remove any doubt as to the upper limits of each RAID level. To compare the RAID levels, configurations using "n" drives will be considered.

RAID LEVEL	PERFORMANCE NORMAL	PERFORMANCE FAILED DRIVE	USABLE CAPACITY	PREMIUM FOR n USABLE DRIVES
1	n	n-1	n/2	2n
3	n-1	n-1	n-1	(n+1)/n
5	n	n/2	n-1	(n+1)/n

The table compares four important metrics for each RAID level. The first metric to compare is the media cost. It is in this comparison that the primary detriment to RAID 1 becomes apparent. RAID 1, because it must duplicate every disk, requires twice the total number of drives needed for any arbitrary capacity objective. As a result, the total cost for a usable capacity equal to n drives is 2n (100% premium). By comparison, RAID 3 and RAID 5 (RAID 3/5) only consume one drive's capacity for redundancy. As a result, the premium for redundancy is only a fraction of the total capacity purchased. A five-drive RAID 3/5 only requires one disk for redundancy, 20% of the total. As the width of the array increases, the premium decreases even further. A nine-drive array, eight of which are usable, has a redundancy premium of only slightly more than 10%. In general, the cost for "n" usable drives in a RAID 3/5 configuration is (n+1)/n. Figure 3 illustrates the difference in redundancy premiums for RAID 1 and RAID

3/5 as compared to just a bunch of disks (JBOD), with no redundancy whatsoever. In addition to RAID 1's much higher cost for redundancy, the large number of drives associated with RAID 1 also increase the packaging and cooling complexities of a system, while lowering the overall reliability due to the larger total number of components. As a result, RAID 1 will not be considered further.

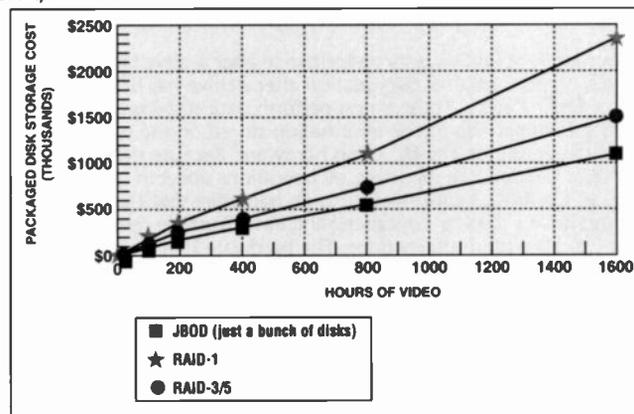


Figure 3. Media cost differences between various disk storage systems.

The popular convention is to consider striping RAIDs for use in video servers. Because the media costs are identical for RAID 3 and RAID 5, the primary consideration in selecting one or the other is the comparative performance capabilities. Video servers operate in real-time environments. As a result, the performance of a RAID under all operating conditions is the crucial consideration. While it is important to consider the performance of a RAID during normal operations, when all drives are functional, it is equally important to consider the performance of a RAID after a single drive has failed—also a normal operating condition. This consideration is required because a video server is typically guaranteed to deliver a minimum level of performance under all operating conditions. Therefore, the lowest performance capability of the RAID under any operating situation it may encounter is the specification that dictates the server's specified performance.

Performance With All Drives Operating

Because one drive in a RAID 3 is dedicated to redundancy, it cannot contribute to data transfer performance. However, the remaining drives are used for data operations. Because of RAID 3's parallel striping technique, the sustained transfer rate approaches the media limits of the data drives. For example, a RAID 3 in a 4+1 configuration (four data, one redundant drive) will have a sustained transfer rate approximately equal to four times the sustained transfer rate of an individual drive. In general, for an n drive RAID 3, the total number of streams supported is equivalent to n-1 drives, with adequately large data requests.

The analysis for a RAID 5 is a bit different. RAID 5 distributes redundancy information across all n drives. Furthermore, each drive is accessed individually. This enables each of the drives to service a data request simultaneously (providing the data requests are evenly distributed and there are no hot spots - a significant presumption). As a result, a RAID 5 theoretically can support n drives worth of streams.

In practice, RAID 3s track theory much better than RAID 5. This is due to the unpredictability of the request distribution. With a RAID 3, all requests access all drives, in parallel. This results in predictable performance. With RAID 5, however, any request distribution pattern



that doesn't keep all the drives busy results in performance degradation. RAID 5 performance is much more difficult, if not impossible, to model accurately for a real-time environment. Many RAID 5 users find performance to actually benchmark at or below the n-1 level.

Performance After a Drive Fails

The strength of RAID 3 is its performance after a drive fails. In fact, there is no performance degradation after a drive has been removed from a RAID 3 array. These arrays perform data striping on-the-fly, using special hardware. The information stored on the redundant disk is also generated on-the-fly, using hardware. Because every piece of user data is striped on all drives, all operations occur in parallel. If a drive fails, a RAID 3 controller turns on hardware that regenerates the missing drive's data by combining the data from the remaining data drives and the redundancy drive. The hardware that performs this function typically is in the controller's data path. These circuits are designed to operate at rates equal to or greater than the media data rate with no additional latency.

RAID 5, on the other hand, has a significant performance degradation after a drive fails. It is RAID 5's strength, independent access to each drive, which causes the severe performance loss after drive failures. When a RAID 5 drive fails, the remaining drives must be accessed for every request of the failed drive. This, in turn, prevents the functional drives from servicing their own requests. To quantify the performance loss, something called the Array To Drive Request Ratio (A_D) must be examined.

The A_D is simply the ratio of the total number of array requests to the total number of disk requests required to complete the array request. In other words, an array request is simply a data request from the host. The drive requests are the actual disk operations inside the RAID 5 array to carry out a host request.

When all drives are operating, the A_D is one, because every host request corresponds to exactly one disk request. However, after a drive has failed, there are far more disk requests (accesses) than host requests. Assume an even distribution of requests to all n drives, from the host's perspective. After a drive fails, n-1 of the n requests will be for the remaining n-1 functional drives. One of the n requests will be for the failed drive. The total array requests equal n-1 (for the good drives) + 1 (for the failed drive) which equals n.

For the drive requests, the n-1 requests for the functional drives will correspond to n-1 drive requests, because each functional drive can perform one request. For a request to the failed drive, another n-1 request is generated, because all of the functional drives are used to regenerate the failed drive's data. In total, after a drive has failed, a RAID 5 will generate n-1 (for the good drives) + n-1 (for the failed drive) drive requests, or, more simply, 2*(n-1) drive requests. Hence, the ratio of host requests to drive requests (A_D) becomes $n/(2*(n-1))$.

To complete the analysis, the A_D is factored with the number of drives in a RAID 5 after a drive failure and the number of streams an individual drive can support. In general, the number of streams a RAID 5 will support is the product of the array to disk ratio, the number of usable drives in the array, and the number of streams supported per drive. Algebraically, total streams = A_D number of drives * S. Substituting the expression for A_D and n-1 for the total number of drives in a RAID 5 array after a drive failure, the total streams supported = $n/(2*(n-1)) * (n-1) * S$. Simplifying, the total streams supported = $n/2 * S$. Hence, the performance of a RAID 5 after a drive failure is only 50% of its theoretical maximum when all drives are operating. Figure 4 compares the performance of RAID 3 and RAID 5 after a single drive failure.

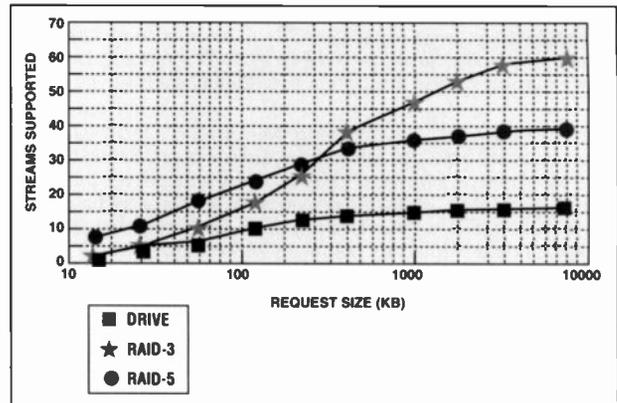


Figure 4. RAID performance after a drive failure in a multidisk array.

Subsystem Redundancy

In addition to providing high levels of performance under all operating conditions, RAID 3 implementations can also provide redundancy features that are extremely useful in on-air broadcast environments. To ensure reliability, the power supplies and cooling fans (if used) should also be redundant, because they are the two most likely components for failure after the disk drives. Redundant components should be hot-swappable after a failure. Hot swap is the capability to allow a failed component to be removed and replaced with a new unit without shutting down the subsystem. It is crucial for any redundant component in a real-time environment to support hot swap. Without such a capability, the subsystem must be shut down to service a failed component. During such times the video server would no longer be able to operate at full capacity, if at all. With hot swap, a failed component can be replaced and the subsystem brought up to 100% protection without a user ever knowing the service has been performed.

The converging worlds of video production, broadcast, communications and computing are placing an ever-increasing burden on the architects of video servers. These architects must design systems that deliver many streams of video, in real-time, and for a price that is palatable. The storage component of the video server accounts for about 50% of the total system cost and is a key performance component. It is for these reasons that RAID disk arrays have become an integral part of video server architectures.

RAID 1, or mirroring, duplicates every drive. Compared to alternative RAID architectures, this approach is not cost-effective. Furthermore, the decreased reliability of a large number of spindles and the complexities of packaging, powering and cooling a RAID 1 implementation is prohibitive.

RAID 3 and RAID 5 stripe user data and only require a single drive's worth of capacity for redundancy. They differentiate themselves in performance. While, in theory, RAID 5 may have a slight performance advantage when all drives are operating, in practice this is not often realized. But the main difference in these two RAID architectures is the performance after a drive fails. While RAID 3 doesn't experience any performance degradation, the RAID 5's performance will drop by 50%. For the real-time environments of video servers, it is RAID 3's robust performance, over all operating conditions, that makes it an ideal choice.



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LARGE-SCALE DISTANCE LEARNING SYSTEMS: QUESTIONS TO ASK TO MEET DIVERSE IMAGING NEEDS



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By Peggy Casey

More and more colleges, universities and K-12 schools are implementing local and statewide distance learning networks. An offshoot of videoconferencing and a progression from the earlier school MATV systems, most Distance Learning (DL) classrooms now provide students and communities with two-way, real time, audio and video communication between sites that are often hundreds of miles apart.

When planning a Distance Learning system, key questions must be asked and answered during the early stages of the network's development, many of them essentially imaging questions. In this article we'll look at the major areas that should be reviewed when designing a Distance Learning system to be used by schools and communities planning a variety of classroom sizes with various budget constraints.

The Iowa Experience

I have seen firsthand how proper planning and management of a Distance Learning network will enhance the effectiveness of the system and provide a seamless backdrop for the educators, students and community members using the classrooms.

The State of Iowa Fiber Optic Network was designed and developed by the Iowa Communications Network (ICN). The classroom technical requirements for the educational sites are provided by Iowa Public Television (IPTV). The network currently has 310 active classrooms. The system operates 16 hours a day Monday through Friday and eight to ten hours on Saturday and Sunday. Eighty to 125 sessions are held on the network daily. Up to 108 sites can be simultaneously linked together over the network for one session.

Originally envisioned for teaching classes to students at remote locations, Distance Learning has expanded into the public sector, and is now widely used for community meetings, public health presentations, parole hearings, governor state-of-the-state addresses with question and answer periods, symphony broadcasts, and even trips to the local zoo.

The system also provides local, regional, state and federal administration officials with a convenient method to conduct business, thus saving state and federal government time and money.

Key Questions

The first step in designing a DL system now is to answer these key questions:

- **Image quality.** Is there a set budget and the need to develop the best system possible within its limits? Or is it more important, even vital, that the system has a specific image quality level—and the funding to reach that goal?
- **Bandwidth.** How much bandwidth will be available to transmit the signal? And is there already a transmission path that must be used, or is the transmission path flexible?
- **Who are the end users?** Yes, who are they, exactly? What is their level of technical expertise? How simple must the system be so that they can feel comfortable using it? And how much training will be provided to them?
- **Define the high-end and low-end classrooms.** Generally, what equipment will be installed in a high-end and a low-end classroom? How different will these rooms be? How similar?
- **Technical support and geographic considerations.** What level of technical support will be provided to the classrooms? Will they be located in areas that have technical assistance available, or will there be minimal or no technical assistance on site? How many miles will there be between those classrooms?

In the case of the State of Iowa, they decided that they wouldn't settle for anything less than full-motion broadcast quality video.

They also decided to run their own fiber cable throughout the state. This provided the state with both the bandwidth they needed to run a 45Mbps digital signal using DS3, and a state subsidized online rate for all schools using the system.

(System designers who are not going to run fiber cable will probably contract the local Telco for time on the phone lines and the bandwidth and online usage rate negotiated with the Telco will directly affect the design of the system. The system will still need to provide the best image quality and bandwidth for that budget.)

System Backbone and Imaging

The second step is to define the system backbone, which, after all, determines how audio, video and data will communicate between the sites. It includes the bandwidth, the connection (getting on and off the network) and three communication protocols. Current options include DS3, STM, SONET, FDDI, ISDN microwave, satellite and others. Because advancements in data communication continue, all system backbones have tradeoffs—usually between cost and performance.

Hard fact: Generally, the more money available, the better the image quality. Choices range from full-image NTSC 525 line broadcast signals at 30 frames/sec. to heavily compressed desktop videoconferencing type systems at 320 lines projected at less than 10fps.

The method of choice for transmission will be based on the definition of the system components. It's important to pick the transmission path that best fits the defined parameters and, likely, leaves options for future expandability.

Specific Design Choices:

- **Bandwidth vs. image quality.** The type of video signal required, the number of frames per second and the image resolution level are initial questions—and dependent upon the amount of bandwidth available. Remember that a higher bit rate may not result in a better image. Many of the systems that were installed just a few years ago run at a high bit rate but have lower image quality than those with lower bit rates on the market today, because compression technology is always improving. Bit rates available today versus the image quality available is still the ongoing question, and it's a good idea to see a live demonstration of the systems to be considered.
- **Audio and video back-haul.** Besides the tradeoffs between bandwidth and image quality, there's the question of whether the same quality signal is needed going in both directions. "Back-haul" is the audio and video signal that returns from the receiving sites (students) to the originating site (teacher). To save bandwidth (and money), you can use two different levels for these signals. For example, an implementation could have the origination site output a 30fps, MPEG2 signal, while the receiving sites return a 10fps, MPEG1 signal. If there are going to be two different signal levels, the origination signal is usually the higher quality signal.
- **Centralized vs. local control.** How will the DL system's signal be switched? Will it be centrally controlled or locally controlled by the end user? Where will the authority to schedule the system resources be placed? If the system is centrally controlled, the end user will call a control center and be patched through to the other classrooms either manually or electronically. If it is end user controlled, the user will dial-up into the system whenever they want—just like videoconferencing. Centrally controlled systems require an operational staff but provide more system control. Locally controlled systems provide the end users with more flexibility but are harder to manage and may require end users with more technical skills.



■ **System protocols.** The system protocols dictate the data communication path and define the rules used to accomplish the data connections. There are three system protocols:

1. Administration Protocol—governs who gets access and when access is granted;
2. Operation Protocol—controls the on and off connections between the sites;
3. Transmission Protocol—determines how the devices will talk to each other.

■ **Inter-network compatibility.** An increasingly important issue. What other networks, outside of your DL network, will you be communicating with? Will you be interfacing with other statewide and university systems or just local sites? Will all of your rooms be able to talk directly with each other, or only to certain rooms? What sort of imagery might those other networks be handling?

■ **Limits on simultaneous sessions and bandwidth.** No matter which transmission method is used, or how it's laid out, there will always be a finite limit on the number of sites that can be linked together simultaneously. Designers need to determine what the maximum number of sites that can participate in one session will be for the system.

Classroom Questions

Once the backbone of the system is defined, the questions home-in on the classroom level.

Should there be an open or closed microphone system? (With open microphone systems the student microphones are always "on." In closed microphone systems, the students or teacher need to press a button to activate the student microphones.) There are pros and cons for both systems.

What will be the standard engineering design and equipment configuration for these classrooms—how many cameras, microphones and monitors? How pre-fabricated will their setups be? What options will be available? What will be the audio level (-10dB or +4dB) and video format (composite or component)? How many and what type of video inputs for additional cameras, VCRs, monitors, CD players, microscopes, etc. will be available in each classroom? How much will an average room cost? And will schools and communities buy this classroom equipment with local, state or federal funding?

And about that equipment...will it be standard and readily available equipment or customized equipment specialized for this network or Distance Learning system? Will equipment upgrades be compatible with what's in place? If the manufacturer discontinues a piece of equipment, how easily can it be replaced? And what is the expected rate of obsolescence?

What is the delivery time after receipt of order (ARO)? This will certainly affect classroom installation schedules. Most rooms have a complement of cameras, display devices, VCRs, copystands, microphones and audio and video ancillary equipment.

Who will install this classroom equipment—in-house personnel or contractors? How many rooms will be installed simultaneously? (In the educational environment, most rooms must be installed in time for classes beginning in August or January; depending upon equipment lead times, it may be necessary to order the equipment two to six months before that.)

Training and Support

The educators, students and other community members using the classrooms will need to be trained. Manuals will need to be developed. The technical expertise of the end users will, of course, determine the level of training that is provided.

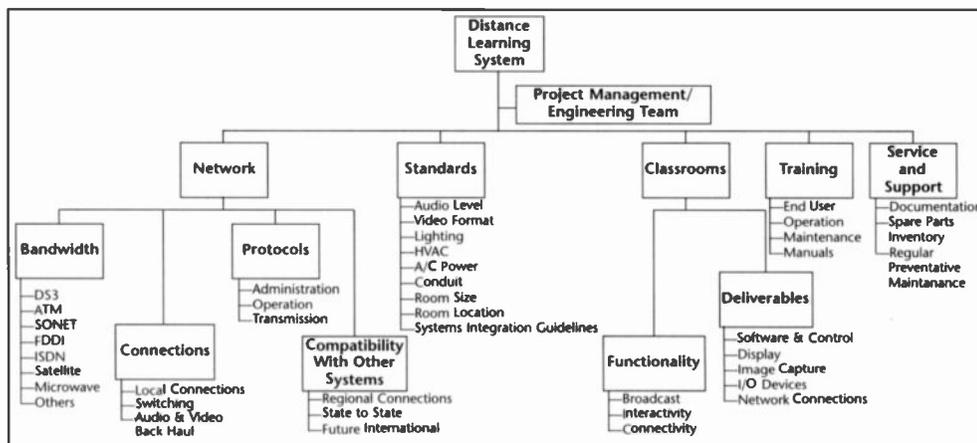
And after the network and classrooms have been installed, they will need to be maintained. Service and support aspects of the system should be planned during the design phase so there's enough money for these activities. Transmission path suppliers should be consulted to determine the maintenance schedule for the system backbone. For classroom maintenance, a visit to each classroom at least twice a year to fix minor items before they become major problems is probably the minimum. And there will need to be a spare parts inventory and standard response times to repair classrooms, as well as a testing/troubleshooting site for the system.

Summary

As you can see, there are many Distance Learning transmission paths, system designs and classroom configurations available! These guidelines, plus creativity and ongoing technological advancements, will yield a Distance Learning system design that meets varied imaging needs.



Peggy Casey was formerly the project manager responsible for managing the installation of the State of Iowa Distance Learning classrooms at Sony Electronics, Inc. Systems Integration Center, San Jose, CA. Sony Electronics, SIC Senior Systems engineers Tom Michales and Steve Sergeant also contributed to this article.





Graphics Standards

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 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 IBM PC and IBM PS/2 computers.

VGA

VGA "Video Graphics Array"—The VGA graphics standard was introduced as the standard output for IBM PS/2 series computers. With the introduction of the PS/2 Model 30, 50, 60, 70 and 80 in 1987 utilizing VGA graphics permanently mounted in the motherboard 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 retrofitable 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 and compatible users to utilize the same higher PS/2 graphics without having to buy a PS/2 computer.

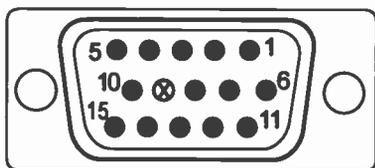


Figure 1 15-Pin "HD" (female)

Specifications:

H. frequency: 31.5kHz
V. frequency: 70/60Hz
Signal: Analog
Max. resolution: 640 x 480
Colors: 64-color palette, 16 displayable

Pin configuration

pin 1—Red	pin 9—No Pin
pin 2—Green	pin 10—Ground
pin 3—Blue	pin 11—ID Bit
pin 4—ID Bit	pin 12—ID Bit
pin 5—N/C	pin 13—H. Sync
pin 6—Red Return	pin 14—V. Sync
pin 7—Green Return	pin 15—N/C
pin 8—Blue Return	

Common characteristics: All VGA compatible cards have 3 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.

IBM 8514/A

IBM 8514/A Display Adaptor Card—The IBM 8514/A display adaptor card is a high resolution VGA card utilizing 4 modes of operation. Introduced in 1987, the 8514/A is an alternative high resolution graphics card to VGA for 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:

H. frequency: 31.5/35kHz
V. frequency: 60/70/87/43Hz
Signal: Analog
Max. resolution: 1024 x 768 interlaced
Colors: 256,000-color palette, 256 displayable

Pin configuration (See Figure 1)

pin 1—Red	pin 9—No Pin
pin 2—Green	pin 10—Ground
pin 3—Blue	pin 11—ID Bit
pin 4—ID Bit	pin 12—ID Bit
pin 5—N/C	pin 13—H. Sync
pin 6—Red Return	pin 14—V. Sync
pin 7—Green Return	pin 15—N/C
pin 8—Blue Return	

Common characteristics: The IBM 8514/A displayed the 3 VGA modes and a fourth mode of 1024 x 768 at a 43Hz refresh rate. This 43Hz fourth mode introduces a slight flicker to the display, thus making it more applicable for graphics rather than text applications. The 8514/A display adaptor utilizes an 8514 monitor.

Super VGA

Super VGA Cards—Every major third-party graphics card manufacturer has introduced since 1988 what can be categorized as a Super VGA card. 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 resolution higher than 640 x 480 or with more than a 64-color palette.

Most Specifications:

H. frequency: 31-107kHz
V. frequency: 60-87Hz
Signal: Analog
Max. resolution: 2000 x 1620 noninterlaced
Colors: 16 Million
Manufacturers: Video-7, AST, Paradise, IBM, Matrox



Pin configuration (See Figure 1)

pin 1—Red	pin 9—No Pin
pin 2—Green	pin 10—Ground
pin 3—Blue	pin 11—ID Bit
pin 4—ID Bit	pin 12—ID Bit
pin 5—N/C	pin 13—H. Sync
pin 6—Red Return	pin 14—V. Sync
pin 7—Green Return	pin 15—ID Bit
pin 8—Blue Return	

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 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 standard VGA modes. Super VGA cards utilize high resolution multiscan monitors ranging in frequency from 31-107kHz.

VESA Standard

VESA—The term "Super VGA" has been used for years to describe a graphics output that is "better than VGA." But better how? Well, Super VGA can indicate any graphics standard that is a higher resolution/frequency than VGA and even higher color output than VGA (16 colors). But, because there were no established "standards" for Super VGA, it was confusing to say the least.

In 1990 that all changed. VESA (Video Electronics Standards Association) was formed to create standards for each of these Super VGA graphics manufacturers to follow. These standards have become known as the VESA standards. Although these standards exist, VESA frequencies and resolutions vary and also can be changed "on-the-fly" by a computer user through windows setup. So, use the following as a guide but not as law.

Specifications:

H. frequency: 31-107kHz
 V. frequency: 60-80Hz
 Signal: Analog
 Max. resolution: 1600 x 1280
 Colors: 16 million

Pin configuration (See Figure 1)

pin 1—Red	pin 9—No Pin
pin 2—Green	pin 10—Ground
pin 3—Blue	pin 11—ID Bit
pin 4—ID Bit	pin 12—ID Bit
pin 5—N/C	pin 13—H. Sync
pin 6—Red Ground	pin 14—V. Sync
pin 7—Green Ground	pin 15—ID Bit
pin 8—Blue Ground	

Common Characteristics: All VESA cards output on 15-pin "HD" connectors, and the frequency and resolution displayable depends on the connected monitor's capabilities. Some manufacturers of VESA cards include: Matrox, ATI, Paradise, Diamond, Cardinal, Dell, Genoa and Nth.

IBM XGA and XGA-2

IBM XGA "eXtended Graphics Array"—The XGA and XGA-2 graphics standards were introduced by IBM in 1990 as the standard output of IBM PS/2 Models 90 and 95. As with VGA in other models of the PS/2, XGA is built permanently on the motherboard of the CPU. Touted as a higher resolution VGA or enhanced VGA graphics mode, XGA is IBM's answer to industry Super VGA cards. Now, IBM includes either the XGA or XGA-2 cards in all models of PS/1 and PS/2 computers.

Specifications:

H. frequency: 31-68kHz
 V. frequency: 43/87Hz
 Signal: Analog
 Max. resolution: 1600 x 1280
 Colors: 16 million palette, 1.6 million displayable

Pin configuration (See Figure 1)

pin 1—Red	pin 9—No Pin
pin 2—Green	pin 10—Ground
pin 3—Blue	pin 11—ID Bit
pin 4—ID Bit	pin 12—ID Bit
pin 5—N/C	pin 13—H. Sync
pin 6—Red Return	pin 14—V. Sync
pin 7—Green Return	pin 15—ID Bit
pin 8—Blue Return	

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

Original Mac II

Original Mac II—Originally the Macintosh II, introduced in 1987, contained only an analog RGB and composite sync output. As the first high resolution color display from Apple, the Macintosh II was ordered either with a color or monochrome display monitor.

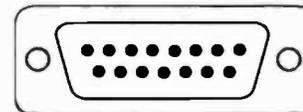


Figure 2 15-Pin "D" (female)

Specifications:

H. frequency: 35.1kHz
 V. frequency: 68Hz
 Signal: Analog
 Max. resolution: 640 x 480
 Colors: monochrome or color, 1.6 million color palette, 256 displayable

Pin configuration

pin 1—Red Ground	pin 9—Blue
pin 2—Red	pin 10—N/C
pin 3—C. Sync	pin 11—N/C
pin 4—Sync Ground	pin 12—N/C
pin 5—Green	pin 13—Blue Ground
pin 6—Green Ground	pin 14—N/C
pin 7—N/C	pin 15—N/C
pin 8—N/C	

Note: The original Mac II color computer was capable of accepting third-party graphics cards manufactured by companies like SuperMac, Radius and RasterOps.

Macintosh II, Performa, Quadra and PowerBook

Macintosh II, Performa, Quadra and PowerBook—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:

H. frequency: 24 and 35-68kHz

V. frequency: 66-76Hz

Signal: Analog

Max. resolution: 1152 x 900

Colors: 16 million

Pin configuration (See Figure 2)

- | | |
|--------------------|-----------------------|
| pin 1—Red Ground | pin 9—Blue |
| pin 2—Red | pin 10—ID Bit 03 |
| pin 3—C. Sync | pin 11—C. & V. |
| pin 4—ID Bit 01 | Sync Ground |
| pin 5—Green | pin 12—V. Sync |
| pin 6—Green Ground | pin 13—Blue Ground |
| pin 7—ID Bit 02 | pin 14—H. Sync Ground |
| pin 8—N/C | pin 15—H. Sync |

Common characteristics: The monitor that is connected determines the pin configuration utilized. Some monitors utilize composite sync output and some utilize separate horizontal and vertical sync outputs.

Note: All Mac brand PCs are capable of outputting 24kHz (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 35-68kHz depending on the size of the monitor.

High Resolution Macintosh II Cards

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 higher resolution than standard Mac II resolution.

Specifications:

H. frequency: 35-68kHz

V. frequency: 60-70Hz

Signal: Analog

Max. resolution: 1280 x 1024

Colors: 16 million color palette, 1.6 million displayable

Manufacturers: SuperMac, RasterOps and Radius

Pin configuration (See Figure 2)

- | | |
|--------------------|--------------------|
| pin 1—Red Ground | pin 9—Blue |
| pin 2—Red | pin 10—N/C |
| pin 3—C. Sync | pin 11—N/C |
| pin 4—Sync Ground | pin 12—N/C |
| pin 5—Green | pin 13—Blue Ground |
| pin 6—Green Ground | pin 14—N/C |
| pin 7—N/C | pin 15—N/C |
| pin 8—N/C | |

Common characteristics: Although most high resolution Mac II cards have a 15-pin "D" output for RGB, 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.

PowerPC and PowerMac

The PowerPC is a new generation of high performance Macintosh and IBM computers with cross platform compatibility that allows users to run Windows and Apple applications with performance better than that of Intel 486 computers.

The PowerPC microprocessor, created through an alliance between Macintosh, IBM and Motorola, utilizes a "reduced instruction-set computing technology," known as RISC. RISC offers significant performance increases and new capabilities while remaining compatible with existing software and peripherals.

The PowerPC's RISC chip makes the Macintosh computer run 25% faster than the Pentium chip and 10 times the speed of a Quadra 950 when performing the floating-point operations of most multimedia applications.

PowerMacs utilize the Macintosh System 7 operating system, so they have the same user interface as other current Macintosh systems. The PowerMac supports nearly all current Macintosh printers, networking cards, and other hardware accessories.

SGI—Silicon Graphics Inc.

SGI high resolution workstations provide advanced graphics capabilities—previously limited largely to engineers, scientists and other visual professionals—at prices comparable to high-end PCs. SGI workstations allow users to produce and manipulate realistic, three-dimensional and four-dimensional color images, and to interact with them in real time. SGI workstations utilize high-performance RISC CPU's and high-end graphics technology. They deliver anywhere from 10 MIPS (Million Instructions Per Second) to 200 MIPS, depending on which SGI workstation you use.

Specifications:

Connector Type: 13W3

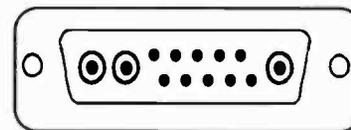
Video: Analog

Sync: TTL

Pin configuration

- pin A1—Red Signal
- pin A2—Green Signal
- pin A3—Blue Signal
- pin 3—Composite Sync
- pin 4—H. Sync
- pin 5—V. Sync

Supports 50, 60, 72, 76Hz, NTSC, PAL, and STR_RECT. Also supports video format files available in the /usr/gfx/ucode/NG1/vof directory.



13W3 (female)

BATTERY VOLTAGE RANGE



Courtesy of: Anton/Bauer, Inc.

By Anton Wilson

While the "nominal" voltage rating is technically meaningless, battery "range" limits are very significant. When a fully charged battery is first placed on a piece of equipment and power is turned on, the initial voltage may be as high as the upper range limit. Typically, the voltage will begin to drop quickly during the first few minutes, then continue to drop more slowly throughout the rest of the discharge cycle until the voltage reaches the lower range limit, at which point the battery has released all its stored energy. The shape of this discharge curve and the rate at which the voltage drops is dependent on many factors including the power drain rate, battery size, age, temperature and cell formulation. (See fig. #2) However, regardless of the shape in between, the lower limit remains the same and is called the "End Of Discharge Voltage" or EODV by the cell manufacturers.

This EODV is the most critical voltage rating of a battery, and the only voltage specification stated by the cell manufacturer relative to capacity. This is the voltage down to which a NiCad battery must be taken in order to retrieve 100% of the available capacity. To put it another way, the cell manufacturer will guarantee full capacity *only* if the battery is discharged down to the EODV. Conversely, you can *not* get all the energy out of the battery until it reaches this voltage. Therefore, if the lower range limit of the battery (EODV) is below the lower operating voltage limit of the equipment, you will *never* get the full capacity or run time out of the battery.

Figure #1 clearly illustrates the problems of powering a modern piece of video equipment with a battery of improper voltage. In this example, the 10.0 volt End Of Discharge Voltage (EODV) rating of the "12 volt nominal" battery is significantly below the 11.0 volt minimum or "cut-off" voltage of the professional camcorder. Only a 13.2 volt or 14.4 volt camera battery fully conforms to the operating range of professional video equipment.

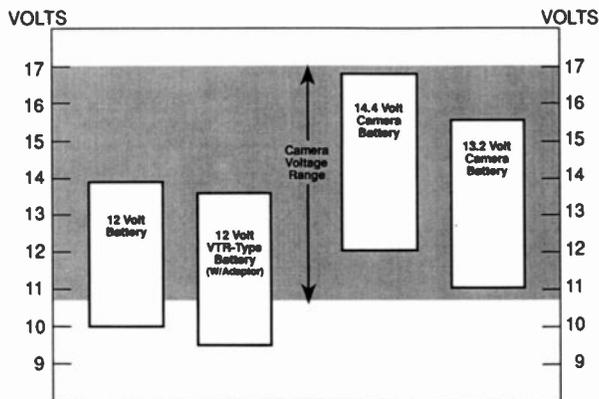


Figure 1

The discharge curve "A" in figure 2 is typical of a "12 volt" NiCad battery in mid-life. Note that this battery is perfectly within specification and still delivers close to 100% of its rated capacity at its specified EODV of 10.0 volts. However, the camcorder cannot make use of all this power because as soon as the battery voltage falls below 11.0 volts, the camcorder ceases to operate. The battery appears to have "lost" 25% of its capacity. In reality, the rest of the energy is still there, but the camcorder just can't get to it. This is called "unavailable capacity" and is totally due to a battery voltage mismatch with the equipment.

The phenomena known as NiCad "memory" (see also "memory" in the Problem Appendix) is illustrated by curve "B" where it is apparent that "memory" is actually a "voltage depression phenomenon." At the so-called "memory" point, the voltage suddenly drops about 1.2 volts, where it is once again below the

camcorder cut-off voltage. The camcorder stops and it appears that "memory" has caused a 50% loss of capacity. But if you look again, it is not really a loss of capacity. The battery will still deliver close to 100% capacity within the EODV voltage specification.

Curve "C" represents a mid-life NiCad in cold weather. In this case the battery will run the camcorder for only 25% of its normal time. Again, there is nothing wrong with the battery. Curve "C" is fully within the normal NiCad operating specifications yielding rated capacity at the EODV of 10.0 volts.

In all of these instances cameramen usually blame the apparent loss of capacity and run time on the battery "getting old," or that strange "memory thing," or the cold weather. Considering these curves, it is easy to understand why "12 volt" batteries seem so unreliable. Depending on prevailing conditions you never know exactly how much run time you will get from a battery. In reality all three of these losses of capacity are due solely to the operator using the wrong voltage battery.

Curves "D," "E," and "F" represent the discharge curves of a 14.4 volt battery under the identical three conditions and with the identical camcorder. As if by magic the "getting old," "memory," and cold weather problems suddenly disappear. Why? Because the 12.0 volt EODV or full discharge rating of the 14.4 volt battery is properly *above* the 11.0 cut-off voltage of the camcorder. The curves of a "13.2 volt nominal" battery with an EODV of 11.0 volts would also deliver 100% capacity in all these cases.

The problems of using a "12 volt" battery as illustrated above are further aggravated if it is a BP-90 type or other style that uses an attached short cable and small coaxial connector. The power drain of modern camcorders will create a significant "voltage drop" across the high contrast resistance of these small plugs. This voltage drop lowers the curves in the examples above, resulting in a more severe loss of capacity in each case. Likewise, small "12 volt" VTR batteries such as NP-1 types, should also be particularly avoided. These small capacity batteries have greater internal resistance, which also results in a significant lowering of the voltage curve. This also results in a significant loss of run time regardless of voltage level and a very severe loss of capacity in the above illustrated examples.

From the foregoing it should be painfully clear why "12 volt" batteries, especially small VTR types or cable styles, should be strictly avoided for professional video applications.

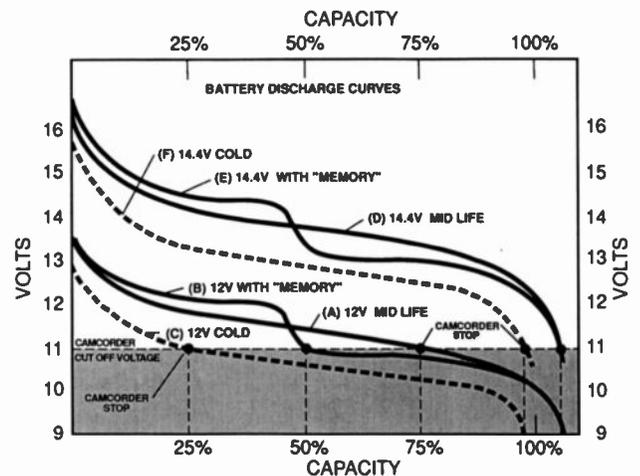


Figure 2

LITHIUM ION BATTERY PRIMER



Courtesy of: IDX Technology

Since Li-Ion's introduction in 1993, IDX has studied it versus NiMH as the new generation broadcast battery. Like every battery chemistry, Li-Ion does have its disadvantages, such as higher cost and an electronic monitoring circuit requirement. Development of the latter being the main obstacle to many of IDX's competitors. However, even taking into account its drawbacks, Li-Ion comes out far ahead when considering the ongoing needs of the broadcasters. The main disadvantage of NiMH on the other hand is that it is not a robust chemistry, thereby making it unsuitable for the heavy demands of broadcasting. The disadvantages of NiMH are as follows:

Disadvantages of NiMH (Nickel Metal Hydride)

- **Gives off hydrogen gas.** During charging and discharging, volatile hydrogen gas is given off. To avoid an explosion in the event of a short, the pack needs to be perforated. This reduces the pack's structural integrity and water resistance.
- **Limited ambient operating range.** NiMH can only operate between 0°C~50°C. This makes it very impractical for camera operators in Canada, the northern parts of the US, and tropical areas.
- **High self-discharge rates leading to short shelf life.** The self-discharge rate of NiMH is extremely high, at least 10% more than even Ni-Cad. Camera operators will be aware of the frustration of returning after a few day's vacation to find their batteries depleted.
- **Fast charging leads to short life.** Fast charging NiMH generates high levels of heat, which in turn weaken the cells and shorten their life.
- **Over-charging and over-discharging damages cells.** Unless charging and discharging are carefully regulated and electronically monitored in respect to temperature, then the resultant heat will damage the cells.
- **Memory Effect.** In spite of various claims, NiMH does have memory effect, albeit not as severe as Ni-Cad. But this in itself means that the packs need to be regularly reconditioned.
- **Weight.** Although more powerful than Ni-Cad, it does not offer any special light weight advantages.
- **Limited Life Span.** Apart from laboratory tests, tests using cellular phones and lap-top computers have proven that NiMH is incapable of more than 300 cycles in actual operation. This is at least 200 cycles less than Ni-Cad and Li-Ion.

Advantages of Li-Ion (Lithium Ion)

- **Ultra-Low Weight.** Because of it's high energy density (three times that of Ni-Cad) it can reduce the overall weight of the camera system.
- **More power than ever before.** Besides the standard 40 Watts of the NP-L40, the IDX NH-200 dual battery box allows the user to power the camera with a whopping 80 Watts of power and still be lighter than conventional brick type batteries.
- **No memory effect.** Having no memory effect is extremely convenient. It means that the user is always confident of getting full use out of his or her batteries, and does not have to bother with reconditioning.
- **Does not need to be recycled.** Lithium Ion, unlike Ni-Cad, does not contain harmful materials and thus in most states may be thrown away in the trash.
- **Very low self-discharge rate.** Li-Ion's self-discharge rate is approximately 15% less than Ni-Cad.

- **Long Life.** The cells used in the Lithium Ion battery have shown reliability up to at least 500 cycles in standard tests. In the field, due to lack of memory effect, they should last even longer.

	Ni-Cad	NiMH	Li-Ion
Energy Density (Wh/Kg)	50	75	100
Cycle Life (typical)	500	300	500
Fast-charge time	1 1/2h.	2-3h.	2-3h.
Self-discharge	Moderate	High	Low
Cell voltage (nominal)	1.20V	1.20V	3.6V
Load current	Very High	Moderate	High

Isidor Buhmann, "Batteries," in the *Electronics Handbook*, President of Cadex Electronics

Frequently Asked Questions Concerning Lithium Ion.

Q. It is said that Lithium is very volatile and as such is dangerous.

A. This is true, but this applies to Lithium Metal, not Lithium Ion, which is a totally different battery chemistry. The cells used in the Lithium Ion pack passed the stringent UL1642 standard, which ensures safety. During testing the cells were burned, crushed, perforated, etc. Even if there were a slight risk of gas build-up due to overheating, for example, the sophisticated valve system would safely vent the gases.

Q. At some point of heavy electrical load does Lithium Ion not revert to Lithium Metal and become unsafe?

A. With the NP-L40 it does not. This pack has been tested at 7Ah and 36V and has proved to be safe.

Q. Presumably the individual cells in the Lithium Ion battery are safe because they passed UL approval. However, does this mean that the pack itself is safe?

A. The issue of safety with respect to Lithium Ion (unlike metallic Lithium) is not really an issue. And because of the built-in PCB to monitor temperature and charging level, the battery is even safer than the cells.

Q. Then why is there an on-board PCB in the pack?

A. With Lithium Ion, the charging voltage level is critical in order to prevent deterioration of the cells. Therefore, to correctly charge it and thus to extend its life, electronic monitoring of charging is essential. This is why we have an on-board PCB.

Q. Is Lithium Ion suitable for heavy load applications, such as in professional video?

A. Yes. Because of the high wattage available, it is perfect for professional video. Additionally, the battery has a built-in PCB to prevent over-discharge which could harm the cells, which was previously a concern for Lithium Ion developers.

Q. Can the Lithium Ion be used in very hot and cold climates?

A. With its ambient operating temperature ranging from -20°C to +50°C, the pack will work in most areas even where the camera itself will not work.

Q. Can we use our existing Ni-Cad chargers or those of another manufacturer to charge the Lithium Ion battery?

A. As mentioned above, the charging method and voltage for Lithium Ion is critical, so only Lithium Ion chargers may be used.



CAMERA FILTERS



Courtesy of: Tiffen Mfg. Corp.

By Ira Tiffen, Senior Vice President, Research & Development, Tiffen Mfg. Corp.

Introduction

Camera filters are optical elements that alter the properties of light entering the camera lens for the purpose of improving the image being recorded. Filters can affect contrast, sharpness, highlight flare, color and light intensity, either individually or in various combinations.

In their most successful applications, filter effects blend in with the rest of the image to help get the message across. Combined with other elements of image-making, filters help make visual statements, manipulate emotions and thought, and make believable what otherwise would not be. They get the viewer involved.

Filter effects can become a key part of the "look" of a production, if considered in the planning stages. They can also provide a crucial last-minute fix to unexpected problems.

Polarizing Filters

Polarizers are most useful for increasing general outdoor color saturation and contrast. Reflected glare, especially from a bright light source like the sun, washes out colors. Often, this glare is polarized and can be removed with a polarizing filter.

Polarizers can also deepen a blue sky. To do this, it must be blue to start with, not white or hazy. Polarization is also angle-dependent. A blue sky will not be equally affected in all directions. The areas of deepest blue are determined by the following "rule of thumb": When setting up an exterior shot, make a right angle between thumb and forefinger. Point your forefinger at the sun. The area of deepest blue will be the band outlined by your thumb as it rotates around the pointing axis of your forefinger, directing the thumb from horizon to horizon. Generally, as you aim your camera either more into or away from the sun, the effect will gradually diminish. There is no effect directly at or away from the sun. Be careful when panning with a polarizer. In all cases, the effect of the polarizer will be visible when viewing through it.

Polarizers need approximately 1½ stops exposure compensation. Polarizers can also control unwanted reflections from surfaces such as glass and water. For best results, be at an angle of about 33 degrees incident to the reflecting surface. Viewing through while rotating the polarizer will show the effect. It may not always be advisable to remove all reflections. Leaving some minimal reflection will preserve a sense of context to a close-up image through the reflecting surface.

Cosmetic Softening Filters

Many different techniques have been developed to improve people's appearances. The Tiffen Softnet® series functions through "selective diffusion." A fine mesh net in glass diffracts out fine details, such as wrinkles and skin blemishes, smoothing features of a face that otherwise retains an overall, relatively sharp appearance. The net comes in colors that allow shadow tinting and contrast control, as well, for further enhancement.

As with any filter that has a discrete pattern, be sure that depth-of-field doesn't cause the net filter lines to become visible in the image. Using small apertures or short focal length lenses make this more likely. Generally, mid-range or larger apertures are suitable; but test before critical situations. Video cameras with filter wheels allow positioning of the filter behind the lens, which eliminates this problem.

The Tiffen Soft/FX® series involves a minutely detailed pattern of tiny "lenslets," embedded in the glass. These effectively reduce fine, unwanted details, without affecting contrast or shadows. They are less likely to become visible through depth-of-field than Softnets.

Contrast Control Filters

There are many situations, such as bright sunlit exteriors, where proper contrast is difficult to maintain. Exposing for either highlights or shadows will leave the other severely under- or over-exposed. Low Contrast filters create a small amount of "localized" flare near highlight areas within the image. This reduces contrast by lightening nearby shadow areas, leaving highlights almost unchanged. Soft Contrast filters include a light absorbing element in the filter which, without exposure compensation, will reduce contrast by also darkening highlights. Use this latter filter when lighter shadows are not desired. In both cases, the mild flare produced from bright highlights is sometimes used as a lighting effect.

Another type of filter reduces contrast without any localized flare. The Tiffen Ultra Contrast filter series uses all ambient light, not just light in the image area, to evenly lighten shadows throughout. Use it in well-lit situations, like outdoor daylight. The Low-Light Ultra Contrast range is recommended for lower-light-level interiors and night scenes. Use either where contrast control is needed without any highlight flare being apparent.

Fog, Double Fog and Pro-Mist® Filters

A natural fog causes lights to glow and flare. Contrast is generally lower, and sharpness may be affected as well. Fog filters mimic this effect of atomized water droplets in the air. The soft glow can be used to make lighting more visible, make it better felt by the viewer. The effect of humidity in, say, a tropical scene can be created or enhanced. In lighter grades, these filters can take the edge off excess contrast and sharpness. Heavier grades can create unnatural effects, as for fantasy sequences. In general, however, the effect of a strong natural fog is not produced accurately by Fog filters in their stronger grades. That is because they are too fuzzy, with too much contrast, to faithfully reproduce the effect of a thick, natural fog. For that, Double Fog filters are recommended.

Double Fogs have milder flare and softening characteristics than standard Fog filters while exhibiting a much greater effect on contrast, especially in the stronger grades. A very thick natural





fog will allow close-up objects to appear sharp. So will a Double Fog filter. The key to the effect is the much lower contrast combined with a minimal amount of highlight flare.

Pro-Mist filters generally produce a highlight flare that, by staying closer to the source, appears more as a "halo" than will the more outwardly extended flare of a fog filter. They create an almost pearlescent glow to highlights. The lighter grades also find uses in toning down the excessive sharpness and contrast contributing to the "film look" in video.

Black Pro-Mist filters have more subtle flare and reduced highlight intensity when compared to Pro-Mists, resulting in a unique, softer appearance.

Warm-Color Effects

The 812 filter adds a cosmetic warmth to skin that is useful in many situations. It is available in combination with Soft/FX, Pro-Mist and Black Pro-Mist filters as "Warm" versions.

Color-Grad® Gradated Filters

There are times when you need to affect color or light intensity differently from one part of the scene to another. Color-Grad filters are part color (or neutral density) and part clear, with a gradated transition area between. The transition edge comes in three types, to best help blend the effect into the image. The "soft" edge is most often used. It provides a good balance for most situations. With a longer focal length, or certain subjects

like a flat ocean horizon, a "hard" edge, narrower than the soft, is recommended. Finally, the "attenuator," changing density throughout the filter, allows for the most difficult of blending situations. Add brilliant color to a sky at sunset, without affecting the faces in the foreground. An ND .6 (two stop) to clear Color-Grad is often used to allow proper exposure for both the sky and the foreground, for dramatic imagery without any additional color being added.

Color-Grad filters are best used in a square, or rectangular format, in a rotating, slideable position in a matte box. This will allow proper location of the transition within the image. They can be used in tandem, for example, with one affecting the upper half, the second affecting the lower half of the image.

Putting It All Together

The above effects work best when blended into the image in a way that doesn't draw attention to themselves. They can add substantially to overall production values at a minimum of cost and effort. All it takes is an understanding of their capabilities. Like anything else, it's easy if you know how.



DISTRIBUTING DIGITAL AUDIO



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By David L. Bytheway

Routing and Switching Digital Audio Signals Is Not a Simple Task.

In the analog audio world, this goal was not difficult to achieve. Yet, the digital audio signal is fundamentally different from an analog one: it is a *sampled* signal. This simple fact changes all the rules. Sampled signals do not respond to switching the same way that analog signals do. Three basic problems must be addressed in order to realize the desired "silent switching" between AES/EBU signals.

Synchronization

The first issue is synchronization. In switching and mixing two digital audio signals, the sample rates of the two signals must not only have identical sample rates, but they must be *locked* together. If the two signals are not locked, it will be practically impossible to find a point to switch between them without damaging a sample. Synchronization is a familiar process to video engineers, but it is new to many audio engineers. Nevertheless, it has become essential for most audio operations in today's teleproduction or broadcast facilities.

Signal sources are usually synchronized by connecting a sync or reference signal to all signal sources. If a source cannot be synchronized, the only real solution is to provide sample-rate conversion to bring all non-synchronized signals to the "in-house" standard before switching or mixing. Fortunately, several manufacturers are now making relatively low-cost (compared to the past) chips that form this rate conversion. These parts are being incorporated into many digital mixers, but they are not usually used in switching equipment. Sample-rate converters also must be used carefully because the rate-conversion process is not transparent. Distortion is always added in the process.

Timing

Timing refers to the alignment of digital signals' AES/EBU frame boundaries so that switching can take place without damage to any signal's samples. This is only possible if the signals to be switched are already synchronized. Some switching equipment provides the ability to automatically align the frame boundaries. This is usually done by decoding the AES/EBU bitstreams of the two signals being switched, then feeding this data into either a double-buffer or a FIFO-type memory. The two signals are clocked out of the buffer or FIFO based upon a local reference signal (usually provided by a sync or reference input to the device). Switching then takes place at a point in the AES/EBU bitstream that will not cause sample damage, such as at the end of the preamble denoting frame boundaries. Damaged samples can make a loud tick or click sound.

Switchers that do not automatically provide time alignment may require cutting of cables or adjustment of the source timing to provide proper alignment of incoming signals. In practice, this can be a nearly impossible task for typical digital audio devices. In anticipation of the problems, a recommended practice was developed by the AES called AES11-1991 (ANSI S4.44-1991) entitled "AES Recommended Practice for Digital Audio Engineering: Synchronization of Digital Audio Equipment in Studio Operations."

An automatic timing scheme is defined in this recommended practice, which defines certain timing windows that inputs and outputs must follow in order to avoid cutting cables to timed lengths. Devices that follow this standard will provide a reference input and some method of accepting synchronized but out-of-time inputs.

Dissimilar Signals

Even after the two problems just mentioned are solved, there still exists the problem of dissimilar signals. A sampled signal does not

respond to a disturbance in the stream of samples in the same way as a sudden interruption in an analog signal. Simply stopping a signal at a sample boundary will not give a pleasing result.

If you plan to use a digital audio switcher to present signals to the air chain, you should carefully study this effect. When switching is done between two synchronized and timed signals during silence, such as between two programs, the result can be acceptable in most cases. Many such switching systems are available. But these systems cannot guarantee that all switches will be glitch-free 100% of the time.

When one or both of the signals involved in a switch are "active" (not in silence), there can be an audible pop or click created at the switch. This is not the result of synchronization or timing problems, but is a simple fact of life with sampled signals.

To illustrate this problem, consider the time domain responses of digital audio samples. A single audio sample heard alone will sound like a click. It is actually the sound of an impulse and has the waveshape of a $\sin x/x$ curve. A signal such as this was often used in early CD player evaluation and can be found on many CD test discs. It was used to test the output polarity of a CD player, but could also be employed to show ringing of the D-to-A conversion process. Careful examination of the resulting analog waveform will show the classic $\sin x/x$ shape.

Each digital audio sample has this waveform, and it is only when all the waveforms of adjacent samples are added that the analog audio output waveform is created. It takes a sequence of many samples (both before and after any given, single sample), with each sample adding its unique contribution, to create the continuous analog waveform values that "connect" (i.e. fill the space between) sample points.

When a digital audio stream is disturbed or truncated, the "side lobes" of the $\sin x/x$ curves cannot add properly, and the resulting waveform may have a large transient or click. When the digital audio streams of two dissimilar waveforms are butted together as in a switch, the resulting waveform will not necessarily be pleasant sounding. The side lobes of each signal do not add up as they would in an undisturbed signal and, therefore, an audible click is produced.

The sound of each switch will be dependent upon the exact signal conditions at the switch point. Sometimes these switches will be transparent and other times a noticeable click will occur. This problem exists in today's digital switching and digital editing equipment. Editors began to learn several years ago that simply butting up two digital audio cuts on a digital editing system could cause problems, and the issue is now well-known among experienced users.

The Real Solution

When totally clickless audio presentation is the goal, more than synchronization and timing are required. The real solution is to produce either a cross-fade or a "V-fade" between the two signals. A ramp of attenuation over many samples (usually in the hundreds to thousands) will produce a pleasing result. This is usually done with digital signal processing (DSP) techniques. Both signals involved in a switch (signal "A" and signal "B") are presented to the DSP. The outgoing (A) signal is faded to silent over many hundreds of samples, and then the incoming (B) signal is faded to full over many hundreds of samples. This quick V-fade will result in a smooth, click-free transition between signals.



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UNDERSTANDING WIRELESS MICROPHONES



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By Skip Pizzi

Wireless Mics Are Setting Broadcasters Free.

THE BOTTOM LINE: For broadcast crews interested in going mobile, the wireless microphone is a welcome tool. Once considered so problematic as to be rarely worth the trouble, today's wireless systems are being used in the studio and the field almost as commonly as their wired brethren.

As their prices drop, reliability improves and audio quality increases, wireless mics are finding increasing applications for broadcasters. They have helped TV talent and techs increase their mobility, eliminating yet another of the boundaries that previously tethered TV production. To best understand their use, a review of the basics is a good place to start.

Physical Designs

Wireless mics come in two basic physical varieties: hand-held and lavalier. A hand-held wireless mic incorporates its transmitter into the body of the microphone, operating as a single unit. A lavalier system uses a standard lavalier mic, which connects to a separate bodypack transmitter. (The transmitter is usually concealed in a pocket or worn inconspicuously by the talent.)

An alternative to the hand-held mic is the transmitter pod. It is a small wireless transmitter with an integral XLR connector that simply plugs into the end of any microphone, turning it into a one-piece wireless system for hand-held, boom or mic-stand use.

Understanding Wireless Microphones

At the receiver end, a number of different physical arrangements are possible. The most common is an AC-powered, single-channel (usually rack-mounted) receiver, with antenna(s) mounted directly onto the back panel. Mic- and line-level outputs are usually provided on XLR connectors, allowing the receiver to be connected to a mixer just like any mic or other wired audio source. A number of manufacturers now offer half-rack receivers or combine two receivers into a single rack unit, in some cases sharing antenna(s).

In larger systems, multiple wireless microphones may be used. Naturally, each wireless mic in such a system requires its own RF channel, and if multiple mics are to be used simultaneously, then multiple receivers are required to capture each signal independently. This can amount to a veritable forest of antennas, so master antenna systems have been devised for such applications. These use either active or passive RF splitters to allow connection of multiple receivers to a single antenna system.

A final class of receiver is the portable, battery-powered type. This approach allows both ends of the wireless link to be mobile. It has become quite popular among two-person ENG crews, allowing a reporter to move freely with a hand-held wireless mic, and a camcorder operator to easily follow with a portable wireless receiver mounted on the camcorder, feeding the received mic signal to the camcorder's audio input.

Diversity Reception

Wireless mics in the United States operate in a number of spectrum bands. Most professional systems use transmission frequencies in or near either the VHF or UHF TV broadcast bands. Low-power (in the milliwatt range) narrow-band, analog, monophonic FM transmission is used by practically all systems today.

Like any RF transmission system, reception problems can be caused by fading or interference. Because the distances between wireless mic transmitters and receivers are usually short, fading from lack of overall

signal strength is usually not a problem. If transmission frequencies are properly chosen (more on this later), interference from other sources can also be avoided in most cases. The most commonly encountered problem in using wireless microphones is fading from multipath—which could be considered a “self-induced” form of interference. With wireless microphones, multipath is usually caused by reflected energy from room boundaries, sets or columns, particularly those near the mic or the receive antenna. For this reason, it is far less of a problem when wireless mics are used outdoors. In outdoor applications, interference from other RF sources can be more problematic.

Because of their shorter wavelengths, UHF systems can exhibit more instances of multipath than VHF systems might have within a given space, but the area affected by each UHF null is typically smaller. Conversely, VHF systems may encounter fewer multipath locations, but the effective area of any null will likely be larger.

The solution to both systems' multipath problems can usually be found in the technique called *diversity reception*. Multiple receive antennas (typically just two) are placed at different locations, and connected to the receiver. This allows a variety of transmission paths to be established, which statistically reduces the possibility of a deep fade caused by multipath interference. Diversity antennas for VHF systems should generally be spaced somewhat further apart (a few feet) than UHF antennas (a few inches is usually adequate).

How wireless microphone receivers accept and process the signals from diversity antennas varies widely. The simplest, generally referred to as passive or non-active diversity, uses widely separated antennas (sometimes three or more) and combines them passively to a single receiver. (See Figure 1.) While this reduces the possibility for total fading, all antennas are feeding the receiver at all times, and their combined signal is almost never as good as a single, unimpaired path would be.

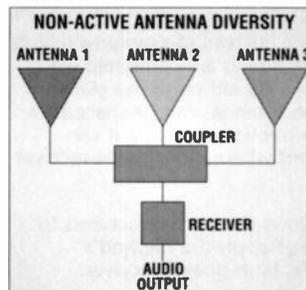


Figure 1. Non-active antenna diversity uses widely spaced antennas that are passively mixed by the receiver.

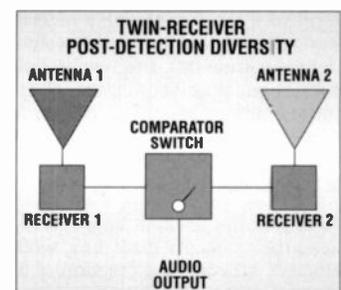


Figure 2. This approach switches between duplicate receiver sections to obtain the better-placed antenna's signal.

A more common approach among diversity receivers today uses an active switching approach. One way to do this uses two RF sections, each connected to its own antenna. (See Figure 2.) Both detectors' outputs are fed to a single demodulator, which chooses the better RF signal via a comparator. (Other systems add redundancy by using two complete receivers, placing the diversity switch downstream of the audio sections.)

A less-expensive variant simply switches between incoming RF signals from two antennas, ideally feeding the stronger signal to a single receiver. (See Figure 3.) In practice, however, some of these systems only monitor the active antenna, and when its signal begins to fade, the system switches to the other antenna which may have an even worse signal at the moment. Generally, this will cause the receiver to quickly switch back to the first antenna, but an additional degradation of the output signal may have been caused in the process.

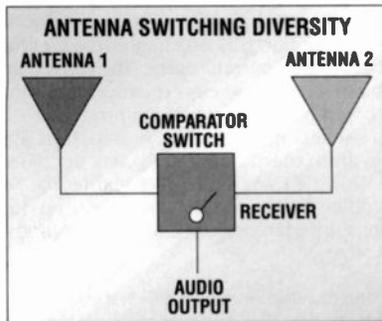


Figure 3. To reduce cost, this method tries to switch the stronger signal from two isolated antennas to a single receiver input.

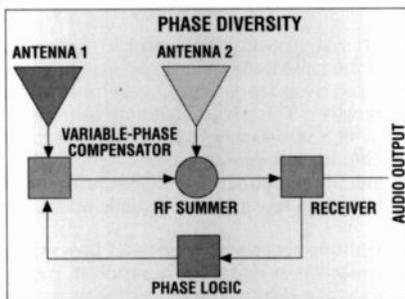


Figure 4. Active phase diversity keeps both antennas active for a stronger signal, with continual adjustment of the phase relationship between antennas via microprocessor control.

To solve this problem while keeping costs reasonable, a more sophisticated style of single-receiver design monitors both antennas' signals continuously. In one system's case, instead of simply switching between antennas, the two incoming RF signals are combined with continuous phase correction. (See Figure 4.) Although this places some limits on how far apart the receive antennas can be spaced (to remain within the range of the phase correction circuitry), it can successfully optimize reception conditions where other single-receiver systems might have difficulty.

Note that the use of a single receiver allows some manufacturers to keep their systems' costs low, while others apply the method's efficiency toward the creation of a single, high-quality receiver.

Incidentally, multimic systems using master antennas can (and typically do) take advantage of diversity reception by using dual master antennas and dual RF dividers to feed each receiver's diversity inputs. The distance between these (or any wireless mic system) antennas and their receivers should always be minimized to avoid excessive cable losses. When cable distances of longer than 25 feet for UHF or 50 feet for VHF systems are required, a low-loss cable should be used.

Signal Quality and Interference

The use of narrowband FM channels has an impact on the fidelity of wireless mics. In the past, even the best systems were noisy and limited in high-frequency response. Today's top performers use companding and other complementary signal-processing techniques to improve S/N and audio bandwidth. It is not uncommon for even mid-priced wireless systems of recent vintage to rival the audio quality of typical wired mics.

The popularity of wireless mics has created some new problems, however. Their ever-expanding use means more potential for interference. Therefore, proper channel selection has never been more important.

Frequency coordination for shared-use channels, along the lines of what broadcasters do with RPUs today, may be warranted in major markets. Many theaters have permanent installations or touring shows that use wireless systems. If your studio happens to be adjacent to such a facility, or if you're doing an ENG shoot in the vicinity, interference between wireless microphone systems may result without proper frequency coordination.

A related problem occurs when multiple wireless mics are used on a project simultaneously, such as is common in today's Broadway-type shows. In these cases, not only must each mic have its own channel, but the channel spacings must be adequate and harmonic multiples (2A-B and the like) must also be avoided. Touring shows (or traveling broadcasters) must also cope with the differing broadcast TV channel allocations in each market they visit. For the 20+ wireless-mic shows that are commonplace today, it's easy to see why computer programs have been developed to determine frequency selections.

A related development in wireless mic technology is the frequency-synthesized oscillator, which allows tech crews to change wireless mic and receiver frequencies in the field with the flick of a switch, instead of exchanging hardware or plugging in crystals.

Even when all these practices are observed, intermodulation can still occur in multimic systems when miked talent approach one another and two active transmitters are placed only a few inches apart. In this case, the intermodulation takes place in the *transmitters'* final stages.

Distance between transmit and receive antennas can also have an unexpected impact. With some of today's more powerful wireless-mic transmitters, too close a placement of receive antennas can cause overload in the receiver (or active antenna distribution system). This can result in non-linear behavior (typically intermodulation) or desensitizing of receivers.

The Future

Wireless mics are one area where digital audio has yet to find a warm welcome. Yet the digital future may affect wireless mic systems via the entrance of digital television.

Note that if current plans advance to reality, a portion of the VHF TV band will be reallocated to non-broadcast applications. Although wireless mics have always shared the band on a secondary basis, this coexistence was possible because the two services were populated by a few fixed, high-powered transmitters (television) and many mobile low-powered transmitters (wireless mics). If the VHF band is reallocated to personal communications services, then both of the services sharing the band will use many low-powered mobile transmitters—a far less desirable arrangement for peaceful coexistence.

Today's lower interference potential in the UHF band has already prompted many manufacturers and users to move there for their wireless mic applications. But the UHF situation will also change due to ATV—and even sooner in the process—as new ATV stations sign on, mostly in the UHF band. New PCS allocations are also moving into the UHF wireless mic spectrum.

Time will tell whether either of these ATV-related issues become real matters of concern for wireless mic users. In the meantime, broadcasters will continue to unfetter themselves from their audio cables and use wireless mics to help them get more mobile.



Skip Pizzi is a Broadcast Engineering Contributing Editor.

EQUALIZATION— USING OR ABUSING



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By Roy W. Rising

Part of the problem with equalizers (EQs) is their name. You reason that sounds should, in some way, be made equal. The group of knobs and switches now found on every input of most mixing equipment might benefit from the less-sophisticated name: tone controls. The EQ name is derived from the need to compensate for inevitable losses.

Analog transmissions and recordings confront these losses with the need to have linear frequency response at the output while minimizing noise and distortion. What comes out should be equal to what went in. Low frequencies are almost too easy to handle; upper ranges can seem impossible. Transmission-line losses usually are compensated at the receiving end. For analog recording, highs are boosted and lows are reduced ahead of the problem area (the tape), and the opposite treatment is done at the output.

If you tried to record a flat signal on tape, the lows would oversaturate the medium, and the highs would be lost in the hiss. So, pre- and post-equalization are used. EQs are part of the recording and reproducing electronics and provide internal adjustments for matching different tape stocks.

Before it became feasible to have EQ on every input, a seemingly mysterious practice called mic selection was more critical. Mics were not as good then either, so it helped to know which mic worked best with which sounds. As the mics became better and EQs became more common, less finesse was required for choosing mics. Instead, each source could be treated to some fine-tuning of EQ. However, too much tweaking also can be hazardous.

Basic EQ

The simple bass and treble controls on most home equipment represent many years of refinement of EQ. Similar performance from professional gear is all that is needed 95% of the time. Working on either side of a hinge point, these EQs provide boost and attenuation, called *shelving* curves. The typical hinge point is 1kHz, and, when fully advanced, the curves slope upward and then level off below 100Hz for bass and above 10kHz for treble. Maximum boost usually is 12dB or 15dB. The attenuation curves are similar, sloping downward from the hinge point.

Sometimes it is necessary to adjust a central part of the spectrum, so midrange control is added. Instead of looking like a shelf, the midrange curve is characterized as a *haystack* for boost and a *dip* for attenuation (See Figure 1). Early EQs typically provided a switch to select the center frequency of the haystack.

Graphic EQ

By providing an array of overlapping haystacks, each controlled by a slider, the approximate shape of the combined curve is represented by the positions of the knobs. This gives a graphic representation that is easy to grasp. Early graphic EQs offered six or seven bands, centered on or between the standard octave increments. You can think of this as one control for each octave on a piano.

When electronics made it possible, a larger number of narrower bands could be offered. This brought the familiar $\frac{1}{2}$ -octave graphic EQ with 27 sliders. Giving new meaning to "tune for maximum smoke," the $\frac{1}{2}$ -octave graphic helped make PA and foldback systems loud enough to be dangerous. Luckily, size and price kept these units from entering common use for program circuits.

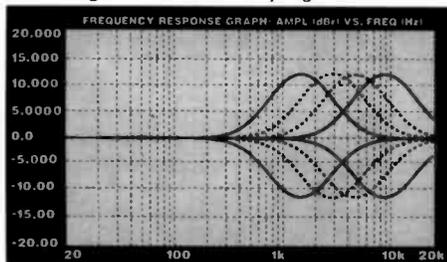


Figure 1. The mid-range curve is characterized as a *haystack* for boost and a *dip* for attenuation.

Parametric EQ

Integrated circuits (ICs) continued to increase in parts density, easily packing 100,000 transistors into the same amount of space once needed for one. Now, it was possible to offer two new dimensions of control over the EQs' performance. Instead of switch-selectable frequencies for the haystacks, the centers could be swept across the entire audio range.

"Q" is the parameter that determines the width of the haystacks. For example, centered at 1kHz with a Q of one, the haystack is 1kHz wide. Raising the Q to 10 narrows the width to 100Hz. In some designs the Q varies with the amount of boost or cut, so the width increases as the amount of EQ increases.

How Much of a Good Thing?

Competition is keen among makers of mixing equipment. If you are building a video facility, you'll be buying lots of lighting equipment and several cameras, but there will be only one mixing desk per room.

In the fight for your purchase, the manufacturers continue to make their EQs ever more versatile but confusing. *Four-band quasi-parametric* is a popular catch phrase. The 4-band part is easy to understand. It is the word *quasi* that makes people stumble. It means that *some* control over *some* parameters is provided.

It is nice to have a switch between a haystack and shelving on the top and bottom bands. A continuous sweep of center frequency for mid-bands is useful. A Q variable from 0.5 to 10 can be a powerful aid. Trouble comes when the maker imposes trade-offs and the user does not understand such a powerful device.

Keep in mind that most EQ work is well-handled by a simple high/low unit with a 1kHz point. A 3-band unit will do almost everything else without requiring you to make decisions about which midrange knob to use. Variable Q can lead to slopes so steep that the phase shifts damage the sound.

The popularity of 4-band EQs comes from the music business, where sound is the only product and there is adequate time to find the golden setting. Some of the most *musical* EQs are not suitable for dialog work, because they fail to provide 1kHz hinge points and low Q for gentle adjustments of wider bands.

The Art of EQ

You can compare the art of EQ to the art of makeup. The artist must know how much is too much. You must be watchful of the settings that can cause damage even though the sound seems OK. Often, adjustments are made for shortcomings in the monitor system or room acoustics. It is a good idea to check the sound on another monitoring system whenever EQ settings start to look severe.

Learn the crossover frequency of your loudspeaker: If it is 700Hz, for example, be alert for EQ problems between 350Hz and 1,400Hz. This range from $\frac{1}{2}X$ to $2X$ the crossover frequency is where the two drivers are sharing the work and response variations that are not in the program may be heard. Try listening from the back of the room, where the drivers' outputs are better merged and the reverberant field is more of the sound. Errors contributed by reflections off the mixing surface also are removed.

Remember that EQ slopes greater than 6dB/octave introduce irreversible phase shifts that blur the sound. Switch the EQ out and in, listening for subtle changes in clarity. When a signal with phase problems has been squeezed through the various transmission and recording EQs that are downstream, the problems are compounded. Minimum-phase EQ seems to sound better; zero-phase EQ is feasible with digital processing. Maybe digital systems will pull back the curtain and eliminate even more misuse of these often misunderstood devices.



Roy Rising is a systems engineer, production mixer and *Video Systems* contributing editor.

PREPARING A NONLINEAR EDIT FOR AUDIO POST



Reprinted with the permission of the ITS, Bill Marino and Videography Magazine. From the ITS Facility Viewpoint written for the March 1996 Videography Magazine issue.

By Bill Marino

Several analogies can be drawn between nonlinear and film editing. Ironically, high-tech nonlinear systems emulate low-tech mechanical ones.

Nonlinear incorporates, in varying degrees, digital sound editing capabilities, primarily to facilitate picture editing. Who could have guessed that this simple sound editing capability would profoundly change the post-production industry?

Film editors work with production sound tracks to an extent that is consistent with their ability, schedule, budget, and inclination. At some point, usually after picture is locked, the production tracks are handed over to the sound editors to be split out, filled, and prepared for the mix. The same magnetic sound tracks cut by picture editors are used by the sound team.

For video editors, sound editing has been strictly an offline process. Before the introduction of nonlinear offline, the two primary methods used for preparing sound tracks for a video mix were:

- a) supplying an EDL and sound dailies to the sound editors who would retransfer all production sound and conform; or
- b) conforming sound edits in a video online session (a process akin to performing surgery in a butcher's shop).

The proliferation of Avid, Lightworks, and other nonlinear systems has led to a "new" way of doing business. As with film editing, quality sound tracks can be passed along to the sound editors who can literally pick up where the picture editors have left off. The savings in time extends beyond the required redigitizing of audio represented in the EDL. Anyone who has spent the night searching for a reel named "Narr01" only to find the needed material on "Transfer roll 06," can attest to this.

True to its microprocessing genealogy, nonlinear editing provides a rich feature set that truly outshines its filmic counterpart. For instance, if the sound editor needs to add a few more frames to the head of an incoming edit to fix an up-cut dialogue line, all that is required is a few mouse clicks or the twist of a jog wheel. This is made possible because all trims are attached and in synch. In the same scenario, imagine if that track had been cut on mag or prepared in a video online. Also, if one uses OMFI (Open Media Framework Interchange) compositions, rather than EDLs or hand-written editor's logs, logging of clips can be done by assistant picture editors and "passed along" to the sound team. Clip names are displayed graphically attached to the clips on a timeline. Information contained in OMFI compositions can even be used to print mixing-cue sheets (what a wonderful world we live in).

Adjustments can be made so fast that one would be tempted to skip the sound edit and go directly into the mix with a digital audio workstation online. This can be done, although most long-form programs could benefit from at least some time spent in a sound editing room beforehand.

In preparing a nonlinear off-line for audio post, the first requirement is to digitize from a "quality" audio source, typically, Betacam, RDAT, quarter-inch, or Tascam DA-88 (also marketed by Sony as the PCM-800, or "DTRS" format). Almost nothing can be done to harm the quality of sound during editing, exporting, or importing (short of throwing your hard drive down an elevator shaft). Recording one decibel over the maximum value, or a speck of dirt on the sound head of a Betacam can, however, transform days of digitizing, consolidating, and exporting into a meaningless exercise.

To safeguard valuable time make sure that:

- a) source decks (Betacam, quarter-inch, etc.) are properly aligned;
- b) equipment is properly wired;
- c) digitizing is at appropriate levels; and
- d) your speaker system is capable of exposing potential problems.

Although the edit may be regarded as a video off-line, the sound is most definitely online.

What is the proper sound level for digitizing? The concise answer is: as hot as possible without clipping. Optimal analog recording levels are a compromise between low-level recordings that are noisy and high-level recordings that are distorted. As level is increased, the signal becomes gradually more distorted. Conversely, digital recordings actually get less distorted as the level is increased (due to the reduced influence of quantizing noise in the A to D converter), up to the point where clipping occurs.

Most digital meters used in nonlinear systems are known as "headroom meters." The scale markings indicate how much room you have (in decibels, or dB's) until you hit your head on the clipping ceiling. While digitizing, the top segment at "0" headroom (usually red) should never light. Theoretically, peak levels just short of clipping should be just fine (in fact, optimal). For this reason CD levels are typically optimized at $\frac{1}{2}$ of a dB below clipping. For practical reasons it is best to leave 3 to 6dB of headroom. Tone from analog tapes should usually be set to -14dB and tone from digital tapes set to -20dB, depending on the recording style of the location mixer. Keep your eyes glued to the meter. Never let the ease of batch digitizing lull you into gazing away from the little bar graph (this is not a good time to go out for coffee).

How should tracks be split? Nonlinear editing inherently offers the ability to rapidly move sounds in time and from virtual track to virtual track. It is simple for a sound editor to move sounds into a track layout that facilitates mixing. To minimize sound editing time, however, here are a few suggestions:

- 1) Don't be afraid to use tracks; tracks are cheap.
- 2) Keep like sound elements on their own separate sets of tracks. Dialogue, narration, music and sound effects all belong on separate sets.
- 3) Consider how these elements will be used at the mix.

For example, dialogue will require four to eight tracks. Split recordings from different microphone angles—within the same scene—onto separate dialogue tracks. Microphone angles usually follow camera angles. Dialogue from Scene 13a, 13b, and 13m belongs on separate tracks, because each has its own peculiar problem and will require separate processing. Scene 13a has a lighting buzz, while 13b sounds tubby. Scene 13m is off-mic and has a lot of air-conditioning rumble. The mixer will want to set up separate filters and equalizers for each specific problem and hopefully leave them set for an entire scene.

If the dialogue is not split, all three problems will come up to the same console input. The mixer will need to be reset for every line of dialogue. Further, it will be impossible to cross-fade from one angle to the other. Instead of having smooth, seamless transitions, the dialogue will sound choppy as the background noise shifts.

Should level changes be part of the composition? Often, sound edits are made to dip music or production sound under narration or dialogue. Typically, this is done to get a sense of how the program



will sound after it is mixed. When it's time to do the actual mix, however, the mixer will want the music at full level throughout so that he can manually finesse the music up and down. Similarly, a long transition between locations is best cross-faded by feel, not mathematically. On the other hand, a two-frame dissolve from narration to room tone and back to clip out a lip smack is something that computers do best.

For those who do not want to be as deeply involved in sound editing, a simple single-strand cut (consolidated with 99-frame handles) can be turned over to the sound editors; that is the beauty of nonlinear post. The picture editor can do as much or as little sound editing as fits the situation. Whatever work is done, however, is not wasted. There is no duplication of effort.

Transporting sound files from one computer to another through the magic of OMFI is a relatively new practice. We have been doing it successfully for two short years. It is not without its problems.

ACHIEVING GOOD AUDIO IN CONFERENCING APPLICATIONS

What Is Audio?

The word "audio" is derived from the Latin word "audire" which means "to hear". Webster's defines "audio" as "having to do with frequencies corresponding to audible sound waves" or "having to do with sound reproduction."

In teleconferencing, we are concerned with both definitions of "audio". Audio frequencies, as they relate to human speech, are critical, and these frequencies must be reproduced through the audio-visual system in order for participants to hear the message.

Why Is Audio Critical In Teleconferencing?

One prominent user puts it this way. . . "If the picture goes bad, I sit and wait; if the audio is bad, I get up and leave." Have you ever gone to a movie where the soundtrack was messed up? Most of us are not adept at reading lips.

Without good audio in your conference, most of the message is lost.

What Are Some of the Problems You Can Encounter In Audio?

Noise

You've undoubtedly experienced "60-cycle hum" first-hand. Electricity travels along power lines at nearly the speed of light (300 million meters per second), but the frequency of the alternating electrical current on the power lines occurs at 60 cycles, or alternations, per second. When equipment is grounded incorrectly, the frequency of the alternating current is superimposed on the audio signal going to speakers and you hear a low frequency, extremely annoying buzz. If you are hearing a buzz in your audio system, check grounding paths and make sure you do not have a "ground loop" in the system.

Repetitive noises—sounds that are low in volume, constant, and coming from somewhere other than the direction of the sound we want to hear—are usually eliminated from our consciousness by our brains because we hear "three dimensionally" and can discriminate the sources of the individual sounds.

Application software for video and audio editing systems is in a constant state of flux. Problems can and do crop up from time to time, as anyone familiar with nonlinear post will understand. These bugs are usually minor in nature. Unfortunately, at this time, OMFI of this type is most flawless between systems of the same manufacturer. Despite these problems, the vast majority of producers and editors who have opted to use OMFI for audio post-production wouldn't consider going back to any other method for finishing their shows.



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Courtesy of: Gentner Communications Corp.

By: Elaine Jones

Consider, however, the audio being sent from one meeting room to another. In the originating room, microphones pick up sounds and send them to the equipment used for transmission. Microphones don't discriminate—every sound picked up by a microphone is sent into the A/V system. Therefore, if a microphone is close to a blower or fan, it will pick up that sound. If the fan is closer to the microphone than is the person who is speaking, the sound of the fan will drown out the person's voice. Even worse: on the receiving end, the combined voice and noises are all appearing in the same place, the room speakers, so people in the receiving room cannot use "three dimensional" hearing to separate the sounds. The people in the originating conference room may be able to hear perfectly well while people in other rooms can't understand them at all.

Feedback

Frequently heard as a loud howling noise through the audio system, feedback is caused two ways: "mechanically" by audio on the speakers getting picked up by the mics, sent back to the speakers, getting picked up again by the mics, sent again to the speakers, and so on, or "electronically" through the audio mixer by accidentally feeding the output source back into the input.

Feedback can be easily resolved by:

- turning down the volume of the speakers, or altering mic/speaker placement so the mics don't pick up speaker audio as readily; or
- changing input/output configurations in the audio system.

A common cause of electronic feedback in telephone teleconferencing involves connecting the teleconferencer (or "phone add" box) to an audio mixer that does not have a "mix-minus" output for feeding audio back to the conferencer. If "program" audio which contains a caller's own voice is fed back to the caller, feedback will result. If you experience feedback through your telephone interface, try connecting an output audio source that does not contain the caller's audio.



Reverberation

Another issue is reflected audio, or reverberation. If you visit a broadcast or recording studio, you'll notice that room acoustics are tightly controlled. By contrast, conference rooms and classrooms tend to be acoustically "live". . . sounds bounce off every hard surface in the room. When you hear audio coming from a "live" room, the audio sounds boomy or echo-ey. The reason is that the reflected audio is arriving at the microphone just a bit later than the original audio.

This problem is compounded in large conference rooms if all of the mics are active. Not only is the reflected audio being picked up by all of the microphones, it's being picked up by all of the microphones at different times. This effect makes audio unintelligible at the other end.

This problem may be corrected mechanically by treating the walls, ceiling and floors with acoustical materials. It may also be controlled (not corrected) electronically, by using unidirectional microphones and automatic microphone mixers that only turn microphones on when someone is speaking into them.

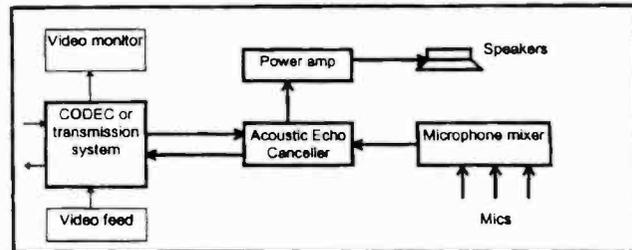
The best compromise in a classroom or conference room is the use of as many sound absorbing materials as possible, such as acoustical ceiling tiles, carpet, curtains, etc., and using unidirectional microphones with an automatic mixer.

Acoustic Echo

When two or more sites are talking to one another over microphones and speakers, you may experience acoustic echo. Acoustic echo is another form of feedback, but it involves multiple rooms. Simply put, it is the re-transmission of your own voice back to you from another site. Here's what happens: you speak into a microphone. Your voice, along with the video signal, is transmitted to another site. At that site, the video pops up on monitors and your voice comes out on a speaker. The mics in that room then pick up your voice, along with any other audio appearing in that room, and send it on that room's transmission of audio and video. Your voice comes back to you after a short delay.

If sound traveled at the speed of light, acoustic echo and reverberation would not occur. But, since sound travels slowly, echo can happen quite easily. If you are in a classroom that is about 10 meters deep, for example, sounds in the back of the room take about a thirtieth of a second to reach the microphones. That's not too bad. But. . . if the room is reverberant, audio may bounce off the walls several times, so you have the same audio reaching the mics at a 30th of a second, a 15th of a second, an 8th of a second, and so on.

Acoustic echo is compounded by the fact that not only is your voice being delayed by the size of the room at the other end, it may be delayed by the transmission medium as well. Even though electrical signals travel at the speed of light, a bounce off a satellite can add about a quarter of a second to the delay.



Acoustic echo must be controlled at the site creating the echo. In our example, we must control echo at the other end of the conference to keep you from hearing your own voice. Acoustic treatment will resolve much of the problem, but there is still the problem of direct-path pickup of speakers by microphones. The solution is an acoustic echo canceller, which is placed in the audio path as follows:

An acoustic echo canceller samples the audio being received from the other site. It then observes audio coming back into it from the microphone mixer, and any audio that matches the received audio is removed. Echo cancellers vary in price depending on the audio bandwidth—3.5kHz echo cancellers for telephone conversations are less expensive than 7.0kHz echo cancellers for use in CODECs or satellite conferences—and the "tail time" of the audio, or the amount of delay present that must be cancelled out.

An important note on acoustic echo cancellers: when used with an automatic microphone mixer, make sure that the mixer is set up so that one of the mics is always "on."

SUMMARY:

The prime considerations in achieving good audio in a conference are:

Types and quantity of microphones used—the best bet is to have microphones close to participants, and picking up just that participant's voice instead of everything in the room, but it's also possible to "overkill" by having too many microphones. A good rule of thumb is to use unidirectional microphones whenever possible, and position the microphones so they can be used by two to three people. If more than a few microphones are used, get an automatic microphone mixer.

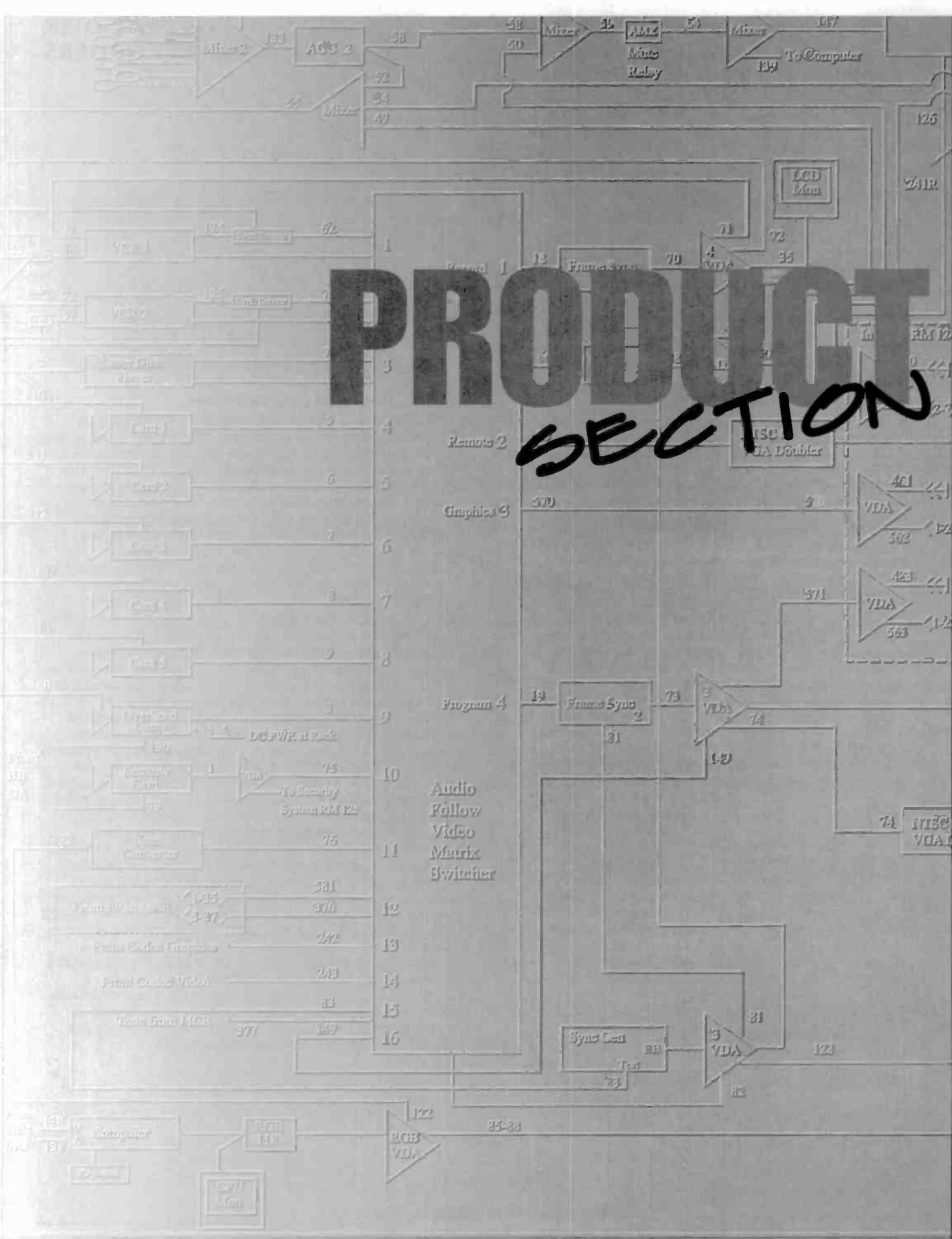
Acoustic treatment of the room—whenever possible, treat the room to keep audio from bouncing off hard surfaces; this will result in audio that is much more intelligible and less tiring to participants.

Control acoustic echo—if two or more sites will be active on mics and speakers, place acoustic echo cancellers at each location to prevent re-transmission of received audio.



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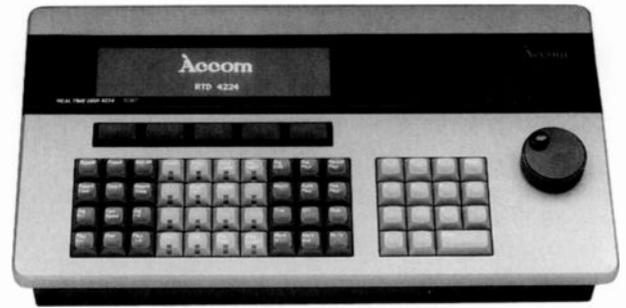


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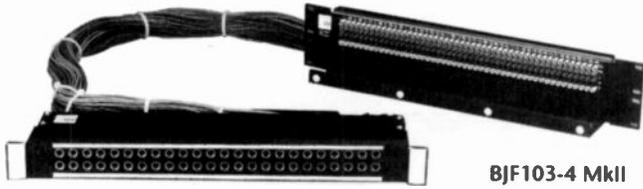
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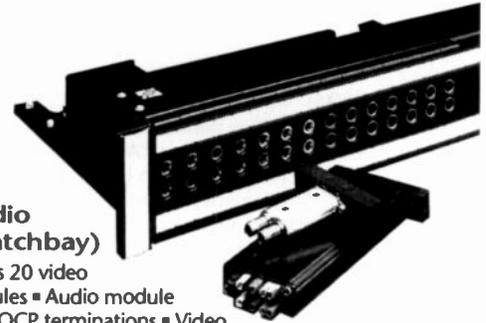
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BJF403-4MkII Normals brought out, rear terminations on 5.25" panel: 96 sets of tip, ring, sleeve and tip normal, ring normal QCP terminals \$1548.00

BJF407-4MkII Normals strapped (fully normalled), rear terminations on 3.5" panel: 96 sets of tip, ring, sleeve QCP terminals 1401.00

1.75" Panels with 2 x 24 Array of Long-frame (¼") Jacks

BJF103-4MkII Normals brought out, rear terminations on 3.5" panel: 48 sets of tip, ring, sleeve and tip normal, ring normal QCP terminals \$967.00

BJF107-4MkII Normals strapped (fully normalled), rear terminations on 3.5" panel: 48 sets of tip, ring, sleeve QCP terminals 767.00

3.5" Panels With 2 x 24 Array Long-frame (¼") Jacks

BJF203-4MkII Normals brought out, rear terminations on 3.5" panel: 48 sets of tip, ring, sleeve and tip normal, ring normal QCP terminals \$967.00

BJF207-4MkII Normals strapped (fully normalled) rear terminations on 3.5" panel: 48 sets of tip, ring, sleeve QCP terminals 767.00

Video Panels

Blank Panels

PPI2226RS 3.5" panel, 2 rows, 52 positions \$120.00
PPI2224RS 3.5" panel, 2 rows, 48 positions 120.00
PPI1224RS 1.75" panel, 2 rows, 48 positions 120.00

With SJ2000N

PPI2226RS-N PPI2226RS loaded with 26 SJ2000N jacks, 2RU x 19" panel \$1080.00
PPI2224RS-N PPI2224RS loaded with 24 SJ2000N jacks, 2RU x 19" panel 1007.00
PPI1224RS-N PPI1224RS loaded with 24 SJ2000N jacks, 1RU x 19" panel 1007.00

With SJ2000N-75

PPI2226RS-75N PPI2226RS loaded with 26 SJ2000N-75 jacks, 2RU x 19" panel \$1209.00
PPI2224RS-75N PPI2224RS loaded with 24 SJ2000N-75 jacks, 2RU x 19" panel 1114.00
PPI1224RS-75N PPI1224RS loaded with 24 SJ2000N-75 jacks, 1RU x 19" panel 1114.00

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	..... \$125.00
VAB-HN	V.A.M.P. audio module ban QCP H/N	..... 79.00
VAB-NN	V.A.M.P. audio module ban QCP N/N	..... 79.00
VAB-NS	V.A.M.P. audio module ban QCP N/S	..... 79.00
VV-1	V.A.M.P. video module with SJ2000N-75 jacks	... 47.00
VA-1	V.A.M.P. audio module, 2 long-frame jacks	..... 45.00
VV-2	V.A.M.P. video module with SJ2000N jacks	..... 45.00
VV-3	V.A.M.P. video module with CJ2011N jacks	..... 45.00
VB-1	V.A.M.P. blank module	..... 2.00

C.A.P.S. Component Analog Patching System

ADC has developed the C.A.P.S. to provide an error-free, flexible patching system for component analog video environments. The C.A.P.S. will perform flawlessly in various types of component analog systems including RGB and Y, R-Y, B-Y.

Choose from a wide selection of C.A.P.S. types: Delay compensated—eliminates patching timing errors; Modular patchbays—cost-effective patching for small systems; Fully loaded patchbays for large systems; RGB plus sync; Terminated and nonterminated jacks.

- C.A.P.S. unique plug design guarantees error-free patching ■ Color keyed rear BNC interface—works with any cable type and eliminates connection errors ■ C.A.P.S. color keyed jacks allow easy access to individual video components for effects or testing ■ Universal Designation Strip System lets you designate your circuits the way you want

Panels

CPPV-8	8 RGB group delay compensated	..... \$2451.00
CV-8-N75	8 RGB group with SJ2000N-75 jacks	..... 1162.00
CV-6-N75S	6 RGB group with SJ2000N-75 jack	..... 1162.00
CV-8-N	8 RGB group with SJ2000N jacks	..... 1074.00
CV-6-NS	6 RGB group with SJ2000N jacks	..... 1074.00
CV-8-NJ	8 RGB group without jacks	..... 390.00

Modules

CV-M-N75	1 RGB group with SJ2000N-75 jacks	..... \$141.00
CV-M-N	1 RGB group with SJ2000N jacks 129.00

Chassis

CV-CM	For CV-M-N and CV-M-N75 module \$150.00
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Accessories

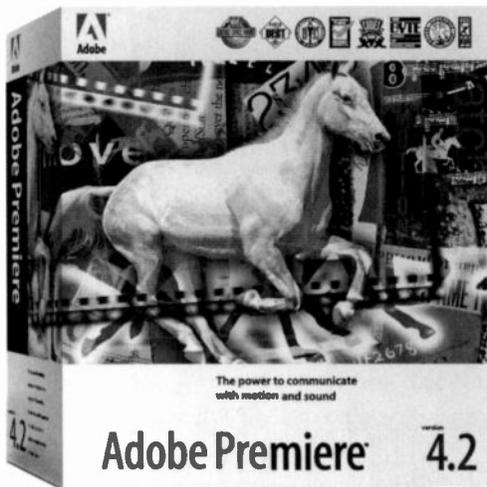
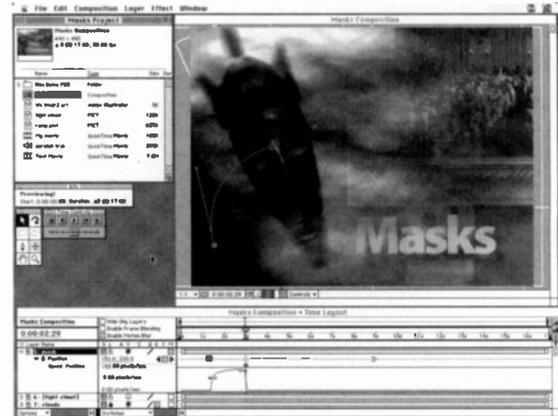
CVPC-6	RGB patch cord, 6' \$63.00
CVPC-4	RGB patch cord, 4' 58.00
CVPC-3	RGB patch cord, 3' 58.00
CVPC-2	RGB patch cord, 2'	..... 58.00
CPPV-B	Blank module	..... 10.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



Adobe Photoshop® 4.0

- Software for Macintosh® or Windows® that improves productivity and allows creative experimentation
- Actions palette lets you record a sequence of commands as an Action List and then automatically play the list on part of an image, an entire image, or a folder of images
- New Adjustment Layers work like nondestructive masks, letting you experiment with color correction and effects
- Navigator lets you zoom instantly to specific areas within a large image
- Definable guides and grids provide precision control
- Free Transform function allows you to scale, rotate, move, and add perspective to selections in a single step
- With 48 new special effects filters, a new multicolor Gradient tool, and an enhanced interface that improves workflow, Photoshop is the tool of choice whether you're creating images for print, multimedia, or the Web



Adobe After Effects™ 3.1

- The leader in desktop compositing and 2-D animation
- Produce professional-quality film and video composites with sophisticated animation and special effects
- Precisely control the position and animation of layers in your commercial, industrial, and multimedia projects
- Import source files from Adobe Photoshop, Adobe Illustrator, Adobe Premiere, or your favorite 3-D graphics application, without a hitch
- Seamlessly integrate After Effects into your nonlinear editing workflow—or use it to create dynamic, highly layered, short- or long-form sequences that are too difficult or costly to produce on traditional systems
- Enjoy the freedom of owning professional production tools, such as motion tracking and image stabilization, previously available only in expensive post-production suites
- No matter what the focus of your work—intros, outros, openers, bumpers, titles, games, or special effects—After effects delivers the compositing power you need
- For Macintosh, Power Macintosh, Windows 95, and Windows NT-compatible personal computers

Adobe Premiere 4.2®

- Nonlinear video editing program
- 32-bit application optimized for both Microsoft Windows 95 and Intel based CPUs running Windows NT 3.51 or higher
- Combination of enhancements more than doubles performance when running under either Windows 95 or Windows NT
- Provides additional capabilities video professionals require for online quality video on the desktop—the ability to capture higher data rate video for improved image quality and faster rendering
- Features an enhanced interface that supports the look and feel of Windows 95 and adds support for Windows 95 features such as long file names and right-mouse button control of all windows
- Delivers camera view filter for creating 3-D digital video effects and the lens distortion filter for simulating special effects, plus the audio swap filter, mosaic filter and the strobe filter
- Integrates features that give multimedia developers all the tools they need in one software application to capture, edit and compress movies for smooth playback at low data rates from CD-ROM and over the internet
- 4K output support
- 8kHz audio support
- Progress bar
- Movies can be compiled in the background
- Tool tips
- Special processing features include: keyframe control, batch movie maker, frame size settings/cropping, gamma correction, noise reduction, and indeo interactive
- Additional software included on deluxe CD-ROM

Adobe Type Manager® Deluxe 4.0

- Powerful way to easily manage all of your Type 1 and TrueType™ fonts
- For Windows NT 4.0
- Delivers powerful organizing features that help you work smarter
- Now you can install fonts and create custom font sets with drag-and-drop simplicity
- Activate and deactivate installed fonts on demand—no more uninstalling typefaces to remove them from font menus
- You can preview and print sample pages before installing typefaces
- You can share your font set definitions with other users, even across platforms
- Provides an easy way to work with multiple master fonts, letting you experiment with thousands of instances
- Font smoothing gives you sharp, beautiful text on-screen
- Lets you print Type 1 fonts on any printer

Call For Pricing

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

DIGITAL FILM RECORDERS/SCANNERS/ RASTERIZERS



Alto Film Recorder

- High performance professional film recorder for Mac, PC and UNIX based systems, IEEE-488 (GPIB) and SCSI interfaces
- 4M byte image buffer, 30 sec/slide (4K)
- Creates chromes and negatives on 35mm, 120/220, 4 x 5 and 8 x 10 film
- Complete custom color control, including brightness, contrast, highlights and shadows
- Completely sealed optic and filter wheels for dust free imaging
- 32-character front panel LCD with 4-button keypad, or use optional full-screen menu display with keyboard control (using VT100)
- Compatible with PostScript, SCODL, TIFF and many other file formats
- Can be run in batch mode with Agfa software on PC and Mac
- 1 year warranty

Alto Includes common features plus:

Allows 2K/4K/8K/18K line resolution \$29,900.00



Horizon Ultra Professional Color Scanner

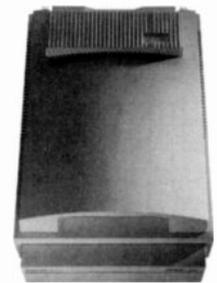
- Professional quality CCD color/black-and-white scanner
- 15,000 pixel-per-line CCD scanning system yields true 1200 x 2000 optical resolution
- 12-bit color sampling accuracy for images up to tabloid size (11.7" x 16.5") reflective and 9" x 13" transmissive
- High powered halogen lamps
- High-speed scanning
- Electronic zooming
- Multiple scanning modes: black-and-white (line art), half-tone, continuous tone and color
- Software drivers for Adobe Photoshop, QuarkXpress, Color Studio and Ragtime \$17,995.00

DuoScan Publishing Scanner

- High-end
- Productive single pass scanning
- High quality 8000 element CCD array
- True optical resolution of 1000 x 2000ppi
- Interpolated output up to 4000 x 4000ppi
- 36-bit color sampling, 3.3 dynamic range
- Batch scanning
- TwinPlate™ technology for optimized productivity in scanning both reflective and transmissive media, offers glassless optical path for transmissive artwork
- Reflective scanning up to 8" x 14"
- Transmissive scanning up to 8" x 10"
- Includes: Agfa FotoLook scanning software, Agfa FotoTune color management software (full version) Agfa FotoFlavor easy to use color correction software for the Mac, and Adobe Photoshop image editing software (full version) \$4,995.00

ARCUS II Color Scanner

- Single pass, high-speed scanning
- Optical resolution 600 x 1200ppi
- Scanning resolutions up to 3600ppi for line art, 2400ppi for color
- 36-bit color sampling
- Dynamic range of 3.0
- Reflective originals up to 8.3" x 14"
- Transparency module included for transmissive originals from 35mm to 8"x 10"
- Includes Agfa FotoLook scanning software, FotoTune LE for color management and a full version of Adobe Photoshop software for image manipulation. \$1,695.00



Python Software Rasterizer

- PostScript output software
- For use with all Alto and PCR II model film recorders
- Outputs PostScript files quickly and easily
- Includes a Chooser level driver
- Outputs directly from Chooser or through "hot folder" for network efficiency
- Includes 13 PostScript fonts
- Python J includes 5 Kanji fonts. \$8,000.00
- Python for Alto models 7,000.00
- Python LE for PCR II models 3,500.00

SuperPrint Software Rasterizer

- Software imaging solution for PC Windows applications
- Outputs from any Windows application
- Outputs single files directly from Windows applications
- Runs in batch mode for easy overnight imaging
- Can be used in server mode for network imaging
- Runs like a Printer driver
- SuperPrint for Forte/Alto \$1,995.00
- SuperPrint for PCR II 995.00
- SuperPrint for ProColor Premier 595.00

ZScript Software Rasterizer

- Outputs PostScript files when used together with SuperPrint
- Converts PostScript files to Windows GDI format
- Converted files can be used for copy and paste, or for output \$295.00

Alto Camera Modules

Alto 120-roll film module requires Alto firmware

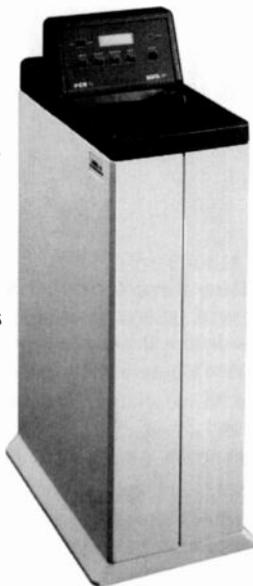
1.08 or higher \$7,500.00

Alto 4 x 5 premium sheet film camera module 6,000.00

Alto 35mm cassette load 36 exposure camera module 2,500.00

PCR II® Plus Digital Film Recorder

- Ideal solution for entry level photo retouching and imaging applications
- Produces sharp, high quality film output which rivals that produced on film recorders costing twice as much
- Negative film support, 120 film formats make the PCR II Plus suitable for photographic work
- Unique digital 36-bit color technology ensures saturated colors and smooth gradations for both 35mm and larger formats
- LCD front panel
- Output Speed: Records 35mm slides at 4K in 62 seconds
- Rasterization is dependent on file and workstation
- Output Formats: 35mm, 35mm bulk (750 exposure), 120/220 roll film (medium format)
- Exposure: In 3 colors, red, green and blue, 36 bits/pixel (12 for each color)
- Supported Film Types: AGFACHROME 100 RS Professional, AGFACOLOR Optima, Kodak Ektachrome Professional Daylight
- 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 \$9,900.00
- 35mm Bulk module 6,500.00
- 120/220 Roll film camera modules 5,500.00



ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

REFERENCE
CATALOG
97-98



Stereo Condenser Mic System

C426B Large-diaphragm mic with FET preamplifier. 9 polar patterns selected via remote control. 20Hz-20kHz. \$4428.00



C414B/TLII



C3000

Large Diaphragm Condenser Microphone Systems

- C12VR Tube, multipattern. \$4325.00
- C12VR/SP Matched pair 9200.00
- C414B/ULS 4 selectable patterns, 20Hz-20kHz 1249.00
- C414B/TLII Same as above, transformerless 1595.00
- C414B/TLII Same as above, stereo, matched pair 3395.00
- C3000 Dual pattern, -10dB pre-attenuation 699.00



C562BL



C562CM

Goosenecks, Hanging, Boundary Layer Condenser Microphones and Systems

- C562BL Hemispherical boundary type. Condenser transducer mounted in a flat round plate \$639.00
- C562CM Hemispherical ceiling mount boundary. Similar to above, but without the flat round plate. 225.00
- C747 Prepolarized condenser, pencil-type hypercardioid, 38Hz-18kHz. Highest quality speech, instrument reinforcement and recording 555.00
- C547BL Directional boundary type 555.00
- C680BL Directional boundary type 215.00
- C647 Comb. Fixed mount podium mic. Black 431.00
- C647 Comb./White. Same as above except white 431.00
- C647E+H600 & A608 Same as C647 Comb., w/preamp/phantom power adaptor 472.00

- C947CM/US Hanging mic w/permanent mount. Black or white \$482.00
- C947CM/E Hanging mic w/XLR. Black or white 462.00
- C921CM/E Supercardioid hanging mic 267.00
- C921CM/US Same as above with permanent mount 309.00
- C621 Comb. Fixed mount podium mic. Black 257.00
- C621 Comb./White. Same as above except white 257.00
- C621E Prepolarized condenser, cardioid, 70Hz-20kHz. High quality speech reinforcement. 237.00
- C580 Comb. Fixed mount podium mic. Black 247.00
- C580 Comb./White. Same as above, except white 247.00
- C580E1 Prepolarized condenser, hypercardioid, 60Hz-15kHz, with XLR preamp. High quality speech reinforcement 237.00

C460B Modular Condenser Microphone System

- C460B+CK61ULS Cardioid. Dynamic range of over 120dB. Built-in 4-position switch. 4 directional patterns may be added. Flat frequency responses \$699.00
- C460B Preamp 515.00
- CK61 Cardioid capsule 216.00
- CK62 Omni capsule. 216.00
- CK63 Hypercardioid capsule 216.00
- CK68 Directional/ultradirectional capsule 699.00
- CK69-ULS 2-section shotgun capsule 785.00
- A61 Swivel for C460B 240.00
- VR61 12" black angled extension tube for C460B 283.00
- VR62 40" black angled extension tube for C460B 555.00



SE300B



CK91



CK92



CK93



CK94

Blue Line Condenser Microphones

- C391B SE300B powering module with CK91 capsule. 12-48V cardioid with switchable bass rolloff/attenuator, 3 positions. . . \$474.00
- CK94 Figure-eight capsule. 402.00
- CK98 10" shotgun capsule 310.00
- VR92 4" extension tube. 418.00
- SE300B Powering/output module 277.00
- CK97-C Miniature cardioid capsule 216.00
- CK97-O Miniature lavalier capsule, omni. 216.00
- CK97-CVR Mini cardioid capsule, with 15" gooseneck. 216.00
- CK97-C/3 Hypercardioid capsule w/stripped and tinned leads . . 194.00
- CK93 Hypercardioid capsule 194.00
- CK91 Cardioid capsule 194.00
- MK90/3 + H98 Extension cable set, 10'. 271.00
- CK92 Omni capsule. 194.00
- A91 Swivel joint for CK90 capsules 261.00
- VR91 Fixed 15" extension tube 251.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



MICROPHONES/ HEADPHONES



Micro Mic Condenser Microphones

- C416 Clip-on instrument mic with XLR. Flat response, hypercardioid. 20Hz-20kHz \$257.00
- C418 Clip-on drum mic with XLR. Rugged, shock-suspended design. 80Hz-20kHz 257.00
- C419 Clip-on wind instrument mic. Hypercardioid with XLR. 20Hz-20kHz 257.00
- C419/B As above with 1/8" gold-plated locking connector, for use with B29 power supply 195.00
- C420 Headset mic with XLR. Featherweight only 0.9 oz. without connector. Boom secures behind the head. Matte black finish. 20Hz-20kHz 267.00
- C420/B As above with 1/8" gold-plated locking connector, for use with B29 power supply 237.00
- C411 Acoustic contact pickup with XLR. 10Hz-5kHz 185.00
- C417 Professional miniature lavalier with XLR. 7mm diameter. 20Hz-20kHz 184.00
- C417/B As above with 1/8" gold-plated locking connector, for use with B29 power supply 123.00
- DB-1 Double-bass bridge pickup 412.00

Performer Series Microphones

Common Features

- Unidirectional dynamic microphones ■ Designed especially for Hi-Fi, karaoke, and home recording use ■ Dual shock mount ensures efficient elimination of vibrational noise ■ Frequency Range: 70Hz-20kHz ■ Polar Pattern: Hypercardioid ■ Sensitivity: 2mV/Pa=-54dBV ■ Impedance: 500 ohms

D 65 S On/off slide switch with positive position indicator. Supplied with 3-pin XLR connector, SA 44 stand adaptor and black leatherette carrying case. Protective basket \$85.00

D 60 S On/off slide switch with positive position indicator. Supplied with separate 16' cable with XLR connector, gold plated mini jack plug and screw-on 1/4" adaptor. Protective basket 85.00

D 50 S On/off slide switch with positive position indicator. Supplied with fixed 16' cable with gold plated mini jack plug and screw-on 1/4" adaptor. Protective basket 72.00

D 40 S Supplied with fixed 16' cable with gold plated mini jack plug and screw-on 1/4" adaptor \$61.00



D 65 S



C535EB



C1000S

Condenser Microphones

- C535EB Cardioid vocal mic. 4-position output level/bass rolloff switch. Switch between -42dBm or -56dBm. 20Hz-20kHz . . \$514.00
- C568EB Short shotgun. 2-position bass rolloff switch, black finish. 20Hz-20kHz 508.00
- C1000S Cardioid/hypercardioid with on/off switch. 12-48V phantom powerable. Nonreflective dark gray finish. 20Hz-20kHz 437.00

Dynamic Microphones

- D112 Bass drum mic, cardioid. Handles 168dB sound pressure levels 20Hz-17kHz. \$319.00
- D230 Omni-directional mic 199.00
- D58E Dynamic close talk, hypercardioid, 70Hz-10kHz. Communications, paging and talkback applications in noisy environments. Satin nickel finish 174.00
- D58E/Black As above except in matte black finish. 174.00
- D541 Dynamic, cardioid, 140Hz-17kHz. Paging, conference systems, podiums, mixing consoles. Designed for permanent mount 149.00
- D541E Designed for detachable mounting with XLR connector 164.00



D541

Wireless Headphones

- K444IR >110dB, 6.7 oz., 39.6' range, 20Hz-20kHz, NiMH (Powerpack), 6 hours, mini/1.4" jacks/RCA \$119.00
- K444IR-H Headphone only, open design. 110.00



K270S



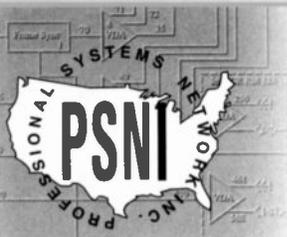
K500

Stereo Headphones

- K270S Circumaural playback headphone. With 2 optimized transducers per channel for high-end response. Self-adjusting headband with auto on/off switch. 92dB, 20Hz-20kHz . . . \$257.00
- K500 Professional dynamic circumaural headphone. Enhanced sensitivity, large diaphragm transducer with open design to eliminate resonance coloration. 15Hz-27kHz, 120 ohms impedance . . . 169.00
- K501 Varimotion System™, open-air design 179.00
- K400 Professional dynamic circumaural headphone. Highly accurate, large diaphragm open design, similar to K500. 20Hz-26kHz, 120 ohms impedance. 129.00
- K401 Varimotion System, open-air design. 149.00
- K240DF Dynamic circumaural studio monitor headphone. Meets the IRT criteria. Each set is individually measured and uses hand selected and matched components to maintain close tolerances. Self-adjusting headband. Single-sided cable. 20Hz-20kHz . . . 154.00
- K240M Circumaural monitor headphone. For professional recording, broadcast studios and in the home. Precise bass and distortion-free. Self-adjusting. Dynamic moving coil. 20Hz-20kHz. 138.00
- K141M Supra-aural, closed design 110.00
- K80 Supra-aural. 69.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





Power Animator™
3-D Animation Software Version 8.5

- Features powerful tools for sophisticated object modeling, character modeling and animation, and special effects
- High-end NURBS and Polygon-based modeling tools
- Inverse Kinematics (IK)
- Digital OptiF/X™
- Integrated particle system generator
- Real-World Camera Lens Package™
- Open Digital Studio™ environment
- Programmable plug-in support

Animator™ Version 8.0

- Brings professional 3-D content creation within reach of a broader range of users
- Integrated environment for 3-D modeling, animation and rendering
- Molten modeling intuitive and interactive sculpting tools
- Atomic animation
- Radioactive rendering
- Features include next-generation user interface, animation workflow, rendering advances, online help, and Keystone™ support

StudioPaint™ 3-D Software Version 4.0

- Power of 3-D manipulation and viewing, with the creative control and intuitiveness of 2-D brushes and pencils
- 3-D paint functionality
- Paint on surface
- UV creation and editing tools
- Paint palette tools for gamers
- Drawing tools include Ligne Claire and Sweeps
- Import/export 3-D geometry
- New integration with Explore and Advanced Visualizer

Composer 4.5™ Special Effects Software

- Procedural compositing and special effects software
- Allows artists to assemble animation clips, still images and audio, to add any number of layers of each, sequence them in time, and combine special effects, transitions, titles, annotations and audio
- TrueTrack™
- Image stabilization
- Traveling mattes
- Motion blur
- Lens distortion
- Time warp
- Film grain
- Color correction
- Region of interest
- Audio file support
- Dynamic shared object (DSO)

Designer™ Version 8.0

- Software that combines industry-leading NURBS-based 3-D modeling and visualization tools
- Allows you to create mathematically accurate regular-shaped objects as easily as freeform organic shapes
- Cloud Fit™
- EvalViewer™
- Curve creation and editing tools
- Query/edit history tool
- Layers
- Draft angle/flange
- STEP translator
- Data exchange technology
- Rendering speed
- Session files
- Advanced scene block diagram
- Next-generation user interface
- Concept modeling
- Curve networks
- Data transfer
- Booleans
- Online help
- Programmable plug-in support

3Design™ Software

- Advanced entertainment-based modeler
- Combines modeling techniques, allowing you to efficiently construct intricate and fluid 3-D shapes
- NURBS allow you to create smooth surfaces and powerful curves
- With polygons you can create complex shapes or any combination of shapes and methods
- Unlimited undo
- Full construction hierarchy



Studio Version 8.0

- Sophisticated, intuitive environment in which you can build freeform conceptual models and accurate machinable surfaces
- Includes same tools as Designer 8.0
- Tools are more task-specific than previous version

Web/Animator™

- Software that creates compelling images, movies and 3-D interactive worlds for the World Wide Web
- Advanced 3-D modeling, animation and rendering tools bring professional content creation within reach of a

- broad range of Web site creators
- VRML (virtual reality modeling language) links
- Output VRML
- NURBS and polygon modeling tools
- Wavefront ComposerLite™
- Power Animator Version 7.0
- Alias Animator Version 7.0
- Open digital studio

Interactive Photorealistic Rendering (IPR™)

- Provides creative control and immediate feedback required to produce graphics with astonishing image quality and special effects
- Changes to lighting, textures, and special effects are made interactively
- Interactively tune any material or rendering parameter directly on the completed scene
- Interactively set links between objects for lighting, shadowing, reflection, and refraction relationships
- Animate any material or rendering parameter
- Automatically dispatch your renderings over a network of computers
- Compute images with motion blur and depth-of-field
- Adaptive, view-dependent surface tessellation
- Conformal texture mapping
- Volume rendering simulates light effects through different atmospheres

Kinematic™ 3-D Software

- Provides tools that incorporate state-of-the-art techniques in 3-D kinematics motion, skeletal intelligence and skin behavior
- Simplifies the kinematics process with its unique Digital Doll™ method
- Allows complete control of the skeleton by integrating forward and inverse kinematics
- Animators can bring static models to life by directly manipulating a user-defined skeleton like a marionette
- Incorporates a behavioral model into its Smart Skin™ that can be taught to behave according to skeletal position or time

Dynamation™ 3-D Software

- Powerful interactive 3-D software solution for creating hyper-realistic animation and imagery of complex dynamic events
- Unique interface allows the user to adjust all dynamic parameters interactively and view the results instantly
- Final images and animation can be produced by either high speed optimized hardware rendering techniques or by passing data to other modules
- Includes a Motif-based point-and-click user interface, a high-level command language, a complete scene programming language, and an easy-to-use library of ClipF/X

MediaStudio™ Software Package

- Fully equipped software package with highly advanced independent modules used by specialists for modeling, animation, rendering, 2-D compositing and special effects
- Consists of Explore™; Wavefront™; Dynamation; Wavefront Composer™; VisPaint2D; 3Design; and IPR rendering, which offers lens flare effects, volume rendering, displacement mapping, and parallel rendering

PowerAnimator for Games 8.0

- MetaCycle™ provides gamers with the first nonlinear character animation system specifically developed to meet the unique requirements for creating short animation sequences typical of interactive game titles
- Cycle Smoother™
- Dynamics Engines™
- Texture space editor
- Polygonal tools include pre-lighting, polygon wedge tool, and polygon drawing modes
- Translators

Games and Interactive Media

- Advanced suite of digital tools for creating rich cinematic imagery
- Features include: polygon reduction, real time motion capture, and color quantizing
- PowerAnimator offers the tools for 3-D base modeling, animation and rendering
- Advanced animation tools create advanced character animation and special effects
- Power modeling tools give maximum flexibility and control in creating complex freeform surfaces
- Game Export Tool (GET) converts files from PowerAnimator, Explore or Visualizer to game specific file formats
- 3Design is the advanced polygon modeler
- Composer offers color quantizing and video compositing
- StudioPaint 3-D for texture generation

Call For Pricing

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



DELAY LINES/ HUM ELIMINATORS



ALLEN AVIONICS, INC.

VAR Series

- Designed specifically to provide for infinitely small delay adjustments ■ Low video distortion
- Continuously variable delay adjustment ■ Low insertion loss ■ 75 ohm impedance ■ 100V working voltage ■ Less than 3% pulse distortion ■ 20dB or greater return loss

Part No.	Delay Range (ns)	Method of Variation	Trimmer Variation (ns)	Switch Variation (ns)	Maximum Insertion Loss at 100kHz (dB)	Amplitude Flatness at Any Delay Setting 100kHz to 5.5MHz (dB)	Price
VAR005	3-7	Trimmer	Continuously variable from 3 to 7	—	0.2	0.2	\$ 84.00
VAR011	0-11	Trimmer & toggle	Continuously variable to 1	Toggle 0.5 to 10.5 in 0.5ns steps	0.2	0.25	143.00
VAR256	0-256	Trimmer & toggle	Continuously variable to 1	Toggle 1 to 255 in 1ns steps	0.15	0.4	351.00
VAR320	0-320	Trimmer & toggle	Continuously variable to 2.5	Toggle 2.5 to 317.5 in 2.5ns steps	0.2	0.4	376.00
VAR640	0-640	Trimmer & toggle	Continuously variable to 5	Toggle 5 to 635 in 5ns steps	0.8	0.5	469.00



VAR256



VPO635



VP1100

VP/VW Series

- 75 ohm impedance ■ Less than 4% pulse distortion with an input rise time of 20ns ■ 100V maximum working voltage ■ 5% or 1ns delay tolerance, whichever is greater

Part No.	Delay Range (ns)	Delay Steps (ns)	Method of Variation	Maximum Insertion Loss at 100kHz (dB)	Amplitude Flatness at Any Delay Setting 100kHz to 5.5MHz (dB)	Max. Rise Time (ns)	Price
VP0010	0-10.5	0.5	Toggle	0.15	0.2 max.	3	\$101.00
VP0127	0-127	1.0	Toggle	0.15	0.3 max.	14	226.00
VP0255	0-255	1.0	Toggle	0.15	0.3 max.	16	271.00
VP0317	0-317.5	2.5	Toggle	0.15	0.3 max.	20	296.00
VP0635	0-635	5.0	Toggle	0.50*	0.4 max.	25	418.00
VP1100	0-1100	10.0	Rotary	1.25	0.4 max.	30	461.00
VP1270	0-1270	10.0	Toggle	1.50*	0.4 max.	30	468.00
VP2075	0-2075	25.0	Toggle	2.50*	0.5 max.	40	860.00
VW0317	0-317.5	2.5	Strap	0.25	0.4 max.	28	270.00
VW0635	0-635	5.0	Strap	0.60	0.5 max.	33	406.00
VW1270	0-1270	10.0	Strap	1.25	0.5 max.	33	460.00
VW2075	0-2075	25.0	Strap	2.50	0.5 max.	40	849.00

HEC-4000 Hum Eliminator

- Broadcast-quality 4-channel GBR/YUV hum eliminator ■ 3 matched, isolated channels plus single-channel, phase-matched transformer-isolated input for sync ■ Diecast metal case \$525.00

HEC-3000 Hum Eliminator

- Removes 50-60Hz hum from NTSC or PAL video signals ■ 3 separate and isolated channels ■ 75 ohms unbalanced impedance ■ Metal case with BNC connectors . . \$400.00



HEC-2000-H Hum Eliminator

- Broadcast-quality devices used to remove hum at over 60dB on 50/60Hz systems ■ 1/2" diameter stainless steel handles ■ Jack covers protect BNC connectors not in use ■ Specially designed for use on remote trucks, in field use, on location sites, etc. \$175.00

VRM/VRS Only

- RM-1 Rackmount with door . . . \$225.00
- RMC-1 Rack card \$10.00
- RMC-2 Rack card kit \$25.00

VRM/VRS Series

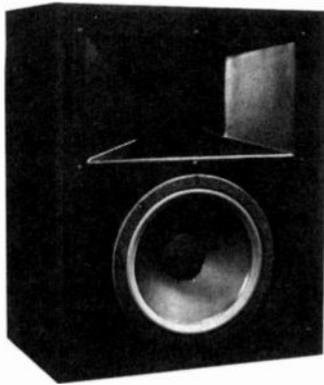
- 75 ohm impedance ■ Less than 4% pulse distortion with an input rise time of 20ns ■ 50V maximum working voltage ■ 5% or 1ns delay tolerance, whichever is greater

VRM011	0-11	Variable	Trimmer & Slide	0.30	0.3 max.	10	\$189.00
VRM0255	0-255	1.0	Slide Switch	0.40	0.4 max.	20	340.00
VRM0256	0-256	Variable	Toggle & Trimmer	0.40	0.4 max.	22	420.00
VRS0317	0-317.5	2.5	Strap	0.40	0.5 max.	26	325.00
VRM0320	0-320	Variable	Toggle & Trimmer	0.50	0.4 max.	25	456.00
VRS0635	0-635	5.0	Strap	0.75	0.5 max.	35	476.00
VRM0637	0-637.5	2.5	Slide Switch	1.00*	0.4 max.	28	460.00
VRM1100	0-1100	10.0	Rotary	1.75	0.4 max.	30	549.00
VRS1270	0-1270	10.0	Strap	1.50	0.5 max.	37	529.00
VRM1275	0-1275	5.0	Slide Switch	1.50*	0.4 max.	33	539.00
VRS2260	0-2260	20.0	Strap	3.00	0.5 max.	40	910.00
VRM2270	0-2270	10.0	Slide Switch	2.50*	0.5 max.	40	923.00

*±0.2dB variation at any delay setting

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





M500 Maestro Monitor—500W Program Power

- High acoustic output, 500W
- Front-mounted components
- Rugged passive crossover
- 2-way vented system
- 15" direct radiator
- 909 driver and horn
- Pressure sensitivity: 96.5dB SPL
- Frequency response: 46Hz-20kHz
- Power handling: 250W, 80Hz-20kHz, AES method
- Maximum long-term output: 120.5dB SPL
- Impedance: 6.8 ohms minimum
- Distribution pattern: 90° horizontally x 40° vertically
- Enclosure: vented, 3/4" black stained birch plywood
- 3/8" T-nut mounting points on each side
- Removable grille
- Red and black 5-way binding posts
- Dimensions: 33"H x 26 1/2"W x 17 1/2"D
- Weight: 86 lbs.

Applications

- Music playback in conference facilities
- Small dance environments
- Simple cluster in houses of worship

9815-8A Available unfinished

M400 Maestro Monitor—300W Program Power

- High sensitivity
- Compact size
- 1" throat 909 driver
- 2-way vented baffle type system
- Controlled dispersion
- 12" direct radiator
- Pressure sensitivity: 99.5dB SPL
- Frequency response: 80Hz-20kHz
- Power handling: 150W, 80Hz-20kHz, AES method
- Maximum long-term output: 121dB SPL
- Impedance: 6.5 ohms minimum
- Distribution pattern: 110° horizontally x 60° vertically
- Enclosure: vented, 3/4" black stained birch plywood
- 3/8" T-nut mounting points on each side
- Removable grille
- Screw terminals
- Dimensions: 23"H x 17 3/4"W x 9"D
- Weight: 46 lbs.



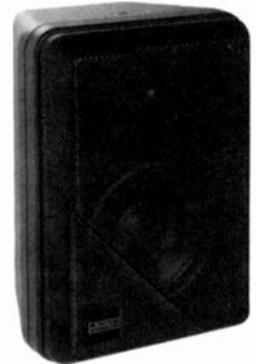
Applications

- Choir monitors
- Theater effects systems
- Lounge surround networks

9872-8A Available unfinished
9872-8F Available in tan

M100 Compact 2-Way Monitor Loudspeaker

- Compact, high performance loudspeaker that is ideal as a nearfield monitor
- Trapezoidal shape allows it to be either standing upright or laying on its side
- Low flux-leakage magnet design
- Frequency response: 85Hz-20kHz, ± 3dB
- Long-term power handling: 160W
- 85dB SPL
- 100 ± 25 horizontal and vertical
- Weather resistant
- 5 1/4" direct radiating woofer
- 1" direct radiating soft dome tweeter
- Produces extended bass response
- Independent protection circuits
- Threaded inserts have been incorporated into the molded enclosure to allow flexible mounting arrangements
- Dimensions: 9.8"H x 7"W x 5.9"D
- Weight: 5.7 lbs.



M100-WH Available in white



9441A 100W Dual-Channel Power Amplifier

- Delivers 100W into 4 ohms and 75W into 8 ohms over the full audio bandwidth
- Frequency response: 10Hz-50kHz
- Power bandwidth: 20Hz-20kHz
- Convection cooling
- Massive heatsinks, extensive control and protection systems
- Short circuit protection with LED illumination
- Clip LED indicator
- Unit operates day and night without attention
- Inputs are electronically balanced and powered octal sockets are provided to accept plug-in transformers
- May be operated in bridge mode as a single-channel power amplifier and will deliver 150W into a 16 ohm load or 200W into an 8 ohm load
- Less than 0.1% distortion across the full audio bandwidth
- Absolutely quiet operation
- Perfect for powering studio monitoring loudspeakers



9442A 150W Dual-Channel Power Amplifier

- Similar to 9441A except:
- Delivers 150W into 4 ohms and 100W into 8 ohms
 - In bridge mode will deliver 200W into a 16 ohm load or 300W into an 8 ohm load
 - Frequency response: 20Hz-20kHz +1dB
 - Power bandwidth: 10Hz-50kHz

Call For Pricing

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

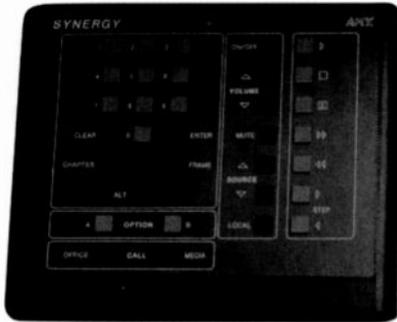


MEDIA RETRIEVAL SYSTEM/TOUCH PANELS



Synergy Client/Server Media Retrieval System

■ AMX Synergy Client/Server software provides desktop network management of meeting rooms and resources ■ Using Synergy Client, a network user can find a suitable meeting room, reserve the room, and specify the setup of tables and chairs ■ Other meeting support items, such as AV support equipment, computers, and concession services, can also be scheduled for delivery ■ As requirements change, the user can edit, add, or delete meeting resources ■ An optional billing module can be integrated to track costs by users ■ The AMX Synergy Server software distributes information to Clients across the network and maintains the database of users, meeting rooms, and resources ■ Synergy software can also enable shared access to media stored at a central location ■ When integrated with AMX AXCESS Control Systems, Synergy allows meeting planners to include tapes, discs, and broadcast channels as an integral part of the meeting ■ The media can be electronically distributed from a central site for access and control from the meeting room **POR***



TOUCH PANELS

■ AMX touch panels embody the latest advancement in integrated control technology ■ Contemporary styling and customized screen menus make touch panels the ideal solution for the most demanding control requirements ■ Buttons, icons, sliders, bar graphs, time displays, logos and drawings may be added and labeled with easy to use pull-down menus and commands ■ Panels are offered in TiltScreen, 19" rackmount and UniMount for wall, lectern or countertop mounting enclosures.

Color Video Active-Matrix LCD Touch Panels

■ Color video window can be shaped to show a small or full-screen display of NTSC or PAL video on any page ■ Employs a 256-color active-matrix 640 x 480 VGA display and touch-sensitive overlay ■ Applications include inserting control buttons over the video window, or allowing a touch on the window to route video or jump to a page with a larger-size window



AXT-CV	Color Video TiltScreen	\$5845.00
AXM-CV/PB	Rackmount, external pushbuttons	6345.00
AXU-CV/PB	UniMount, external pushbuttons	6345.00
AXM-CV	Rackmount	6180.00
AXU-CV	UniMount	6180.00

Color Active-Matrix LCD Touch Panels

■ Active-matrix back lit 640 x 480 (HV) pixel VGA color display delivers the highest quality image ■ The panel includes a VGA monitor output port, helpful in client demonstrations and approval sessions

AXT-CA	Color Active TiltScreen	\$5010.00
AXM-CA/PB	Rackmount, external buttons	5510.00
AXU-CA/PB	UniMount, external buttons	5510.00
AXM-CA	Rackmount	5345.00
AXU-CA	UniMount	5345.00

Color Passive-Matrix LCD Touch Panels

■ Color passive-matrix LCDs with back lit 640 x 480 (HV) pixel VGA resolution displays provide excellent viewing and are ideal for use in high and low ambient light conditions ■ Up to 16 external pushbuttons may be added to the panels (excluding TiltScreen)

AXT-CP	Color Passive TiltScreen	\$4175.00
AXM-CP/PB	Rackmount, external buttons	4675.00
AXU-CP/PB	UniMount, external buttons	4675.00
AXM-CP	Rackmount	4510.00
AXU-CP	UniMount	4510.00

Monochrome Electroluminescent Touch Panels

■ Bright amber electroluminescent 640 x 400 (HV) pixel displays provide the best angle of view of all touch panels

AXT-EL+	EL+ TiltScreen	\$3840.00
AXM-EL+/PB	Rackmount, external buttons	4340.00
AXU-EL+/PB	UniMount, external buttons	4340.00
AXM-EL+	Rackmount	4175.00
AXU-EL+	UniMount	4175.00

Color Video Active-Matrix LCD Mini-Touch Panels

■ Displays VGA-level graphics inserted over an NTSC/PAL video input or color background ■ Employs a 256-color/VGA active-matrix display and touch-sensitive overlay



AXT-MCV	Color Video Mini-TiltScreen	\$3505.00
AXM-MCV	Rackmount	3840.00
AXM-MCV/PB	Rackmount, external pushbuttons	3840.00
AXU-MCV	UniMount	3840.00
AXU-MCV/PB	UniMount, external pushbuttons	3840.00
AXT-MCV/PB	Color Video Mini-TiltScreen, external pushbuttons	3505.00

Color Active-Matrix LCD Mini-Touch Panels

■ Features a 5" color active-matrix LCD screen ■ Employs a 256-color/VGA active-matrix display and touch-sensitive overlay ■ Available with or without side control buttons ■ Display tilts for comfortable viewing or lies flat for laptop and walk-around use

AXT-MCA	Color Mini-TiltScreen	\$2670.00
AXM-MCA	Rackmount color mini-touch panel	3005.00
AXM-MCA/PB	Rackmount color mini-touch panel, external pushbuttons	3005.00
AXU-MCA	UniMount color mini-touch panel	3005.00
AXU-MCA/PB	UniMount color mini-touch panel, external pushbuttons	3005.00
ACT-MCA/PB	Color Mini-TiltScreen, external pushbuttons	2670.00

*Price On Request

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

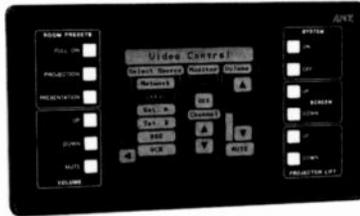


TOUCH PANELS (Cont'd) Black/White LCD Touch Panels

- Bright monochrome 640 x 480 (HV) pixel VGA displays feature excellent image quality and viewing at an economical price
- AXT-LC** TiltScreen, black/white \$2670.00
- AXM-LC/PB** Rackmount, external buttons 3175.00
- AXU-LC/PB** UniMount, black/white, external buttons 3175.00
- AXM-LC** Rackmount, black/white 3005.00
- AXU-LC** UniMount, black/white 3005.00

Black/White LCD Mini-Touch Panels

- Mini-Touch Panels bring the convenience of touch panel control to the small screen
- The compact UniMount panel can fit into a variety of tight spots—on lecterns, in pull-out drawers, or on a wall
- Includes up to 12 external pushbuttons and custom panel engraving



Note: Enclosures available in oak, walnut or matte black. Other finishes available upon request.

- AXT-MLC** LC Mini-TiltScreen \$1420.00
- AXM-MLC** Rackmount Color LC Mini-Touch Panel 1755.00
- AXM-MLC/PB** Rackmount LC Mini-Touch Panel, external pushbuttons 1755.00
- AXU-MLC** UniMount LC Mini-Touch Panel 1755.00
- AXU-MLC/PB** UniMount LC Mini-Touch Panel, external pushbuttons 1755.00
- AXT-MLC/PB** LC Mini-TiltScreen, external pushbuttons 1420.00

Software Panels

- The standard Software Panel operates on the 4-wire AXCESS AXlink data/power bus, offering up to 64 buttons with LED feedback and three 8-segment bar graphs
- The ultrathin, 1" deep flush-mounted enclosure is ideal for lecterns, tabletops and drawers
- An optional sloped wood console is also available

- AXW-SP+** Software panel in wood enclosure, up to 64 buttons, 3 bar graphs \$1335.00
- AXM-SP+** Rackmount software, up to 64 buttons, 3 bar graphs 1000.00
- AXU-SP+** UniMount software, up to 64 buttons, 3 bar graphs 1000.00
- AXU-MSP32** UniMount mini-software, 32 buttons, 3 bar graphs, 4-gang 670.00
- AXM-MSP32** Rackmount (2H) mini-software, up to 32 buttons, 3 bar graphs 670.00
- AXU-MSP24** UniMount mini-software, 24 buttons, 3 bar graphs, 3-gang 585.00
- AXU-MSP16** UniMount mini-software, 16 buttons, 2 bar graphs, 2-gang 500.00
- AXU-MSP8** UniMount mini-software, 8 buttons, 1 bar graph, single-gang 420.00

Note: Enclosure is available in oak, walnut or matte black. Other finishes are available upon request.

WAVE Wireless AXlink Power Packs

WavePack Features

- Extends 2-way wireless AXlink control to TiltScreen and Mini-TiltScreen touch panels
- Transforms panels to WAVE operation in a single plug-and-play step
- Wakes up from battery-saving "sleep" state from a reset button (WavePack) or by touching the panel's screen (Mini-WavePack)
- Updates status feedback automatically when panels awake from "sleep"

- mode
- Operates on 1 of 16 assignable frequency groups, allowing use of multiple WAVE systems in adjacent room applications
- Powers panel for hours with user-programmable, energy-saving battery management

WAVE Server Features

- Provides a 2-way wireless link for up to 8 WavePacks within a 100' radius; multiple servers can manage up to 128 WavePacks in a single system
- Operates up to 3000' away from AXCESS central controllers via AXlink data/power bus
- Allows adjacent-room operation of multiple control systems using Group ID setting

- WAV-PK** Wavepack (WAV-BP battery, WAVE 2-way 2.4GHz RF) \$1170.00
- WAV-PKM** Mini-WavePack (WAV-BPM battery, WAVE 2-way 2.4GHz RF) 1170.00
- AXR-WAVES** WAVE server (AXlink) 1170.00
- SMT-PK** SmartPack (WAV-BP battery, 1-way RF, 38/455kHz IR) 500.00
- SMT-PKM** Mini-SmartPack (WAV-BPM battery, 1-way RF, 38/455kHz IR) 500.00
- WAV-CG** Fast-Cycle battery charger (charges up to 2 batteries) 165.00
- WAV-BP** WavePack battery (WavePack/SmartPack) 85.00
- WAV-BPM** Mini-WavePack battery (Mini-WavePack/Mini-SmartPack) 85.00

Mini-LCD Wired Control Panels

- All AMX Mini-LCD panels feature easy to read text and well-defined graphic layouts
- Control options are clearly displayed on the 2-line, 16-character per line, back lit LCD readout. Display text, buttons, and control codes are fully programmable

- AXP-MLCD** Mini-LCD 2-line display, 20 buttons \$710.00
- AXU-MLCD** UniMount Mini-LCD, 2-line display, 20 buttons 710.00
- AXU-SPL4** UniMount 4-button mini-LCD, 2 relays, 2 I/O, 2-gang 710.00

PRODIGY Lighting Control System

- The PRODIGY provides control of up to 16 enclosures and 96 channels of high-performance architectural lighting control
- Each wall mounted enclosure holds up to six 2400W dimming modules

- PRO-2400** PRODIGY light dimmer with 2 modules \$2340.00
- PRO-SP8** UniMount PROLink wall panel, single-gang 420.00
- PRM-INC** Incandescent dimmer module 335.00
- PRM-FLE1** 120VAC fluorescent dimmer module on 10VDC 335.00
- PRM-FLE2** 277VAC fluorescent dimmer module on 10VDC 335.00
- PRM-FPC1** 120VAC on/off switch module 335.00
- PRM-FPC2** 277VAC on/off switch module 335.00
- PRM-FDB** 120VAC fluorescent dimmer module 335.00

RADIA Lighting Control System

- RADIA master controllers are modular 6-channel lighting controllers, operate as AXlink bus devices, and include 4 onboard 10A dimmers and 2 drivers for external dimmer modules in satellite enclosures

- RAD-MC6** RADIA Master Controller with enclosure 120/240VAC \$1255.00
- RAD-MC** RADIA Master Controller with enclosure 120/240/277VAC 1085.00
- RAD-INC6** Incandescent dimming module, 6000W \$500.00
- RAD-VDR** Electronic fluorescent dimming module 475.00
- RAD-FDB** Fluorescent dimming module 375.00
- RAD-INC** Incandescent dimming module, 2400W 325.00
- RAD-ENC** Satellite module enclosure 200.00
- RAD-SWM** Switch module 100.00



ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

MEDIA CONTROL SYSTEMS/WIRELESS TRANSMITTERS



AXCESS Central Controllers

Every AXCESS system contains 1 central controller. Acting as the nerve center, the central controller performs 3 tasks—command, control, and communication. System commands are coordinated by an onboard microprocessor, following instructions from a custom program stored in memory. Each controller includes a defined set of local control ports, up to 255 devices. A central controller manages all AXlink data bus communications, and includes a Master Port that provides an RS-232 connection for computer diagnostics, exchange of application software, and download of IR control files. Both compiled and source application codes can be stored and recalled from memory. AXCESS CardFrames act as a central controller with the addition of an AXC-EM enhanced system master card.

Control ports: Master port 9-pin male RS-232 (300-38,400 baud)

Processor: Motorola 16-bit 68340

Memory: Standard—64K; optional—256K

Includes: Master port setup switches to define baud rate, data bits, stop bit and parity front panel status LED for power and AXlink status

AXCENT² Integrated AXCESS System

While the AXCENT² is small, it contains the full power of AXCESS programming, control and system expansion. An integrated master controller, the AXCENT² delivers 14 ports for IR/serial, RS-232/422/485, relay and input/output control, popular in many AXCESS applications. If more control is needed, choose from an extensive selection of bus controllers or CardFrames for expansions over AXlink 4-wire data/power bus. It includes a full range of front panel system setup switches and status LEDs for every port.

Control ports: 8 IR/serial ports
2 RS-232 ports, 1 supports CTS/RTS hardware handshaking
2 RS-232/422 ports, 1 supports RS-485 communication
12 relays, normally open, rated at 12VDC at 750mA
6 input/output channels, rated at 200mA

Power: 12VDC power supply, 1.9A (included with 110VAC installations only)

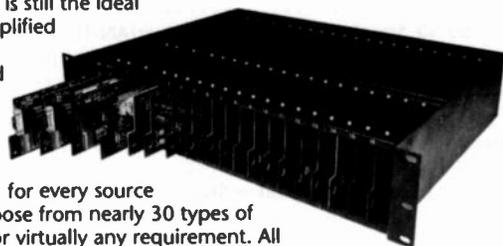
Includes: Integrated master processor and features
Front panel setup and switches and status LEDs
Metal tab strips for commoning adjacent relays
1 AXlink port and 4 CC-IRE emitters

Options: CSB Cable Support Bracket

AXCENT² \$1835.00

AXF-M/S and AXF-S CardFrames

The CardFrame is still the ideal solution for simplified system design, adaptation, and support. It has 16 front-access slots that accept slide-in control cards, 1 for every source controlled. Choose from nearly 30 types of control cards for virtually any requirement. All cards include LED status indicators, visible through the removable front cover.



The Master CardFrame with an AXC-EM Enhanced System Master Card acts as a system master and 16-port controller. The AXF-M/S can support a back-up AXC-EM in the master card 2 slot. Each Server CardFrame adds another 16 control ports to the Master Controller.

Control ports: 16 front-access control card slots
16 rear mounted control cable jacks (16-pin)

Includes: AXC-S CardFrame server to manage card communication
AXC-EM Enhanced System Master Card included with Master CardFrame
Master port on rear panel and on AXC-EM
3 AXlink ports (electrically identical)

AXF-M/S CardFrame with AXC-EM and AXC-S cards . . . \$1420.00

AXF-S CardFrame with AXC-S card only 1085.00

SoftKey Vertical Back Lit Display, RF/IR

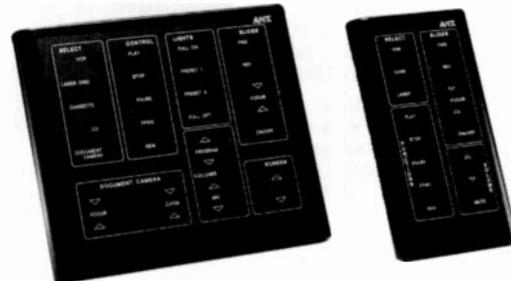
The SoftKey provides a unique solution in control design, offering menu-selected versatility in a handheld wireless control panel. A vertical LCD display is included, with 10 side function buttons and 1 menu selection button.

Specifications

■ Size: 7.5"H x 4"W x 1.35"D ■ Display: 8-character x 30-line LCD

■ Power: NiCad battery pack, approximately 14 hours usage time

TX-SK+ \$1585.00



TX Series Wireless Remote Transmitters

The TX Series of wireless transmitters features slim-line design, offering comfort and flexibility to the presenter. Button locations may be deleted to create custom layouts. A wide range of engraving options are included, and customer logos may be added at extra cost. Wood enclosure is standard for TXC32+ and TX64. RF Carrier: 303.875MHz standard. Power Supply: 9V battery.

TX64* Up to 64 buttons in wood enclosure, RF. . . . \$1085.00

TXC32+ Compact 32-button, molded enclosure, RF, 38/455kHz IR 500.00

TXC4L+ 4 buttons in molded plastic enclosure with laser pointer, RF, 38/455kHz IR 335.00

TXC16+ 16 buttons in plastic enclosure, RF, 38/455kHz IR 265.00

TXC4+ 4 buttons in molded plastic enclosure, RF, 38/455kHz IR 165.00

*Enclosure is available in oak, walnut or matte black. Other finishes on special request.

Wireless Mini-LCD Panel

The TX-MLCD Wireless Mini-LCD Panel offers a wide range of control options in a portable handheld transmitter. The 2-line, 16-character LCD can be programmed to provide text information that changes as new functions are selected. A 20-button keypad is provided to select control functions. RF/IR.

Specifications

■ Size: 5.75"H x 3.5"W x 1.25"D ■ Enclosure: standard plastic; optional wood enclosure ■ Power: 4 AAA batteries

TX-MLCD \$920.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





ANCHOR AUDIO, INC.



PORTABLE SOUND SYSTEMS



Powered and Unpowered Sound Systems

AN-1000X 2-Way Powered Full-Range Monitor Speaker • RCA and 1/4" phone line level inputs • Mic/line configurable XLR balanced input • Line level (RCA) and external speaker output • Powerful 50W MOSFET amplifier • Shielded magnet speakers • Separate bass, treble and volume controls on front panel \$400.00

AN-1001X 2-Way Unpowered Monitor Speaker • Includes in/out parallel speaker connections • Speaker cable (SC-50) not included .. 125.00

AN-1001X/70 2-Way Unpowered Monitor Speaker • Internal 70V transformer tapped at 5/10/30W • Includes in/out parallel speaker connections • Speaker cable (SC-50) not included 145.00

AN-100 2-Way Powered Monitor Speaker

• 1/4" phone/microphone and instrument level inputs • 2 RCA-type summing line level inputs • 25W MOSFET amplifier • Separate bass and treble controls • Shielded magnet speaker • Available in platinum beige only \$172.00



AN-100DC Powered Monitor Speaker with DC output • An AN-100 equipped with a 12VDC output for powering an external wireless receiver that requires 12VDC at 100mA or less • Includes power cable from DC output to receiver and audio output from receiver to line input \$188.00

AN-100W Wireless • Includes receiver only (must order mic and transmitter separately) • Built-in wireless receiver (2 selectable channels) and antenna • Select a WH-1000 handheld microphone/transmitter or a WL-1000 transmitter combined with a CM-1000, LM-30, HBM-35 or HBM-40 322.00

Explorer Sound Systems

PA-2500 Explorer Sound System • AC powered • 50W amplifier • 2-way speaker system • Separate bass and treble controls • Inputs include a balanced, low impedance XLR mic input with phantom power, an unbalanced 1/4" phone mic input and a line level input with 1/4" phone and RCA jacks • RCA line output • 8 ohm speaker output \$700.00

PB-2500 Explorer Sound System • Battery powered • 25W amplifier • 2-way speaker system • Separate bass and treble controls • Inputs include a balanced, low impedance XLR mic input with phantom power, an unbalanced 1/4" phone mic input and a line level input with 1/4" phone and RCA jacks • RCA line output, but no speaker output • Built-in charger included 675.00

PA-2500W Wireless Explorer (Order mic and transmitter separately) • AC powered • Built-in wireless receiver and antenna 950.00

PB-2500W Wireless Explorer (Order mic and transmitter separately) • Battery powered • Built-in wireless receiver and antenna 925.00

P-2501 Explorer Companion Speaker • Unpowered speaker for use with AC powered Explorer sound systems • Speaker cable (SC-50) not included 320.00

Accessories

AK-100 Accessory Kit • For AN-100 • Includes MIC-90P mic, CC-100 bag, MSB-201 mic/speaker stand and SB-1 mounting bracket .. \$226.00

AK-1000 Accessory Kit • For AN-1000X • Includes MIC-90 mic, CC-100 bag, SS-250 speaker stand and SB-1 mounting bracket .. 256.00

AK-2500 Accessory Kit • For Explorer • Includes MIC-90 mic, MSB-201 mic stand, SS-450 speaker stand, CC-450 stand bag and VL-25 cover 417.00

CC-100 Carrying Bag • For AN-100/1000X Series • Cordura nylon bag with storage compartment 36.00

CC-450 Speaker Stand Bag • For AN-100/1000X Series/Explorer • Holds 2 speakers and 1 mic stand \$ 94.00

CM-1000 CollarMic™ Microphone • For WL-1000 (3.5mm plug)/AN-100W • Low profile microphone with adjustable gooseneck that fits around neck with a tiny mic element that extends up to the mouth130.00

CM-1000XLR CollarMic Microphone • With belt-pack XLR module • For AN-100/1000X Series/Explorer • Low-profile mic with an adjustable gooseneck that fits around the neck with a tiny mic element that extends up to the mouth • Mic extension cable (EX-50M) not included270.00

EX-50P 50' Mic Extension Cable • Connects CM-1000XLR to an AN-100 input • Low noise cable with high density braided shield ..58.00

EX-50M 50' Mic Extension Cable • For AN-1000X Series/Explorer • Low noise cable with high density braided shield • Has XLR connectors; 1 male and 1 female59.00

HBM-35 Economy Headband Type Microphone • Headband mic with electret element • 3.5mm mini-plug60.00

HBM-40 Headband Type Microphone • Deluxe headband mic with electret element • 3.5mm mini-plug90.00

HS-1 Carrying Handle • Black • For AN-100/1000X Series19.00

LM-30 Lapel Microphone • For use with WL-1000 (3.5mm plug)/AN-100W • Electret mic element with omnidirectional pickup pattern38.00

MIC-90 Handheld Microphone • For use with AN-1000X Series/Explorer's Mic 1 input • Dynamic, balanced, low impedance mic with unidirectional pickup pattern • Ball-shaped grill and windscreen • 20' cable with male and female XLR connectors \$100.00



MIC-90P Handheld Microphone • For use with AN-100/Explorer's Mic 2 input • Same as MIC-90, with 1/4" phone plug jack and 20' cable .. \$100.00

MSB-201 Mic Stand • For use with Explorer/AN-100 • Collapsible floor model mic stand with 33" long extension boom • Adjustable height from 36"-63" • Black chrome finish 65.00

RM-1 Single Rackmount Kit • For AN-100/1000X Series • Black .. 55.00

RM-12 Dual Rackmount Kit • For AN-100/1000X Series • Black. . 63.00

SB-1 Swivel Stand Mounting Bracket • For AN-100/1000X Series • Includes speaker stand adaptor and microphone stand adaptor • Black. 50.00

SB-3 Swivel Wall Mounting Bracket • For AN-1000X • Black ... 21.00

SB-360 Swivel Wall Mounting Bracket • Allows 360° rotation • Black 23.00

SB-3P Swivel Wall Mounting Bracket • For AN-100 • Platinum beige 21.00

SB-360P Swivel Wall Mounting Bracket • Allows 360° rotation • Platinum beige. 23.00

SC-50 50' Speaker Cable • For Explorer/AN-1000X • Heavy-duty 18-gauge cable with strain relief housed in vinyl jacket • Weatherproof male phone plugs on each end 39.00

SS-250 Speaker Stand • For AN-100/1000X Series • Lightweight, collapsible stand • Black anodized structural aluminum • Adjustable height from 42" to 70" • Load capacity of 25 lbs. • Requires SB-1 mounting bracket 99.00

SS-450 Heavy-Duty Speaker Stand • For Explorer • Heavy-duty structural aluminum with black anodized finish • Adjustable height from 38"-79" • 75 lb. load capacity 169.00

VL-25 Storage Cover • For use with Explorer • Heavy-duty vinyl cover 35.00

WH-1000 Handheld Microphone/Transmitter • For AN-100W, with power on/off/mute switch 180.00

WL-1000 Body-Pack Transmitter • For AN-100W • Detachable • Body-pack transmitter only 140.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

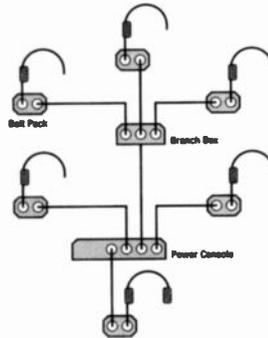


Porta-Com 2-Channel Intercom Systems

■ 2-channel, wired intercom system consisting of a central power supply, belt-packs with A/B channel select and volume control, standard mic cable and dual or single headsets ■ Available in complete systems or separate units ■ Offers 20-headset capability with simple branch-box operation ■ AC/DC powered ■ Rackmountable ■ Portable ■ Porta-Com can be used for television/theater/lighting/church production, educational institutions, industrial production, sound contracting and football coaching ■ Includes a carrying case ■ Extremely easy to use ■ High performance/low cost



COM-60FC



System diagram



Porta-Com 2-Channel Intercom

COM-80 8-Headset, 2-Channel Intercom System. Includes 1 PC-100 power console, 8 H-100 dual earpiece headsets*, 8 BP-100 belt-packs, 2 B3-100 branch boxes, 10 EX-50M 50' extension cables and 2 CC-15 carrying cases. \$3099.00

COM-80FC 8-Headset, 2-Channel Intercom System. Same as COM-80 except: Includes 2 CC-15F deluxe carrying cases; cables not included 2673.00

COM-60 6-Headset, 2-Channel Intercom System. Includes 1 PC-100 power console, 6 H-100 dual earpiece headsets*, 6 BP-100 belt-packs, 1 B3-100 branch box, 7 EX-50M 50' extension cables and 1 CC-15 carrying case. 2279.00

COM-60FC 6-Headset, 2-Channel Intercom System. Same as COM-60 except: Includes 1 CC-15F deluxe carrying cases; cables not included 1960.00

COM-40 4-Headset, 2-Channel Intercom System. Includes 1 PC-100 power console, 4 H-100 dual earpiece headsets*, 4 BP-100 belt-packs, 4 EX-50M 50' extension cables and 1 CC-15 carrying case. 1529.00

COM-40FC 4-Headset, 2-Channel Intercom System With Deluxe Carrying Case. Includes 1 PC-100 power console, 4 H-100 dual earpiece headsets*, 4 BP-100 belt-packs and 1 CC-15F deluxe carrying case with foam inserts; cables not included 1389.00

COM-20 2-Headset, 2-Channel Intercom System. Includes 1 PC-100 power console, 2 H-100 dual earpiece headsets*, 2 BP-100 belt-packs, 2 EX-50M 50' extension cables and 1 CC-15 carrying case. 909.00

COM-20FC 2-Headset, 2-Channel Intercom System With Deluxe Carrying Case. Includes 1 PC-100 power console, 2 H-100 dual earpiece headsets*, 2 BP-100 belt-packs, 2 EX-50M 50' extension cables and 1 CC-15F deluxe carrying case with foam inserts. 829.00

*Single earpiece headsets may be substituted for dual earpiece headsets. Please call for pricing.

Porta-Com Components

Porta-Com systems can be built using the following components.

PC-100 Porta-Com 2-Channel Power Console. Has 4 outputs: powers up to 20 BP-100 belt-packs. Includes wall mount AC power adaptor (operable on 30-40VDC) \$225.00

PBS-100 Portable Battery Supply. Uses 6 D-cell batteries. Powers 8-10 headsets 199.00

H-100 Dual Earpiece Headset. Lo-Z dynamic microphone and headphones with 6' coil cable and female XLR-4 connector. Features noise-canceling microphone with on/off switch. 157.00

CC-15F Deluxe Porta-Com Carrying Case. Has custom-cut foam inserts for 1 power console and AC power adaptor. 6 headsets and 6 belt-packs (no cables) 135.00

H-100S Single Earpiece Headset. Lo-Z dynamic microphone and headphones with 6' cable and female XLR-4 connector. Features noise-canceling microphone with on/off switch. 133.00

BP-100 Porta-Com 2-Channel Belt-Pack. Small, lightweight belt-pack with volume control and A/B channel switch. Has standard XLR-3 line connector and XLR-4 headset connector. Rugged aluminum construction 125.00

CC-15 Porta-Com Carrying Case. Without foam inserts. 110.00

B3-100 Porta-Com Branch Box. For expanding Porta-Com systems. Has 1 input and 3 outputs 85.00

EX-100M 100' Extension Cable. Includes standard 3-pin XLR connectors 80.00

RM-100 Porta-Com Rackmount. Mounts 1 or 2 PC-100 power consoles in a single (1 1/4") 19" rack space 51.00

EX-50M 50' Extension Cable. Includes standard 3-pin XLR connectors 40.00

AC-20 Replacement AC power adaptor for PC-100 19.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





Digital Logic Series Gold Mount Batteries

Each digital battery has a built-in microprocessor that communicates directly with the InterActive chargers for reliability, performance and life... Fuel computer and InterActive Viewfinder "Fuel Gauge" accurately computes the state of charge of the battery and continually informs the operator of remaining capacity through an integral LCD or LED display... Battery Management: Digital batteries can display and print out a variety of data including serial number, date of manufacture, number of charge/discharge cycles, present available capacity, cell temperature and calibrated capacity... All digital batteries should be charged only with Anton/Bauer InterActive Logic Series chargers models MP-4D, Quad, Dual, MP-2 and Q2... Earlier models of the Magnum Quad, MP-4, MP-8 and CMFC can be made digital compatible with a software update

Digital Pro Pac

Recommended for all applications Premium heavy-duty Pro Pac cells

Digital Pro Pac 14 Logic Series NiCad Battery 14.4V 60Wh 5 1/4" x 4 1/2" x 3 3/4"; 5 1/2 lbs. Typical run time: 2 hours at 29W, 3 hours at 19W, 4 hours at 15W \$625.00

Digital Pro Pac 13 Logic Series NiCad Battery 13.2V 55Wh 5 1/4" x 4 1/2" x 3 3/4"; 4 3/4 lbs. Typical run time: 2 hours at 27W, 3 hours at 18W, 4 hours at 14W 605.00



Digital Compac

Almost half the size and weight of a Pro Pac Should only be considered with power demands under 24W Not recommended when using an Ultralight

Digital Compac 14 Logic Series NiCad Battery 14.4V 40Wh 4 1/2" x 3 3/4" x 2 1/4"; 2 1/4 lbs. Typical run time: 2 hours at 20W, 3 hours at 13W \$425.00

Digital Trimpac

Extremely thin and lightweight (less than half the width and almost half the weight of a Pro Pac) Has more effective energy than 2 NP style slide-in batteries Not recommended when powering an Ultralight or camcorders rated above 24W

Digital Trimpac 14 Logic Series NiCad Battery 14.4V 40Wh 6 3/8" x 4 3/8" x 1 1/8"; 2 1/4 lbs. Typical run time: 2 hours at 20W, 3 hours at 13W \$395.00

Logic Series Gold Mount Batteries

Identical to digital versions with respect to size, weight, capacity, Impac case construction and application Advanced MicroCode logic circuits and ACS sensor networks of these batteries communicate directly with all Logic Series chargers These batteries do not, however, include the digital microprocessor features such as the integral diagnostic program, "Fuel Computer," LCD/LED display and InterActive viewfinder "Fuel Gauge" circuit

- Pro Pac 14 NiCad battery 14.4V 60Wh \$495.00
Pro Pac 13 NiCad battery 13.2V 55Wh 475.00
Trimpac 14 14.4V 40Wh 295.00
Compac 14 NiCad battery 14.4V 40Wh 295.00
Trimpac 13 13.2V 36Wh 285.00
Compac 13 NiCad battery 13.2V 36Wh 285.00

Logic Series VTR Type Batteries

Professional choice for all BP-90 type applications

Pro Pac 90 NiCad VTR Battery 12V 48Wh 3 3/4 lbs. Typical run time: 3 hours at 14W \$365.00

InterActive 2000™ PowerChargers

Common Features

2- or 4-position models 6 simultaneous charge termination systems SSP (selective sequence programming) Automatic balance and rejuvenation mode Lifesaver maintenance mode Cold battery safety mode Power loss memory mode Multifunction LCD displays critical battery and charger data automatically Built-in regulated power supply DC output for camera operation from AC mains Wide range mains input (90-260VAC 50-60Hz) automatically adapts to any mains source worldwide for both charging and camera power Modular design allows addition of expansion options Expanded communications with digital batteries and new charging protocols improve charge times and battery performance Serial output port for printer and PC interface Slim, ultra-lightweight design for easy portability Charge position expansion port for charging up to 4 additional batteries 2 power module choices for optimized performance and economy

PowerCharger Quad 2702

Includes common features plus: 4-position power charger 70W camera DC output will operate virtually all camera camcorders from any AC mains source Built-in diagnostic/discharge module will test and diagnose batteries before they go into the field Autocal feature communicates with digital batteries—automatically tests and updates battery capacity information to the battery's fuel computer Will charge any Gold Mount battery in one hour and can be expanded to charge up to 8 batteries of professional types \$1695.00

PowerCharger Quad 2401

Includes common features plus: Most slim and lightweight full-featured 4-position power charger 40W supply will power most camera/camcorders from any AC mains Will charge ProPac batteries in 2 hours and TrimPac batteries in one hour Can be expanded with the PowerCharger charge module options to charge any combination of up to 8 batteries of all professional types Add the diagnostic/discharge module and the Quad 2401 becomes an all-purpose power and test system with its standard LCD providing instant access to battery status \$1395.00

PowerCharger Dual 2701

Includes common features plus:

2-position power charger 70W camera power output Will charge any combination of Anton/Bauer Gold Mount batteries in one hour as well as reliably operate virtually any camera/camcorder from any AC mains source Dual package design with 70W capability makes this the ultimate travel or starter PowerCharger Optional modules include diagnostic/discharge module and expansion charge modules to charge up to 6 batteries of any type \$1195.00



PowerCharger Dual 2401

Includes common features plus: 2-position power charger 40W camera power output Will charge ProPac batteries in 2 hours and TrimPac batteries in one hour, in any combination Fully compatible with all the PowerCharger expansion options Wide range input and small size make it perfect for travel without sacrificing features \$995.00

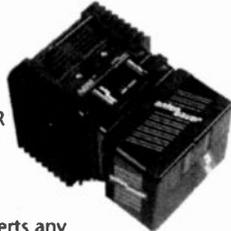
ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





Diagnostic Accessories

ADM (Automatic Discharge Module) = Load circuit and built-in automatic cut-off safely exercise batteries through a full discharge cycle
 = Coupled with the DataTap, the ADM becomes a calibration and diagnostic instrument
 = LCDDataTap will display battery capacity while the DC output can be coupled to a DVM/chart recorder for diagnostic data = Directly accepts all Gold Mount and Pro Pac 90 (BP-90 type) VTR batteries = All other 12-14V batteries including Power Strap can also be accommodated by using optional CA-30 cable\$395.00



Prowatt 250 Power Inverter = 250W unit converts any 12-14V source to 115VAC = Allows any Anton/Bauer charger to be powered from any vehicle or source with a 12V negative ground system = Includes an automatic cut-off circuit to prevent the vehicle battery from being depleted = Plugs into any standard cigarette lighter socket = 1 1/2" x 4 1/2" x 6"; 1.75 lbs..... \$130.00

Ultralight 2 Camera Mounted Light

= Designed specifically for camera mounting
 = Compact super lightweight (only 10 oz.) version of the original Ultralight system shares many of the same features and accessories
 = Patented universal mounting system for 1/4-20 or shoe type mounting standard, eliminating the need for special studs or adaptors = With the head module removed, the Ultralight 2 can be folded into itself like a pocket knife and practically disappears into the camera handle
 = The Ultralight 2 can remain mounted and connected to the camera at all times even when the camera is in the case = Integral PowerTap cable plugs directly into the PowerTap receptacle on all Gold Mounts and is available in 2 lengths as indicated below = Complete with universal mounting system, 1 head module, 1 BAB bulb (25W flood), and integral PowerTap cable
 UL2-6 Ultralight camera mounted light with integral 6" PowerTap cable. For use with the Sony SX camera \$195.00
 UL2-20 With integral 20" PowerTap cable 195.00
 UL2-28 With integral 28" PowerTap cable 195.00
 UL2-HM Extra quick change head module for UL2. To fully realize the versatility of the Ultralight System, it is highly recommended that additional head modules be part of every system. (Not for use with original ULS or UL2 models)..... 75.00



Original Ultralights

= 3/8" stud mounting system = Ideal for a wide variety of applications in addition to camera mounting = Available in both single and dual head versions = Features choice of power source: 12-14V, 30V and 115/230VAC = Integral connector accepts a variety of power cables (must be ordered separately) = Available separately or in complete lighting kits
 UL2 Ultralight Dual Dual base with 2-head modules, 2 switches and single power input connector. Includes 2 BAB (25W flood) bulbs . . \$350.00
 ULS Ultralight Single Single base and head module. Includes 1 BAB (25W flood) bulb 195.00
 UL-HM Ultralight Head Module Extra quick change rugged aluminum module house alternate or spare bulbs.
 Not for use with Ultralight 2..... 75.00

Bulbs for Ultralight

Low Voltage (12/14V) Bulbs are available in 3 Focus Types
Triple Focus Bulbs — The ESX, EYR and EYF/FPA bulbs provide 3 beam/output options: 1) Spot (15°) — plain bulb. 2) Medium Spot (approx. 21°) — with #1 diffuser (UL-DF). 3) Flood (36°)—with wide-angle adaptor (UL-WA), which covers most zoom lenses in the extreme wide position.
Dual Focus Bulbs — The EXZ bulb provides 2 beam/output options and is a good all-around bulb. 1) Medium Flood (24°) — plain bulb. 2) Full Flood (36°) — with wide-angle adaptor (UL-WA).
Single Focus Bulbs — The BAB, EYP and EYC bulbs provide full flood (36°) — plain bulb.

Purpose/Type	Bulb Code	Watts	Ft. Candles @ 5'			Amps	Run Time w/4AH Battery
			Spot	Med.	Flood		
Triple Purpose	ESX	25	200	85*	30**	1 1/2	120 min.
	EYR	50	400	170*	60**	3 1/2	60 min.
	EYF/FPA	85/75	700	300*	120**	6 1/2	35 min.
Dual Purpose	EXZ	60	-	175	70**	4 1/2	45 min.
Single Purpose	BAB	25	-	-	35	1 1/2	120 min.
	EYP	50	-	-	65	3 1/2	60 min.
	EYC	85/75	-	-	125	6 1/2	35 min.

All above data measured at 14V.
 *With #1 diffuser (ULDF) **With wide-angle adaptor (UL-WA)
 Note: 14.4V wattage rating. (May be greater than the 12V ratings indicated on the actual bulb).

30V Bulbs — While the low voltage bulbs offer maximum versatility, the following bulbs can be used with a 30V battery belt to provide excellent results in certain applications. Not for use with Ultralight 2.

Purpose/Type	Bulb Code	Watts	Amps	Ft. Candles @ 5'	Run Time w/4AH Battery
Extra high output. Full flood. Needs no adaptor.	EXS	200	6 1/2	400	35 min.
Long run time Flood only.	EKP-ENA Note.	80	2 1/2	140	90 min.

Note: Bulbs EKP-ENA must be used with UL-WA wide-angle adaptor. The beam pattern of the plain bulb is unacceptable.
 All Bulbs (12-14/30V, spot/medium/flood) \$28.00

Ultrakits

= Portable lighting packages that include either an Ultralight Single or an Ultralight Dual in a custom-fitted case complete with a battery belt and all necessary accessories = The Ultrakit 13-S/D includes one 13V power strap 13 battery belt while the 30V Ultrakit 30-S/D includes the heavy-duty 30/13 battery belt

Ultrakit 13-D/S 13V Ultralight Kits Include:
 = PowerStrap 13 battery belt: 13.2V 55Wh (fast charge compatible)
 = Power cable (ULC-L) power strap 13 to Ultralight, 5' = Bulb (BAB) 25W flood (2 BAB bulbs included with dual kit) = Case, heavy-duty shipping/carrying type with custom cut foam interior
 Ultrakit 13-D Dual \$795.00
 Ultrakit 13-S Single 675.00

Ultrakit 30-D/S 30V Ultralight Kits Include:
 = 30/13 battery belt: 30V, 120Wh (switchable to 13.6) = Fast charge compatible = Power cable (ULC-30/13) battery belt to Ultralight, 5'
 = Bulb (EKP/ENA) 80W flood (2 EKP/ENA bulbs included with dual kit)
 = Case, heavy-duty shipping/carrying type custom cut foam interior
 = ULWA wide-angle adaptor
 Ultrakit 30-D Dual \$1475.00
 Ultrakit 30-S Single 1345.00

Note: Filters, focus adaptors, spare head modules, handles and mounting studs must be purchased separately.

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



PRODUCT APPLICATIONS GUIDE

CAMERA/CAMCORDER MODEL #	POWER WATTS	MAXIMUM BATT. VOLT.	QUICK-RELEASE GOLD MOUNT	BATTERY RUN TIMES (HOURS)		NOT REQUIRED FOR UL-2 LIGHTING POWER TAP CABLE		POWER SUPPLY
				PRO PAC	COMPAC/TRIMPAC	BRACKET		
HITACHI								
Z-ONE	12	14.4	CB-C1	5	3½	BRSHOE	20"	SPS 6
Z-ONE W/BVVS	27	14.4	QRSP200	2½	1½	BRSHOE	28"	SPS 6
Z-ONE W/PVV1	22	14.4	QRSP200	2½	1½	BRSHOE	20"	SPS 6
Z-ONE W/AG7450	34	13.2	QRAB7450	1½	1	BRSHOE	28"	SPS 6
Z-ONE W/BVVS	25	14.4	QRSP200	2½	1½	BRSTUD½	28"	SPS 6
KEGAMI								
HL-53/55	13	14.4	QPY-79E	4½	3	BRSTUD½	20"	SPS 3/6
HL-53/55 W/BVVS	26	14.4	SP BETA PKG.	2½	1½	BRSTUD½	28"	SPS 3/6
HC-340/HC-390	15	14.4	OEM SUPPLIED	4	2½	BRSHOE	20"	SPS 3/6
HC-340/HC-390 W/PVV1	25	14.4	QRSP200	2½	1½	BRSHOE	20"	SPS 3/6
HC-340/HC-390 W/BVVS	28	14.4	SP BETA PKG.	2	1½	BRSHOE	28"	SPS 6
HC-340/HC-390 W/AG 7450	38	13.2	OEM SUPPLIED	1½	1	BRSHOE	28"	SPS 6
HL-57	18	14.4	OEM SUPPLIED	3½	2½	BRSTUD½	20"	SPS 3/6
HL-57 W/BVVS	31	14.4	QRSP200	2	1½	BRSTUD½	28"	SPS 6
HLV55	23	14.4	QRSP200	2½	1½	BRSHOE	20"	SPS 3/6
HL-43	15	13.2	OEM SUPPLIED	3½	2½	BRSHOE	20"	SPS 6
HL-43 W/BVVS	28	13.2	QRSP200	2	1½	BRSHOE	28"	SPS 6
HL-V77 (DVC PRO)	28	14.4	OEM SUPPLIED	2	1½	BRSHOE	20"	SPS 6
HL-V73 (DVC PRO)	25	14.4	OEM SUPPLIED	2½	1½	BRSHOE	20"	SPS 6
HL-59	17	14.4	OEM SUPPLIED	3½	2½	BRSTUD½	20"	SPS 6
JVC								
KH-100	31	14.4	OEM SUPPLIED	2	1½	BRSHOE	20"	SPS 6
KY-17/25/35/90 W/BR S411	32	13.2	Q-410	1½	1½	BRSHOE	28"	SPS 6
KY-17/25/35/90 W/BR S422	31	13.2	QR-27	1½	1	BRSHOE	20"	SPS 6
KY-27/KY-19 W/AU45H	23	14.4	QR-AU45H	2½	1½	BRSHOE	20"	SPS 6
KY-27/KY-19	13	14.4	QR-27	4½	3	BRSHOE	20"	SPS 6
KY-27/KY-19 W/BRS411	27	13.2	Q-410	2	1½	BRSHOE	28"	SPS 6
KY-27/KY-19 W/BRS422	25	13.2	QR-27	2	1½	BRSHOE	20"	SPS 6
KY-27/KY-19 W/PVV1	23	14.4	QRSP200	2½	1½	BRSHOE	20"	SPS 6
KY-27/KY-19 W/BVVS	26	14.4	QRSP200	2½	1½	BRSHOE	28"	SPS 6
KY-27/KY-19 W/BR-DV10	25	14.4	QR-DV10	2½	1½	BRSHOE	28"	SPS 6
KY-35/90	16	14.4	Q-35	3½	2½	BRSHOE	20"	SPS 6
GY-X2B	25	14.4	QR-27	2½	1½	BRSHOE	20"	SPS 6
GY-X3	23	14.4	QR-X3	2½	1½	BRSHOE	20"	SPS 6
PANASONIC								
AG-DP800	20	14.4	OEM SUPPLIED	2½	1½	BRSHOE	20"	SPS 3/6
AJ-D310	40	14.4	QR-AU45H	1½	1	BRSTUD½	20"	SPS 6
AQ-10/20	18	14.4	QRPANAQ	3½	2½	BRSTUD½	20"	SPS 3/6
AQ-10/20 W/AU-410	33	14.4	QRPANAQ	1½	1½	BRSTUD½	28"	SPS 6
WV-F250	18	13.2	QRPANCLC	3	2	BRSHOE	20"	SPS 3/6
WV-F500/565/700	18	14.4	QRPANCLC	3½	2½	BRSHOE	20"	SPS 3/6
WV-F250 W/AG-7450	41	13.2	QRAB7450	1½	½	BRSHOE	28"	SPS 6
WV-F500/565/700 W/AG-7450	41	13.2	QRPANAQ	1½	½	BRSHOE	28"	SPS 6
WV-F250W/AU45H	28	13.2	QRAU45H	2	1½	BRSHOE	20"	SPS 6
WV-F500/565/700 W/AU410	13	14.4	QRPANAQ	1½	1½	BRSHOE	28"	SPS 6
WV-F500/565/700 W/PVV1	28	14.4	QRSP200	2	1½	BRSHOE	20"	SPS 6
WV-F500/565/700 W/BVVS	31	14.4	SP BETA PKG.	2	1½	BRSTUD½	28"	SPS 6
WV-F500/565/700 W/AU45H	28	14.4	QRAU45H	2	1½	BRSHOE	20"	SPS 6
AQ-11D	11	14.4	QRPANAQ	5½	3½	BRSTUD½	20"	SPS 3/6
AJ-D700 (DVC PRO)	23	14.4	OEM SUPPLIED	2½	1½	BRSHOE	20"	SPS 6
AJ-D300	28	14.4	QRD300	2	1½	BRSHOE	20"	SPS 6
AJ-D200 (DVC PRO)	18	14.4	OEM SUPPLIED	3	2	BRSHOE	20"	SPS 6
SONY								
BVP-5/7/50/70/90	13	14.4	QRDXCM3A	4½	3	BRSTUD½	20"	SPS 3/6
BVP500 W/BVVS	30	14.4	QRSP200	2	1½	BRSTUD½	28"	SPS 6
BVP500 W/DNV5	35	14.4	QRD700	1½	1	BRSTUD½	20"	SPS 6
BWW-505/507/550/570/590	27	14.4	SP BETA PKG.	2½	1½	BRSTUD½	28"	SPS 3/6
BVW-200/300/400	22	14.4	QRSP200	2½	1½	BRSTUD½	20"	SPS 3/6
BVW400A	22	14.4	QRSP400A	2½	1½	BRSTUD½	20"	SPS 3/6
DXC-327/537	12	14.4	QRDXC327/537	5	3½	BRSTUD½	20"	SPS 3/6
EVW300/EVW300A	17	14.4	QRSP200	3½	2½	BRSTUD½	20"	SPS 3/6
DXC-537 W/BVVS	25	14.4	SP BETA PKG.	2½	1½	BRSTUD½	28"	SPS 3/6
DXC-D30	14	14.4	QRSP400A	4½	2½	BRSTUD½	20"	SPS 6
PVV-D30 (DXC-D30 W/PVV3)	24	14.4	QRSP400A	2½	1½	BRSTUD½	20"	SPS 6
DRS-130 (DXC-D30 W/DRS1)	25	14.4	QRSP400A	2½	1½	BRSTUD½/BRSHOE	20"	SPS 6
DNW-7/90	32	14.4	QRD700	1½	1½	BRSTUD½	6"/20"	SPS 6
DXC-327/537W/PVV1	22	14.4	QRSP200	2½	1½	BRSTUD½	20"	SPS 3/6
BVW-D600	24	14.4	QRSP400A	2½	1½	BRSTUD½	20"	SPS 3/6
DXC-637	14	14.4	QRDXC327/537	4½	2½	BRSTUD½	20"	SPS 3/6
DXC-637 W/BVVS	27	14.4	SP BETA PKG.	2½	1½	BRSTUD½	28"	SPS 6
DXC-637 W/PVV3 (PVW637)	24	14.4	QRSP400A	2½	1½	BRSTUD½	20"	SPS 6
DVW-700	28	14.4	QRD 700	2	1½	BRSTUD½	20"	SPS 6
UVW-100	23	14.4	QRSP400A	2½	1½	BRSHOE	20"	SPS 6

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



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.

Anvil designs each case to exact specifications for uncompromising fit and quality. Case interiors are custom designed to provide

maximum shock absorption and vibration resistance. Quality control is assured through numerous inspections during and at the conclusion of the manufacturing process. If your equipment is worth protecting, it's worth using an Anvil Case.



A.T.A. Video and Audio-Visual Cases

Anvil Product Lines

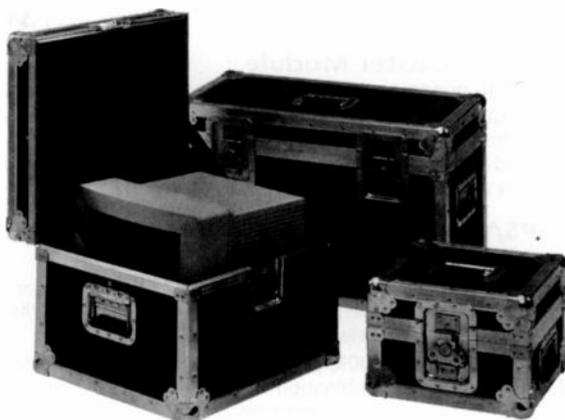
A.T.A.—Anvil's most popular line, fully compliant with Air Transport Association 300, category 1 specification.

ArmorLite—Anvil's exclusive lightweight case, which is on average 30% lighter in weight than our 3/8" or 1/2" A.T.A. cases and still offers the same durability.

M.A.C.C.—Military applications cases and containers that meet or exceed applicable portions of MIL. STD.-810 C/D.

Forge II—Ideal for local or occasional travel not involving air transport.

Fiber—Available in rugged vulcanized fiber or Duralite fiber.



A.T.A. Computer, Video and Audio-Visual Cases

Anvil builds a strong case around any computer, broadcast, video or audio-visual system, or any combination of equipment requiring protection for travel or storage. Just submit the manufacturer's name and model number from your equipment and we'll provide you with a case that will ensure your components are ready when you are, every time.

E.I.A. Rackmount Cases

Anvil offers a variety of cases for standard 19" rackmount components. Front and rear removable covers are standard for easy access and ventilation. Available in non-shock mounted or shock mounted configurations.



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 assembly swings into position and all components lock securely in place. Lid is then attached to the case side, instantly creating a stable work area.

Lift Case

The ATA compliant Lift Case is the answer to raising heavy monitors, displays, projectors, speakers, or anything that is used for presentations. Not only does the case supply protection during transit, it also incorporates a self-contained pneumatic lift mechanism. Simply remove the case lid, attach it to the case side for storage, pull the safety pin, and watch your equipment raise pneumatically to a level of your choice. Features: Access doors provide easy access to lift controls; heavy-duty locking casters; nylon safety straps included to secure equipment when raising or lowering; optional drapery skirts are available for professional shows or presentations.

With over 40 years in the case business, Anvil has built cases for just about everything imaginable. Let us take the worry out of your shipping concerns. Most orders, custom or standard, are expedited from drawing board to shipping dock within 10 working days.

Call For Pricing

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

REFERENCE
CASES



400 Digiducer™ Stereo Generator

- Audiophile analog signal path ▪ Digital control ▪ Better than 70dB separation to 15kHz ▪ True real time throughput ▪ High frequency limiter ▪ Zero overshoot lowpass filter ▪ High resolution meter ▪ 2 independent adjustable transmitter outputs ▪ Remote control and tally\$3995.00

320A Compellor®—2-Channel Stereo

- Dual mono operation ▪ Individual silence gates ▪ 2 stereo modes: leveling link, compression ▪ Reference level (-10, +4, +8) switchable (from rear panel) ▪ Leveling speed switchable from front panel ▪ Peak limiter defeat switch ▪ Bypass relays, remote controllable ...\$1350.00

250 Aural Exciter® Type III

- Adjustable harmonics mixing ▪ 2 noise reduction modes ▪ Spectral Phase Refractor™ (SPR) ▪ Servo-balanced I/O on XLR type connectors ▪ Operates with I/O levels from +8dBm to -10dBm ▪ RF filtered AC power input ▪ Direct relay bypass with remote control ▪ Solo function ▪ All switch settings LED indicated\$995.00

323A Compellor/Aural Exciter

- Compellor: ▪ Compressor ▪ Leveler ▪ Peak limiter ▪ Ultra-pure audio path ▪ Improved metering ▪ Improved transformerless servo-balanced input/output circuits ▪ Aural Exciter: Lower noise, smoother performance ▪ System: Inputs and outputs trimmed for highest common mode rejection ratio (CMRR)\$949.00

622 Logic Assisted Expander Gate™

- Logic assisted gate circuitry ▪ Parametric key input filters -24dB octave ▪ Key monitor headphone jack ▪ 119dB dynamic range ▪ Switchable ducking mode ▪ Servo-balanced input and output circuits ▪ +4/-10 operation, rear panel selectable ▪ Hardwire relay bypass\$795.00



661 Tubessence® Expressor™ Tube Compressor/Limiter With Easyrider®

- Auto or full manual operation ▪ Tubessence in the output stage ▪ HFX allows use of high compression ratios ▪ SPR ▪ Use sidechain access jacks for creative processing ▪ Stereo, dual mono or master/slave operation ▪ Consists of WDC circuit\$749.00

651 Expressor Compressor/Limiter

- High Frequency Expander® (HFX) ▪ Soft and hard knee compression ▪ SPR ▪ Link/slave/external sidechain ▪ Low-cut filter on sidechain ▪ Servo-balanced input and output ▪ Bargraph output level meter (switchable -10 or +4dB) ▪ Bargraph gain reduction meter ...\$495.00



108 2-Channel Easyrider Auto Compressor

- Wave Dependent Compressor™ (WDC) circuitry automatically adjusts time constants ▪ No-Knee™ compression curve varies ratio automatically ▪ Dial up to 20dB compression ▪ Gain reduction meter with 10 LED steps ▪ Channels linkable for stereo operation ▪ Switchable -10dBV/+4dBu operation\$299.00

104 Aural Exciter Type C² With Big Bottom

- Aural Exciter: ▪ Enhanced stereo imaging ▪ Comprised of a high pass filter and a harmonics generator ▪ Big Bottom: Increased bass sustain and density ▪ Little or no increase of peak output ▪ Sidechain containing a frequency shaping means, a phrase shaping means and a dynamics processor\$299.00

9000 SERIES MODULAR PROCESSING SYSTEM

9721 Dominator™II MultiBand Peak Limiter Module

- Peak ceiling adjustable in 1dB steps over 22dB range ▪ 102dB dynamic range (5 times better than 16-bit digital) ▪ Onboard switchable pre- and de-emphasis ▪ Detented controls ▪ Relay bypass remote controllable\$595.00

9301A Compellor Module

- Intelligent AGC for consistent program level ▪ Peak limiting for equipment protection (defeatable) ▪ Nominal operating level switchable: -10dBv, +4, +8dBm ▪ Meter shows input/output average and peak levels simultaneously ▪ Meter shows compression and leveling ▪ Electronically servo-balanced inputs/outputs ▪ Relay bypass ▪ Fits 9000R or dbx 900® Series rack ...\$549.00



9901A Parametric Equalizer Module

9721

- 3 overlapping bands fully parametric equalization ▪ Continuously adjustable Q from 1-10 ▪ Peak or shelf filter shaped on each band ▪ Servo-balanced inputs and outputs ▪ RF protected inputs ▪ Output clip LED indicator ▪ Fits 9000R or dbx 900 Series rack\$449.00

9651 Expressor Compressor/Limiter Module

- Input/output to match any operating system ▪ Attack/release ▪ High frequency expander (HFX) ▪ Soft or hard knee compression ▪ Link/slave/external sidechain ▪ Low-cut filter on sidechain ▪ Bargraph output level meter (switchable -10 or +4dB) ▪ Bargraph gain reduction meter ▪ Relay bypass ▪ Fits 9000R or dbx 900 Series rack ...\$449.00

9621 Logic Assisted Gate™ Module

- Unmatched sound quality—will not degrade your audio ▪ Variable expansion as well as gating ▪ Instantaneous attack (4µs) follows any input waveform with no loss of leading edge ▪ May be slaved from another 9621 ▪ Ultra low distortion—0.002% TYP ▪ 100dB of attenuation range ▪ High cut/low cut filters on key inputs for frequency selective operation ▪ Electronically servo-balanced inputs and outputs ▪ Fits 9000R or dbx 900 Series rack\$449.00

9251 Aural Exciter Module

- For use with 9000R or compatible dbx 900 Series rack ▪ SPR ▪ Electronically servo-balanced inputs and outputs ▪ Operates with I/O levels from -10dBv to +8dBm ▪ Operates balanced or unbalanced automatically ▪ Solo function for effects return mixing ▪ All switch settings LED indicated\$449.00

9005PS/9001PS/9000PS Modular System Power Supplies

- Barrier strip connectors ▪ Over voltage protection ▪ Front panel LED power indicator ▪ Operates from 90-140VAC, 190-260VAC ▪ Multiple voltages user selectable
- 9005PS For use with 9000R, provides ±15V at 5A\$699.00
- 9001PS For use with combination 9000R and dbx 900 Series modules, provides both ±15V and ±24V ...\$599.00
- 9000PS For use with 9000R, provides ±15V\$499.00

9000R Modular System Rack

- Space for 11 modules ▪ Standard 10-pin barrier strip audio input/output connectors ▪ External power supply removes hum field and heat ▪ Barrier strip power supply connectors ▪ Front panel LED power indicators (bipolar 15VDC and 24VDC)\$379.00

9000BP Blank Panel

- Single module width\$19.00

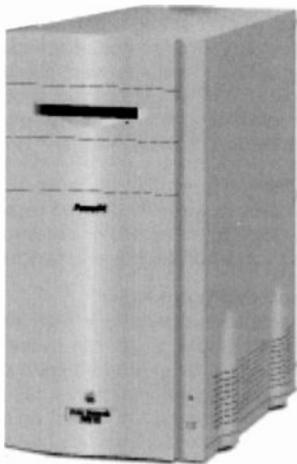
ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





Power Macintosh 7300 Series Personal Computers

- 180MHz or 200MHz PowerPC 604e processor
- Built-in floating-point processor and 64K cache
- Standard 256K level 2 cache
- 2 high-speed serial ports compatible with GeoPort devices and LocalTalk cables
- 12X-speed CD-ROM drive
- 16-bit stereo audio input and output
- 64-bit VRAM subsystem
- Removable processor card allows for upgrade to 233MHz processor
- 3 industry-standard PCI expansion slots
- SCSI connector for hard disks, CD-ROM drives, and other SCSI devices
- Internal expansion bay for additional 3.5" storage device
- Up to 512MB of RAM
- Up to 4MB of VRAM
- Includes 10BASE-T and AAUI Ethernet connectors
- Supports Open Transport networking software (TCP/IP and AppleTalk)
- Runs 680x0 Macintosh applications as well as applications accelerated for Power Macintosh computers
- Reads Mac OS, Windows, MS-DOS, OS/2, and ProDOS floppy disk formats
- Runs MS-DOS and Windows applications via either of 2 optional PC compatibility cards from Apple
- Comes with all of the software required for Internet access
- Makes working with different applications consistent, so they're easier to learn and use
- Allows easy customization of your Macintosh to reflect the way you work
- Provides active assistance in learning new features with Apple Guide
- Includes MacLinkPlus file translation software from DataViz



Power Macintosh 9600/200 and 9600/200MP Personal Computers

- One or two 200MHz PowerPC 604e processors
- Built-in floating-point processor and 64K cache
- 512K level 2 cache
- Accelerated graphics card
- 2 high-speed serial ports compatible with GeoPort devices and LocalTalk cables
- 12X-speed CD-ROM drive
- 16-bit stereo audio input and output
- Support for speech-recognition and text-to-speech capabilities
- Removable processor card allows for upgrade to 233MHz processor
- 6 industry-standard PCI expansion slots
- Dual-channel SCSI connector for hard disks, CD-ROM drives, and other SCSI devices
- Internal expansion bays for additional storage devices (3.5" and 5.25")
- Includes 10BASE-T and AAUI Ethernet connectors
- Supports Open Transport networking software (TCP/IP and AppleTalk)
- Runs 680x0 Macintosh applications as well as applications accelerated for Power Macintosh computers
- Reads Mac OS, Windows, MS-DOS,

- OS/2 and ProDOS floppy disk formats
- Runs MS-DOS and Windows applications via either of 2 optional PC compatibility cards from Apple
- Comes with all of the software required for Internet access
- Makes working with different applications consistent, so they're easier to learn and use
- Allows easy customization of your Macintosh to reflect the way you work
- Provides active assistance in learning new features with AppleGuide
- Includes MacLinkPlus file translation software from DataViz

Power Macintosh 9600/233 Personal Computer

- 233MHz PowerPC 604e processor
- Built-in floating-point processor and 64K cache
- 512K level 2 cache
- Accelerated graphics card
- 2 high-speed serial ports compatible with GeoPort devices and LocalTalk cables
- 12X-speed CD-ROM drive
- 16-bit stereo audio input and output
- Support for speech-recognition and text-to-speech capabilities
- 6 industry-standard PCI expansion slots
- Dual-channel SCSI connector for hard disks, CD-ROM drives, and other SCSI devices
- Internal expansion bays for additional storage devices (3.5" and 5.25")
- Includes 10BASE-T and AAUI Ethernet connectors
- Supports Open Transport networking software (TCP/IP and AppleTalk)
- Runs 680x0 Macintosh applications as well as applications accelerated for Power Macintosh computers
- Reads Mac OS, Windows, MS-DOS, OS/2 and ProDOS floppy disk formats
- Runs MS-DOS and Windows applications via either of 2 optional PC compatibility cards from Apple
- Comes with all of the software required for Internet access
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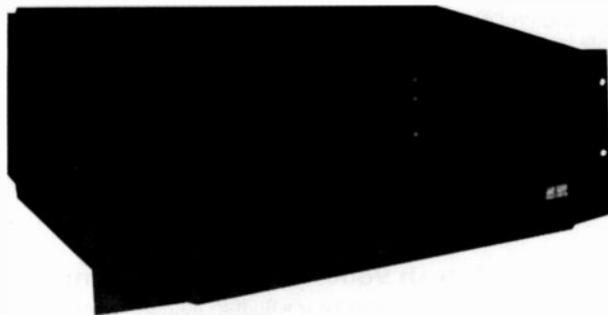
Power Macintosh 8600/200 Personal Computer

- 200MHz Power PC 604e processor
- Built-in floating-point processor and 64K cache
- 256K level 2 cache on a DIMM
- Built-in graphics acceleration
- 64-bit VRAM graphics subsystem
- 2 high-speed serial ports compatible with GeoPort devices and LocalTalk cables
- 12X-speed CD-ROM drive
- 16-bit stereo audio input and output
- 24-bit composite and S-Video input and output
- Support for speech-recognition and text-to-speech capabilities
- Optimized for QuickTime Conferencing software
- Built-in Iomega zip drive
- Removable processor card allows for upgrade to 233MHz processor
- 3 industry-standard PCI expansion slots
- SCSI connector for hard disks, CD-ROM drives, and other SCSI devices
- Internal expansion bays for additional storage devices (3.5" and 5.25")
- Includes 10BASE-T and AAUI Ethernet connectors
- Supports Open Transport networking software (TCP/IP and AppleTalk)
- Runs 680x0 Macintosh applications as well as applications accelerated for Power Macintosh computers
- Reads Mac OS, Windows, MS-DOS, OS/2, and ProDOS floppy disk formats
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ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

REFERENCE
CATALOG
97-98



VR300™ Broadcast Video Server

ASC's VR300 is the most advanced disk-based broadcast system available for on-air playback of commercials, news and programming. VR300 delivers the power, versatility, and dependability broadcasters need to make the transition to an integrated server-based digital broadcast environment.

VR300 is a professional broadcast video server based on a PCI platform and Intel Pentium Pro processor. VR300 systems are completely expandable and modular, with each VR300 providing 2 channels of video in a rackmountable chassis.

VR300 is the only on-air playback system with *FibreDrive*, ASC's patent-pending architecture. *FibreDrive* allows multiple servers to have instant random access to all Fibre Channel RAID storage.

- 1 to 24 simultaneous channels
- Up to 96 hours of online storage
- Brilliant Image Compression™ starting at 2:1
- *FibreDrive* architecture for instant access
- RAIDsoft™ technology for reliability

Simplifies Operations

VR300 takes you from recording, to editing, to on-air playback faster, easier, and more cost effectively than any other broadcast system. Because it's disk-based, VR300 puts an end to tape-related problems such as clogged heads, tape wear, and image degradation.

Reliable

Multiple redundancy strategies, including RAIDsoft fault tolerance software, eliminate any single point of failure and provide the highest standards for reliability and data integrity. RAIDsoft is ASC's exclusive implementation of RAID which enables you to hot swap a disk drive while remaining on the air. RAIDsoft rebuilds data drives in the background, with no effect on system performance.

Flexible

VR300 is flexible and modular, supporting step-by-step expansion from single to multichannel, and from small storage capabilities to large. Add more VR300s to build a fully automated, integrated broadcast environment in which all users have facility-wide, instant random access to all commercials, news and programming.

Flawless Broadcast Images

ASC's Brilliant Image Compression allows individual users to select their own compression rates for achieving unparalleled image quality and maximum storage capacity. VR300 can support up to 1.1 terabytes of video storage and 24 simultaneous channels.

Exclusive *FibreDrive* Architecture

FibreDrive is ASC's patent-pending architecture which gives all users in the broadcast facility instant random access to the entire media bank. At the heart of *FibreDrive* architecture is the Fibre Channel interface. Unlike ATM or SCSI, Fibre Channel is both an advanced

network architecture and ultra high-bandwidth storage interface. VR300 is the only broadcast video server to utilize both Fibre Channel advantages.

FibreDrive eliminates bottlenecks which compromise high-bandwidth broadcasting applications. With *FibreDrive*, there are no tapes to transport and no data files to transfer—ever. And that means a system in which all users have instant random access to all storage—all the time.

Open Systems Compatibility

VR300's open systems design reflects ASC's commitment to industry standards and the importance of emerging technologies. Supporting Louth, Odetics, and Sony protocols, VR300 is fully compatible with leading automation, newsroom, and traffic systems. With external control through RS-422, GPI, and TCP/IP, VR300 is easy to integrate into your broadcast facility.

Streamlines Commercial Insertion

VR300 features SpotBase™, an advanced media management system. SpotBase manages your facility's entire inventory of video material—disk and tape. In fact, SpotBase can even prompt operators to digitize material needed for upcoming breaks. SpotBase takes advantage of ASC's patent-pending *FibreDrive* architecture, allowing multiple users to concurrently access thousands of spots stored in a central media bank.

With instant random access to audio and video, operators can swap scheduled spots and stack breaks—even while playing to air. So, you can confidently make last minute changes and sell additional space right up to air time. Select and arrange non-sequential video segments for seamless playback, as if they were precisely edited together. User VR Playlist™, ASC's multichannel spot insertion program, to streamline scheduling and sequential playback of commercials, promos, bumpers, news stories, and programming.

Automates Network Delay

VR300 is ideal for simultaneous, variably delayed recording and playback. Use RAIDelay software to record newscasts for late-night rebroadcast, off-set time zones, or delay live broadcasts.

Improves the Speed and Quality of News

VR300 is ideal for television news operations. With instant random access to bumpers, IDs, and graphics, you can create and rundown, then make last minute changes. Drop finished news stories, spots, and programming into a playlist and watch them air instantly. Create different rundowns to give each newscast an original look and feel. Do it all without ever transferring data files or worrying about source tapes. VR300's effects capability enhances the look of news. Use two VR300 servers to add dissolves, wipes, and other transitions between news stories. And better looking news means more viewers will tune in day after day.

Integrated News Editing

For a completely tapeless newsroom, integrate VR300 with NEWSFlash™, ASC's full-featured nonlinear editing system. NEWSFlash's powerful set of features and effects will immediately improve the look of news. With instant access to shared video, one editor can cut news stories while another creates impressive promos. And with VR300, playing news stories to air is as fast as point-and-click.

Produces Smooth Slow-Motion Playback

VR300's exclusive ProMotion™ feature produces smooth, crystal-clear video playback at any speed, forward or reverse. ProMotion creates compelling slow-motion and instant replay.

VR300 works with leading slow-motion controllers. Set cue points and recue instantly. Store pre-game interviews, crucial plays, statistics, bios, graphics, and highlight reels.

Call For Pricing

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



VIDEOCONFERENCING EQUIPMENT



Multiband Plus/MAX/VSX Inverse Multiplexers

Multiband is used with many different types of applications that need digital bandwidth on demand. For videoconferencing, Multiband connects to the network with single or multiple lines, and uses inverse multiplexing or other techniques to provide the desired bandwidth. Multiband connects to the video unit with data cables that carry video, audio, and dialing control information. Because it's a multiport device, Multiband provides access for LAN bridges and routers.

Multiband is used for videoconferencing, leased-line back-up, leased-line overflow, disaster recovery, bulk file transfer, imaging, and many other applications to send data at very high rates between sites. Any application that benefits from a mix of leased and dialed digital bandwidth benefits from Multiband.

Multibands are multi-application network access equipment. The Multiband Plus has 4 high-speed serial ports, and the Multiband MAX can have up to 32 high-speed serial ports. Multibands also provide videoconferencing access to the global dial-up network, with RPMs (Remote Port Modules) to extend the Multiband ports to the videoconferencing rooms. Other applications, such as frame relay back-up, bulk file transfer, imaging and T1 multiplexer leased-line back-up, can use Multiband as well. Multiband can be managed via SNMP, Telnet, or remote and local VT-100 or PC terminals.

Multiband lets users dial up bandwidth in amounts from 56K bit/s to 4M bit/s, using all types of digital access lines—Switched 56, T1, E1, ISDN BRI and PRI and network carrier services. Whether using ISDN or non-ISDN, inverse multiplexed or carrier-based bandwidth offerings, Multiband connects points at any bandwidth.

Multiband Supports All Network Services

Multiband is certified for connection to all the world's digital services. Inverse multiplexing can be used to build "super-circuits" from these individual services: ■ Switched 56 ■ Switched 64 ■ Switched 384 ■ Switched 1536 ■ Multirate and GloBand (Network-based Nx64) ■ Dedicated 56, T1, FT1, and E1 circuits

Multiband Supports All Digital Access Line Types

Multiband assures full interoperability between sites. Multiband not only connects to all types of access lines, it allows you to share access line costs with your PBX using T1 drop and insert or PRI to T1 conversion. Includes: ■ ISDN BRI ■ ISDN PRI ■ Switched 56 ■ DDS 56 ■ T1, E1 and FT1 access ■ Built-in T1/PRI CSU ■ T1 drop and insert ■ PRI to T1 conversion ■ Also connects to user side of PBX

Inverse Multiplexing

■ AIM and BONDING ■ Nx56, Nx64, Nx384 ■ 56K bit/s to 4M bit/s ■ Can be used with any access line type and multiple lines

Videoconferencing Feature Set

■ Field-selectable V.35, RS-449 or X.21 data ports ■ RS-366, V.25 bis, X.21 and control-lead dialing ■ Dual 56 ports for 112K bit/s operation ■ Exact clocking and 56-64K bit/s rate adaption ■ Speed dialing and stored call profiles ■ Supports conference scheduling software ■ Supports desktop video via ISDN BRI interfaces

Data Communications Feature Set

■ Combine leased and dialed bandwidth to maximize economy ■ Increase or decrease bandwidth during connection (Rubber Bandwidth™) ■ Automatically adjust bandwidth to real time traffic loads ■ Multicarrier gateway ■ Automatic leased-line failure detection dials back-up bandwidth ■ Ethernet and digital modem cards make MAX a Remote LAN Access Server

Global Connectivity

International leased lines are extremely expensive. Digital dial-up bandwidth on demand provides high-speed international connections on an as-needed basis.

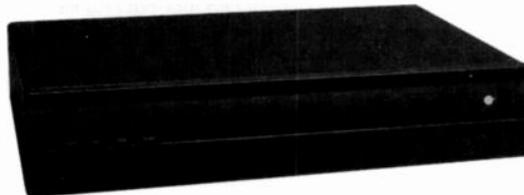
Management and Control

VT-100, PC or Palmtop Controller interface ■ Remote management and configuration from central site ■ SNMP and Telnet management option ■ Remote software upgrades ■ Remotely enabled features ■ Multilevel password security ■ Built-in BERT testing ■ Local and remote loopbacks ■ Ongoing self-tests ■ Call Detail Reports (CDR) ■ Continuous statistics collection ■ Optional integral modem



Multiband Plus Base Units

MB-T1-STD Multiband Plus T1 base unit with 4 application V.35/RS-449/X.21 ports (DB44), RS-232 console port (DB9), and palmtop port (RJ11). Includes console cable \$ 8,000.50
 MB-8BRI Same as MB-4BRI, except 8 ISDN BRI S/T (RJ45C) 7,000.00
 MB-7SW56-2W Same as MB-4SW56-4W, except 7 switched 56 and 2 wire network interfaces. 9,000.00
 MB-7SW56-4W Same as MB-7SW56-2W, except 4 wire network interfaces. 10,000.00



Multiband MAX Base Unit

MX-2T1 Multiband MAX T1/PRI with 2 application V.35/RS-449/X.21 ports (DB44), RS-232 console port (DB9) and palmtop port (RJ11). Includes console cable \$10,000.00

Multiband RPM Base Units

RPM-1 1 remote port module used for extending the Multiband PLUS/MAX application ports via unshielded twisted-pair wiring. RPM ports include 2 V.35/RS-449/X.21 ports (DB44), 1 RS-232 port (RJ11), and a twisted-pair wiring port (RJ45) \$1,125.00
 RPM-2 2 remote port modules used for extending the Multiband PLUS/MAX application ports via unshielded twisted-pair wiring. RPM ports include 2 V.35/RS-449/X.21 ports (DB44), 1 RS-232 port (RJ11), and a twisted-pair wiring port (RJ45) 2,200.00

Multiband VSX BRI/T1 Inverse Multiplexers

The Multiband VSX BRI/T1's bandwidth on demand lets you operate your video network using ISDN dial-up. The system combines: inverse multiplexing, dial-up videoconferencing, global connectivity and call and device management. It is used for applications such as group and desktop videoconferencing, distance learning, electronic banking and purchasing, telemedicine and file transfer.

Common features include: ■ Scalable inverse multiplexing ■ Interoperability ■ Dial-up videoconferencing capabilities ■ Global connectivity ■ Call and device management
 MBV-BRIU Single BRI unit with U interface (RJ45C). Includes RF11-DB9 adaptor cable, 1 BRI network cable, 2 DB9-DB25 adaptors, manual set and 110VAC adaptor \$1,195.00
 MBV-BRIS Same as MBV-BRIU, except with S/T interface 1,195.00
 MBV-BRI4U BRI base unit with 3BRI expansion module with U interfaces. Includes RJ11-DB9 adaptor cable, 4 BRI network cables, 2 DB9-DB25 adaptors, manual set and 110VAC adaptor 2,895.00
 MBV-BRI4S Same as MBV-BRI4U, except with S/T interface 2,895.00
 MBV-T1DSX T1 base unit, DSX i/f, ISDN. Includes RJ11-DB9 adaptor cable, 2 DB9-DB25 adaptors, manual set and 110VAC adaptor. Network cable must be ordered separately 6,495.00
 MBV-T1CSU Same as MBV-T1DSX, except with CSU i/f 7,195.00
 MBV-SL-BRIU BRI module with 3 U interfaces, 3 BRI cables. 1,995.00
 MBV-SL-BRIS BRI module with 3 S/T interfaces, 3 BRI cables. 1,995.00
 MBV-SL-DSX DSX drop and insert (PRI-T1), module for MBV-T1DSX or MBV-T1CSU only. 1,495.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





PERFORMER SERIES TRIPOD STANDS
TL34-3E/TL34E Two and Three-Piece Tripod Stands

▪ All metal housing ▪ Double-cam locking device ▪ Glide'n Lock legs for secure positioning and convenient transportation/storage ▪ Wearproof clutch ▪ High density rubber feet ▪ 3/8"-27 thread pattern ▪ TL34-3E may be lowered to 26", making it ideal for seated performers and short sources such as guitar amplifiers ▪ CRS tube assemblies ▪ Nonreflective ebony epoxy finish

TL34-3E 26"-63"H, 3-section tube, folds to only 23 3/4" \$115.70
 TL34E 34"-63"H, 2-section tube 104.95

MICROPHONE FLOOR STANDS

Common Features

▪ Steel tubing ▪ Finished in choice of mirrored chrome or nonreflective ebony ▪ Anti-vibration cap absorbs incidental vibrations and sounds ▪ Lock-nut ring securely positions tubing to base ▪ 3/8"-27 thread pattern plus lock-nut ring for positioning of accessories ▪ Wearproof clutch ▪ High stability cast metal with shock absorbing rubber pads

MS-20/MS-20E Extra-Stability Stands With Oversized Base

▪ Heavy-duty stands for studio, recording, church and school applications ▪ Includes extra-height 1 1/2" diameter tube assembly and top adaptor ▪ Low contour, high stability cast-iron base ▪ MS-20 features chrome finished tube and ebony base ▪ MS-20E includes ebony finished tube and base

MS-11C/MS-12C/MS-12CE Professional Full-Height Stands

▪ All-purpose stands ▪ 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

MS-10C/MS-10CE All-Purpose Floor Stands

▪ Cost efficient assemblies ▪ Dependable performance in music, entertainment, business, education and social functions ▪ MS-10C includes chrome finished tube and circular cast-iron base ▪ MS-10CE is supplied with ebony finished tube and circular cast base



MS-12C



MS-10C

Model	Height Span	Base	lbs.	Price
MS-20/20E	37"-66"	12" dia. round	14	\$101.58
MS-11C	34"-62"	10" dia. round	12	60.20
MS-10C/10CE	35"-63"	10" dia. round	11	46.75
MS-12C/12CE	34"-62"	10" dia. round	10	46.75

STUDIO BOOM STANDS

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

▪ Heavy-duty stands for stage and studio application include integral piston type air suspension system for effortless height adjustment ▪ Models are equipped with 2-piece horizontal chromed tube assembly, 6-lb. boom counterweight, heavy-duty gyromatic swivel ▪ Wearproof clutch ▪ Triangular cast iron base ▪ SB-36 is without casters for stationary applications ▪ Standard 3/8"-27 thread pattern ▪ SB-36W includes silent-motion, ball-bearing swivel casters of hard rubber for friction-free and vibration absorbing mobility ▪ Both models are supplied with guide clips for microphone cable attachment ▪ Chrome finished tubing ▪ Ebony epoxy base with a chrome cover

SB-11WE Economical Studio Boom

▪ Especially suited for small studio/broadcast applications and for stage miking of drums and percussion instruments ▪ Unit features a 60"L, 2-piece horizontal boom ▪ Boom includes swivel clamp and an adjustable 2-lb. counterweight ▪ Tubing includes 90° angled end for optimum microphone positioning ▪ Standard 3/8"-27 thread pattern ▪ Wearproof clutch ▪ Triangular die-cast base with hard rubber swivel casters ▪ Finished in nonreflective ebony epoxy.

Model	Height Span	Boom Length	Boom Counterweight	Base Spread	lbs.	Price
SB-36W	49"-73"	62"	Adj., 6 lbs.	*21"	40	\$407.61
SB-36	48"-72"	62"	Adj., 2 lbs.	15"	36	349.68
SB-11WE	43"-68"	60"	Adj., 6 lbs.	*21"	26	286.96

*Dimension includes wheels. Triangular cast base is 15".

PERFORMER SERIES BOOM ATTACHMENTS

Common Features

▪ All metal swivel clamp ▪ Glide'n Position tubing with nylon brake bushings for smooth horizontal adjustment ▪ Resilient washers are made from compressed virgin wool fiber (in lieu of rubber) for quiet and secure positioning ▪ Extra-strength steel T-bar knob assures no-fail locking with 1-hand adjustment in the vertical plane ▪ All versions include counterweights for increased stability and balance ▪ Clamps are finished in nonreflective ebony epoxy ▪ CRS tubing ▪ 3/8"-27 thread pattern

PB25X	32"-51 1/2"L, chrome	\$87.85
PB25	34 1/2"L, chrome	69.80
PB21X	25 1/2"-38 1/2"L, chrome	68.43
PB21XE	25 1/2"-38 1/2"L, ebony	68.43
PB11XE	16 1/2"-24 1/2"L, ebony	65.70
PB15	34"L, chrome	54.88
PB15E	34"L, ebony	54.88

DESK AND BANQUET STANDS

TS-8 Banquet Stand ▪ Adjustable stand

▪ Provides quick height variation from 14 1/2" to 26" to meet a variety of oratory needs ▪ Wearproof clutch ▪ Chrome tube assembly ▪ 8" dia. low silhouette chrome base

DS-1 Executive Stand ▪ Attractively styled ▪ Polished white Carerra marble base ▪ Chrome finished tube

▪ Complements any desk, conference table or dais ▪ Protective desk pads ▪ Standard threads

DS-2 Vibration Isolating Stand ▪ Low silhouette stand

▪ Features an integral tension variable mount to reduce conductivity of external mechanical vibrations ▪ High stability metal base with protective pads includes notched area for convenient placement of cards or pens ▪ Fixed height tubing is chrome finished ▪ Ebony base

DS-7/DS-7E Adjustable Stands ▪ Versatile stands

▪ Vertical height adjustment from 8" to 13" ▪ Wearproof clutch ▪ Ebony finish cast-iron base ▪ DS-7 features chrome tubing ▪ DS-7E has ebony tubing.

DS-14 Contemporary Stand ▪ Diecast wishbone shaped base ▪ Ebony finish ▪ Fixed height

▪ Chrome tubing

DS-5/DS-5E General Purpose Stand ▪ Fixed height stand ▪ Traditional circular cast-iron base

▪ Choice of tubing finish: chrome or ebony (E) as noted ▪ For application with any standard microphone



TS-8



DS-2



DS-14

Model	Base Size	Height Span	Tube Style	lbs.	Price
TS-8	8" dia.	14 1/2"-26"	Chrome	5.5	\$59.30
DS-1	7"L x 5"W	4"	Marble	2	58.75
DS-2	6"L x 4"W	4"	Cast Zinc	2	44.30
DS-7/7E	6" dia.	8"-13"	Cast Iron	3	28.93
DS-14	Wishbone	3"	Cast Iron	2	27.63
DS-5/5E	6" dia.	5"	Cast Iron	2	18.03

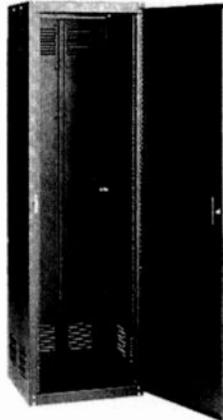
ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





WA200/WA202 Series Knocked-Down or Welded Cabinets With Front Door and Adjustable Rails

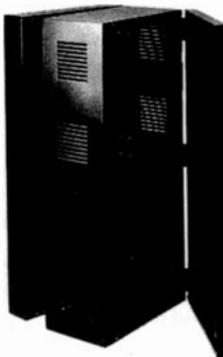
- Built for strength, utility and economy ▪ Manufactured to E.I.A. standards ▪ 16-gauge CRS construction ▪ Inside (usable) dimensions 17½"W x 17¼"D x vertical panel space
- Includes 1-pair 11-gauge CRS fixed mounting rails tapped 10-32 ▪ UL listed versions available on many models
- Stocked in scratch-resistant black textured enamel—other colors available
- Ideal for telecommunications, broadcasting, manufacturing, testing, research, educational and institutional applications



Cost-efficient, transmitter racks with solid steel front door (110 Series) and front-to-rear adjustable mounting rails (230 Series). Series 200 is shipped knocked down—Series WA200 is welded. Both are available less door. Extra-depth Series WA202 models are structurally identical to the WA200 Series, except for their 25½" depth. Available in 3 vertical panel space heights. Outside dimensions of 200/WA200 models are 22¾"W x 18¼"D.

300B/320B/340B Series Assembled Sectional Wall Mounting Cabinets

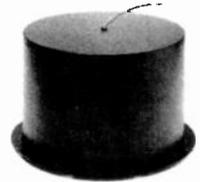
- Save floor space by wall mounting electronic controls and equipment
- Sturdy 16-gauge CRS welded construction ▪ Includes side louvers to ventilate equipment ▪ Includes 1 pair of 11-gauge CRS mounting rails tapped 10-32 and hardware ▪ Equipped with conduit knockouts for easy wiring access
- Includes mounting holes for simple wall positioning ▪ Right hinging assemblies may be inverted for left hinging applications
- Stocked in scratch-resistant textured black enamel finish ▪ House and protect electronic switching, monitoring, lighting, sound and communications controls in school auditoriums, healthcare facilities, clubs, meeting areas, factories, warehouses, public buildings and recreational areas



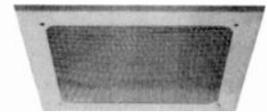
Because of their right- or left-hand hinging capability, these units offer full-functional and mechanical flexibility for wall mounting standard 19"W rack equipment. Series 300 and 320 cabinets are available in 2 overall depth configurations (with 11"D and 15"D center sections, respectively) and 5 panel space heights. The 28", 42" and 61" models include 11-gauge mounting supports, the 2 tallest models include additional gusset supports. Removable hinge pins allow recessed installation of rear section. Front door is 2"D and includes cylinder lock. All models are shipped completely assembled and are available without front door (suffix model with LD). Optional doors are available for replacement and for LD Series cabinets.

EQ Series 8" Music Loudspeaker System

- Developed to meet the sound industry's need for high fidelity ceiling loudspeaker systems with conventional installation and architectural integrity
- Combines high performance loudspeakers with ported bass reflex ceiling enclosures and a choice of flush grilles
- Ideal for foreground music and sound reinforcement applications wherever enhanced audio quality is desired
- 50W system comprised of an 8" diameter woofer, a 4" diameter high frequency piezo transducer and an acoustically matched ported enclosure
- 70-20,000Hz frequency response ▪ 8 ohms impedance
- The loudspeaker assembly is factory mounted to a subplate and offered with choice of 3 professional quality line matching transformers
- Bass reflex enclosure EQ818-BX (order separately) is manufactured from 20-gauge CRS, lined with 1½" thick fiberglass and finished in textured black enamel
- The backbox measures 11¼" diameter x 8"D and includes teflon leads with connectors for installation in plenum ceilings and a separate junction box for convenient connection to conduit systems
- Companion baffles (order separately) are constructed of 22-gauge CRS and finished in textured white
- Grilles: EQ61 round grille measures 13¾" diameter and EQ164 is 16" square grille
- Optional load-bearing tile bridge EQ81 is recommended
- Round cutout of the EQ81 measures 12¾" diameter



EQ818-BX
(Bass Reflex Enclosure)



EQ164

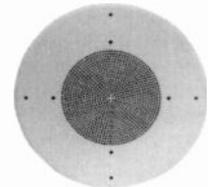
FD70W 8" Loudspeaker/Transformer/Baffle Package

- Packaged with pre-assembled 51-8 baffle, 8" loudspeaker with 5 oz. ceramic magnet (30Hz-18kHz) and 70.7V transformer



51-8 Round Recessed Baffle For 8" Loudspeakers

- Available in standard screw mount or labor-saving torsion spring (T) versions
- 1-piece CRS construction ▪ Textured white finish ▪ 12¾" diameter ▪ Projects ¼"
- Enclosure: (EZ) 95-8 Series, T95-8 Series, (EZ) 96-8 Series, 199-8, Q408, CS95-8 (NS)



81-8R Tile Bridge For 8" Loudspeakers

- Round cutout and mounts 8" loudspeaker packages and enclosures
- 24-gauge, rust-resistant electrogalvanized steel ▪ 10¾" diameter ▪ 23¾"L x 14¾"W x ¼"D



95-8 Extra-Depth Backboxes For 8" Loudspeakers

- For improved low frequency performance
- Extended bass response ▪ Undercoated and lined with 1½" thick fiberglass
- Screw mount and torsion spring versions ▪ 10"D x 11¼" diameter
- Textured black finish ▪ Heavy-gauge CRS



Call For Pricing

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



Remote Power Condenser Microphones

AT825 OnePoint™ X/Y stereo field recording; frequency response: 30-20,000Hz; S/N: <67dB, 1kHz/1 pA; phantom power requirement: 5-52VDC, 2mA typical (each channel); battery life: more than 1000 hours (alkaline battery) \$525.00

AT822 OnePoint X/Y stereo DAT; frequency response: 30-20,000kHz; S/N: <70dB, 1kHz/1 pA; battery life: more than 1000 hours (alkaline battery) \$399.00



AT822

AT835b Electret condenser short line/gradient (unidirectional); frequency response: 40-20,000Hz; S/N: 50dB/1kHz/1µbar; flat/roll-off switch; accommodates any external 9-52VDC phantom power source or can operate independently on a 1.5V "AA" battery (more than 1000 hours) \$329.00

AT831R Miniature cardioid remote-powered condenser; frequency response: 50-18,000Hz; S/N: ≥65dB; phantom power requirement: 9-52VDC, 2mA typical \$225.00

AT873R Remote powered hypercardioid condenser; for use as a handheld vocal mic, but can also be used in lectern and stand applications; includes stand clamp; frequency response: 70-20,000kHz; phantom power requirement: 48VDC \$225.00

AT813A Remote powered electret condenser (cardioid); frequency response: 30-20,000Hz; S/N: 50dB/1kHz/1µbar; power requirement: 9-52VDC phantom power \$208.00

AT831b Subminiature clip-on electret condenser (cardioid); frequency response: 40-20,000Hz (close), 70-20,000Hz (distant); also operates on 9-52V phantom power \$200.00

AT831c Miniature cardioid; unterminated for wireless and other applications, includes tie clip and windscreen \$99.00

Condenser Microphones

AT815B Electret condenser/line/gradient (unidirectional); frequency response: 40-20,000Hz; flat/roll-off switch; S/N: 50dB/1kHz/1µbar; accommodates any external 9-52VDC phantom power source or can operate independently on a 1.5V "AA" battery (more than 1000 hours) \$399.00

AT813A Electret condenser (cardioid); on/off switch; S/N: 50dB \$208.00

AT803b Subminiature clip-on electret condenser (omnidirectional); frequency response: 30-20,000Hz; also operates on 9-52VDC phantom power \$190.00

AT803c Ultraminiature omnidirectional unterminated for wireless and other applications; includes tie clip and windscreen \$89.00



AT803b

Dynamic Microphones

AT857AMa Miniature cardioid condenser adaptor mount double gooseneck; frequency response: 30-20,000Hz; for high quality sound reinforcement, professional recording and broadcast; mounts direct to desk or floor stand, or to threaded surface adaptor included; battery or phantom power; flat/roll-off switch . . . \$310.00
AT857AML a 19" version of AT857AMa \$330.00

AT857QMa Quick mount miniature cardioid condenser gooseneck; frequency response 30-20,000Hz; flat/roll-off switch in base \$260.00
AT857QML a 19" version of AT857QMa \$275.00

AT859b Miniature cardioid condenser wand; frequency response: 40-18,000Hz; battery or 9-52V phantom power; on/off switch; for handheld use and podiums \$260.00

AT853a Miniature cardioid condenser; frequency response: 30-20,000Hz; battery or 5-52V phantom power; switch: on-flat/on-roll-off/off-battery only; designed for high quality recording, broadcast and sound reinforcement \$259.00

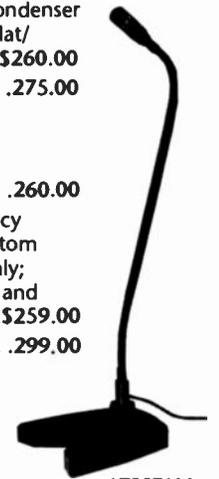
AT853Wa White version of AT853a \$299.00

AT853PMX Same as AT853a with wall/ceiling plate power module \$230.00

AT853PMWX White version of AT853PMX \$270.00

AT859QMLX Miniature cardioid condenser gooseneck; frequency response: 50-18,000Hz; for high quality sound reinforcement \$175.00

AT804 Moving coil (omnidirectional); frequency response: 50-15,000Hz \$110.00



AT857AMa

Boundary Microphones

AT871R UniPlate® unidirectional condenser; frequency response: 30-20,000Hz; for demanding sound pickup situations in sound reinforcement; switch: flat/roll-off \$310.00

AT851a Micro-unidirectional condenser; frequency response: 30-20,000Hz; switch: flat/roll-off \$297.00

AT841a Micro-omnidirectional condenser; frequency response: 30-20,000Hz; switch: off/on/low roll-off \$297.00

40 Series Microphones

AT4041 Pressure-gradient capacitor microphone with a uniform cardioid unidirectional polar pattern; frequency response: 20-20,000Hz; 100 ohms; 80Hz, 12dB octave high pass filter (low-end roll off); 48VDC phantom power \$395.00



AT4041

AT4033/SC Studio condenser; frequency response: 30-20,000Hz; 48V phantom power; transformerless; includes stand clamp POR*

AT4033/SM Same as AT4033/SC, except includes shock mount POR*

AT4050/CM5 Multipattern studio capacitor; 3 switchable patterns: cardioid, omnidirectional and figure-8; frequency response: 20-20,000Hz; 80Hz, 12dB/octave high-pass filter; transformerless POR*

AT4049/4051/4053 Studio capacitors; frequency response: 20-20,000Hz; 48VDC phantom power (±12V); 250 ohms balanced; transformerless; 80Hz, 6dB/octave high pass filter (low cut)

AT4049 Omnidirectional POR*

AT4051 Cardioid POR*

AT4053 Hypercardioid POR*

*Price On Request



AT4053

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





ATW-1031 UniPak™ Body-Pack Systems

▪ Offers 2 basic transmitter types to meet specific needs ▪ Operates in the 169-26MHz range, where 15 frequencies are available for multiple input applications with minimum interference ▪ Included connecting cable features a locking-type miniature plug to assure no interruptions during use ▪ Cable provides audio connections from guitar or other high impedance source ▪ DC bias for electret condenser microphones also available at the input jack ▪ Exclusive circuitry prevents the noise burst typically heard when the transmitter is switched ▪ Separate trim controls permit matching guitar and microphone levels to the transmitter input ▪ Transmitter is powered by a 9V alkaline battery that offers 10 hours of normal service ▪ Operates in the VHF high band and is available in 15 crystal-controlled frequencies ▪ Selectivity and noise rejection permit full use of up to 9 channels simultaneously ▪ High S/N ratio and low distortion ensure wide dynamic range and superb output quality ▪ A-T muting system assures minimal noise even if the transmitter is switched off during a performance ▪ Range is up to 1500' ▪ VHF high band, 160-240MHz carrier frequency range ▪ ±0.005% frequency stability, crystal-controlled ▪ FM modulation mode ▪ ±15kHz maximum deviation range with limiting compressor ▪ 200' minimum operating range (line-of-sight) ▪ 40°F to 110°F operating temperature range

- ATW-1031 Basic System ▪ Inputs for mic and line-level/Hi-Z instruments ▪ ATW-R10 diversity receiver ▪ ATW-T31 UniPak transmitter with instrument cable and vinyl pouch \$690.00
- ATW-1031-857 Lectern/Desk Stand Microphone System ▪ ATW-1031 system with AT857AMLcW UniPoint® miniature cardioid gooseneck microphone ▪ 3/8"-27 threads attach to microphone stand or mounting flange 880.00
- ATW-1031-M73 Headworn Microphone System ▪ Windscreen ▪ ATW-1031 system with ATM73cW side-of-mouth entry headworn miniature cardioid condenser microphone. 850.00
- ATW-1031-851 Plate Microphone System ▪ ATW-1031 system with AT851cW UniPoint plate microphone for conference, podium or tabletop use 850.00
- ATW-1031-M35 High-SPL Clip-On Instrument System ▪ ATW-1031 system with ATM35cW UniPoint High-SPL unidirectional microphone ▪ AT8418 universal instrument clip 800.00
- ATW-1032 Dynamic Cardioid Microphone System ▪ With stand clamp ▪ ATW-R10 receiver and ATW-T32a handheld transmitter 799.00

- ATW-1031-831 Lavalier System ▪ Mic clip and windscreen ▪ ATW-1031 system with MT831cW miniature wide-range unidirectional microphone. \$760.00
- ATW-1031-830 Lavalier System ▪ Mic clip and windscreen ▪ ATW-1031 system with MT830cW ultraminiature wide-range omnidirectional condenser microphone. 745.00
- ATW-1031-XLR Input System ▪ Converts a standard Lo-Z microphone to wireless ▪ ATW-1031 system with XLRF-type cable to plug into XLRM-type output of any standard low impedance mic 699.00



1100 Series Professional VHF Wireless Systems

- True diversity reception with 2 independent RF sections for greatest reliability ▪ Full FM deviation improves signal/noise ratio for greater headroom and dynamic range ▪ Ground-lift switch solves hum problems when ground loops are encountered in the field ▪ Adjustable squelch control on receiver eliminates unwanted background RF noise ▪ Receiver offers both balanced (XLR-type) and unbalanced (1/4" phone jack) audio output jacks ▪ Rugged all-metal receiver case mounts in standard 19" equipment rack using included brackets ▪ Choice of 20 VHF frequencies for minimum interference ▪ Dual-power switches on all transmitters may be set "high" for maximum range or "low" for extended battery life ▪ VHF high band, 169-216MHz operating frequency ▪ 100Hz-15kHz frequency range ▪ ±0.005% single-frequency, crystal-controlled frequency stability ▪ FM modulation mode ▪ ±30kHz, traveling frequencies ±15kHz maximum deviation range ▪ 200' minimum operating range ▪ 40°F to 110°F operating temperature range ▪ Unidirectional polar pattern
 - ATW-1129 Handheld Condenser Microphone System ▪ ATW-T29C handheld condenser microphone/transmitter ▪ Extended frequency response. TBA*
 - ATW-1128 Handheld Dynamic Microphone System ▪ ATW-T28 handheld microphone/transmitter ▪ Features Hi-ENERGY® dynamic element with superior internal shockmounting \$550.00
 - ATW-1127 UniPak Transmitter System ▪ ATW-T27 UniPak transmitter with professional HRS connector ▪ Includes Super Hi-Z input that provides optimum load for guitar pickups. 499.00
- *To Be Announced

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



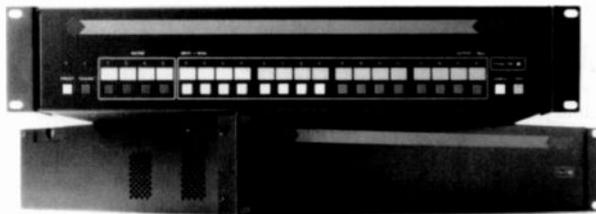
4Y Distribution Matrix Series

- Local and remote X/Y control panel functions are prompted by menus on an 80-character alphanumeric LCD
- Advanced programming functions include designating preset configurations that can be recalled with the X/Y control panel or by a serial controller
- Standard equipment includes a DB-9 port that can be jumpered for the RS-232 or RS-422/485 standard
- Single-bus controllers can be ordered with a 3-key, 12-key or 16-key numeric keypad
- Each enclosure can contain 32 inputs and 32 outputs with 4 connectors on each of 8 I/O cards
- 4YDM enclosures can contain any mixture of signal types (e.g., component and composite video and both mono and stereo audio can all be installed in a single enclosure)
- The 4Y architecture allows up to 4 parallel inputs per source, providing a standard configuration range of 4 x 4 through 32 x 128 per signal level
- Configurations from 33 x 33 to 128 x 128 are available using AutoPatch distributed matrix software
- 4YDM specifications are suitable for pro audio, high-speed data, broadcast video (with vertical interval timing) and super high-res graphics systems
- 4Y audio boards can be used for most data system installations

Model 40 boards are designed for NTSC and PAL composite video (including HDTV bandwidths) and standard component video (Y/C, RG_B and RGBS) up to 40MHz.

Model 100 output boards can also pass any of the above but were designed for higher resolution graphics system (to 100MHz).

Model 200 output boards are designed for even higher resolution graphics systems (to 200MHz).



1Y Distribution Matrix Series

- Advanced control features include easy designation of up to 64 preset configurations that can be recalled at any time—and a quick-disconnect function that allows an operator to open any with a few fast keystrokes
- Standard equipment includes a DB-9 port that can be jumpered for EIA RS-232 or RS-422
- Software development protocol is available
- Single-bus controllers can also be used with the 1YDM series
- Each enclosure can contain up to 4 matrix cards that provide complete paths for 1 signal level
- Each audio and video card can be independently configured as: 4 x 4, 8 x 4, 4 x 8, 8 x 8, 12 x 4
- Enclosures can contain any mixture of signal types so a single enclosure could contain: S-Video plus stereo audio; composite video plus mono audio and 2 empty slots; RGBS; RG_B plus mono audio; etc.
- Signal-follow and full breakaway

operations are supported in both single- and multi-enclosure matrices

- Suitable for small churches, board rooms, sports bars, post production and other compact studios, etc.—and they are priced to fit small budgets
- 1Y series specs exceed those required for pro audio, broadcast (with vertical interval timing option) and high-res graphics systems
- 1Y audio boards are also suitable for many high-speed data systems

“Narrow” bandwidth boards are designed for NTSC and PAL composite (including HDTV bandwidths), standard components (Y/C, RG_B and RGBS) and some computer graphics systems.

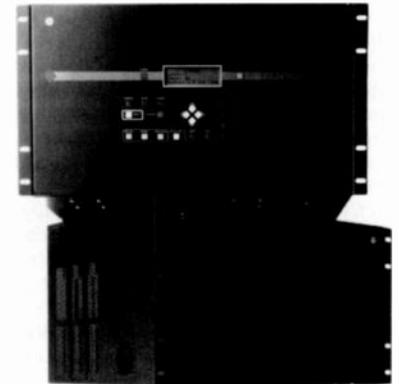
“Wide” bandwidth boards can also pass any of the above, but were designed especially for high resolution graphics systems (to 130MHz).

“Ultra” bandwidth boards are designed for extremely high resolution graphics systems (400+MHz).

Note: AutoPatch 1YDM series inputs are not field expandable.

8Y Distribution Matrix Series

- Uses input and output increments of eight and each enclosure can hold up to 64 inputs and 64 outputs
- Each enclosure can contain a mixture of signal types and wide variety of matrix sizes
- Can house an 8 x 44 composite video matrix, a 16 x 6 S-Video matrix, and a 24 x 8 mono audio matrix in less than 11" of rack space
- Field expandable to as many as 64 inputs and 256 outputs



- Designed for large installations such as multimedia educational systems, security systems, flight simulation, computer networks, and telecommunications traffic control
- True virtual matrix architecture
- AFV and breakaway control
- Configuration storage and recall
- Programmable single-key matrix changes
- Easy expansions in the rack
- Local and remote X/Y control panels
- Channel selectors at distant locations
- RS-232 and RS-422 serial interface
- Free menu-driven DOS control software

half-Y Control Panels

- Ideal for home, boardroom, classroom, and anywhere else a small footprint matrix is required for a high performance A/V system
- Press any button and both the matrix status and your selection options are immediately obvious
- Available in the following configurations: 6 x 2, 8 x 2, 8 x 4 for mono audio, stereo audio, and composite video
- Toggle switch disconnect
- Constant full matrix status switching power supply
- Audio/video breakaway
- Vertical interval switching
- Auto voltage sensing
- Rackmount enclosure: 1U
- Your choice of connectors: BNC, RCA, and Y/C video; RCA, 3-terminal for single-ended, 5-terminal for differential audio
- 100-240VAC universal power supply with automatic voltage sensing
- Provisions for use as a shelf unit
- Available: standard composite video, balanced and unbalanced mono and stereo audio
- 0-55MHz video
- DC to 200KHz audio
- Noise: better than 0.01% THD+N at line levels
- 19dBu headroom

Note: Windows control software is included with any matrix.

Call For Pricing

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



Avid Media Composer® Family

Common Features

- Customize your editing interface, and map your keyboard to execute common tasks with a single keystroke
- Powerful media-management tools let you display clips in frame, text or script views and locate material quickly and easily using multilevel sift and sort criteria
- Supports the ITU 601-R broadcast-quality image format at compression levels as low as 2:1
- ABVB supports component and composite I/O or serial digital I/O (available on some models) and captures all 21 lines of blanking during digitizing
- Standard audio features include real time, 3-band EQ; scrubbing with pitch change; track/global pan settings; waveform display in the timeline; single-track crossfades; and mixdown
- Real time multicamera play option

Avid Media Composer 1000

- Includes common features, plus: ▪ Industry-leading 2-field images; integrated compositing with 8 video tracks; real time titling; transitions; keying and 2-D effects
- Frame-accurate trimming with slip and slide
- Interactive timeline editing
- Customizable timeline views
- Full-screen editing and playback
- 32 levels of undo/redo
- Optional script-based editing interface
- Includes a hardware-independent QuickTime® codec that can be used to create QuickTime effects
- Layer and composite using multiple picture tracks
- Audio features include 44.1kHz audio with 4-channel I/O or optional 48kHz audio; optional 8-track monitoring; real time rubberband gain adjustments

Avid Media Composer 4000

- Includes common features, plus: ▪ Doubles as both a powerful online and offline editing system
- Features a range of broadcast-quality 2-field images; single-field images for offline; integrated compositing with 24 video tracks; an extensive array of real time 2-D effects
- Optional script-based editing interface
- Create and play back a wide range of titles and effects in real time, with high-quality, 60-field images
- Layer and composite using 24 picture tracks
- Input/output 4 channels of 44.1kHz or 48kHz digital audio with 8-track monitoring and edit with 24 audio tracks
- Audio features include rubberband gain adjustments and punch-in

Avid Media Composer 8000

- Includes common features, plus: ▪ Full range of high-quality 2-field and single-field images
- Editing tools
- Integrated compositing with 24 video tracks
- Extensive array of real time customizable 2-D and 3-D effects
- Includes script-based editing interface which allows you to instantly access and edit shots based on lined scripts located on your system
- Create and play back a wide range of titles, 2-D and 3-D effects in real time, with broadcast-quality, 60-field images
- Layer and composite within the Media Composer application using 24 picture tracks
- Analog or digital input/output 4 channels of 44.1kHz or 48kHz audio with 8-track monitoring
- Edit with 24 audio tracks
- Audio features include rubberband gain adjustments and punch-in

Avid Film Composer®

- Lets you digitize, edit and play back your film projects at a true 24 frames per second
- Features a customizable, easy to use editing interface and powerful tools optimized for film editing
- Sequences are visually represented within a timeline, where you modify your clips, transitions and effects with frame-accurate trimming
- Script-based editing interface
- Full-screen editing and playback
- Includes Multicamera Grouping software
- Real time multicamera play option
- Display clips in frame, text or script mode
- Create and previsualize optical effects and titles using 4 picture tracks



- Comes standard with film-style dissolves and wipes, anti-aliased graphic keying, flips, flops, resizes and motion effects
- High-quality image resolutions
- Select between maximizing storage or image quality on a project-by-project basis
- Prepare for audio mixing directly on the system, using 4 channels of 48kHz audio I/O, 8 tracks of audio monitoring and 24 tracks of audio editing
- Advanced storage solutions let you work with up to 250G byte of storage on a single system

Avid MCXpress™ for Windows NT®

- Delivers stunning, broadcast-quality images, professional editing features, ease of use and Windows compatibility
- Integrated, professional feature set is designed to promote greater efficiency and creativity
- Delivers powerful editing tools, robust media management and a user interface optimized for ease of use
- Create programs interactively using timeline editing, frame-accurate trimming and full-screen playback
- Supports images in excess of 300K bytes/frame
- Dial-a-quality feature
- Includes batch digitizing
- Other features include a real time effects option, unlimited compositing, more than 100 built-in transition effects, 4-track audio monitoring with real time rubberband gain adjustments and EDL output
- Fully-integrated title tool
- 32 levels of undo/redo
- Leverage your media assets by importing and exporting over 20 standard Windows file formats
- Seamlessly integrates 3-D animations/models, 2-D graphics and audio from other Windows-based applications to create spectacular video content

Avid MCXpress for Macintosh®

- Digital video production tool which delivers powerful editing and finishing tools and broadcast-quality images
- Features a streamlined interface
- Features support 2:1 ITU 601-R compressed format images and composite and component video I/O
- Built-in waveform monitor and vectorscope
- AutoScale feature automatically adjusts compression rates during digitizing
- Sort and sift functions
- Timeline editing, frame-accurate trimming and full-screen playback
- Dynamic Storyboard feature lets you play clips in full-screen directly from a bin
- Snap-to-transition
- Sync-lock/sync-break detection
- 32 levels of undo/redo
- Comprehensive audio features
- Features up to 4 video tracks for integrated compositing
- Create multilayered effects and combine multiple effects on a single video track
- Real time effects options give you the freedom to experiment with a wide range of effects in real time, using crystal-clear 2-field images



Avid Media Composer Offline

- Turnkey editing system for offlining commercials, documentaries, corporate videos, TV shows and other projects
- Allows you to bring bins and project information to an online Media Composer system for batch digitizing and project finishing
- Customize your editing interface, and map your keyboard to execute common tasks with a single keystroke
- Script-based editing interface allows you to instantly access and edit shots based on lined scripts located on your system
- Provides a direct link from any text document to the finished program and lets you work with greater speed and creative continuity
- Real time multicamera play option
- Features the ability to create and play back dissolves, superimpositions, box wipes, chroma keys, luma keys and titles in real time using 4 picture tracks
- Customizable effects that allow you to more fully visualize final projects during the offline stage
- Input/output 2 channels of 44.1kHz audio and edit with 8 audio tracks
- Integrates seamlessly with your existing systems and applications

Call For Pricing

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



Avid



SPECIAL EFFECTS SOFTWARE



Avid Media Illusion™

- High voltage creative environment for commercial, feature film, broadcast, industrial and multimedia effects creation
- Seamlessly merges paint, compositing, image manipulation and special effects tools into one artistic domain
- Build effects by adding, editing and experimenting with an unlimited number of layers
- Key off red, green, blue, luma or expression
- Create traveling mattes freehand or using Rotosplines or Bezier shapes
- Alter an entire image, isolated components or objects, as well as highlights, midtones, lowlights or edges
- Track up to 256 points simultaneously, even if they move off-screen
- Create stunning effects in 2-D and 3-D
- Link multiple models and grids in a hierarchy and combine several DVEs on a single shot
- Create subtle effects or outrageous images using morphing technology
- Shape-to-shape™ interface
- Includes paint tools, as well as user-configurable brushes, vector shapes, 2-D and 3-D text, advanced filters and intricate image manipulation tools
- Drag-and-drop control
- Create keyframed animations with unlimited layers and render in a single pass
- Nonlinear short-form editing
- Runs on a wide range of Silicon Graphics® workstations

Avid Elastic Reality®

- Power special effects system combining the most advanced warping and morphing technology available with sophisticated 2-D and 3-D animation, color correction, matte generation and compositing tools
- Shape-based interface
- Bezier curve technology provides easy-shape creation, keyframing and editing
- Can contribute to an unlimited number of matte layers which can be simultaneously defined and processed
- MultiSource™ and shape blending technology breaks all the traditional morphing barriers, allowing morphed regions to travel arbitrary paths and even blend through intermediate shapes
- Allows you to color correct any number of shapes or groups individually
- Use shapes to define motion paths for other shapes to follow
- Link paths in a hierarchy to create sophisticated animations
- Accelerate cartoon creation with sophisticated frame in-betweening and the Animation Reference Library of reusable character positions
- Vocalization and other movements can be dragged and dropped into keyframes for automatic integration with footage
- Shape-to-shape technology
- Supports more than 25 file formats including OMF Interchange® and is compliant with Silicon Graphics Keystone Initiative™

Avid Matador®

- Brings together painting, rotoscoping, tracking and multilayered 2-D animation into one resolution-independent creative environment
- Provides ultimate image quality with total resolution-independence and up to 16-bit color depth
- Paint tools include a wide selection of user-configurable, pressure-sensitive brushes, vector shapes, 2-D and 3-D text, an advanced array of filters and intricate color-correction tools
- Macros can be used to automate repetitive tasks, allowing you to concentrate on more important creative details
- Masks can be generated from luma, chroma, component or hue or by using Matador's advanced chromakey techniques
- Anything you paint can be animated
- Create keyframed hierarchical animations with unlimited layers and render them in a single pass
- Features full shape in-betweening and seamless integration with Avid Jester™
- Allows you to track the motion of up to 256 reference points, and lock an animated cutout to a vector path—even if the point moves off-screen
- Can be used as a stand-alone paint system or as part of a networked post-production environment



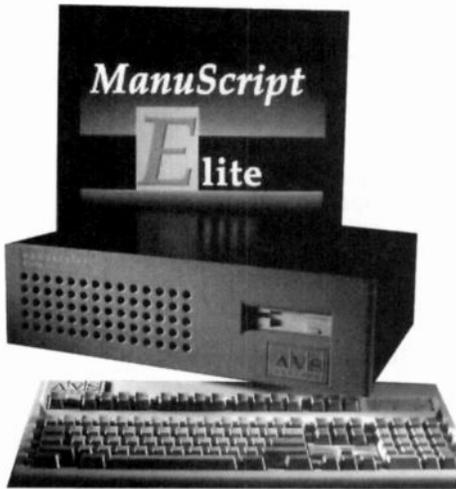
Avid Jester

- Digital ink and paint system that accelerates the cartoon production process without compromising quality
- Combines the distinctive human touch of traditional cartooning with the power of computer processing
- Close integration with Avid's complete range of image processing tools lets you combine cartoons with unlimited layers of 2-D and 3-D elements, live action and special effects for film and video
- Any cartoon you draw can be scanned at any resolution, digitized and stabilized
- Complete integration with Matador provides access to more than 16 million colors
- Reference cells for individual characters can be created to act as a pictorial guide for the painter
- A traditional-style exposure sheet manages all scanned files, allowing you to build unlimited effects on multiple layers in a highly organized environment
- Can composite an unlimited number of layers at mixed resolutions, and includes a rostrum module for precise control over camera moves
- Compositor module has its own set of fully animatable effects
- Sophisticated color-correction
- Multilayered, multisource Rotomanager
- New shapes menu
- Intuitive interface lets you build color libraries
- Databases can even be locked so that unwanted changes cannot be applied



Call For Pricing

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



ManuScript Elite Character Generator

- Component or composite linear keyer, which allows you to choose from a range of 16.7 million colors and creation of transparencies at 256 levels
- Resolution of 9nS on any character size and on all logos
- True real time operation on dedicated Risc-based hardware and software
- Graduated backgrounds
- Variety of motion options from movement of the whole page to only part of the text
- Cut, fade, reveal, push and wipe can be performed in any direction
- LogoComposer drawing package
- AVS Latin Typeface Library of 250+ typefaces (almost 100,000 font sizes) as standard, which can be instantly displayed at heights from 4-400 scanlines
- Full international language support of 44+ Latin based languages with the options of Arabic, Farsi (Persian), Cyrillic, Greek, Hebrew, Vietnamese, Hindi or Thai
- Optional Video Toolkit comprising: VTR slate clock, test pattern generator and video fade to black
- Option of additional quality typefaces from library of 300+

The ManuScript 'Elite' is the latest addition to the ManuScript range of character generators. The Elite is a broadcast quality machine which has been specifically designed to compliment a UWW Betacam environment. It is a low cost unit and yet it meets full broadcast specifications.

Elite Composite and Y/C program outputs, internal composite and Y/C linear keyer, 250+ Latin master typefaces and LogoComposer drawing package \$9395.00

Elite Component YUV/RGB program outputs, internal YUV/RGB linear keyer, 250+ Latin master typefaces and LogoComposer drawing package 9850.00

Options for Elite or Junior

- Upgrade Junior to Elite Composite or Component \$2250.00
- Upgrade Elite Composite to Elite Component 950.00
- Upgrade older ManuScripts to entire typeface library access 795.00
- Video Toolkit VTR countdown clock, digital sports timer, test pattern generator and background video fade up/down 450.00

Note: All equipment meets or exceeds European community standards for emitted radiation.



ManuScript Junior Character Generator

- Composite and Y/C program output, composite and Y/C keying and RGB edit output
- Internal linear keyer which allows you to choose from a range of 16.7 million colors and 256 levels of transparency
- Ideal for online and off-line environments
- High quality anti-aliased characters with a resolution of 18nS
- Online sizing and style creation
- Text can be rotated, mirrored and offset
- 20 Latin master typefaces, which can be instantly displayed at heights from 4-400 scan lines
- LogoComposer drawing package
- A free typeface booklet details the whole of the AVS typeface library
- Support for 44+ Latin-based languages plus Cyrillic, Greek and Vietnamese
- Graduated color background generator
- Fully compatible with the ManuScript 500 and the ManuScript Elite
- Options include Video Toolkit and access to the entire Latin typeface library of 250+ typefaces (almost 100,000 fonts)

The ManuScript 'Junior' is the first dedicated character generator in its price range to offer online sizing of typefaces while giving high resolution, anti-aliased text. Based on the proven ManuScript character generator range, the Junior shares the same speed of operation and ease of use.

Junior Level I, Composite, Y/C program outputs, internal linear keyer, 20 Latin master typefaces and LogoComposer. \$7850.00

Junior Level II, Junior Level I, plus access to the entire Latin based typeface library of 250+ typefaces. 8595.00

Junior Level III, Junior Level II, plus Video Toolkit Software . . 8950.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



Fluxlite 300/240W 6-Lamp Fluorescent Fixture

The Fluxlite is a highly energy efficient reflecting fluorescent light fixture equipped with 6 "Tungsten" 3100°K CRI 95 or "Daylight" 5200°K CRI 98 fluorescent lamps. The patented optical reflector makes the Fluxlite a highly efficient source used by itself or mixed with existing tungsten-halogen lighting systems. It uses only 300W to produce the equivalent light of a 2500W to 3000W Halogen with virtually no ambient heat and almost no change in color temperature when dimming.

The Fluxlite is the perfect design for large studios, cyclorama lighting, news broadcasting applications, motion pictures, digital imaging, museum restoration departments, or any situation where soft, yet intense full-spectrum, flicker-free, dimmable lighting is necessary. Many accessories are available.

- Housing: aluminum extrusion and epoxy coated aluminum alloy sheets
- Mirror flaps: 4 pivoting flaps and 4 removable reflecting corners
- Yoke with 28mm/1 1/4" male spigot (Female 16mm/5/8" additional fitting on the back of housing for optional pole operated system)

Fluxlite 300 10,000 candelas, 300W \$2314.00
 Fluxlite 240 7700 candelas, 240W 2212.00

Quadlite 200/160W 4-Lamp Fluorescent Fixture

The Quadlite is a highly energy efficient reflecting fluorescent fixture equipped with 4 "Tungsten" 3100°K CRI 95 or "Daylight" 5200°K CRI 98 fluorescent lamps. The patented optical reflector makes the Quadlite a highly efficient source used by itself or mixed with existing tungsten-halogen with virtually no ambient heat and almost no change in color temperature when dimming.

The Quadlite is the perfect design for medium and low ceiling studio applications. It is the perfect complement to the Fluxlite and Duolite. The extensive selection of accessories lets you adapt the Quadlite to any lighting application. A two-Quadlite Kit case is available for location shooting.

- Housing: aluminum extrusion and epoxy coated aluminum alloy sheets
- Mirror flaps: 2 pivoting flaps and 2 removable reflecting corners
- Yoke with 28mm/1 1/4" male spigot (Female 16mm/5/8" additional fitting on the back of housing for optional pole operated system)

Quadlite 200 5800 candelas, 200W \$1827.00
 Quadlite 160 4500 candelas, 160W 1786.00

Duolite 100 2-Lamp Fluorescent Fixture

The Duolite is a highly energy efficient reflecting fluorescent fixture equipped with 2 "Tungsten" 3100°K CRI 95 or "Daylight" 5200°K CRI 98 fluorescent lamps. The patented optical reflector makes the Duolite a highly efficient source used by itself or mixed with an existing tungsten-halogen lighting system. It uses only 100W to produce the equivalent light of a 650W to 900W halogen with virtually no ambient heat and almost no change in color temperature when dimming.

The Duolite is very compact, so it's ideal for very low ceiling studio applications, teleconferencing setup, chromakey, etc. Used in combination with Quadlite and Twinlite in smaller studios or on location. Full-range of accessories for beam shaping, light control, hanging. A three-Duolite Kit case is available.

- Housing: aluminum extrusion and epoxy coated aluminum sheets
- Mirror flaps: 2 pivoting flaps and 2 removable side flaps
- Option 1 mount: aluminum alloy yoke with 16mm/5/8" female mount (28mm/1 1/4" available)
- Optional 2 mount: pan/tilt with 16mm/5/8" female mount for tripod use

Duolite

Bi-Voltage 100 2700 candelas, 100W \$1203.00



Twinlite 100W 2x1 Lamp Fluorescent Fixture

The Twinlite is a lightweight highly energy efficient fluorescent fixture. It consists of two one-lamp "Twinheads" connected to a remote ballast by 2m (7') cords. Both "Tungsten" 3100K° CRI 95 and "Daylight" 5200°K CRI 98 bulbs are used with the Twinlite. Each "Twinhead" outputs a powerful light of 340 lux at 2m (220V) or 42FC at 5' (110V). Several versions are available: model with built-in 0-10V dimmer or model with external dimming working on standard Triac dimmers.

The Twinlite is designed for very low ceiling studios, teleconferencing, TV duplication bench, strip light source, car interior shooting, etc. Grid Spots, lenticular concentrating lens, filter holder and several attachment methods make the Twinlite a very versatile light source. Kit case available for location shooting.

- Heads: Aluminum housing, mirrored inner reflector, 2 pivoting flaps, 2 removable side flaps, epoxy coated aluminum alloy sheets
- Steel tube black finish
- Female 3/8" mount on pack and heads for pan/tilt or spigot

Twinlite 110V 1350 candelas (each head),
 100W \$1354.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



DIGITALLY CONTROLLED PROJECTORS

Common Features

- 37-140Hz vertical frequency
- Linear digital interpolation (LDI)
- Effective on-screen display: installation screens, help screens, IR remote control unit for source switching, user settings per source (brightness, contrast, hue, color, sharpness), geometry per source, convergence per source, barscale display of user settings, on-screen display of source frequencies
- Automatic storage of all adjustments
- Ability to set parameters to midposition
- Text generators for other languages
- IRIS 800 ready
- Optional RCVDS 800 and RCVDS 05 remote controlled video and data source selectors
- Optional Control 800 software package
- Optional executive remote control unit available for control of source switching and user settings per source
- Color temperature adjustment



GRAPHICS PROJECTORS

BarcoGraphics 1209 Ultrahigh Resolution Graphics Projector

- Includes common features plus:
 - Ultra-high performance graphics projector
 - Powerful, liquid coupled 9" EMF CRTs for exceptional contrast and clarity
 - Includes IRIS² auto-convergence
 - 15-135kHz (H)
 - 37-200Hz (V)
 - Light output: peak 1050 lumens, ANSI 240 lumens
 - 120MHz RGB bandwidth
- 90-00978 \$32,495.00

RetroGraphics 808s 67" Large Rear Screen Projector

- Includes common features plus:
 - 67" self-contained, rear screen graphics projector with high brightness and outstanding contrast
 - 8" EMF CRT type
 - 15-110kHz (H)
 - 37-200Hz (V)
 - 364fL at 10% peak white
 - 57fL at ANSI
 - 120MHz RGB bandwidth
- 90-02049 \$31,495.00

BarcoGraphics 1208s Ultrahigh Resolution Projector

- Includes common features plus:
 - 32 frequency-related memory banks
 - Display compatibility from VHS up to 2500 x 2000 pixels
 - 8" EMF CRT
 - f/1.06 high definition, fully color-corrected hybrid lenses
 - 15-135kHz horizontal frequency
 - 1250 lumens
 - 120MHz RGB bandwidth
 - 10 lp/mm optical resolution
 - Flexible installation possibilities, even under difficult projection angles, on screens up to 20"
 - Extremely low RFI/EMI emissions
 - RGB sharpness control
 - Built-in Scheimpflug optical correction
 - RCVDS 05 remote controlled switcher optional
 - Inputs: RGB analog input on BNC connectors, sync on green or separate sync; RGB analog input on D9 connector; 4-pin S-Video loopthrough, video loopthrough (2x BNC)
 - Includes IRIS² auto-convergence
- 90-00896 \$23,995.00

BarcoGraphics 808s Projector

- Includes common features plus:
 - 8" EMF CRTs
 - 15-110kHz horizontal scan rates
 - 120MHz RGB bandwidth
 - 210 lumens ANSI light output (more than 1250 lumens at 10% peak white)
 - 1600 X 1200 pixels/78Hz resolution
 - f/1.06 color corrected hybrid lenses with center edge focus
 - 10 lp/mm optical resolution
 - Projection on screen up to 20"W
 - Digital Dynamic Astigmatism circuits
 - Adjustable Scheimpflug optical correction
 - Inputs: RGB analog (5x BNC connectors), sync on green or separate sync; RGB analog on D9 connector; video loopthrough (2x BNC); S-Video (4-pin mini-DIN)
 - Flexible design
 - Ideal for large screen presentations for CAD/CAM/CAE imaging, training centers, simulation and traffic management centers
 - 32 frequency-related memory banks
 - RGB sharpness control
- 90-00908 \$20,995.00

DATA PROJECTORS

RetroData 808s Large Rear Screen Projector

- Includes common features plus:
 - Self-contained
 - Built-in 67" diagonal high resolution fresnel type projection screen
 - Sophisticated memory management system
 - Displays all worldwide video standards as well as S-VHS signals
 - Compatible with a wide range of PC graphic boards from 15-75kHz with resolutions up to 1180 x 900 pixels/60Hz
 - Single front surface-coated mirror for ultrasharp images with an extremely high light output
 - 8" square CRTs with stabilized pressure chambers
 - f/1.1 color corrected hybrid lenses
 - 10 lp/mm optical resolution
 - Optical coupling between CRTs and lenses
 - Guided adjustment program
 - Internal pattern generators
 - 364fL at 10% peak white
 - 75MHz RGB bandwidth
 - All controls accessible through a soft-touch front panel or a user-friendly IR remote
 - Ideal for a variety of presentations and training applications
 - Inputs: RGB analog (BNC connectors), sync on green or separate sync; RGB analog on D9 connector; video loopthrough (2x BNC); 4-pin S-Video
 - 38 frequency-related memory banks
 - RGB sharpness control
 - Easily transportable cabinet
 - Extremely thin borders around the screen
- 90-02119 \$25,995.00

BarcoData 808s Projector

- Includes common features plus:
 - 8" EMF CRTs
 - 15-75kHz scan range
 - 1280 x 1024 resolution
 - 1250 lumens at 10% peak white
 - 75MHz RGB bandwidth
 - Digital Dynamic Astigmatism circuits
 - BarcoData 808s provides a more affordable solution for those looking for the image quality and flexibility of a graphics projector
- 90-02038 \$16,995.00

BarcoData 701s Large Screen Projector

- Includes common features plus:
 - Auto lock frequency range of 15-50kHz
 - Wideband 45MHz RGB amplifiers
 - Compatible with most graphics boards up to a resolution of 1024 x 768/60Hz
 - Displays video, S-VHS, component video and HDTV signals in 4:3 and 16:9 aspect ratio
 - Compact and lightweight
 - Advanced digital architecture
 - Truecolor projection on screens up to 20"W
 - 1100 lumens at 10% peak white
 - 7" CRTs
 - High definition f/1.03 lenses
 - Optional hybrid lenses with short throwing distance for projection cube applications
 - 10 lp/mm optical resolution
 - Ideal for medium-sized audiences such as boardroom meetings, training sessions and trade shows
 - Inputs: Dual function input—RGB analog or R-Y/B-Y/Y on BNC connectors, sync on green or separate sync, standard sync or tri-level sync; video loopthrough (2x BNC); S-Video (4-pin mini-DIN); RS-232
 - 32 frequency-related memory banks
 - External auto-diagnosis LEDs
 - Adjustable Scheimpflug correction in 3 discrete steps
 - Superb color reproduction through color transient improvement, automatic black level, gamma-tracking and CRT phosphors
- 90-00718 \$9,995.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



LCD PROJECTORS

BarcoGraphics 9200 LC Ultra-High Brightness LCD Light-Valve Graphics Projector

- Offers light output of 4000 lumens full white
- Powerful display device for demanding applications in high ambient light conditions such as simulation, CAD/CAM, process control and virtual reality
- Capable of delivering extremely bright projected images on screens up to 50' wide
- Powerful 1500W metal-halide lamp ▪ 3 active matrix 6" LCD panels with a resolution of 1024 x 768 pixels ▪ Wide range of high definition lenses ▪ User adjustable geometry corrections ▪ Built-in test patterns ▪ Freeze facility ▪ Can be easily installed in table or ceiling mount configuration and can project onto any front or rear screen ▪ Dual- or triple-mount configurations ▪ Equipped with a high performance, proprietary pixel map processor ▪ External auto-diagnostics with 2x 7-segment LED display ▪ Built-in help menus ▪ Intuitive on-screen display of selected source ▪ Adjustable leveling feet ▪ Color temperature adjustment



90-01329 \$84,995.00

BarcoGraphics 8200 LC LCD Light-Valve Projector

- Equipped with an advanced pixel map processor and high resolution XGA LCD panels ▪ Compatible with most of today's PC graphics boards and electronic workstations up to 1280 x 1024 pixels ▪ Powerful display device for highly demanding graphics applications, such as simulation, CAD/CAM, process control, and virtual reality ▪ Displays graphical images on screens up to 50' wide ▪ Powerful 650W metal-halide lamp ▪ 3 active matrix 6" XGA LCD panels with a resolution of 1024 x 768 pixels ▪ Wide range of high definition lenses ▪ Built-in test patterns ▪ Image freeze facility ▪ User adjustable geometry corrections ▪ Can be easily installed in table or ceiling mount configuration, and can project onto any front or rear screen ▪ Dual- or triple-mount configurations

90-01339 \$59,995.00

BarcoGraphics 2100 LC Single-Panel, High Resolution LCD Graphics Projector

- Compact, portable high resolution single-panel LCD projector
- Equipped with an advanced pixel map processor and a high resolution XGA LCD panel ▪ Compatible with most of today's PC graphics boards and electronic workstations with resolutions up to 1280 x 1024 pixels ▪ Logical on-screen menus, accessible through a convenient back lit infrared remote control unit ▪ Extensive user facilities including image size, shift, zoom, freeze and built-in test patterns ▪ RS-232 serial communication input ▪ Table or ceiling mount configuration ▪ Front or rear screens ▪ 700 lumens full white, 550 ANSI lumens ▪ 575W metal-halide lamp ▪ External auto-diagnostics with 2x 7-segment LED display for source selection and error codes ▪ Adjustable leveling feet ▪ Color temperature adjustment

90-01159 \$17,995.00

DIGITALLY CONTROLLED VIDEO PROJECTOR

BarcoVision 701s Video Projector

- 37-155Hz vertical frequency
- Effective on-screen display: installation screens, help screens, barscale display of user settings, on-screen display of source frequencies
- Automatic storage of all adjustments ▪ Linear digital interpolation (LDI) ▪ Ability to set parameters to midposition ▪ Color temperature adjustment ▪ Text generators for other languages ▪ IRIS 800 ready
- Multimedia projector ▪ Compatible with all existing video standards and all HDTV extended or improved TV standards ▪ RGB inputs are capable of accepting a limited range of computer sources, including most modes of VGA, XGA and Mac II running 640 x 480 pixels
- High brightness 7" CRTs ▪ User-friendly remote control ▪ Full digital control ▪ Compact cabinet design ▪ 1100 lumens (at 10% peak white) ▪ f/1.03 lenses ▪ 20' x 15' maximum screen size (4:3 aspect ratio); 20' x 11' maximum (16:9) ▪ 15-16kHz and 30-35kHz horizontal frequency ▪ RGB bandwidth 20MHz, ± 3dB ▪ Inputs: video; 4-pin S-Video; RGB analog, sync on green or separate sync, standard sync or tri-level sync; component video ▪ Easy switching between 4:3 and 16:9 ▪ 8 memory banks ▪ External auto diagnosis LEDs ▪ Hand grips ▪ Discrete adjustable Scheimpflug correction ▪ Ideal for video theaters, trade shows, large screen corporate presentations, sales/educational seminars, teleconferencing links and sports and entertainment applications



90-00727 \$8,995.00

ACCESSORIES FOR DIGITALLY CONTROLLED PROJECTOR

RCVDS 05 Digitally Controlled Source Switcher

- Connects a wide range of video, data and graphics sources to 1 or more projectors or monitors ▪ Modular input design (can be equipped with up to 10 input modules) ▪ 4 input modules available: Video/S-Video, component video, RGB analog with standard sync and RGB analog with tri-level sync ▪ 200MHz RGB bandwidth ▪ Can be used as a high bandwidth signal splitter ▪ Additional output modules can be added making it possible to connect up to 4 displays ▪ All functions can be controlled through the front panel or the IR remote control ▪ Compatible with all BARCO digitally controlled projectors ▪ 7-segment LED display indicates the selected source or displays error and warning codes

98-27888 \$2,995.00

98-27889 Same as above except no input modules included 2,695.00

Input Modules for RCVDS 05

98-28000	Expansion module	.....	\$495.00
98-28020	Output module	.....	495.00
98-27910	RGB analog	.....	320.00
98-27820	RGB analog/tri-level sync	.....	320.00
98-28010	Communications module	.....	320.00
98-28030	Quad-decoder module	.....	320.00
98-27900	Video/S-VHS	.....	275.00
98-27935	Component video	.....	275.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

LCD/LIGHT-VALVE PROJECTORS



BarcoData 9200 LC (Light Cannon) Ultra-High Brightness LCD Light-Valve Projector

- 1500W metal-halide lamp
- 5000 lumens full white
- Powerful display device for demanding applications in high ambient light conditions
- User adjustable geometry corrections
- Extensive user facilities including zoom, freeze and built-in test patterns
- Wide range of high definition lenses
- Table or ceiling mount configuration on front or rear screens
- Dual- or triple-mount configurations
- Pixel map processor
- External auto-diagnostics with 2x 7-segment LED display
- Built-in help menus
- Intuitive on-screen display
- Adjustable leveling feet
- Color temperature adjustment



90-01269 \$71,995.00

BarcoData 8200 LC High Brightness LCD Light-Valve Projector

- Clear images on screens up to 50'
- Can display all NTSC video sources, and is compatible with all computers with a resolution up to 1180 x 900 pixels
- Powerful display device for staging and rental applications
- Extensive user facilities including image size, shift, zoom, freeze and built-in test patterns
- Wide range of high definition lenses
- Table or ceiling mount configuration on front or rear screens
- Dual- or triple-mount configurations
- 650W metal-halide lamp
- 3 active matrix 5.8" LCD panels with a resolution of 756 x 556 pixels

90-01259 \$46,995.00

9000/8000 Series Lens Kits

98-29320	WHD 3.5:1 Anamorphic	\$15,995.00
98-29190	HD (3-5.3):1 Zoom	12,995.00
98-29150	HD (1.5-3):1 Zoom	11,995.00
98-29090	HD 7.0:1	11,995.00
98-29550	HD 0.9:1	10,995.00
98-29200	HD 1.2:1	9,995.00
98-29060	HD 2.2:1	4,995.00
98-29075	HD 3.3:1	4,995.00
98-29145	HD 4.0:1	4,995.00
98-29180	HD 5.0:1	4,995.00

BarcoData 3100 LC Compact LCD Projector

- Built-in pixel map processor
- Advanced digital video decoder allows the projector to display all NTSC video sources
- 720 x 480 resolution; 1180 x 900 maximum resolution
- 1150 full-screen lumens
- 3.3' to 20' screen width
- 575W metal-halide lamp
- 3" active-matrix LCD panel
- Utilizes light-valve technology
- On-screen menus
- Light output of up to 20x that of traditional CRT projectors
- Extensive user facilities including: image size, shift, pan, zoom, freeze and built-in test patterns
- Projector can be used in front or rear screen installations and in table or ceiling mount configurations



90-01037 \$27,495.00

BarcoData 3000 LC Compact LCD Projector

- 3-panel single-lens LCD light-valve projector
- 575W metal-halide lamp
- High resolution (640 x 480 pixels) 3" active-matrix LCD panel
- Projects on screens up to 20' wide
- Digital NTSC decoder accepts all video formats
- IBM and Macintosh compatible
- Table or ceiling mount configuration on front or rear screens
- On-screen menus
- 1250 lumens full white (1000 ANSI lumens) light output
- Contrast ratio: >200:1 on 5 x 4 black-and-white checkerboard; >400:1 full-field contrast
- Built-in pixel map processor
- Built-in modular signal switcher that accommodates up to 3 video, component video, RGB analog input modules
- Complete range of high-definition lenses with throw distance of 1.2, 2.3, 3.4, 5, 6 and 7x the screen width
- Built-in stereo audio amplifier (10WRMS)
- 15W loudspeaker
- 3 stereo audio (2x RCA) inputs
- Built-in adjustable lensholder
- Internal test patterns
- External auto-diagnostics with 2x 7-segment LED display
- Built-in help menus
- Color temperature adjustment
- Adjustable keystone correction

90-01099 \$21,495.00

3000 Series Lens Kits

98-29470	1.2:1	\$4,995.00
98-29340	2.3:1	2,495.00
98-29350	3.4:1	2,495.00
98-29360	5.0:1	2,495.00
98-29370	6.0:1	2,495.00
98-29380	7.0:1	2,495.00

BarcoData 2100 LC Single-Panel LCD Projector

- Plug-and-Play portable, large screen projector
- Projects video and computer images on screens up to 20' wide
- 575W metal-halide lamp
- 10.4" active-matrix color LCD panel with SVGA resolution (800 x 600 pixels)
- Built-in video decoder
- Built-in pixel map processor
- On-screen menu
- Extensive user facilities include: image size, shift, zoom, freeze and built-in test patterns
- Table or ceiling mount configurations
- 1000 lumens full white (750 ANSI lumens) light output
- >120:1 contrast ratio
- External auto-diagnostics with 2x 7-segment LED display
- Adjustable leveling feet
- Color temperature adjustment
- Built-in audio amplifier (2x 10WRMS)
- Stereo audio output (2x RCA)

90-01079 \$13,995.00

2100 Series Lens Kits

98-29500	1.7:1	\$1,695.00
98-29485	1.2:1	1,495.00
98-29480	1.15:1	995.00

BarcoData 708 Compact High Performance Data Projector

- Designed to project sharp, clear images from a wide range of PC graphics boards on screens up to 20' wide
- New proprietary 7" CRTs
- High brightness f/1.03 lenses
- Optional IRIS' automatic convergence unit
- CRT drive in 3 modes: normal, economy, and boost
- External auto-diagnosis LEDs for ease of maintenance
- Superb color reproduction through color transient improvement, automatic black level and gamma-tracking
- 32 memory banks
- Linear Digital Interpolation
- Ability to set parameters to midposition
- Color temperature adjustment
- Hand grips on the side of projector facilitate carrying
- Discrete adjustable Scheimpflug correction

90-02129 \$11,495.00

Projection Lamps

98-29525	For 9000 Series	\$1,095.00
98-29295	For 8000 Series	795.00
98-29280	For 3000 Series	695.00
98-29130	For 5000 Series	595.00
98-29510	For 2000 Series	595.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



VP400 Copy Stand System

A technically advanced stand ideal for heavier video and large format still cameras. The VP400 offers users exceptional camera stability, accurate camera placement and smooth, effortless carriage movement for cameras up to 40 lbs., along with a unique enclosed carriage design that makes the VP400 an attractive addition to any professional videography or photographic environment.



500-71

VP310 Copy Stand System

The VP310 offers significant improvements over earlier designs, including an independent support system for the column, eliminating the need for the column to rest directly on the baseboard. This design provides the strongest possible structure for maintaining camera stability and maximizes useable area on the baseboard. Camera stability is further enhanced by the 1-piece extruded aluminum column, an extruded aluminum carriage, and a camera mounting plate supported by machined steel shafts riding in oil impregnated bronze bearings. The VP310 can easily accept video or still cameras weighing up to 15 lbs.



600-50

VP400 Copy Stand

- 500-22 Tabletop copy stand, motorized with light control . . . \$1800.00
- 500-12 Wall mount column and carriage, motorized with light control. 1620.00
- 500-21 Tabletop copy stand, motorized 1610.00
- 500-02 Column and carriage only, motorized with light control. . . 1560.00
- 500-11 Wall mount column and carriage. 1430.00
- 500-01 Column and carriage only, motorized 1360.00
- 500-20 Tabletop copy stand 1130.00
- 500-10 Wall mount column and carriage. 950.00
- 500-00 Column and carriage only 880.00

VP400 Producer

- 500-56 Producer floor, motorized \$2730.00
- 500-51 Producer tabletop, motorized 2460.00
- 500-55 Producer floor 2290.00
- 500-50 Producer tabletop 2030.00

VP400 Illuma

- 500-71 Floor Illuma, motorized \$3320.00
- 500-70 Floor Illuma 2870.00

VP400 Camera Accessories

- 060-90 Camera reflection shield, Hasselblad \$60.00
- 060-62 Camera reflection shield, 62mm 30.00
- 060-58 Camera reflection shield, 58mm 27.00
- 060-55 Camera reflection shield, 55mm 27.00
- 060-52 Camera reflection shield, 52mm 27.00
- 060-49 Camera reflection shield, 49mm 27.00

VP400 Stand Accessories

- 570-10 Floor base \$400.00
- 570-60 Slide duplicator 220.00
- 570-42 Book/copy hold-down 200.00
- 570-40 Copy mask set 190.00
- 570-00 Wall mounting bracket set 80.00

VP400 Lighting Accessories

- 580-90 Quartz halogen base illuminator \$1430.00
- 080-14 Quad quartz halogen copy lights, set of 4 480.00
- 580-70 Copy light control 260.00
- 580-89 Quad copy light polarizing filters, set of 2 250.00
- 080-10 Master quartz halogen copy lights, set of 2 250.00
- 080-12 Auxiliary quartz halogen copy lights, set of 2 230.00
- 580-00 Side light arms, set of 2 220.00
- 080-82 Quartz halogen copy light safety glass kits, set of 4 . . . 101.00
- 080-84 Quad quartz halogen copy light baffles, set of 4 90.00
- 080-80 Quartz halogen copy light safety glass kits, set of 2 55.00
- 080-83 Master quartz halogen copy light baffles, set of 2 50.00

VP310 Copy Stand

- 600-23 VP310 tabletop copy stand with 5' column \$650.00
- 600-20 VP310 tabletop copy stand 620.00
- 600-13 VP310 wall mount 5' column and carriage. 480.00
- 600-10 VP310 wall mount column and carriage 440.00
- 600-03 VP310 with 5' column and carriage 400.00
- 600-00 VP310 column and carriage only 370.00

VP310 Producer

- 600-57 VP310 floor Producer with 5' column. \$1770.00
- 600-55 VP310 floor Producer. 1730.00
- 600-52 VP310 tabletop Producer with 5' column. 1560.00
- 600-50 VP310 tabletop Producer. 1520.00

VP310 Illuma

- 600-72 VP310 floor Illuma with 5' column. \$2250.00
- 600-70 VP310 floor Illuma 2220.00

VP310 Counterbalance Spring

- Factory installed
- 650-00 For cameras 8 to 15 lbs. \$26.00

VP310 Camera Accessory

- 060-20 Camera quick release \$37.00

Copy Stand Accessories

- 670-10 VP310 floor base \$330.00
- 670-42 VP310 book/copy hold-down. 200.00
- 670-60 VP310 slide duplicator 96.00
- 670-00 VP310 wall mounting bracket set 85.00
- 690-70 Counterbalance spring for cameras 8 to 15 lbs. 38.00
- 670-40 VP310 copy mask set. 37.00

VP310 Lighting Accessories

- 680-90 Quartz halogen base illuminator \$1310.00
- 080-14 Quad quartz halogen copy lights, set of 4 480.00
- 680-70 VP310 copy light control 290.00
- 680-89 VP310 quad copy light polarizing filters, set of 2 250.00
- 080-10 Master quartz halogen copy lights, set of 2 250.00
- 080-12 Auxiliary quartz halogen copy lights, set of 2 230.00
- 680-00 VP310 side light arms, set of 2 170.00
- 080-87 Master quartz halogen copy light polarizing filters, set of 2 85.00

Replacement Parts

- 090-80 Quad copy light polarizer replacement filter set. . . . \$125.00
- 090-04 300W/120V quartz halogen lamps, set of 4 120.00
- 090-02 300W/120V quartz halogen lamps, set of 2 65.00
- 090-82 Master copy light polarizer replacement filter set. . . . 58.00
- 090-90 Replacement quartz halogen copy light safety glass. . . . 38.00
- 090-00 300W/120V quartz halogen lamp, each. 33.00
- 090-10 600W/120V DYS quartz halogen lamp each 27.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





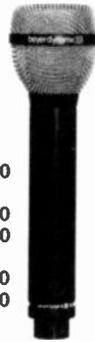
DYNAMIC MICROPHONES

XST™ Series Microphones

- M 01 • Supercardioid response • Ergonomically designed barrel with switch and internal rubber shock mount \$ 99.00
- M 02 • Supercardioid mic suitable for vocals and instruments • Internal shock mount and windshield 119.00
- M 03 Switched version of M 02 129.00
- M 04 Supercardioid mic for vocal and instrumental applications 149.00
- M 05 Switched version of M 04 159.00

TourGroup™ Series Microphones

- M 69 TG • Vocal and instrumental, hypercardioid mic • Off-axis rejection • Extended frequency response . . . \$259.00
- M 88 TG • Vocal and instrumental mic • Feedback and off-axis rejection • High output for gain-before-feedback • High SPL capability 399.00
- M 201 TG • Instrumental hypercardioid mic • High SPL capability • Moving coil transducer • High sensitivity 289.00
- M 300 TG • Cardioid vocal microphone • Built-in pop and breath filter • Vocal tailored frequency response 169.00
- M 300 TG Switched version 169.00
- M 420 TG • Rack toms and percussion, hypercardioid mic • Transient response • Low frequency attenuation 299.00
- M 422 TG Snare hi-hat percussion, supercardioid mic 199.00



TourGroup-X™ Series Microphones

- TG-X 5 • Clip-on gooseneck drum mic • High SPL capability • Acoustically coupled to capture shell and skin sound • Clip-on mount \$149.00
- TG-X 10 • Percussion mic • Insensitive to mechanical and handling noise • Extremely high gain-before-feedback • Supercardioid polar pattern • Capable of high SPL levels • Packaged with special drum mount with claw clamp and flexible gooseneck 279.00
- TG-X 20 • Vocal and instrumental hypercardioid mic • High SPL capability • Vocal tailored frequency response • High gain-before-feedback 259.00
- TG-X 21 Switched version of TG-X 20 269.00
- TG-X 40 • Hypercardioid vocal/instrument • Excellent isolation from unwanted sound • Flat wide frequency response 329.00
- TG-X 41 Switched version of TG-X 40 339.00
- TG-X 50 • Hypercardioid kick-drum • High SPL capability • Reduces shell ring in bass drum • Gain-before-feedback • Transient response • Extended low frequency range 249.00
- TG-X 60 • "Rock and roll" hypercardioid vocal mic • High volume-before-feedback • Vocal tailored frequency response 399.00
- TG-X 61 Switched version of TG-X 60 409.00
- TG-X 80 • High quality hypercardioid vocal mic • Full-range frequency response • Studio quality accuracy • Off-axis isolation 469.00
- TG-X 81 Switched version of TG-X 80 479.00

STUDIO AND BROADCAST MICROPHONES

Ribbon Microphones

- M 130 • Figure-of-eight or bidirectional mic • Double ribbon element to give superlative transient response \$699.00
- M 160 • Hypercardioid with double ribbon transducer • Extended frequency response • Suited for close miking of stringed instruments 699.00
- M 260 • Ribbon mic for speech and instruments • Smooth, wide, flat frequency response • Capable of responding to fast transients 399.00

Condenser Microphones

- MCE 80 TG • Supercardioid vocal mic powerable by battery or 12-48V phantom • Built-in footfall filter • Volume-before-feedback and off-axis rejection • Internal shockmount \$ 439.00
- MCE 81 TG 12-48V phantom only version of MCE 80 TG 399.00
- MCE 82 • Handheld stereo X-Y condenser mic • Internal battery or phantom powering • Ideal for IFP/ENG or DAT recording 799.00
- MCE 83 • Cardioid studio condenser mic especially for instrument miking • Back electret technology • Wide frequency response 359.00
- MCE 84 • Cardioid studio condenser version of MCE 83 but with built-in battery/phantom power supply • LED indicates power on/off 399.00
- MC 740 • Large diaphragm transducer • 5 selectable polar patterns • Internal suspension • Switchable 10dB attenuator and 3-position, low frequency roll-off • Comes with MKV 11 1699.00

- MC 742 • Stereo version of MC 740 • 2 independent double diaphragm condenser systems • Comes with MKV 11 mic clamp and connection cables \$3399.00
- MC 833 • End-fire stereo with true MS and XS capabilities without external matrix • Natural frequency response • Ability to vary capsule positions • Comes with MKV 11 mic clamp and connection cables 2999.00
- MC 834 • High quality large diaphragm cardioid transformerless side-fire mic • Exceptional signal-to-noise ratio • Switchable 10 and 20dB attenuation • Bass roll-off • Comes with MKV 11 mic clamp 999.00
- MCD 100 • Digital mic • Cardioid polar pattern • 22-bit A to D converter with standard AES/EBU output • Offers the optimal route into the digital domain • Requires DPP power supply (6-10V, 150mA) 2500.00

Broadcast Microphones

- M 58 • Omnidirectional interview/broadcasters mic • High output moving coil transducer • Internal shockmount \$259.00
- M 59 • Hypercardioid reporters interview mic • Fast transient response for increased sonic accuracy • Enhanced field rare-earth magnets for high output and sensitivity 349.00
- M 101 • Omnidirectional for studio/film work with clarity, neutrality and superior intelligibility • Low-mass moving coil transducer • High sensitivity 299.00
- M 201 • Speech and instrumental hypercardioid mic • High SPL capability • Moving coil transducer • High sensitivity 289.00
- MCE 58 • Omnidirectional interview/broadcaster mic with condenser capsule • Internal shockmount • Tailored frequency response for maximum intelligibility 399.00

SPECIAL APPLICATION MICROPHONES

- MPC 65 Series • Semi-cardioid response • Higher gain-before-feedback over typical boundary mics • Very low profile with small footprint • Surface mountable • Low-cut filter eliminates low frequency rumble and unwanted surface bound noise • Specify black or white • Phantom power 12-48V • Built-in pre-amplifier
- MPC 65 V Pre-amp has captive cable, bare-ends \$269.00
- MPC 65 VJ Pre-amp has 1/4" jack connector 279.00
- MPC 65 VC Pre-amp has male XLR connector 279.00



- MPC 66 Series • Omnidirectional response • Very low profile with small footprint • Surface mountable • Low-cut filter eliminates low frequency rumble and unwanted surface bound noise • Specify black or white • Built-in pre-amplifier
- MPC 66 V Pre-amp has captive cable, bare-ends \$269.00
- MPC 66 VJ Pre-amp has 1/4" jack connector 279.00
- MPC 66 VC Pre-amp has male XLR connector 279.00

- MPC 67 Series • Half-cardioid response • Multi-functional • 3 operating modes available • Frequency response can be tailored for use in 3 modes via a DIP switch • Switched on and off with a noiseless film button • Different functions are controlled by an 8-bit microprocessor • Ideal for tele/videoconferencing, round table discussions or distance learning
- MPC 67 • Includes built-in pre-amp with detachable 3-pin cable • Specify black or white \$369.00
- MPC 67 RC • Includes microprocessor control • Microphone can be activated by an external switch and an external device can be triggered by a MOSFET output • Detachable 5-pin cable • Specify black or white 439.00

- MPC 22 • Electret, cylindrical ceiling/conference table mic • "Aimable" cardioid pick-up pattern • Extremely small footprint • Half cardioid • High gain-before-feedback • Built-in pre-amp • Easy installation • Specify black or white \$239.00
- MPC 23 • Electret, cylindrical ceiling/conference table mic • Omni pick-up pattern • Extremely small footprint • Ideal for installations where mounting area is limited • Half spherical • Built-in pre-amp • Easy installation • Specify black or white \$239.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





**PROFESSIONAL BROADCAST
AND INTERCOM HEADSETS**

DT 109/108 Dynamic Headsets

- Highly sensitive headphone and microphone transducers ▪ Capable of handling very high SPL ▪ Wide frequency response, noise canceling dynamic boom microphone ▪ Excellent comfort for long-term wearing ▪ Rugged construction

DT 109	Double-sided headset	.....\$349.00
DT 109.4	DT 109 with built-in balanced microphone pre-amp	.. 419.00
DT 108	Single-sided headset	.....289.00
DT 108.4	DT 108 with built-in balanced microphone pre-amp	..359.00

Note: DT 108/109 are available in black or gray. DT 108.4/109.4 are available in gray only.

DT 190/180 Sports Headset Microphones

- On-air quality noise canceling microphone and high SPL capability
- 200/250 ohms ▪ Studio quality monitor transducers ▪ Modular design for easy servicing ▪ Excellent for long term wearing without fatigue
- Consistent performance unaffected by environmental changes
- Rugged construction ▪ Unobtrusive dark, gray color

DT 190	Double-sided headset	..... \$389.00
DT 180	Single-sided headset	..... 329.00

DT 300 Series Headsets

- Lightweight, semi-open ▪ Powerful neodymium magnet system
- Single-exit, fixed cable assembly ▪ Advanced cushion system ▪ Narrow, fully flexible gooseneck boom mic with an external pre-amplifier ▪ Very durable headband

DT 392	Double-sided headset with cardioid electret condenser microphone	..... \$399.00
DT 391	Double-sided headset with omnidirectional condenser microphone	..... 399.00

DT 200 Series Headsets

- Extremely low profile and lightweight ▪ Designed for sports commentators ▪ Very comfortable for long term operation ▪ Excellent isolation from ambient noise ▪ Choice of dynamic or condenser microphone ▪ Choice of headphone capsule

DT 292	Double-sided headset with hypercardioid, noise canceling condenser microphone and external pre-amp complete with K 190.15 cable	..... \$499.00
DT 291	Double-sided headset with omnidirectional, electret condenser microphone and external pre-amp complete with K 190.15 cable	.. 499.00
DT 290	Double-sided headset with hypercardioid dynamic microphone complete with K 190.00 cable	.. 299.00
DT 282	Single-sided headset with cardioid, electret condenser microphone and external pre-amp complete with K 190.15 cable	.....\$399.00
DT 281	Single-sided headset with omnidirectional, electret condenser microphone and external pre-amp complete with K 190.15 cable	.....\$399.00
DT 280	Single-sided headset with hypercardioid dynamic microphone complete with K 190.00 cable	.....239.00
DT 250	Stereo headphone complete with WK 250.30/07 cable; 250 ohms	.....229.00
DT 250	Stereo headphone complete with WK 250.30/07 cable; 80 ohms	.....199.00
DT 220	Fully enclosed monitoring headphone with rigid steel headband	.....179.00



DT 290

**BROADCAST/STUDIO MONITORING
HEADPHONES**

DT 48 Dynamic Headphone

- Closed design ▪ Flat accurate frequency response ▪ Excellent isolation from unwanted ambient sounds ▪ Very rugged construction
- Reliable performance in demanding environmental conditions
- Coiled cable ▪ 1/4" stereo jack

**DT 100 Stereo
Monitor Headphone**

- Closed design ▪ Comfortable for extended use
- K 100.07 cable supplied ▪ Used in audio recording and monitoring applications ▪ Flat frequency response ▪ Excellent isolation from ambient noise ▪ Modular construction ▪ High SPL capability



DT 102 Dynamic Single-Cup Headphone

- Single-sided version of DT 100 ▪ Includes K 100.07 cable

**DT 150 Stereo
Monitor Headphone**

- Fully enclosed studio monitoring headphone based on the DT 100 with 250 ohms
- Extended frequency response for critical monitoring ▪ Excellent isolation from ambient noise ▪ Lightweight and rugged ▪ Modular construction



DT 770 Pro Stereo Monitor Headphone

- Enclosed monitoring headphone isolates unwanted ambient sound
- "Bass reflex" technology for improved bass response ▪ Equalized to meet diffuse field EQ requirements ▪ Padded headband ensures long-term comfort ▪ Wide frequency response ▪ Durable, lightweight construction

DT 990 Pro Stereo Monitor Headphone

- Same features as DT 770 Pro but as open version

DT 311 Musician Headphones

- Open, lightweight supraural design ▪ Powerful reproduction
- Long term listening comfort ▪ Excellent for portable usage ▪ 40 ohms
- Frequency response: 20Hz-20kHz ▪ 98dB SPL ▪ 2.5m straight cable with 3.5mm stereo phone plug and 1/4" adaptor

DT 505

- Broadcast quality earpiece for program information ▪ OB 506 clip and K 505.00 open-ended cable included

DT 211 Musician Headphones

- Open, lightweight supraural design ▪ 40 ohms ▪ Frequency response: 30Hz-18kHz ▪ 98dB SPL ▪ 25' cord with 3.5mm stereo phone plug and 1/4" adaptor

Cables

WK100.07	10' coiled cable with 1/4" stereo jack	..... \$43.00
WK109.00	10' open-ended coiled cable for DT 109/108	.... 43.00
K100.07	10' straight cable with 1/4" stereo jack	..... 36.00
K109.00	10' straight open-ended cable for DT 109/108	... 33.00
K190.00	5' straight open-ended cable for DT 109/108	... 33.00
K109.0	5' straight open-ended cable for DT 109/108	.... 30.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





ADVANTAGE™ System One Modular Mixing System

- Modules can be combined in a wide variety of system configurations
- Modules may also be used separately to provide their functions to existing sound systems ▪ All modules are UL listed
- ONE** An 8-input mic/line mixer with HPF, notch filters, output EQ and limiter
- EX** An 8-input expander, which provides limitless inputs to a system
- AGII** An 8-channel auto gate, which provides automatic mixer functions
- AM** An 8 x 3 auxiliary mixer, which provides limitless send/zone outputs
- EQ** An 8-channel, 3-band equalizer, which provides EQ for inputs and outputs

ADVANTAGE 601e Mic/Line Mixer

- 5 electronic balanced mic/line input channels ▪ 1 transformer balanced 600 ohm line input channel ▪ 30dB rear panel pad switch on each input channel ▪ 40dB screwdriver adjust trim on each input channel ▪ +10dB peak LED indicator on each input channel ▪ +12V phantom power for condenser microphones ▪ Electronic balanced main output with rotary level control

ADVANTAGE RPM Series Rackmount Powered Mixers

- Provides an 8-input by 2-output mic/line mixer ▪ 9-band graphic equalization ▪ Output patch points ▪ 2 choices of output amplification
- Single 300W main amplifier or 300W main amplifier, plus a 60W zone amplifier ▪ 1 stereo summing line level mixer input channel
- Independent main and zone level controls on each channel ▪ Main and zone mixer outputs with master level controls

ADVANTAGE SPM522D Digitally Controlled Stereo Preamp/Mixer

- 5 stereo line inputs, with trim controls for level adjustment ▪ 2 mono mic/line inputs ▪ 2 independent stereo outputs ▪ 5th input 30dB pad for input from distributed speaker lines ▪ 5th input override via contact closure or signal activation ▪ 40dB trim, 30dB pad and peak indicator on mic/line inputs



ADVANTAGE SPM412 Stereo Preamp/Mixer

- Provides 4 stereo line inputs, 1 mic input and 2 independent outputs
- Input source selection ▪ Automatic page-over muting

ADVANTAGE DP/M 28 Distribution Preamplifier/Mixer

- Single rack space unit ▪ Combines a 2-channel mic/line mixer with an 8 output distribution preamplifier ▪ Each input channel accepts mic or line level signals ▪ Patch points for insertion of external signal processing equipment ▪ Outputs are electronically balanced and floating line level outputs with 600 ohm drive capability ▪ Rear panel mode switch allows DP/M 28 to function either as one 2 x 8 mixer/distribution preamplifier or as 2 independent 1 x 4 distribution preamplifiers



ADVANTAGE GM Gain Manager

- Leveling function controls long term average signal levels ▪ Soft knee compressor controls peak signal levels ▪ Peak limiter sets absolute ceiling

- on signal levels ▪ Soft gate reduces output level when system is idle
- Independent bypass switches for processing and gate ▪ Internal independent peak limiter threshold adjustment ▪ Silence-hold circuitry

ADVANTAGE GM/2 Dual Gain Manager

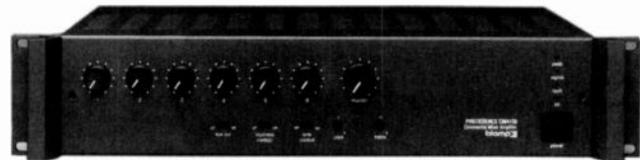
- 2 independent channels in a single rack space chassis ▪ Leveling function controls long term average signal levels ▪ Soft knee compressor controls peak signal levels ▪ Peak limiter sets absolute ceiling on signal levels ▪ Soft gate reduces output level when system is idle ▪ Independent bypass switches ▪ Fast or slow processing

ADVANTAGE CPA130 Commercial Power Amplifier

- Balanced inputs on barrier strip terminals ▪ 65W/channel at 4 ohms (stereo); 40/channel at 8 ohms (stereo) ▪ 130W at 8 ohms (mono bridge) ▪ Peak indicators on each channel ▪ Internal jumpers select input sensitivity and HPF ▪ Passively cooled

ADVANTAGE CPA650 Commercial Power Amplifier

- Balanced inputs on barrier strip terminals ▪ 325W/channel at 4 ohms (stereo); 200W/channel at 8 ohms (stereo); 650W at 8 ohms (mono bridge) ▪ Peak indicators on each channel ▪ Output fuses for speaker protection ▪ Recessed ground lift switch and mono bridge switch



CMA 120

ADVANTAGE CMA Series Commercial Mixer/Amplifiers

- Combines 6-input mic/line mixer with either 30W, 60W, or 120W amplification ▪ Mixing functions include: mic/line/telephone inputs, selectable automatic and manual channel muting, channel priority assignment, remote level control, tone control, a built-in compressor, an internal chime, phantom power and extensive output patching
- Amplifier includes an output transformer and provides rated power into direct or distributed speaker systems

ADVANTAGE D60EQ Amplifier/Equalizer

- Same as D60 except: ▪ Integrated equalizer, amplifier and distribution auto former ▪ 9-band graphic equalizer

ADVANTAGE EQ301 Graphic Equalizer

- 25Hz to 20kHz filter range ▪ ±12dB filter cut and boost, and master gain control ▪ +15dBu peak LED indicator ▪ 20Hz high pass filter switch
- Adjustable low pass filter ▪ Equalization bypass switch

ADVANTAGE DRC 4+4 Digital Remote Control

- Provides audio level and mute functions ▪ Internal microprocessors and a nonvolatile memory provide 4 channels of digitally controlled VCA ▪ 4 control voltages for external VCA units ▪ 5 memorized setups ▪ 4 logic outputs ▪ Serial port

ADVANTAGE RCII 4-Channel VCA Remote Control

- Provide remote level and/or mute control of System One input and output signals ▪ 4 independent channels of VCA remote ▪ Channels may be controlled individually or in groups ▪ Controls may be located up to 2000' away from system

Call For Pricing

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





MCA-b 3V
Single Channel VHF Amplifier \$467.26

MSCA 2V
Single Channel VHF Amplifier \$343.63

MCA-Ub
UHF Strip Amplifier \$972.39



AP-60-450 Agile Audio/Video Processor
 ■ Complementary products to the AM modulators ■ Accept any UHF or VHF television input in the 50-806MHz range and process signal to any TV channel in the 50-550MHz range ■ Suitable for advanced SMATV and CATV systems with available options. \$1665.09

OC-8d Passive Combiner
 ■ 5-1000MHz ■ 8 broadband input ports ■ Radiation-proof passives \$255.39

OCA-8b Active Combiner
 ■ 8 broadband input ports \$498.06



AM Series Agile Audio/Video Modulators

Model	Output Level	Spurious Content	Frequency Range	Price
AM60-450	60dBmV	>58dB Below Visual Carrier	50-450MHz in 0.250MHz Increments	\$1301.61
	63dBmV	Below the Threshold of Visibility as Set Forth on "W" Curve		
AM60-550	60dBmV	>58dB Below Visual Carrier	50-550MHz in 0.250MHz Increments	1438.74
	63dBmV	Below the Threshold of Visibility as Set Forth on "W" Curve		
AM40-450	42dBmV	>58dB Below Visual Carrier	50-450MHz in 0.250MHz Increments	1164.46
AM40-550	42dBmV	>58dB Below Visual Carrier	50-550MHz in 0.250MHz Increments	1284.77

Note: Channels below 50MHz available upon request

Splitters

Product		Specifications									
Model	Stock No.	No. of Outputs	Frequency Range (MHz)	Splitter Loss (dB)	Input Return Loss (dB)	Isolation Between Outputs (dB)	Power Passing Capability	80dB RFI Shielded	Connector Orientation	Application	Price
CRS-2	4032	2	5-600	3.5 (5-500MHz) max. 4.0 (500-600MHz) max.	17 min.	27 min.	N/A				\$ 5.77
CRS-3	4033	3	5-600	5.2 (5-500MHz) max. 5.5 (500-600MHz) max.	17 min.	27 min.	N/A	Yes	In-line	SMATV/ CATV	6.11
CRS-4	4034	4	5-600	7.2 (5-500MHz) max. 8.0 (500-600MHz) max.	18 min.	27 min.	N/A				11.48
CRS-8	4038	8	5-600	12.0 (5-450MHz) max. 13.5 (450-600MHz) max.	14 min.	27 min.	N/A				20.84



Directional Couplers

Product		Specifications									
Stock No.	Tap Value (dB)	Frequency Range (MHz)	Isolation Tap-to-Tap (dB)	Isolation Output to Tap (dB)		Thru-Line Loss (dB)		Tap Down Loss (dB)	Input Return Loss (dB)	Price	
DCW-1 Output											
				5-470MHz	470-900MHz	5-470MHz	470-900MHz		5-470MHz	470-900MHz	
4889-4	4	5 to 900	N/A	20	18	3.5	4.0	3.0 ± 0.5 (5-470MHz) 3.0 ± 1.0 (470-900)	15	12	\$12.07
4889-6	6			22	20	3.0	3.5	6.0 ± 0.5 (5-470MHz) 6.0 ± 1.0 (470-900)	15	13	
4889-9	9			24	20	1.2	1.6	9.0 ± 0.5 (5-470MHz) 9.0 ± 1.0 (470-900)	15	16	
4889-12	12			30	24	0.9	1.5	12.0 ± 0.5 (5-470MHz) 12.0 ± 1.0 (470-900)	20	18	
4889-16	16			30	26	0.7	0.7	16.0 ± 0.5 (5-470MHz) 16.0 ± 1.0 (470-900)	20	18	
4889-20	20			36	30	0.6	0.7	20.0 ± 1.0 (5-900)	20	18	
4889-24	24			36	30	0.5	0.6	24.0 ± 1.0 (5-900)	20	18	
4889-27	27			40	30	0.5	0.6	27.0 ± 1.0 (5-900)	20	18	
4889-30	30			40	30	0.5	0.6	30.0 ± 1.0 (5-900)	20	18	

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



CAMERA SUPPORT EQUIPMENT



3191 Professional Cine/Video Tripod

▪ Tandem legs ▪ Retractable, spring-loaded spike tips ▪ Lightweight (11 lbs.) ▪ Handles cameras up to 22 lbs. when used with the 3066 Cine/Video Fluid Head ▪ Features a 100mm diameter claw-ball leveler, variable leg angles within a 180° arc, quick-flip lever leg locks, stainless steel fittings with high quality castings, and built-in leg straps for convenient transport ▪ Tripod folds to 38½" and extends to 59" without head

3191	3191 tripod without head	\$ 500.00
3191-316	3191 tripod with 316 head (3274), strap (3044), and padded bag (3282)	1385.00
3191-510	3191 tripod with 510 head (3147), strap (3044), and padded bag (3282)	1660.00
3192	3191 black anodized tripod without head	530.00
3192-316	3192 black tripod with 316 head (3274), strap (3044), and padded bag (3282)	1420.00
3192-510	3192 black tripod with 510 head (3147), strap (3044), and padded bag (3282)	1698.00
3194	3191 tripod with 3066 head	962.00
3194S	3191 tripod with 3066 head and 3189 spreader	1001.50
3195	3192 black anodized tripod with 3066 head	992.00
3195S	3192 tripod with 3066 head and 3189 spreader	1031.50



3066 Cine/Video Fluid Head With Quick-Release Plate

▪ Professional quality, designed for cine and video cameras weighing up to 22 lbs. ▪ Large, removable platform has a mounting stud that travels in a 3½" slot and facilitates balancing at the camera's center of gravity ▪ Series of closely spaced locking detents on the platform ▪ Pans smoothly 360° ▪ Panning drag can be adjusted by means of a simple adjustment screw ▪ Vertical drag is adjusted by a large pawl-controlled lever ▪ Tilting range is 60° up to 90° down ▪ Detent can be set to limit the downward movement to 45° ▪ Separate locks, independent of the drag system, provide a positive hold in any position

3066 \$462.00

3068 Universal Cine/Video Tripod

▪ Weighs only 11 lbs. ▪ Extends to 67" ▪ Rigid center brace construction ▪ Steel extension legs lower the center of gravity ▪ Legs are furnished with convertible cushion/spike tips ▪ For precise positioning a center post permits 9¼" of extension ▪ Variable-angle center brace system allows minimum elevation of the tripod platform as low as 17"

3065	3068 tripod with 3066 head	\$ 750.00
3069	3068 tripod with 3066 head and 3067 dolly	1046.00
3068	3068 tripod without head	\$288.00
3118	3068 tripod with 3063 head	451.00



3046 Series Professional Tripods

▪ Aluminum double-strut, center-braced 2-section tripod ▪ The design offers remarkable rigidity coupled with light weight (only 8¼ lbs.) ▪ Ideal for educational and industrial studio applications ▪ Extends to 68½" with the Mini Fluid Head ▪ Folds to a compact 32" for traveling ▪ Legs are furnished with convertible cushion/spike tips

3046	3046 tripod without head	\$252.00
3140	3046 tripod with 3063 head	415.00
3142	3246 black anodized tripod with 3063 head	433.00
3246	3246 black anodized tripod without head	\$270.00



3067/3198 Deluxe Cine/Video Dollies

▪ Designed for use with the Professional Cine/Video, Universal and Heavy-Duty tripods ▪ Individually braked 5" wheels with cable guards and a unique leg-locking system ▪ Easy to assemble and disassemble for transporting ▪ Tripod legs are captured in a 38" diameter circle ▪ Doorway clearance needed for the fully assembled dolly is 39½" ▪ A version of the Deluxe Cine/Video Dolly is also available for tripods in the 3181, 3185 and 3190 Series

3067	Deluxe Cine/Video Dolly	\$296.00
3198	Deluxe Cine/Video Dolly for tripods with spiked feet	295.00



3063 Mini Fluid Head With Quick-Release Plate

▪ Measures 5" x 5" x 5" (excluding handle) ▪ Lightweight (3¼ lbs.) ▪ Pans and tilts smoothly ▪ Camera platform features a quick-release mounting plate with locating pin ▪ Comes with a versatile handle, which is positionable on either side and can be separated into 2 individual segments, each 9" in length ▪ Can be tilted 45° up and 90° down continuously, with detent at 45° ▪ Has separate pan and tilt locks ▪ Vertical drag is continuously adjustable ▪ 11 lb. rating

3063 \$163.00



PRO STUDEX Series 4 Tripods

▪ Top leg Ø: 1½" ▪ Matching head 4 ▪ Loads up to 26 lbs. ▪ Cameras up to 10 x 8 and video ▪ Pro Studex takes some beating for versatility with a choice of 6 models, all with 3-position leg spread, interchangeable rapid (sliding) or geared columns plus special short columns for extra-low shots

Ref.	Model	Col. Type	Mx. Ht./in.	Min. Ht./in.	Closed Ht./in.	Wt. lbs.	Max. Load lbs.	Price
G412	Performance	G	75½	29½	31½	11½	26	\$930.00
G411	Performance	R	78½	29½	31½	9½	22	632.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





ViewPort AMTFT Color LCD Video Monitors
Common Features

- NTSC or PAL or RGB (525/625) ▪ True active matrix thin film transistor drivers (AM TFT) ▪ DC or AC power with instant-on operation and low power consumption ▪ 7900°K color temperature
- 30/50ms response time ▪ -25° to +60°C storage temperature
- Cylcolac ABS case materials ▪ Case flammability: UL94 V-O

13.8" Video Monitors

Includes common features, plus: ▪ Amorphous Si active matrix TFT analog drive system ▪ Dot pitch: 0.44W x 0.43V mm; RGB vertical stripe ▪ 180cd/m² typical brightness (optional dimmer) ▪ 30/50ms response time ▪ 100:1 contrast ratio ▪ Light source: twin cold-cathode fluorescent tube lamps ▪ Cabinet size: 10.5"H x 14"W x 1.90"D ▪ 4.5 lbs.

1660 \$5474.00

10.4" Video Monitors

Includes common features, plus: ▪ 307,200 pixels ▪ Pixel arrangement: 640H x 480V RGB vertical stripe ▪ 300 cd/m² typical brightness ▪ 100:1 contrast ratio ▪ Light source: 2 fluorescent tubes (1.7W) ▪ 25K lamp life ▪ 0.7Vp-p RGB video input ▪ Power: 9-36VDC 15W; current at 12V-approximately 1250mA ▪ Power supply: Desktop-UL/CSA; 120VAC to 12VDC ▪ Anti-glare 3 coat window ▪ 0° to 50°C operating temperature ▪ 3 lbs.



1545 NTSC/PAL and VGA \$3712.00

6" Video Monitors

Includes common features, plus: ▪ 57,600 pixels ▪ Pixel arrangement: 720H x 240V Delta RGB ▪ 120cd/m² typical brightness ▪ 60:1 contrast ratio ▪ Light source: fluorescent tube (1.7W) ▪ 8K-12K lamp life ▪ 1.0±0.3Vp-p (sync > 0.2Vp-p) video input ▪ Power: 9-36VDC 2.2W + 6W lamp; current at 12V-approximately 680mA ▪ Power supply: Wall-mount 120VAC to 12VDC ▪ Non-glare window ▪ 0° to 40°C operating temperature ▪ 1 lb.

1505 PAL \$1737.00
1501 NTSC 1608.00
1506 RGB 1608.00

4" Video Monitors

Includes common features, plus: ▪ 37,362 pixels ▪ Pixel arrangement: 479H x 234V Delta RGB ▪ 120cd/m² typical brightness ▪ 30:1 contrast ratio ▪ Light source: fluorescent tube (1.7W) ▪ 8K-12K lamp life ▪ 1.0±0.3Vp-p (sync > 0.2Vp-p) video input ▪ Power: 9-36VDC 5W; current at 12V-approximately 425mA ▪ Power supply: Wall-mount 120VAC to 12VDC ▪ Non-glare window ▪ 0° to 40°C operating temperature ▪ 12 oz.

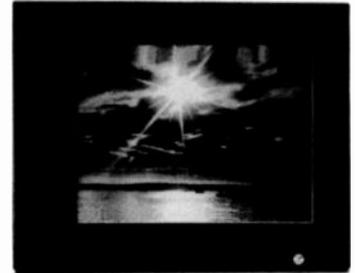
1522 PAL \$1097.00
1521 NTSC 1033.00
1523 RGB 1033.00
1650 Quad video monitor; PAL 4289.00
1550 Quad video monitor—Four high quality full-color 4" displays in a 3 rack unit cabinet; NTSC 3717.00
1649 Triple 4" rackmount video monitors, PAL 3266.00
1549 Triple 4" rackmount video monitors, NTSC 2818.00

ViewPort AMTFT Color LCD VGA Monitors
Common Features

- True active matrix thin film transistor drivers (AM TFT) ▪ Pin compatible to desktop CRT-type monitors ▪ DC or AC power with instant-on operation and low power consumption ▪ Controlled color temperature ▪ Standard VGA analog monitor (direct digital interface optional) ▪ Direct plug-compatibility to CRTs, EGA and VGA modes
- Connector: DB-15HD male, 10' round detachable cord ▪ 640H x 480V resolution ▪ Glass screen (acrylic optional) ▪ Shock resistant ABS cabinet material (GE cylcolac) ▪ UL94V-O flammability ▪ 15-pin plug

13.8" VGA Monitors

Includes common features, plus: ▪ Amorphous Si active matrix TFT analog drive system ▪ Dot pitch: 0.44W x 0.43V mm; RGB vertical stripe ▪ 180cd/m² typical brightness (optional dimmer) ▪ 30/50ms response time ▪ 100:1 contrast ratio ▪ Light source: twin cold-cathode fluorescent tube lamps ▪ Cabinet size: 10.5"H x 14"W x 1.90"D ▪ 4.5 lbs.



1630 \$4591.00

10.4" VGA Monitors

Includes common features, plus: ▪ Amorphous Si active matrix TFT analog drive system ▪ Dot pitch: 0.33W x 0.33V mm; RGB vertical stripe ▪ 300cd/m² typical brightness (high brightness, optional dimmer) ▪ 100:1 contrast ratio ▪ Light source: twin cold-cathode fluorescent tube lamps, 25,000 hours life ▪ Cabinet size: 9.5"H x 11.9"W x 1.50"D ▪ 3 lbs.

1626 \$2683.00
1526 PC/104 SBC version 2586.00

8.4" VGA Monitors

Includes common features, plus: ▪ Active matrix TFT-drive LCD, with integral back light ▪ Dot pitch: 0.27mm x 0.27mm; RGB vertical stripe ▪ 140cd/m² brightness ▪ 20/40ms response time ▪ 150:1 contrast ratio ▪ Light source: cold-cathode fluorescent lamp, 7900°K ▪ Cabinet size: 6.34"H x 9.51"W x 1.50"D = 2 lbs.

1624 \$2631.00
1524 PC/104 SBC version 2283.00

6.5" VGA Monitors

Includes common features, plus: ▪ Active matrix TFT-drive LCD with integral back light ▪ Dot pitch: 0.27mm x 0.27mm; RGB vertical stripe ▪ 300cd/m² brightness ▪ 30/50ms response time ▪ 100:1 contrast ratio ▪ Light source: cold-cathode fluorescent lamp, 7900°K ▪ Cabinet size: 4.88"H x 6.88"W x 1.50"D = 1 lb.

1622 \$2191.00

Note: Each display includes: 12V desktop or wall-mount power supply. Please specify case color: black (standard), tan (almond), gray, or blue.

Accessories

1502 Replacement 6" fluorescent lamp cartridge \$80.00
1519 Replacement 4" fluorescent lamp cartridge 79.00
1641 Rackmount kit, 10.4" monitors, 5RU high 55.00
1642 Rackmount kit, 13.8" monitors, 8RU high 55.00

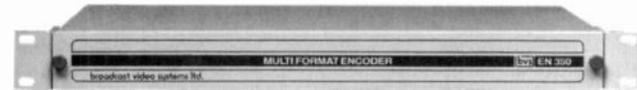
ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





EN-450 Multiformat Broadcast Encoder

▪ IQ modulators ▪ Drift-free, tweak-free encoding under all conditions ▪ RGB and Y/R-Y/B-Y inputs ▪ Genlocks to color black reference ▪ Onboard color bar generator ▪ Simultaneous Y/R-Y/B-Y, Y/C, NTSC outputs ▪ Available in PAL format
 EN-450P PAL..... \$4500.00
 EN-450N NTSC..... 4200.00



EN 350 Multiformat Encoder-RGB to Betacam, MII, S-VHS Y/C, NTSC

▪ Versatile and economical encoding system for computer graphics, weather maps and paint boxes ▪ Component, Y/C and NTSC outputs simultaneously ▪ Genlocks to external video or color black ▪ No separate pulses or subcarrier required ▪ Generates internal subcarrier in the absence of reference ▪ Internal horizontal phasing, advance and delay ▪ Also available in PAL and PAL-M standards..... \$3050.00



EN 300 NTSC Encoder

▪ Economical, compact, rugged, reliable and accurate ▪ The perfect RGB to NTSC encoder for computers, weather maps and paint boxes ▪ Generates internal subcarrier in nonsynchronous applications ▪ Locks to external sync and subcarrier when RGB source can be genlocked ▪ Internal blanking regenerated in both modes ▪ Optional sync-on-green input ▪ Optional TTL inputs
 ▪ Available in NTSC or PAL standard \$1050.00
 YC-2 Optional S-VHS Y/C output 260.00
 SOG-200 Optional sync-on-green input 260.00
 RM-3 Rackmount (holds 2 EN-300s) 150.00
 Select switch (sync-on-green or external)..... 100.00

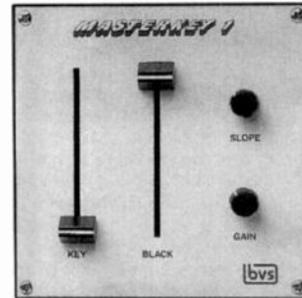


D100 NTSC Comb Filter Decoder

▪ 8-bit digital, adaptive comb filter ▪ 3-line vertical integration and 4X subcarrier sampling ensure optimum vertical and horizontal resolution ▪ Minimum cross color, cross luminance ▪ 6MHz luminance bandwidth ▪ 35dB subcarrier rejection ▪ Simultaneous outputs of Y/C, Y/R-Y/B-Y, RGB and sync ▪ RGB outputs are individually pinnable for comp or noncomp operation ... \$4950.00
 D100RP Remote control panel 750.00

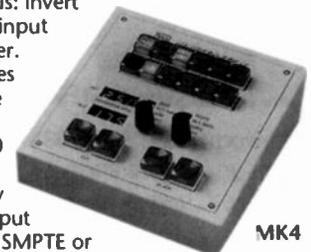
Masterkey Linear Luminance Keys

▪ Opaque to transparent inserts at your fingertips ▪ May operate as a stand-alone keyer or downstream from any switcher ▪ Full-preview output without switching or time sharing ▪ Self-key or external key ▪ Clamped inputs ▪ Sync, burst and blanking always derived from program input ▪ Available in NTSC or PAL standards



MK1

- MK1 Manual mix to key or A/B mix via remote fader. Remote key gain control. Also available as an RGB chromakeyer \$2200.00
- MK2 Frame accurate auto mix-to-key or cut-to-key via remote pushbutton or GPI. 0-300 frame rate is adjustable from remote panel with digital readout. Remote key gain and slope controls. RS-422 control from remote panel. 2780.00
- MK3 Same features as MK2, plus frame accurate master fade-to-black. Separate rate controls, readouts and GPIs for mix-to-key and fade-to-black. Color black signal is derived from "A" (program) input .. 3595.00
- MK4 Same features as MK3 plus: invert key, key area masking, 4-input key and fill source switcher. Nonvolatile memory stores settings of gain and slope for each key input \$4995.00
- MK5 Component linear keyer with auto mix. Mix to key via pushbutton or GPI. Input may be Betacam*, MII**, SMPTE or EBU standards \$3280.00
- MK6 Serial digital luminance keyer. 10-bit processing. 525 or 625 standard. Auto timing correction. Mask invert key. Panel setting store. A/B mix. Fade-to-black. Remote panel (included) or GPI control. Compact IRV package. . \$6950.00
- MKCK Downstream linear RGB chromakeyer C/W key delay line..... 3570.00
 Failsafe relay option, Masterkey 1-4 130.00
 Failsafe relay option, Masterkey 5. 260.00
- KP500 RGB key processor, allows any Masterkey to do a linear chromakey..... 1100.00

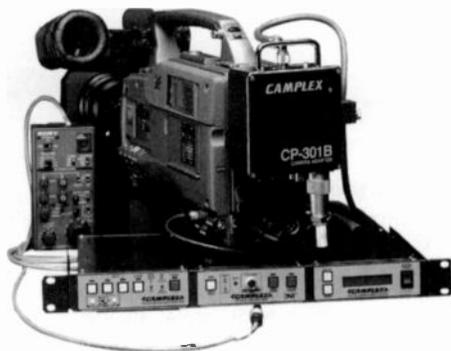


MK4

*Betacam is a Sony trademark. **MII is a Panasonic trademark.

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





CP-301B Complex® Camera Multiplexing System

Common Features

▪ Provides safe microprocessed operating down the coax ▪ Add functions to the original system later in the field ▪ Control center units rackmounted in a variety of arrangements ▪ Uses one 75 ohm coaxial cable, which reduces labor to load, unload, set-up and reload ▪ More than 600 TV lines of resolution ▪ Universally field adaptable to any modern NTSC/PAL broadcast or industrial camera ▪ Digital control data link between Complex and camera's remote hand controller or CCU ▪ Up to 3 switchable channels of synchronous return video relayed from your production switcher, simultaneously with genlock ▪ Camera adaptor unit with a user-friendly external 3-position mic/line selection switch, push-to-talk intercom switch and chromed-metal guard

Specifications

Video signal performance—Frequency response: 30Hz to 6.0MHz, less than ±0.5dB @ 7.0MHz, less than -3.0dB S/N: Better than 57dB (NTSC/PAL) Resolution: Better than 600 TV lines Audio signal performance mic/line (program)—Balanced output level: 600 ohm/variable from -10 to +8dBm Bandwidth: 20Hz to 20kHz, better than +1/-2dB S/N: Better than 60dB

Power requirements—Console adaptor unit: Without camera power function an outboard power supply is provided. 110/250VAC, 50/60Hz, standard IEC power connection

Camera adaptor unit—12VDC less than 0.5 amps (500mA), power provided on coax, or by other external source, selectable

CP-301B-S8	Complex with power, plus port and return video . . .	\$7130.00
CP-301B-S7	Complex with power and return video switcher . . .	6635.00
CP-301B-S5	Complex with power and plus port	6080.00
CP-301B-S6	Complex with plus port and return video switcher . .	5740.00
CP-301B-S3	Complex with PDC-340 power-down coax	5585.00
CP-301B-S4	Complex with RVS-230 return video switcher.	5245.00
CP-301B-S2	Complex with PP-150 plus port CCU data interface. .	4690.00
CP-301B-S1	Complex primary multiplexing system with CAO camera adaptor unit and CUO control unit	4195.00
CP-301B-CAO	CP-301B series camera adaptor unit only.	3255.00
CP-301B-CUO	CP-301B series control unit only	2495.00

Options for Complex Systems

2x	Dual video timing units (VTU-320-2x)	\$745.00
1x	Single video timing unit (VTU-320-1x)	495.00
3	Single timing module installed in a RVS-230 return video switcher (VTU-320-RVS)	395.00
4	Second audio channel option (PP-A2X)	395.00
5	High temp. environment option for Complex camera adaptor unit (CA-HI-TEMP)	215.00

PDC-340 Remote Camera Power System

▪ Microprocessor monitors all functions and displays necessary operational information on a 2-line, 32-character illuminated LCD display
▪ "AutoPower" mode allows a single operator to place the PowerPlex power down the coax in standby before connecting the coax and/or camera adaptor
▪ 33W of microprocessor controlled DC power to operate camera head, viewfinder and lens (plus 7W) to power the Complex camera adaptor via the same single coax or triax cable
▪ 4 stages of current limiting for extra

safe protection
▪ Designed to operate with all previous Complex camera adaptor systems
▪ Power requirements: 110/250VAC, 50/60Hz, standard IEC power connection
▪ Upgrade may be required for older models
PDC-340 \$1955.00

RVS-230 Return Video Switcher

▪ Unique video-follow-tally function maintains signal continuity on return video for camera personnel when used with production switchers that provide "look-ahead preview"
▪ Sends switchable return video to Complex equipped camera and simultaneously genlocks the camera via the same single coax cable
▪ System power on/off switch

RVS-230	\$1590.00	
RVS-230 with VTU option	1985.00	
RVS/VTU-UG-RE	Timing Upgrade for RVS-230 for S/N RVS-1295207 and lower (Return and exchange of old RVS-230 required)	545.00
RVS/VTU-UG-KIT	Timing Upgrade for RVS-230 for S/N RVS-1295208 and greater	495.00

PP-150 Camera Control Data Interface

▪ Plus Port® camera control data function
▪ Designed for use in conjunction with Hitachi, Ikegami, JVC, Sony, Ampex, Panasonic and other systems using digital type hand controllers or CCUs
▪ Allows digital information from remote control units to be sent down the same coax with Complex signals to control camera functions
▪ Consists of a CCU adaptor unit (external) connected to the Complex control unit, or (internal) module in control unit and camera adaptor "daughterboard," which is mounted inside underneath the Complex camera adaptor motherboard
▪ Both modems are configured from the console end of the system by setting DIP switches
▪ Operates with or without camera power function
▪ Power supply: +12VDC supplied by Complex console unit

PP-150	\$995.00
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VTU-320 Video Signal Timing Unit

▪ Adjusts the subcarrier and horizontal phase of any genlockable video signal to compensate for distance variations ranging from 0-5,000'
▪ Interfaces with any Complex system and any other video system equipment that requires timing of genlockable signals
▪ Can be installed inside a Complex RVS-230 return video switcher enclosure
▪ Stand-alone version available with either 1 or 2 timing units per enclosure
▪ Available in NTSC or PAL standards, except PAL M and PAL N
▪ Outboard power supply: 110/250VAC, 50/60Hz, standard IEC power connection

VTU-320-2x	Dual video timing unit (subcarrier and horizontal phase)	\$895.00
VTU-320-1x	Single video timing unit (subcarrier and horizontal phase)	595.00
VTU-XMER-220	VTU-320 220V power supply (required for stand-alone use)	40.00
VTU-XMER-110	VTU-320 110V power supply (required for stand-alone use)	30.00

Accessories

CAIC-23*	Complex camera adaptor to camera interface cable	\$225.00-270.00
PPIC-23*	Complex Plus Port-CCU/hand controller interface cable	95.00-180.00
CPN-2378-KIT	Complex mechanical docking adaptor for Panasonic/Philips 700/800 camcorders (includes mounts for TrimPac and "Brick" battery	125.00
CSR-23	Complex cable strain relief	100.00
RM-20	Complex rackmount adaptor	90.00
RMS-KIT	Complex rackmount slide kit	90.00
RM-PP	Complex Plus Port rackmount adaptor (holds up to 3 external Plus Ports)	40.00
CMD-23	Complex mechanical docking adaptor	35.00
CAB-23	Complex Anton/Bauer snap-on docking adaptor	35.00
DAP-23	Complex camera docking adaptor plate	20.00
BP-20	Complex rackmount adaptor blank plate.	15.00

*Call for specific camera/VCR docking and interface configurations and specific price.

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



75 OHM DIGITAL VIDEO PATCHBAYS

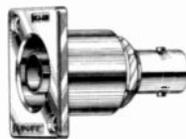


- Digital video broadcast facilities
- Satellite headends
- HDTV system upgrades
- OB vans
- 1RU, 2RU or 4RU panel choices
- Normal and straight jacks load in same panel
- Easy to assemble, jacks load at front
- Reduced weight
- Durable non-conductive phenolic panel blocks
- May be used as a supplement to routing switchers or as the primary stand-alone component for cost-effective switching
- Handle all Serial Digital formats with excellent return loss characteristics and very little signal reflections

Loaded Panel Specifications

Loaded Panel Model	19" Panel Height	Circuit Type	Row Config.	*Jack Model	Quantity	Patch Points	Blank Panel
201U-DVJW	1RU	Normal	2x20	DVJ-W	20	40	VJ2-E20
241U-DVJW	1RU	Normal	2x24	DVJ-W	24	48	VJ2-E24-1U
261U-DVJW	1RU	Normal	2x26	DVJ-W	26	52	VJ2-E26-1U
242U-DVJW	2RU	Normal	2x24	DVJ-W	24	48	VJ2-L24-2U
262U-DVJW	2RU	Normal	2x26	DVJ-W	26	52	VJ2-L26-2U
244U-DVJW	4RU	Normal	6x24	DVJ-W	72	144	VJ2-E24-4U

75 OHM BNC BULKHEAD RECEPTACLES BCJ-JRU



- Jack to jack
- Brass body with nickel plating
- Diecast flange with nickel plating

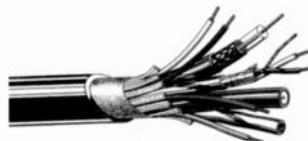
Bandwidth VSWR Return Loss DC to 2GHz	Center Contact Material Plating	Dielectric	Insulation Resistance at 500VDC	Voltage Rating for 1 Minute	Center Contact Resistance	Outer Contact Resistance
≤1,1 >26dB	Beryllium Copper Gold	PTFE	>1000M ohm	1500VAC (rms)	<3m ohm	<6m ohm

75 OHM TYPE RECESSED RCA BULKHEAD RECEPTACLE RJ-RU



- Jack to solder
- Insulator colors: red, green, yellow, white

VIDEO REMOTE CABLE A2V2-L



- 2 balanced audio lines, two 75 ohm video coax channels and 4 separate intercom tally lines in a common overall flexible PVC jacket
- Uses Canare BCP-C3B 75 ohm BNC crimp plugs for video channels

CABLE REELS

Stackability

- All R300 series models have built-in stacking tabs, so Cable Reels can be securely stacked on top of each other

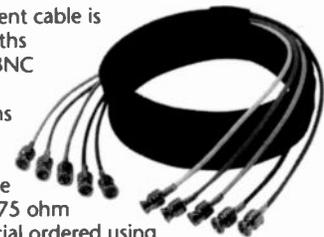


Cable Reel Specifications

Model	Size	Wt. (lbs.)	Stackable	Casters	Connector Mounting Flange	Cable Cut-Out	Hanger
R460S	Large	22.0	No	Yes	No	Yes	Yes
R3B0S	Med.	17.5	No	Yes	No	Yes	Yes
R300S	Small	9.5	Yes	No	No	Yes	Yes
R300L	Small	9.5	Yes	No	Yes	No	No
R300CN	Small	9.5	Yes	No	Parallel Wired M&F XLR on Hub & Flange	No	No

VS COMPONENT VIDEO FANTAILS

- Canare 75 ohm V-Series component cable is available in a variety of pre-cut lengths terminated with our true 75 ohm BNC crimp plugs
- All assemblies are precisely timed with less than 2.2 ns between adjacent video channels
- Canare VS fantails offer extra wide video bandwidth performance because cable and connectors are 75 ohm impedance matched
- Can be special ordered using V-5C series cable in a variety of lengths



VS Premade Video Fantails

Model *	Lng.	Number of Channels	75 ohm Cable	75 ohm BNC Plugs
3VS03-3C	9.8', 3m	3	V3-3C	BCP-C3B
3VS05-3C	16.4', 5m	Red, Green, Blue		
4VS03-3C	9.8', 3m	4	V4-3C	
4VS05-3C	16.4', 5m	Red, Green Blue, White		
5VS03-3C	9.8', 3m	5	V5-3C	
5VS05-3C	16.4', 5m	Red, Green Blue, White, Yellow		

*Cable boot at breakout.

EC MICROPHONE CORDS

- Canare preassembled microphone cords are available in a variety of convenient lengths and colors
- All are meticulously wired using L-4E6S Star Quad mated with premium Neutrik XLR-3 connectors; black shell with gold pins
- Custom assemblies available on request

EC Premade Mic Cable

Model	Lng.	Cable Star Quad	Connector Plug XLR3-Female	Connector Plug XLR3-Male
EC005F	5'	L-4E6S	Neutrik	Neutrik
EC015F	15'		NC3FX-B	NC3MX-B
EC025F	25'		Black Shell	Black Shell
EC050F	50'		Gold Pin	Gold Pin
EC100F	100'			

Call For Pricing

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





J9ax5.2BIRS/IAS



J15ax8BIRS/IAS



J20ax8BIRS/IAS



J33ax11BIAS

3/8" ENG/EFP CCD Lenses

Lens	Zoom Ratio	Range of Focal Length	Extender	Maximum Relative Aperture	Angular Field of View	M.O.D.	Object Dimensions At M.O.D.	Size	Weight
(IF+) J9ax5.2BIRS/IAS	9x	5.2-47mm	2x	1:1.8 at 5.2-38mm 1:2.0 at 47mm	80.5 x 64.8 at 5.2mm 10.7 x 8 at 47mm	0.3m	58.8 x 44.1cm at 5.2mm 6.3 x 4.8cm at 47mm	250.9mm	1.8kg
(IF+) J15ax8BIRS/IAS	15x	8-120mm	2x	1:1.7 at 8-100mm 1:2.1 at 120mm	57.6 x 44.8 at 8mm 4.2 x 3.15 at 120mm	0.65m	62.7 x 47cm at 8mm 4.4 x 3.3cm at 120mm	206.9mm	1.4kg
(IF+) J20ax8BIRS/IAS	20x	8-160mm	2x	1:1.7 at 8-113mm 1:2.4 at 160mm	57.6 x 44.8 at 8mm 3.15 x 2.36 at 160mm	0.9m	87.5 x 65.6cm at 8mm 4.5 x 3.4cm at 160mm	232.6mm	1.75kg
(IF+) J33ax11BIAS	33x	11-363mm	2x	1:2.0 at 11-220mm 1:3.3 at 363mm	43.6 x 33.4 at 11mm 1.39 at 1.04 at 363mm	2.2m	162 x 121cm at 11mm 4.9 x 3.7cm at 363mm	308.4mm	4.5kg
(IF+) J33ax15BIAS	33x	15-500mm	2x	1:2.7 at 15-297mm 1:4.5 at 500mm	32.7 x 24.8 at 15mm 1.01 x 0.76 at 500mm	2.2m	118 x 89cm at 15mm 3.6 x 2.7cm at 500mm	338mm	4.5kg
J15x9.5BIRS	15x	9.5-143mm	2x	1:1.8 at 9.5-121mm 1:2.1 at 143mm	49.7 x 38.3 at 9.5mm 3.5 x 2.6 at 143mm	0.95m	80 x 60cm at 9.5mm 5.4 x 4.1cm at 143mm	186.4mm	1.6kg
(IF PRO) YJ18x9BKRS	18x	9-162mm	—	1:1.8 at 9-117mm 1:2.5 at 162mm	52.1 x 40.3 at 9mm 3.11 x 2.33 at 162mm	0.9m	78.9 x 59.2cm at 9mm 4.5 x 3.4cm at 162mm	171.7mm	1.3kg
YJ17x9.5BKRS	17x	9.5-162mm	—	1:1.8 at 9.5-121mm 1:2.4 at 162mm	49.7 x 38.3 at 9.5mm 3.11 x 2.33 at 162mm	0.95m	80.3 x 60.2cm at 9.5mm 4.8 x 3.6cm at 162mm	167.3mm	1.45kg

1/2" ENG/EFP CCD Lenses

Lens	Zoom Ratio	Range of Focal Length	Extender	Maximum Relative Aperture	Angular Field of View	M.O.D.	Object Dimensions At M.O.D.	Size	Weight
(IF+) H9ax3.8BIRS/IAS	9x	3.8-34.2mm	2x	1:1.4 at 3.8-34.2mm	80.5 x 64.8 at 3.8mm 10.7 x 8 at 34.2mm	0.3m	58.8 x 44.1cm at 3.8mm 6.3 x 4.8cm at 34.2mm	249mm	1.8kg
(IF+) H15ax6BIRS/IAS	15x	6-90mm	2x	1:1.4 at 6-80mm 1:1.55 at 90mm	56.1 x 43.6 at 6mm 4.1 x 3.1 at 90mm	0.65m	61.1 x 45.9cm at 6mm 4.2 x 3.2cm at 90mm	206.7mm	1.4kg
(IF+) H20ax6IRS/IAS	20x	6-120mm	2x	1:1.4 at 6-93mm 1:1.8 at 120mm	56.1 x 43.6 at 6mm 3.06 x 2.29 at 120mm	0.9m	85 x 63.8cm at 6mm 4.4 x 3.3cm at 120mm	230mm	1.75kg
(IF+) PH33ax8.5IAS	33x	8.5-280.5mm	2x	1:1.5 at 8.5-168mm 1:2.5 at 280.5mm	41.2 x 31.5 at 8.5mm 1.31 at 0.98 at 280.5mm	2.2m	153 x 115cm at 8.5mm 4.7 x 3.5cm at 280.5mm	315.6mm	4.5kg
(IF+) H33ax11BIAS	33x	11-363mm	2x	1:2.0 at 11-220mm 1:3.3 at 363mm	32.4 x 24.6 at 11mm 1.01 x 0.76 at 363mm	2.2m	118 x 89cm at 11mm 3.6 x 2.7cm at 363mm	322mm	4.5kg
PH15x7BIRS	15x	7-105mm	2x	1:1.4 at 7-95mm 1:1.55 at 105mm	49.1 x 37.8 at 7mm 3.5 x 2.6 at 105mm	0.95m	80 x 60cm at 7mm 5.4 x 4.1cm at 105mm	192mm	1.6kg
(IF PRO) YH18x6.7KRS	18x	6.7-121mm	—	1:1.4 at 6.7-91mm 1:1.85 at 121mm	51.1 x 39.4 at 6.7mm 3.03 x 2.27 at 121mm	0.9m	77.2 x 57.9cm at 6.7mm 4.4 x 3.3cm at 121mm	177.8mm	1.3kg
YH17x7KRS	17x	7-119mm	—	1:1.4 at 7-96mm 1:1.75 at 119mm	49.1 x 37.8 at 7mm 3.06 x 2.29 at 119mm	0.95m	78.8 x 59.1cm at 7mm 4.68 x 3.51cm at 119mm	168.9mm	1.45kg
YH13x7.5KRS	13x	7.5-97.5mm	—	1:1.4 at 7.5-80mm 1:1.7 at 97.5mm	46.2 x 35.5 at 7.5mm 3.8 x 2.8 at 97.5mm	1.0m	78.5 x 58.9cm at 7.5mm 6.2 x 4.6cm at 97.5mm	179mm	0.95kg

Optical Stabilization Lenses

Lens	Zoom Ratio	Range of Focal Length	Extender	Maximum Relative Aperture	Angular Field of View	M.O.D.	Object Dimensions At M.O.D.	Size	Weight
J14ax178KRSV	14x	17-238mm	—	1:3.4 at 17-112mm 1:6.8 at 238mm	29 x 21.9 at 17mm 2.12 x 1.59 at 238mm	0.8m	38.6 x 29cm at 17mm 2.83 x 2.12cm at 238mm	221.5mm	1.58kg
J13ax98KRSV	13x	9-117mm	—	1:2.7 at 9-57mm 1:4.7 at 117mm	52.1 x 40.3 at 9mm 4.3 x 3.2 at 117mm	0.8m	72.2 x 54.2cm at 9mm 5.7 x 4.3cm at 117mm	256mm	1.95kg
IS-208 II Stabilizing Adaptor	As Per Lens	As Per Lens	To Be Used With Most Canon IF+ Lenses						

Teleconferencing Lenses

Lens	Format	Range of Focal Length	Zoom Ratio	Maximum Relative Aperture	Angular Field of View	M.O.D.	Object Dimensions At M.O.D.	Size	Weight
YJ17x9.5BKTSa	3/4"	9.5-162mm	17x	1:1.8 at 9.5-121mm 1:2.4 at 162mm	49.7 x 38.3 at 9.5mm 3.11 x 2.33 at 162mm	0.95m	80.3 x 60.2cm at 9.5mm 4.8 x 3.6cm at 162mm	167.3mm	1.45kg
YH17x7KTSa	3/4"	7-119mm	17x	1:1.4 at 7-96mm 1:1.75 at 119mm	49.1 x 37.8 at 7mm 3.06 x 2.29 at 119mm	0.95m	78.8 x 59.1cm at 7mm 4.68 x 3.51cm at 119mm	168.9mm	1.45kg
YH13x7.5KTSa	3/4"	7.5-97.5mm	13x	1:1.4 at 7.5-80mm 1:1.7 at 97.5mm	46.2 x 35.5 at 7.5mm 3.8 x 2.8 at 97.5mm	1.0m	78.5 x 58.9cm at 7.5mm 6.2 x 4.6cm at 97.5mm	179mm	0.95kg

*Internal Focusing Plus System-(IF Plus)

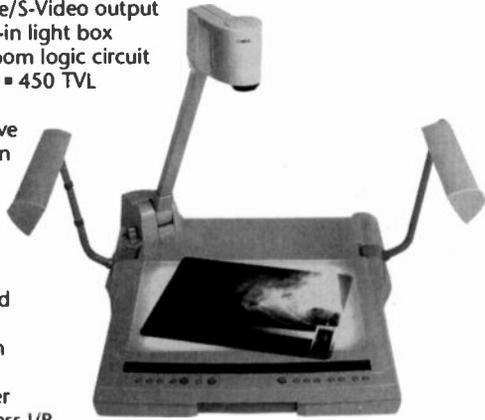
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ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



RE-350 Video Visualizer

- RGB/Composite/S-Video output
- Genlock ▪ Built-in light box
- Focus follow zoom logic circuit
- RS-232 control ▪ 450 TVL
- 46dB S/N
- Positive/negative image conversion
- Detail circuit for text enhancement
- Selectable manual/AWB
- Color/black and white output selector ▪ Built-in carry handle
- Vinyl dust cover
- Optional wireless I/R controller and software developer's kit ▪ 21 lbs.



The Canon RE-350 Video Visualizer represents the fifth generation of Visualizer from Canon. It is a feature-rich product ideal for today's demanding imaging applications. Whether your application is a document capture, desktop publishing, videoconferencing, radiology, presentation or 3-D imaging, the image quality is excellent.

- | | |
|--|---|
| <p>F93-0200-331</p> <p>C86-0116</p> <p>C86-0117</p> <p>SWK-0010-DPK</p> <p>C86-01150</p> | <p>RE-350 Video Visualizer; includes: camera and dust cover. \$3665.00</p> <p>Hard case. 395.00</p> <p>IR remote controller kit. 360.00</p> <p>Developer's kit for RE-350 180.00</p> <p>Fluorescent bulb (for light arms) 20.00</p> |
|--|---|

VC-C1 MKII Communication Camera

- 450H x 350V lines of resolution ▪ 410,000 pixels
- 1/4" CCD pickup device
- 43dB S/N ratio ▪ Auto iris by servo mechanism ▪ TTL white balance (auto or lock)
- 1 1/2-step back light correction
- Fade to white or black
- 8 x 1 zoom range ▪ 6-48mm focal length ▪ Auto/manual focus ▪ 27mm filter diameter
- Audio output: RCA jack
- Audio output impedance: 1K ohm ▪ Video output: NTSC, Composite or S-Video
- Video output impedance: 75 ohms ▪ Video signal level: 1V p-p (luminance), 0.3V p-p (chrominance) ▪ Audio input: 3.5mm microphone jack ▪ Audio input impedance: 5K ohm ▪ IR Wireless Controller: infrared pulse system ▪ Control terminal: RS-232C
- Internal synchronization ▪ 1/60, 1/100 shutter speeds ▪ Motorized pan, tilt and zoom control ▪ ±50° pan angle ▪ ±20° tilt angle ▪ 6 preset locations available ▪ Driving motor: 3 stepping motors for pan/tilt/zoom
- 12VDC power ▪ Includes camera, RCA cable, IR remote control, AC adaptor, lens cap and attachment band



The VC-C1 MKII Communication Camera combines Canon's superior lens systems, sharp, detailed video resolution and fully automated camera control into a compact yet full-featured product. The VC-C1 MKII can zoom, focus, pan, and tilt with speed and precision. Quality, features, performance and control are what makes Canon's VC-C1 MKII Communication Camera the perfect addition to today's visual communications systems.

X51-0702-300. \$1895.00

Accessories

- | | |
|---|---|
| <p>SWK-0004-VC1</p> <p>SWK-0003-VC1</p> <p>SWK-0003-DPK</p> <p>SSR-JC902-0D</p> <p>SWK-0002-VC1</p> <p>D89-0580-201</p> <p>SSX-00194-0D</p> <p>D56-0040-201</p> <p>C86-0102-001</p> <p>C86-0102-232</p> <p>SSX-00193-0D</p> | <p>People Tracker™ (intelligent figure tracking software) \$1750.00</p> <p>Quick REMOTE (remote control software) 199.00</p> <p>Developer's kit for VC-C1 180.00</p> <p>0.75X wide converter lens kit 115.00</p> <p>Control software for Macintosh 99.00</p> <p>1.4X teleconverter TL-37 (req. SR-27/37) . . . 90.00</p> <p>WL-V1 wireless controller 30.00</p> <p>Step-up ring SR-27/37 for converter lenses. 15.00</p> <p>Control cable for Macintosh. 10.00</p> <p>Control cable for PC. 10.00</p> <p>Attach band FB-V1 6.00</p> |
|---|---|

VIZCAM 1000 Desktop Camera

- 1/4" CCD pickup device ▪ 410,000 pixels
- 450H x 350V TV lines resolution
- Internal synchronization ▪ Auto or manual white balance ▪ 1/60, 1/100 shutter speeds ▪ Auto/lock gain control ▪ Output signals: NTSC standard color video signal, RCA pin jack ▪ Video output impedance: 75 ohms ▪ Video output signal level: 1V p-p (luminance) ▪ Stereo audio output: 1K ohm, RCA pin jack, S-Video ▪ Stereo audio input signals: mini jack 3.5mm microphone; Input impedance: 5K ohms ▪ Lens: Focal length: 2.9mm ▪ Focus: manual ▪ Normal aperture: f/2.8 ▪ Zoom: fixed ▪ Iris control: manual ▪ Power: Input power: 12VDC
- Power consumption: 7W ▪ Includes: camera, video cable and AC adaptor



Canon has brought the ability to display and capture high quality visual images to the desktop with the lightweight VIZCAM. The VIZCAM features a 3-axis articulated camera mounting arm and rotational camera head capability to provide flexibility and stability in image presentation and acquisition. The VIZCAM can be used to display color video images of actual 3-D objects, documents, photographs, slides and transparencies on any NTSC video device. Images can be output to a color video printer for hard copy prints or input into a computer utilizing a video capture or frame grabber card.

A40-0001-301. \$1295.00

Accessory

- | | |
|------------------|--|
| <p>C86-01550</p> | <p>Carrying case for VIZCAM \$150.00</p> |
|------------------|--|

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



C40S Fluid Head

- Designed for 35mm motion picture and studio TV cameras
- Sliding quick-release plate = 8-step helical spring system for perfect counterbalance with cameras weighing up to 110 lbs.
- 23.5 lbs. head weight = +80°/-60° tilt range = Operator simply dials in the appropriate setting on the easy-grip selector ring = 7 + 7 fluid drags = 7 + 0 counterbalance steps = Includes a telescoping handle and illuminated spirit level

K479 C40S head only with 1 extendable pan bar . . \$7950.00

Tripods for C40S

- K701 1-stage tripod with ground spreader ball base . . \$1300.00
 K702 2-stage tripod with ground spreader ball base . . 1560.00
 K703 1-stage tripod with ground spreader flat base . . 1300.00
 K704 2-stage tripod with ground spreader flat base . . 1560.00
 K705 Baby legs (flat base or ball base) 1125.00

C20S Fluid Head

- Designed for either ENG/EFP or 16mm film production = 61 lbs. load capacity = 14.3 lbs. head weight = 360° pan range = ±60° tilt range = 100mm ball type leveling base = 7 + 7 fluid drags = Includes a frictionless sliding base plate with a locking quick-release plate = 8-position easy-grip selector ring for counterbalance match = Includes spirit level and telescoping handle = Interfaces with standard aluminum and ultra-light carbon fiber legs

S518 Head only with 1 extendable pan bar \$5695.00



C40S Dutch Head

- Produces smooth and professional Dutch tilts = Head interfaces directly with C40S fluid head or similar quick-release heads = Drag can be adjusted to suit any camera (up to 110 lbs.) = Includes frictionless sliding base plate, locking quick-release plate and a telescoping handle

K500 \$5595.00

Delta Fluid Head

- 100mm bowl diameter = +80°/-70° tilt range = 360° pan range = 38 lbs. load capacity = 8.3 lbs. head weight = 50mm range sliding plate = Camera quick-release and safety lock mechanism = Infinitely adjustable counterbalance = Ultralight magnesium alloy = Ideal for supporting dockable cameras using large battery packs = Frictionless drag mechanism allows 10 basic tension settings, plus more than 40 intermediate positions in both pan and tilt = Powered by a standard 9V battery = 2 digital displays indicate the counterbalance and tilt drag reference = Illuminated bubble allows easy leveling even in low light conditions

D601 Head with 1-stage aluminum tripod \$4995.00
 D600 Delta head only with 1 extendable pan bar . . . 4320.00



C20S Dutch Head

- Designed to make it simple and straightforward to execute smooth Dutch-tilt effects with EFP and 16mm cameras = Interfaces directly with C20S or similar quick-release heads = Drag can be adjusted to suit any camera up to 61 lbs. = Includes frictionless sliding base plate, locking quick-release plate and telescoping handle

S518 Dutch head only with pan bar \$4150.00

Gamma Fluid Head

- For dockable camcorders from 15-35 lbs. = Features dual displays to indicate counterbalance and drag values for repeatable moves = Load capacity range at 5" C/G (10cm C/G): 35 lbs. = Head weight: 7.9 lbs. = 360° pan range = ±90° tilt range = 100mm bowl diameter = -22°F/+158°F temperature range = Infinitely adjustable fluid drags = Infinitely adjustable counterbalance steps

G100 \$3320.00

Beta Fluid Head

- Ideal for ENG/EFP cameras = 6 lbs. head weight = 33 lbs. load capacity = 360° pan range = +60°/-50° tilt range = 95mm bowl diameter = 3 + 3 fluid drags = 3 + 0 counterbalance steps = Interfaces with standard aluminum and ultralight carbon fiber tripods

B473 Beta head only with 1 extendable pan bar . . . \$2850.00

Alfa I/II Fluid Heads

- Head weight: 4.25 lbs. = 360° pan range = +60°/-40° tilt range = 90mm bowl diameter = -22°F/+158°F = Infinite fluid drags = Counterbalance steps: one with preset spring tilt angles

A301 Ideal for new ENG/S-VHS/Hi 8 cameras weighing up to 16 lbs. \$1575.00

A402 Suited to the advanced generation of ENG cameras weighing from 17-22 lbs. 1675.00

ActionPro™ Fluid Head

- Offers true fluid drag and professional features for sophisticated Hi8, Super VHS and digital cameras weighing up to 12 lbs. = Fluid modules for both pan and tilt modes = Friction device offers selectable fluid drag = Features positive-locking tilt, orientable pan bar, spirit level and built-in shoulder strap = Supported by an aluminum standard tripod with 75mm ball base and rubber feet = System includes complete fluid head, quick-release sliding camera plate, tripod and integral mid-level spreader

ActionPro \$795.00

Tripods for Alfa, Beta, Delta, Gamma Heads

- L504 2-stage carbon fiber \$1795.00
 L503 1-stage carbon fiber 1300.00
 L502 2-stage aluminum 1015.00
 L501 1-stage aluminum 750.00
 L505 Aluminum baby legs. 750.00
 A302 3-tube aluminum with mid-level spreader 600.00

Heavy-Duty Tripods for Delta, Gamma, C20S Heads

- H604 2-stage carbon fiber \$2295.00
 H603 1-stage carbon fiber 1840.00
 H602 2-stage aluminum 1350.00
 H601 1-stage aluminum 1050.00
 H605 Aluminum baby legs. 895.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



WIDE-ANGLE ADAPTORS/ DIOPTERS/DUPLIKINS



Wide-Angle Adaptors for 3/8" Video and 16mm Macro Zoom Lenses

- Precision construction
- Aluminum alloy housing
- Glass elements yield high definition, low distortion images and resist scratches
- Lightweight ▪ No light loss to the taking lens ▪ Easy to use: Mount to the front of the lens, set the lens focus at infinity, and adjust the macro setting until the picture is sharp ▪ Lenses without a macro feature require back focus adjustment ▪ Adaptors available to fit most popular 3/8" video zooms
- Custom accessories available

WA-7X5X	0.5X and 0.7X wide-angle adaptor set	\$995.00
WA-7X93	0.7X wide-angle adaptor	495.00
WA-5X45	0.5X super wide-angle adaptor. Must be used with 0.7X to yield a total of 50% additional coverage to the original zoom lens.	595.00



0.8X Wide-Angle Converter

▪ For industrial and broadcast video camera lenses ▪ Attaches quickly to the front of a zoom lens and has the effect of shortening its focal length while maintaining full zoom capabilities ▪ When added to a 14 x 8.5 lens, the converter converts the focal length range from 8.5-119mm to 7-98mm. This is especially useful when shooting in tight quarters ▪ Not only is the field of view expanded, but minimum focus distance is reduced as well ▪ The camera can therefore move closer to the subject while maintaining focus ▪ Because there is no light loss with the 0.8X wide converter, no exposure or lighting change is required ▪ 4 different step-up rings are available to make the 0.8X wide converter compatible with a variety of zoom lenses



WA-8XCV	. . . . .	\$1650.00
FA-388X	138mm filter adaptor	185.00

0.6X Double Asphere

▪ Created for ENG/EFP video zoom lenses ▪ Single element with 2 aspheric surfaces ▪ Minimizes distortion, reduces chromatic aberration while increasing edge resolution ▪ Lightweight ▪ Comes in sizes to fit 80mm, 85mm and 90mm lens fronts ▪ Lens shade and filter holder available

WA-6XAS	\$1375.00
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Step-Up Rings: Wide-Angle Adaptors And .8X Converters

FA-7X67	67mm screw-in type (WA-7X5X/7X93)	\$60.00
FA-7X75	75mm slip-on type (WA-7X5X/7X93/8XCV)	70.00
FA-7X80	80mm slip-on type (WA-7X5X/7X93/8XCV)	70.00
FA-7X85	85mm slip-on type (WA-7X5X/7X93/8XCV)	70.00
FA-7X86	86mm screw-in type (WA-7X5X/7X93)	60.00
FA-7X90	90mm slip-on type (WA-7X5X/7X93/8XCV)	70.00

Step-Up Rings: Super Wide-Angle Adaptors (WA-5X45)

FA-5X85	85mm slip-on type	\$95.00
FA-5X90	90mm slip-on type	95.00
FA-5X95	95mm slip-on type	95.00
FA-5X00	100mm slip-on type	95.00

Achromatic Diopters 86mm Thread to Fit Most Lenses

▪ Original lens maintains all zoom capabilities ▪ Edge-to-edge sharpness ▪ Lack of chromatic aberration ▪ Excellent contrast

- No light loss ▪ Highly corrected 2-element design ▪ Glass elements fabricated to strict mil spec standards ▪ Hard anti-reflection coated elements ▪ 86mm thread with adaptors to most lenses ▪ May be stacked for additional magnification



AD-8616	+1.6 achromatic diopter	\$495.00
AD-8620	+2.0 achromatic diopter	495.00
AD-8626	2.6 achromatic diopter	495.00

Step-Up Rings for Achromatic Diopters

FA-6786	67mm to 86mm screw-in type	\$60.00
FA-7286	72mm to 86mm screw-in type	60.00
FA-7586	75mm slip-on to 86mm	70.00
FA-7786	77mm to 86mm screw-in type	60.00
FA-8086	80mm slip-on to 86mm	70.00
FA-8586	85mm slip-on to 86mm	70.00

Video Duplikins 35mm Slide-to-Video Transfer

▪ Superior multi-element lens ▪ Slide holder stage provides vertical, horizontal and rotational adjustments ▪ Slide-in holder for 2" x 2" filter track

- Hinged swing-away diffusion plate for even illumination ▪ Black anodized aluminum housing ▪ 2 focusing mounts for variable magnification and adjustable back focus ▪ Designed to work with popular 3/8", 3-CCD professional video cameras ▪ Installs in the lens port of your camera

CD-323C	Duplikin III in C-mount for 3/8" cameras	\$950.00
CD-323B	Duplikin III in 3/8" bayonet mount for many Sony, Sharp, Panasonic, NEC, JVC, Hitachi cameras (specify model)	950.00
CD-312B	Duplikin III in 1/2" bayonet mount for BTS, Panasonic, JVC	950.00
CD-312S	Duplikin III in Sony 325/327 mount	950.00

Century Converter

TC-16CV	1.6X tele-converter	\$1795.00
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Century Tele-Extenders

XF-20CC	2X extender for C-mount lenses	\$175.00
XF-223B	2X extender for 3/8" bayonet for many Sony, Sharp, Panasonic, NEC, JVC, Hitachi cameras (specify model)	825.00
XF-212B	2X extender for 1/2" bayonet for BTS, Panasonic, JVC cameras	825.00

Super Fisheye Adaptor

▪ Use internal focus video zooms when the widest possible field of view is required and zooming isn't appropriate ▪ Magnification factor of approximately .55 ▪ Produces an extraordinary degree of barrel distortion

- Adding the Super Fisheye to a 15 x 8 results in a 116° horizontal angle of view—or 145° when measured diagonally ▪ Barrel distortion makes extreme low and high angle shots even more dramatic

WE-FESU	For high performance video zooms	\$1175.00
WE-FE7S	For industrial video zooms with 75mm lens fronts	495.00

Camcorder Accessories

All accessories are 58mm threaded. Appropriate step-up rings must be ordered.

AD-5870	+7.0 achromatic diopter	\$250.00
AD-5840	+4.0 achromatic diopter	250.00
AD-5820	+2.0 achromatic diopter	250.00
AD-5810	+1.0 achromatic diopter	250.00
WA-6058	0.6X wide-angle adaptor	225.00
WA-0758	0.7X wide-angle converter	275.00
WA-1558	1.5X tele-converter	275.00
WA-2058	2.0X tele-converter	275.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





VIDEO PROJECTOR STANDS/CEILING MOUNTS

LV-400 Series Video Projector Stand

■ 10 bases, 14 shelves and unlimited posts can be combined to configure heavy-duty carts suitable for video projectors and TV/monitors ■ LV-401 consists of 1 LVB2 base, 4 P42 posts, 1 LSS video projector level and 1 LSG middle shelf **POR***

MAGNA-PROJECT™/MAGNA-VIEW™ Recessed Electric Ceiling Mounts

Common Features

- Designed for both theater and commercial applications ■ Smooth, quiet cycling ■ Custom units available by special order ■ Unit attaches simply and universally to any ceiling using four ½" threaded rods or 2 NPT 1½" threaded pipes ■ Remote control compatible
- Concealed bottom can be finished to match existing ceiling design and color
- Ceiling recessed for optimum concealment and equipment security
- Low voltage switching circuitry
- Heavy-duty steel and aluminum construction
- Heavy-duty chain drive ■ All electrical components are UL, CSA or VDE listed ■ All brakes engage if power to unit is lost



MAGNA-VIEW

MAGNA-PROJECT Recessed Electric Video Projector Ceiling Mount

Includes common features, plus: ■ Designed to accommodate all popular video projectors ■ All models include ceiling closure frame ■ Appropriate PHB hanging bracket is required to attach a video projector to the MAGNA-PROJECT series ■ 250 lb. lift capacity

Model	Maximum Projector Size H x W x D	Downward Travel	Price
MP3703	34½" x 32" x 46½"	37"	\$4153.00
MP2102	18½" x 32" x 39"	21"	3538.00
MP1301	10½" x 26" x 32½"	13"	3076.00

MAGNA-VIEW Recessed Electric TV/Monitor Ceiling Mount

Includes common features, plus: ■ Designed to accommodate most popular TVs and monitors ■ 250 lb. lift capacity

Model	Maximum TV Size H x W x D	Downward Travel	Price
MV3735	37" x 36" x 24"	37"	\$3538.00
MV3435	34" x 36" x 24"	34"	3230.00
MV3127	31" x 27½" x 21"	31"	2769.00

Note: Other Sizes Available.

LCDA Ceiling Mounts For All LCD/DLP Projectors

■ Adjustable LCDA ceiling mounts offer a wide range of minimum height and width adjustments to provide a snug fit around most LCD/DLP projectors ■ LCDA mounts can be attached to NPT 1½" threaded pipe ■ Also compatible with Chief CMA ceiling plates and columns ■ Precise Image Registration: Image registration is accomplished through incremental adjustments of roll, pitch and yaw ■ Adjustments: Roll 5° left and right of vertical, pitch 90° above and below horizontal, yaw 360° ■ Use height and width (inside dimensions of ceiling mount) from the following chart to determine the correct mount for your LCD projector

Model	Height (ID)	Width (ID)	Price
LCDA-240C	10.40"-16.40"	12.40"-23.30"	\$306.00
LCDA-225C	10.40"-16.40"	6.87"-12.50"	300.00
LCDA-220C	7.75"-13.40"	6.87"-12.50"	280.00
LCDA-230C	7.75"-13.40"	12.40"-23.30"	280.00

LCD Series Inverted Ceiling Mounts For LCD/DLP Projectors

■ LCD series ceiling mounts provide safe, easy and economical installation of inverted LCD/DLP projectors ■ LCD series mounts attach to NPT 1½" threaded pipe and are compatible with CMA ceiling plates and columns ■ Pitch and yaw adjustable



LCD-580CI

Model	Projectors Accommodated	Price
LCD-4200CI	Eiki LC 4200, LC 4300	\$420.00
LCD-7000CI	Eiki LC 7000, Sanyo PLS 5500	320.00
LCD-580CI	In Focus LP580	280.00
LCD-950CI	Sharp XG-1000U, XG-E850U, XG-II440, XG-800U	225.00
LCD-575CI	Apollo 575	225.00
LCD-5100CI	Proxima MP 5100, 3M MP 8030	186.00
LCD-620CI	In Focus LP 610, LP 620	186.00
LCD-585CI	Boxlight 2500; Chisholm Galaxy V470; CTX EX Pro 800	186.00
LCD-210CI	In Focus LP210	186.00
LCD-100CI	Ampro 100	186.00
EPA-500CI	Sony VPL-V500Q, VPL-W400Q	180.00
EPA-101CI	Lightware VP100	168.00
LCD-600CI	NEC MT600, MT800; Runco LCP400, LCP500	145.00

VCM 20/30/40/50/60/70/80/90/100 Series Deluxe Video Projector Ceiling Mounts

■ Roll ±5°, pitch ±45° depending on projector, yaw 360° ■ Horizontal adjustments ± 1½" in any direction ■ Positive registration lock; projector may be removed without losing projector mount registration ■ Heavy-duty support ■ Unit may be attached to CM-100 for incremental vertical adjustment ■ 4-point threaded rod mount or mounted with NPT 1½" pipe column ■ Black finish. **POR***



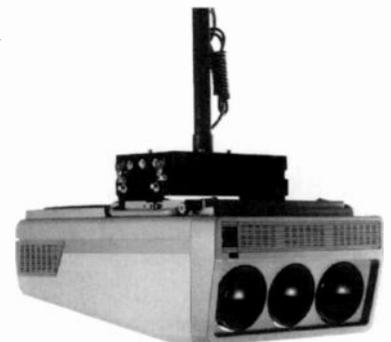
MAGNA-LIFT™ Electric Ceiling Mount

■ Combines 3 distinct applications in a single unit ■ Permanently mounts a video projector to the ceiling ■ Electrically raises a video projector to the ceiling for easy installation ■ Lowers projectors to floor level for servicing or removal, then raises projector back to the ceiling for re-installation without heavy lifting, dangerous equipment/scaffolding or costly personnel ■ UL listed components ■ 250 lb. lift capacity ■ 20' drop ■ Appropriate HB hanging bracket is required

EVCM-100I Electric ceiling mount, 230V, 50Hz \$1350.00

EVCM-100D Electric ceiling mount, 115V, 60Hz 1327.00

LPK-1 Low profile mounting kit. 95.00



*Price On Request

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



iNFiNiT!® Character Generator and Graphics System

- 2 full-function, independent channels
- Full-color 32 bits per channel
- Full-bandwidth color and key channel
- 4:4:4 internal architecture
- 16.7 million colors online
- 256 levels of anti-aliasing and transparency
- 2-D animation
- Unlimited online fonts
- FlashFont™—instant sizing, edging, italics and texture mapping
- Dual encoders
- Mix and effects between channels and within a channel (wipes, dissolves, etc.)
- Soft roll mask
- Infinitely variable roll speeds
- 1.1G byte hard disk drive
- 1.44M byte 3½" floppy disk drive built into keyboard
- 68040 CPU with 16M bytes expandable RAM memory
- Icon-oriented prompt screen with mouse support
- Fonts by Wire™ \$64,000.00



IMAGESTOR!™ Stand Alone Still System

- Single and dual channel versions
- 100% Chyron iNFiNiT! family compatibility
- Full-bandwidth analog or SDI I/O
- Ethernet networking
- FTP and NFS protocol
- iNFiNET: NFS file server
- Quantel™ gateway interface
- TIFF and TGA file import
- SCSI-2 interface
- Sophisticated play list organizer
- Comprehensive database manager with extensive librarian features
- Thumbnail browse of 16 stills
- Newsroom interface software
- Remote recall panel available
- Dual user capability
- Flash, save, record and browse with Extended Effects Frame Buffers Starting at \$14,000.00



MAX!>® Character Generator and Graphics System

- Full-color 32-bit system
- Full-bandwidth color and full-bandwidth key channel
- 4:4:4 internal architecture
- 16.7 million colors online
- 256 levels of anti-aliasing and transparency
- 2-D animation
- Unlimited online fonts (16 presets)
- FlashFont—instant sizing, edging, italics and texture mapping
- Dual encoders
- Mix and effects within a channel (wipes, read effects, etc.)
- 1.1G byte hard disk drive
- 1.44M byte 3½" floppy disk drive built into keyboard
- 20M byte RAM memory (expandable to 68M bytes)
- Icon-oriented prompt screen with mouse support
- Fonts-by-Wire
- MAX!> Dual Channel System \$34,000.00
- MAX!> Single Channel with Dual Encoders 27,000.00

MAXINE!® Character Generator and Graphics System

- Full-color 32-bit system
- Full-bandwidth color and key channel
- 4:4:4 internal architecture
- 16.7 million colors online
- 256 levels of anti-aliasing and transparency
- 2-D animation
- Unlimited online fonts (16 presets)
- FlashFont—instant sizing, edging, italics and texture mapping
- Dual encoders
- Mix and effects within a channel (wipes, read effects, etc.)
- 1.1G byte hard disk drive
- 1.44M byte 3½" floppy disk drive built into chassis
- 20M byte RAM memory (expandable to 68M bytes)
- Icon-oriented prompt screen with mouse support
- Fonts by Wire \$14,800.00

WiNFiNiT!™ Graphic User Interface

- Provides support of full ASCII character sets for international languages
- Allows control of multiple Chyron systems, including iNFiNiT!, MAX!, MAXINE!, and IMAGESTOR!, from one Windows 95 and Windows NT workstation
- Text and 24-bit graphics can be cut and pasted between the Windows clipboard and the Chyron frame buffer
- Operators can use programs including Microsoft Word® and Adobe Photoshop®, and text and graphics can be dropped directly into an iNFiNiT! family graphics system
- Supports automatic conversion of TrueType fonts into Chyron Master fonts
- ASCII text files can be imported directly as Chyron messages
- Returns and page breaks are observed in the conversion
- Graphics files can be imported and exported
- Graphics formats that are supported include: Liberty, TIFF, TGA, and BMP
- Through WiNFiNiT!, Chyron graphics systems have direct access to any other network a personal computer can be connected to
- Data can be sourced and shared from a variety of network environments, including the Internet. \$2,400.00



pc Scribe® Video Graphics Engine

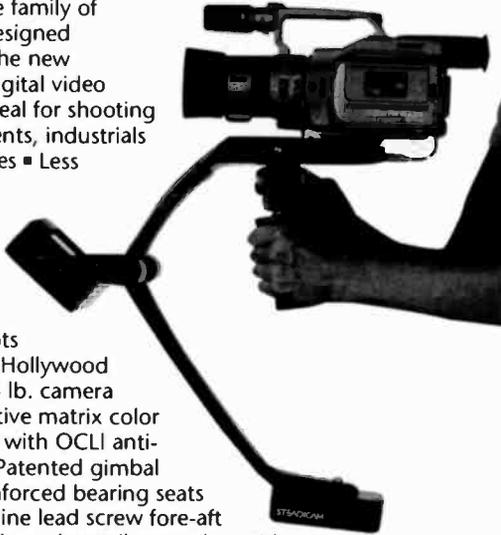
- Windows® 95/NT-based
- Instantly re-size, position and rotate text on a page, word, row or character basis
- Import over 40 different graphic file formats from other software applications and select colors from a 16.7 million color palette
- All operations instantly appear on the SVGA monitor in a true WYSIWYG display
- Designed to work with either PAL or NTSC pc-CODI video boards
- Display is independent of the output of the pc-CODI and functions as an edit/preview screen in live or fast edit applications \$1,495.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



DVS Steadicam®

- Smallest in the family of Steadicams
- Designed specifically for the new generation of digital video camcorders
- Ideal for shooting multimedia, events, industrials or documentaries
- Less assuming for interviews or undercover shots
- Offers the same fluid motion and professional shots achieved in big Hollywood films
- 2 lb. to 6 lb. camera capacity
- 4" active matrix color monitor display with OCLI anti-glare coating
- Patented gimbal design with reinforced bearing seats
- Stage with in-line lead screw fore-aft and side-side drives; dovetail mounting with quick release
- Ergonomic handle design interchangeable with Sony GP-TRX grip
- Quick-release feature adds to the ease of use
- Dimensions (HxWxL): 15.5" x 6" x 16" open, 4.75" x 6" x 15.5" closed
- Approximately 2 lbs. **POR***



ProVid 2 Steadicam

- Custom vest with optional LTX vest
- Iso-Elastic™ arm holds 9 to 19 lb. cameras
- Dynamically balanced sled
- Enhanced P43 monitor with optional high performance 4" monitor
- Low mass gimbal
- Extendible battery bay
- Anton/Bauer or PAG battery with optional NP-1 battery
- Optional telescoping post
- Modular design permits additional and upgraded components
- Lightweight, yet strong due to its carbon fiber construction
- Incorporates an enhanced monitor, a one-piece sled and the convenience of no-tools adjustments
- Ideal for videographers, small production companies and cable television stations working on commercials, documentaries or daily news segments
- Same fluid motion, uninterrupted shots and professional, natural feel as the big Hollywood films
- Training video and instruction manual included **POR***

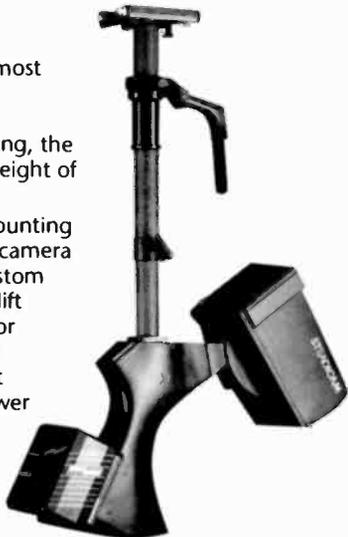


ProVid™ Steadicam

The ProVid is the lightest and most affordable commercial quality Steadicam. Using an ultralight monocoque carbon fiber housing, the ProVid maintains a base sled weight of under 10 lbs.

System includes:

- Camera mounting chassis (sled)
- 15 lb. to 26 lb. camera capacity
- Iso-Elastic™ arm
- Custom vest
- Adjustable angle of arm lift
- High performance 4:3 monitor
- Battery mount (Anton/Bauer)
- Docking/spin balance bracket
- Long dovetail plate
- 12V power cable
- 3' lightweight video cable
- "T" handle
- Allen wrench
- Owner's manual
- 35-minute VHS training tape
- Hard case



SC800 **\$22,000.00**

Power Supplies

- FGS-900035 A/B MP4D quad charger **\$2,370.00**
- FGS-001722 A/B quad one-hour charger **1,365.00**
- FGS-001724 A/B dual one-hour fast charger **1,025.00**
- FGS-001723 A/B Q2 dual position quick charger **695.00**
- FGS-000768 A/B Pro Pac 14 battery **495.00**
- FGS-900049 DM-4 discharge module **425.00**

Accessory

FGS-090044 Black Mathews "C" stand **\$158.00**

Steadicam JR™

- Designed for 8mm, Hi8 and VHS-C camcorders
- Eliminates handheld shakes
- Allows camera to float on air
- 2 lbs.

- Ergonomic intergimbal 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
- 3½" integral high resolution monochrome monitor
- A flushmounted soft touch toggle switch is adaptable for connection to the pause circuits of many camcorders
- 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/SVDC each



- 8C100 Steadicam JR for 8mm and Hi8 camcorders **\$499.00**
 - 8H100 Travel case for camcorder, Steadicam JR and accessories **89.00**
 - 8X280 S type adaptor for Sony L-1 camcorder . . . **89.00**
 - 8X100 L type adaptor for Canon L-1 camcorder . . **79.00**
- *Price On Request

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

BATTERY BELTS/PACKS/ PORTABLE LIGHTING



30V Battery Belts/Packs

■ For Cine 60 Sun-Guns, Lowel, LTM, Colortran, Frezzi, Arri, Anton/Bauer, Mole-Richardson, Cinema Products, De Sisti, Kobold, Ianero and other battery lights ■ 4AH capacity operates 30V 250W lamp 26 minutes ■ 7AH capacity operates 250W lamp 42 minutes ■ 2-pin Amphenol connector and 5-pin XLR on fast charge models, 2-pin Amphenol on Overnite models

Cat. No.	Volts/Amps	Charge Rate	Fast Charge Rate w/Fast Charger	Weight	Price
7004	30V, 7AH	Overnite		15 lbs.	\$1310.00
7004FC	30V, 7AH	Fast Charge	2 hr.	15 lbs.	1375.00
6304	30V, 4AH	Overnite		11 lbs.	820.00
8304FC	30V, 4AH	Fast Charge*	1 hrs.	11 lbs.	870.00
Same as 30V Battery Belts, but in a battery pack style.					
9704	30V, 7AH	Overnite		14 lbs.	\$1310.00
9704FC	30V, 7AH	Fast Charge*	2 hr.	14 lbs.	1375.00
9104	30V, 4AH	Overnite		10 lbs.	860.00
9104FC	30V, 4AH	Fast Charge*	1 hrs.	10 lbs.	920.00



7004FC
6304



3014FC



9704FC

Switchable 30V Belts/Packs

Cine 60's versatile power for most portable equipment and Sun-Guns.

30V/14.4V Switchable Battery Belts

3017	30V, 7AH/14.4V, 14AH	Overnite		15 lbs.	\$1410.00
3017FC	30V, 7AH/14.4V, 14AH	Fast Charge*	2 hr.	15 lbs.	1475.00
3014	30V, 4AH/14.4V, 8AH	Overnite		11 lbs.	920.00
3014FC	30V, 4AH/14.4V, 8AH	Fast Charge*	1 hrs	11 lbs.	980.00

30V/14.4V Switchable Battery Packs

1430	30V, 10AH/14.4V, 20AH	Overnite		26 lbs.	\$2195.00
9017	30V, 7AH/14.4V, 14AH	Overnite		14 lbs.	1410.00
9017FC	30V, 7AH/14.4V, 14AH	Fast Charge*	2 hr.	14 lbs.	1475.00
9014	30V, 4AH/14.4V, 8AH	Overnite	1 hrs.	10 lbs.	920.00
9014FC	30V, 4AH/14.4V, 8AH	Fast Charge*		10 lbs.	980.00

30V/13.2V Switchable Battery Belts

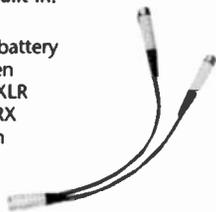
30137	30V, 7AH/13.2V, 14AH	Overnite		15 lbs.	\$1380.00
30137FC	30V, 7AH/13.2V, 14AH	Fast Charge*	2 hr.	15 lbs.	1450.00
3013	30V, 4AH/13.2V, 8AH	Overnite		11 lbs.	905.00
3013FC	30V, 4AH/13.2V, 8AH	Fast Charge*	1 hrs.	11 lbs.	965.00

30V/13.2V Switchable Battery Packs

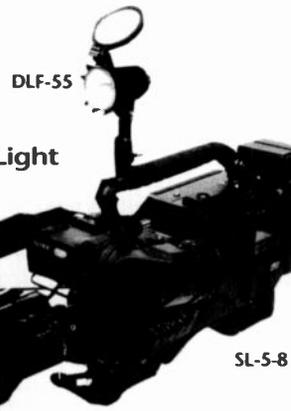
1330	30V, 10AH/13.2V, 20AH	Overnite		26 lbs.	\$2130.00
90137	30V, 7AH/13.2V, 14AH	Overnite		14 lbs.	1380.00
90137FC	30V, 7AH/13.2V, 14AH	Fast Charge*	2 hr.	14 lbs.	1450.00
9013	30V, 4AH/13.2V, 8AH	Overnite	1 hrs.	11 lbs.	905.00
9013FC	30V, 4AH/13.2V, 8AH	Fast Charge*		11 lbs.	965.00

*Requires Fast Charger. 115V overnite charger built-in.

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 1 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. . . \$65.00



DSL 1-2



SL-5-8

Spider-Lite Mini Sun-Gun Light

■ May be powered with a 12, 13 or 14V camera battery, any other external battery source, or mini 6 oz. AC power supply, output 12VAC, 75W max.
 ■ Adaptable to all professional cameras ■ May be handheld or attached to walls, clamps or suction cups, etc. ■ Since cigar lighter plugs are also available, Spider-Lites are often gaffer-taped inside vehicles ■ Equipped with 7' power cables terminating in 5-pin Cannon connector, or can also be supplied with popular battery connectors of your choice ■ Mounting studs: 1/8", 3/8" or shoe-type ■ Lite posts can be camera-mounted either horizontally (low profile) or vertically (high profile) ■ Spider-Lites use German BLV multimirror halogen bulbs for the most even light distribution available; these bulbs are black-coated to prevent back and side reflection, and are hand changeable in seconds without tools ■ BLV bulbs available with or without clear safety glass or frosted (diffusion) glass; Spider-Lites also available with swing-away daylight dichroic or diffusion glass ■ Each Lite head equipped with a toggle switch for easy and positive on and off ■ Dual heads available, each Lite separately controlled

DSL 1-2	Dual Spider-Lite for 1/8" stud	\$299.00
DSL 5-8	Dual Spider-Lite for 3/8" stud	299.00
SL-1-2	Spider-Lite for 1/8" stud	159.00
SL-5-8	Spider-Lite for 3/8" stud	159.00
DIM-10	DC volt dimmer % efficient.	118.00
DLF-55	Daylight filter with adaptor	90.00
FRG-55	Diffusion filter with adaptor	80.00
ACP-12	12VAC power supply, 75W max.	80.00
CLC	Cable-to-cigarette lighter	48.00
FRG-551	Replacement dichroic glass only	44.00
DLF-551	Replacement diffusion glass only.	34.00
LSS 1-2	Lite stud shoe type 1/8"	30.00
LSS 5-8	Lite stud shoe type 3/8"	30.00
STU 1-2	Lite stud 1/8" 1/4-20	20.00
STU 5-8	Lite stud 3/8" 1/4-20	20.00

BLV Lamp Guide

Lamp Code	Volts	Watts	Safety Glass	Beam Spread	Price
102 111	12	20	No	Flood	\$27.00
102 151	12	20	Yes	Flood	30.00
102 151F	12	20	Frosted	Flood	32.00
103 111	12	35	No	Flood	27.00
105 111	12	50	No	Flood	27.00
105 151	12	50	Yes	Flood	30.00
105 151F	12	50	Frosted	Flood	32.00
105 113	12	50	No	Spot	27.00
105 153	12	50	Yes	Spot	30.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





7000/6900/6700/6500 RAID DISK ARRAYS

Common Features

- High-speed playback of 3-D images
- Storage capacities from 8G bytes to 72G bytes of seismic data
- Couple parallel data transfers with high-speed SCSI-2 drives, resulting in sustained data transfer rates of over 19Mbps to nearly 40Mbps
- Ability to choose between 5- and 9-drive disk arrays
- Capacities range from 8G bytes to 72G bytes, depending on the configuration you select
- Redundancy abilities including hot-swap drives which allow replacement of a failed drive without users even knowing it
- Excellent in applications requiring high data transfer rates, real time performance, large capacities, and redundancy for high data availability
- High-speed storage and retrieval of data at real time rates
- Provide storage and retrieval at speeds ranging from 19-40Mbps, allowing designers greater control, quicker response to last-minute changes, and the ability to store jobs online

Ciprico's RAID disk arrays are excellent in the world of visual computing applications requiring very high data transfer rates, real time performance, large capacities, and redundancy for high data availability. If you're in the film/video, medical imaging, digital prepress, satellite telemetry, oil/gas or video service industries, these needs are paramount to your applications.

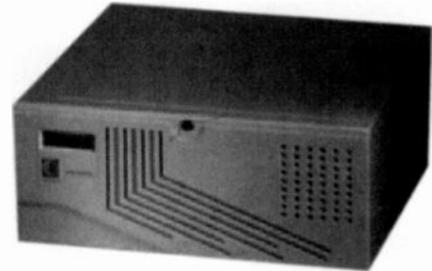


7000 Series Fibre Channel Compatible Disk Arrays

- Includes common features plus: ▪ High-speed fibre channel RAID-3 disk arrays connect to the host via the FC-AL interface supporting burst rates of up to 100Mbps
- SCSI software layer allows the disk array to make use of standard SCSI-2 drives in conjunction with its 9 fast/wide SCSI-2 channels
- In this configuration, the disk array is capable of more than 70Mbps sustained data rate
- Designed to accept fibre channel drives as they become available
- Designed for 90+ Mbps sustained data throughput with new generation drives
- Redundancy capabilities within the system including hot-swap disk drives, power supplies and cooling modules
- Supports multiple uncompressed video streams; delivers dozens of compressed video streams
- Will support 30fps operations of 2K x 1K x 8-bit resolutions
- Single array transfers 1K x 1K x 16-bit images at 30fps
- Supports both point-to-point and arbitrated loop
- Allows peripherals to attach directly to the network, allowing any client direct access
- Supports simultaneous operations on multiple uncompressed streams of video
- No performance degradation after a drive failure
- Configuration: 8 data drives +1 redundant drive
- 4 or 9G byte capacity per drive; 32 or 72G byte capacity per array
- Failed drive support: operational with single drive failures; no performance degradation after drive failure; hot-swap of failed drive; automatic rebuild of replacement drives
- User programmable rebuild performance
- Corrected on-the-fly hard media errors

6900 Series Disk Arrays

- Includes common features plus: ▪ UltraSCSI (double-speed) compatible disk array
- Transfers data at 40Mbps to your host system while maintaining backwards compatibility with SCSI-2
- A single 6900 Series delivers real time uncompressed video, in NTSC through D1 resolutions, easily surpassing the 27Mbps video requirement
- Video server applications, such as video-on-demand (VOD) get 2X as many streams of video from the 6900 than from traditional SCSI-2 disk subsystems
- Available in flexible capacities ranging from 16G bytes to 72G bytes, the 6900 Series also delivers a high level of redundancy with hot-swap disk drives and power supplies ensuring continued operating and sustained performance
- Models/options include: 8 + 1 drive configuration and 2G byte or 4G byte drives
- Tower, desktop or rackmountable
- Differential
- Up to 40Mbps maximum sustained rate
- Failed drive support: operational with single drive failures; replacement of failed drives online; rebuilds data on replacement drive
- User-selectable rebuild modes



6700 Series Disk Arrays

- Includes common features plus: ▪ Provides flexibility for users
- Available in capacities ranging from 8 to 72G bytes
- Delivers sustained performance rates of near 20Mbps through a standard fast/wide SCSI-2 host interface
- High level of redundancy provided through the use of RAID-3 technology as well as hot-swappable disk drives and optional hot-swappable redundant power supplies
- Models/options include: 8 + 1 drive configuration, 4 + 1 drive configuration, 2G byte or 4G byte drives
- Tower, desktop or rackmountable
- Single-ended or differential
- Over 19Mbps maximum sustained rate
- Failed drive support: operational with single drive failures; replacement of failed drives online; rebuilds data on replacement drive
- User-selectable rebuild modes

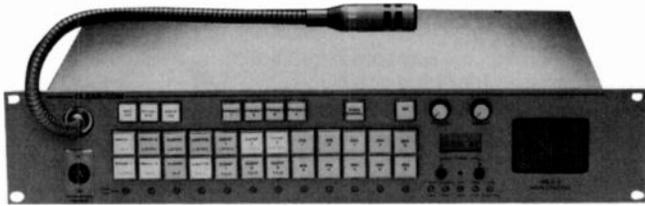
6500 Series Disk Arrays

- Includes common features plus: ▪ Economical RAID-3 storage
- Ideal for applications requiring high performance with small capacities
- Up to 30Mbps transfer rates per disk array
- Allows you to swap disk drives in the event of a drive failure
- Use low capacity, high-performance disk drives in a configuration of 8 data drives with 1 parity drive
- Capacities range from 8G bytes to nearly 30G bytes
- If you need higher capacities, the arrays can easily be striped or daisy-chained together
- Provide a standard UltraSCSI or SCSI-3 interface
- Will readily fit into any standard SCSI platform environment, including DEC, HP, IBM, Silicon Graphics (SGI), Sun and PC
- Offers seamless integration into the SGI platform environment and includes GUI-based interfaces to array utilities
- Enhanced utilities make it easy to configure and monitor the arrays in an SGI environment
- Supports an adaptor card that provides connectivity to SGI's Indigo² IMPACT workstation, providing real time speeds with just one array

Call For Pricing

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

MAIN/REMOTE INTERCOM STATIONS

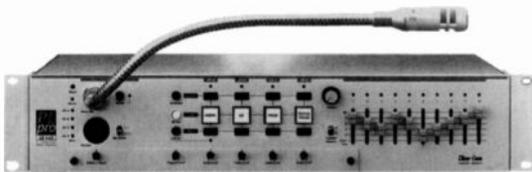


MS-812A

Main Stations

A Main Station is a combination intercom station and system power supply.

MS-812A Master Station ■ Rackmount microprocessor based with menu-driven programming ■ Provides 12 party-line intercom channels ■ Has visual and audible signaling, separate listen and talk buttons, individual channel listen-level controls, 4 preset buttons, adjustable button brightness and the ability to program internal and external IFB and ISO, privacy, relays, walkie-talkies and much more ■ Up to 4 programmed "setups" can be stored ■ Individual button assignments can be stored in presets ■ Selectable program signal feed to any of the intercom channels. \$3675.00



SB-440 Main Station ■ 4-channel ■ Same specs as MS-440, but includes a 5 x 10 assignment matrix, which permits 4-channel groupings with off and party-line positions, plus an easy-access subpanel \$1949.00



MS-440 Main Station ■ 4-channel rackmount headset/speaker operation ■ 2A power supply ■ Multiple program inputs ■ Program audio monitoring ■ 3 built-in IFBs for talent cueing ■ Microprocessor controlled logic ■ All-talk function \$1299.00

MS-232 Rackmount Main Station ■ 2-channel speaker and headset station ■ Remote mic kill ■ Line program input with IFB/interrupt ■ Stage announce ■ A+B "Link" switch ■ Separate channel listen-level controls and call buttons ■ Applications include: fixed installations, theater directors and stage managers, video trucks and facilities, sports arenas ■ 1RU (1.75"H) ■ Supports up to 60 headset stations or 20 speaker stations \$870.00

CS-222 Portable Main Station ■ 2-channel headset station ■ Remote mic kill ■ Mic/line program input with IFB/interrupt ■ Stage announce ■ A+B "Link" switch ■ Separate channel listen-level controls and call buttons ■ Power supply features special "auto restore" overload/short circuit protection ■ Applications include: theater, concerts, sports (coach-to-spotter), rental firms ■ Supports up to 30 headset stations or 10 speaker stations \$780.00

RK-101 Rackmount kit for CS-222 and PS-22. 2RU (3.5"H) \$75.00

Rackmount Remote Stations

A remote station does not contain a power supply. It obtains DC power from a system power supply or main station.

RM-440 Remote Station ■ 4-channel headset/speaker station, same as the MS-440, except requires no external AC power supply, no circuit breaker and no linking function ■ Powered directly from the intercom line. \$1030.00



RM-220 2-Channel Intercom Station ■ Selectable 2-channel communication ■ Individual listen volume controls ■ Momentary/latching talk buttons ■ Balanced program input with interrupt circuit ■ Optional plug-in gooseneck mic ■ Visual flashing call signaling ■ Mic limiter ■ Wide range high-output speaker ■ Optional 4-wire balance interconnect ■ Hot mic and line level outputs ■ Logic control of talk buttons ■ Studio announce output with relay ■ Uses only 1RU. . . \$677.00

MR-102A Wall/Console Mount Station ■ 2-channel (A or B selectable) headset station mounts in console or standard 2-gang electrical box (headset operation only) \$227.00

MR-104A Same as above, except 4-channel selectable 295.00

Speaker Stations

KB-111A Speaker Station ■ 2-channel select speaker station, uses handset or push-to-talk mic ■ Mounts in 6" x 8" electrical box or portable enclosure ■ Applications include: theater/security ■ May be wall mounted, console mounted, or placed in the optional P-Box or M-Box \$312.00

KB-112 Speaker Station ■ With push-to-talk mic; talk/listen can be controlled remotely ■ All functions selectable ■ Applications include: dressing rooms/paging/security ■ May be wall mounted, console mounted, or placed in the optional P-Box or M-Box. 312.00



KB-112 in P-Box

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 \$145.00

M-Box Portable rectangular shaped enclosure, metal construction, for KB-111A (single channel only) and KB-112 122.00

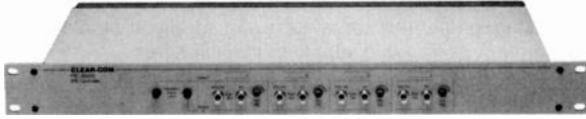
Gooseneck Panel Microphones

GM-18 18" gooseneck panel microphone for all main and remote intercom stations. \$155.00

GM-9 9" gooseneck panel microphone for all main and remote intercom stations. 145.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





PIC-4000B

IFB (Program Interrupt) Systems

▪ Modular system capable of operating as a stand-alone system, or being integrated with MS-808 Master Stations ▪ Transmits an interruptible program signal to individual talent receivers via standard 2-conductor shielded microphone cable ▪ Distributed amplifier system with the earphone amplifier located at the talent's position ▪ Features unlimited expansion capabilities (up to 96 talent channels and 50 control locations)

PIC-4000B IFB Electronics ▪ 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 ▪ Requires 24VDC power from a Clear-Com Intercom System or power supply. **\$829.00**

MA-4 Talent Access Master Control Station ▪ 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 rackmounting in an optional rackmount adaptor ▪ Includes a panel-mounted gooseneck microphone and all required local electronics. **\$730.00**

AX-4 Talent Access Expansion Station ▪ Connects to the MA-4, 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 **\$520.00**

TR-532 Stereo/Split Feed Talent Receiver ▪ Contains 2 discrete amplifiers to feed the "Interrupt" and "Noninterrupt" signals from the PIC-4000B on a standard mic cable to separate ears of sportscaster type headsets or standard stereo earphones ▪ Provides a passive loopthrough output of the headset's microphone for on-air applications . . **\$295.00**

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 . . **\$133.00**

Belt-Packs

RS-522 Stereo Belt-Pack ▪ 2-channel, dual listen, binaural belt-pack ▪ Allows completely selectable simultaneous listening and talking on 2 separate channels ▪ Binaural split-feed headset output ▪ Includes all features of the RS-501 and RS-502 ▪ Applications include video/theater production, industrial, lighting design **\$346.00**

RS-522-TW Stereo, 2-channel, 3-pin cable **375.00**

RS-502 Belt-Pack ▪ 2-channel belt-pack ▪ Allows access to either 1 of 2 separate intercom channels ▪ Includes all features of the RS-501, plus dual channel signaling ▪ Applications include video/theater production, industrial ▪ 4-pin headset connector, 6-pin female line connector (no loopthrough, programmable options) **\$314.00**
Note: RS-502 requires YC-36 adaptor to connect to a standard Clear-Com system.

RS-502-TW 2-channel, 4-pin headset, 3-pin male and female connectors, channel B call light only, programmable options . . **\$348.00**
Note: RS-502-TW requires TWC-10 adaptor to connect to a standard Clear-Com system.

RS-501 Belt-Pack ▪ Single-channel, lightweight belt-pack ▪ All digital, noiseless, electronic switching ▪ Remote mic kill function ▪ Visual signaling ▪ Carbon-type headset jack optional ▪ The RS-501 is the standard belt-pack station for use in all applications ▪ Accepts dynamic or electret mics ▪ 4-pin male headset connectors, 3-pin male and female line connectors **\$215.00**

Que-Com Headset Intercom System

- High performance 2-way communications
- Wide frequency response and high volume
- All metal belt-pack with belt clip
- Clear-Com compatible
- Noise-canceling mic
- Mic switch and volume control
- Interconnects with standard mic cable
- Permanently attached, lightweight, noise-isolating headset
- Soft ear cushions and adjustable headbands



SMQ-1

DMQ-2 Que-Com double-muff headset/belt-pack **\$232.00**

SMQ-1 Que-Com single-muff headset/belt-pack **199.00**

PK-5 Power Supply ▪ Portable regulated power supply ▪ Single channel ▪ Operates up to 25 headset stations **\$170.00**

Dynamic Headsets

CC-85/250 PL-Pro Communications Headsets

- Virtually indestructible
- Designed for comfort
- Broadcast quality
- Balanced microphone output
- Separate earphone wires for binaural split ear use
- Left or right side mic operation
- Low profile on-air appearance
- Dual-chamber ear cushion for maximum acoustical isolation
- Mic switch in boom
- Noise-rejecting mic
- Fully field-serviceable
- Noise attenuating earmuffs
- Single- or double-muff
- Replaceable washable ear socks
- Dynamic transducer
- Excellent mic isolation for minimum crosstalk



CC-85

CC-85 PL-Pro single-muff headset **\$175.00**

CC-250 PL-Pro double-muff headset **218.00**

CC-250-6 Same as CC-250 with 6-pin female XLR type connector wired for "split-ear" operation. **226.80**

CC-85-RTS Same as CC-85 with 4-pin male XLR connector. **181.00**

CC-250-RTS Same as CC-250 with 4-pin male XLR connector. **224.00**

CC-26 Headset ▪ Single-muff ▪ 6' straight ultrathin cord ▪ Ultra-lightweight headset (2¼ oz.) ▪ Dynamic, noise-canceling mic element (4-pin XLR) **\$142.00**



CC-250

HS-6 Handset ▪ Telephone-style headset with push-to-talk switch **95.00**

PT-4 Mic ▪ Rugged push-to-talk mic ▪ Mounting clip included, 2' coil cord (4-pin female XLR type connector) **65.00**

CC-40 Headset ▪ Single-muff ▪ Noise-canceling ▪ Noise-attenuating ear cushion. **99.00**

CC-60 Headset Same as CC-40 with double-muff. **123.00**

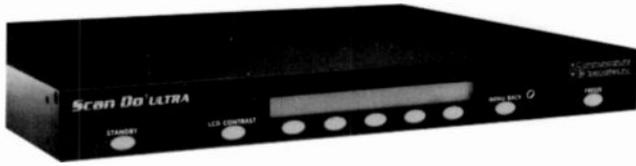
ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



SCAN CONVERTERS/ DISTRIBUTION AMPLIFIERS

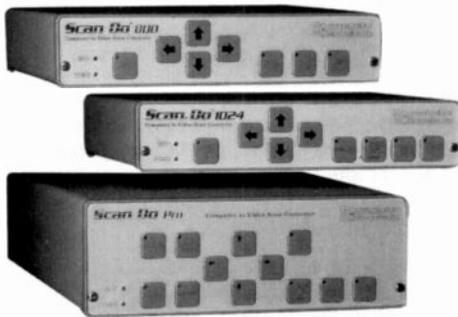


Communications
Specialties, Inc.



Scan Do Ultra Computer Workstation to Video Scan Converter/Downconverter

■ Combination scan converter and downconverter ■ Supports high resolution computer workstations, both PC and Mac (up to 1600 x 1280) ■ Broadcast quality (24-90kHz) NTSC/PAL outputs ■ VGA, SVGA and Mac compatible down converted outputs ■ 1RU (1 1/2" high) ■ Composite, S-Video, RGB and YUV outputs ■ Genlock support ■ True multiscanning over a wide input range ■ Dual computer inputs ■ Variable sizing and positioning \$6495.00



Scan Do 800, 1024, Pro and Pro/C VGA and Macintosh Video Scan Converters Common Features

■ Auto locking circuitry automatically detects different VGA and Mac modes being used by your computer ■ 4 outputs: computer, monitor composite, S-Video, 15kHz RGB ■ Image freeze, switchable ■ Horizontal and vertical image positioning, front panel ■ Test pattern generator: color bars and gray scale ramp ■ NTSC and PAL TV standard outputs, switchable ■ 12' composite and S-Video cables, standard ■ Single 6' computer input cable for both VGA and Mac ■ Small universal input AC supply—95-250VAC ■ 24-bit (8 bits per RGB), supports 16.8 million colors ■ Modes supported: VGA—320 x 200, 640 x 200, 640 x 350, 720 x 350, 720 x 400, 640 x 480 (60Hz); SVGA—640 x 480 (72 and 75Hz), 800 x 600 (56, 60, 72 and 75Hz)

Equipment Included: (1) Scan Do VGA/Mac to video scan converter; (1) Universal AC input power supply with AC power cord; (1) 6' HD-15P to DB-15P cable for both VGA or Mac computer hook-up; (1) 12' S-Video cable

Scan Do 800

Includes common features plus: ■ Flicker-free video filter, switchable in 2 stages for optimizing either flicker reduction or vertical resolutions ■ Underscan/overscan modes, switchable ■ Mac modes supported: 512 x 384, 640 x 480 (66Hz), 832 x 624 (75Hz) ■ One 12' RCA-to-RCA composite video coax cable \$1495.00

Scan Do 1024

Includes common features plus: ■ Image magnification with panning ■ Flicker-free video filter, switchable ■ Underscan/overscan modes, switchable ■ Additional modes supported: SVGA—1024 x 768 (60-75Hz); Mac—1024 x 768 (60 and 75Hz) \$1795.00

Scan Do Pro

Includes common features plus: ■ Genlock input with front panel horizontal and subcarrier timing ■ Image magnification with panning ■ Flicker-free video filter, switchable ■ Underscan/overscan modes, switchable ■ Additional modes supported, see Scan Do 1024 ■ One 12' BNC-to-BNC composite video coax cable \$1995.00

Scan Do Pro/C

Includes Scan Do Pro features plus: ■ Component output (Y, R-Y, B-Y) for Betacam and MII is standard ■ One 12' BNC to BNC composite video coax cable \$2495.00
Scan Do Pro/C Upgrade Available to existing Scan Do Pro owners. Adds switchable Y, R-Y, B-Y output for Betacam and MII \$550.00

RS-232 Control

Provides remote operations of all front-panel Scan Do Pro and Scan Do Pro/C functions. Available as an upgrade kit or with purchase of the Scan Do unit.
RS-232 Control with Scan Do purchase \$400.00
RS-232 Control as an upgrade 475.00

300MHz Distribution Amplifiers

Use with any VGA, SVGA, XGA computer. Output cables not included. Supports up to 250'.

TwinSplit for VGA Buffered 2-output. \$ 295.00
QuadSplit for VGA Buffered 4-output. 495.00
HexiSplit for VGA Buffered 6-output. 695.00
OctoSplit for VGA Buffered 8-output. 895.00
DeciSplit for VGA Buffered 10-output. 1095.00
TwinSplit E.D. VGA (Extended Distance)
Buffered 2-output. Supports up to 700' 549.00

Use with any Macintosh computer. Output cables not included. Supports up to 250'.

TwinSplit for Mac Buffered 2-output \$ 295.00
QuadSplit for Mac Buffered 4-output. 495.00
HexiSplit for Mac Buffered 6-output. 695.00
OctoSplit for Mac Buffered 8-output 895.00
DeciSplit for Mac Buffered 10-output. 1095.00

Use with Sun, Silicon Graphics and NeXT Workstations.

Supports up to 200'. Output cables not included.
TwinSplit for 13W3 Buffered 2-output 13W3 DA \$595.00
QuadSplit for 13W3 Buffered 4-output 13W3 DA. 995.00

For RGB—Supports up to 200'

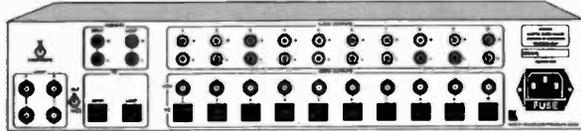
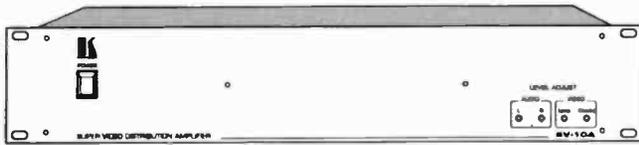
TwinSplit for RGB Buffered 2-output RGBHV distribution amplifier. Use with any RGB source. Supports H&V, composite sync, sync-on-green or sync-on-all. Input and output cables not included \$495.00
QuadSplit for RGB Buffered 4-output RGBHV distribution amplifier. Use with any RGB source. Supports H&V, composite sync, sync-on-green or sync-on-all. Input and output cables not included \$895.00

For Video and S-Video—Supports up to 250'

TwinSplit for S-Video Buffered 2-output S-Video (Y/C) distribution amplifier. Compatible with any S-Video output. Input and output cables not included \$295.00
HexiSplit for S-Video Buffered 6-output S-Video (Y/C) distribution amplifier. Compatible with any S-Video output. Input and output cables not included \$395.00
HexiSplit for Video Buffered 6-output video distribution amplifier. Compatible with any NTSC or PAL based video output or monochrome workstation. Input and output cables not included \$325.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



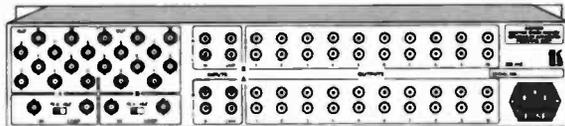
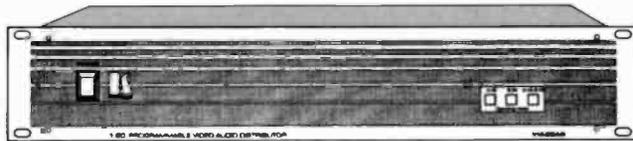


SV-10A

SV-10A/SV-5A Super and Composite Video/Audio (Stereo) Distribution Amplifiers

▪ The SV-5A and its "big brother" SV-10A split a single input consisting of separate luma or chroma channels (Y/C) and a stereo audio signal into 5 or 10 identical S-Video or composite outputs at the flip of a switch ▪ Inputs can be looped-through for cascading multiple units for any number of outputs without loss of signal quality

- SV-10A \$920.00
- SV-5A \$580.00



VM-20AR 1 x 20 Programmable Video/Stereo (Audio) Distribution Amplifier

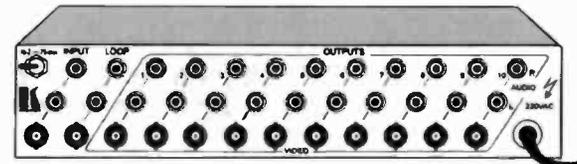
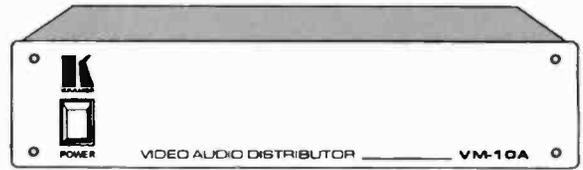
▪ Designed for studio duplication and other demanding applications ▪ Splits a single video and stereo input source into 20 identical outputs with no discernible signal degradation ▪ Contains 2 programmable looping units

- VM-20AR \$840.00

CVDA-4 Video Distribution Amplifier

▪ Most economical video-only DA ▪ Provides the budget-conscious user with 2-input, 4-output capability ▪ Can be looped and cascaded for additional outputs without line loss

- CVDA-4 \$199.00

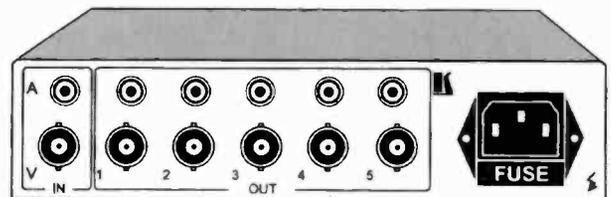
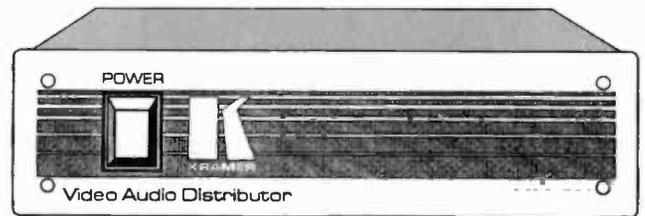


VM-10A

VM-10A Video/Audio (Stereo) Distribution Amplifier

▪ The VM-10A and its rackmounted version (VM-10AR) is a top seller suitable for a variety of video applications ▪ Allows a single input source of composite video and stereo audio to be split into 10 identical outputs ▪ Many copies of videotapes can be made at the same time by chaining multiple units through the looping inputs ▪ The reliability and cool running power supply makes this unit ideal for unattended remote applications

- VM-10A \$460.00
- VM-10AR Rackmounted version 499.00



VM-6NS Video/Audio Distribution Amplifier

▪ Improved version of a compact "workhorse" ▪ Designed for applications where a straightforward 5-output video and audio signal distributor is required ▪ Heavy-duty design and excellent reliability of the VM-6NS and its predecessors have made them the best-selling products in their class ▪ VM-6NS has a 350MHz bandwidth and stereo audio on stereo mini plugs

- VM-6NS \$329.00

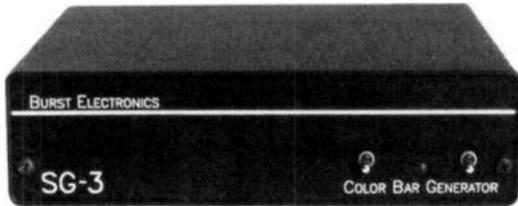
ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



SG-7 SMPTE Color Bar/Blackburst Generator

▪ Designed to provide genlock signals for a variety of video equipment, such as source decks, edit controllers, mixers, SEGs, cameras, etc. ▪ May also be used to record bars on tape or to correctly set the color and brightness of video monitors ▪ 1 output of color bars and 6 outputs of blackburst ▪ Multibuffered outputs make DAs unnecessary ▪ Optional ID programming at factory

SG-7 \$645.00



SG-3 SMPTE Color Bar Generator

▪ A single output SMPTE color bar/blackburst generator with composite NTSC video output ▪ May be used to lay down bars on tape, or to correctly set the color, hue and brightness of video monitors ▪ Front panel switch selection between SMPTE color bars or black for the output ▪ Can be factory programmed with an ID (such as station call letters) to appear on the output

SG-3 \$495.00

SG-2 Video Blackburst Generator

▪ The SG-2 blackburst generator outputs a composite "blackburst" signal ▪ This output, which contains composite sync, color burst (and 7.5 IRE setup for NTSC) is a standard 1V signal designed to be terminated into 75 ohms ▪ Can be used as a source for composite sync to drive genlock inputs, VCRs to lay down "black" (on tape), or DAs to distribute sync



SG-2 Standard composite NTSC 3.58MHz. \$195.00
 SG-2/NS NTSC S/VHS (Y/C 3.58) 235.00
 SG-2/P Standard composite PAL 4.43MHz 240.00
 SG-2/PS PAL S/VHS (Y/C 4.43) 280.00

SG-4 Video Blackburst Generator

▪ A larger version of the SG-2, this unit provides 4 separate isolated buffered outputs ▪ Includes a 1kHz tone output at 0dBm, unbalanced

SG-4 \$345.00
 SG-4 Y/C 395.00

SG-5 Video Blackburst Generator

▪ Same as the SG-4, except that there are 5 separate isolated buffered outputs

SG-5 \$495.00
 SG-5 Y/C 395.00

BCS-6003B Blackburst/Color Bar Generator

▪ Designed and manufactured by Kramer Electronics for broadcast level applications ▪ Can be used as a studio master genlock to 1 stable source, a black or color bar reference for professional video cameras that need a stable reference, a color bar generator as filler for recording in a duplication studio, or as a test and alignment tool for professional video/audio equipment ▪ Provides 3 identical blackburst outputs, a color subcarrier output, a color bar output, and two 1kHz crystal stabilized audio outputs ▪ Number of outputs can be increased by using one of Kramer's broadcast video distribution amplifiers

BCS-6003B \$599.00

VMF-2 2-Channel Mixer/Fader

▪ DC powered device which fades from A to B, B to A, or A to black via a fader bar or automatically ▪ Transition occurs upon hitting the TAKE button or an external GPI trigger ▪ Automatic transitions can be preset from 0.2 seconds (approximately 6 frames) to 6 seconds ▪ Fade bar usable as preset speed in GPI mode ▪ No input required in A to black mode ▪ Genlock sources required in A to B mode ▪ Output is DC clamped to zero volts

VMF-2 \$450.00

F2B Fade to Black Module

▪ Low cost device which fades a single video input to black (7.5 IRE) ▪ Wide bandwidth (10MHz) and low errors (0.1 difference in phase and gain) assure clean fades even with consumer level VHS decks ▪ 12VDC powered ▪ Smooth action fader bar

F2B \$250.00



KR-10 Bidirectional Composite-Y/C Transcoder

▪ Designed to interface between the 2 popular video formats— composite video and YC (Super-Video) ▪ Useful when material existing in composite video format is to be edited into a Super-Video production ▪ Fed from an external 12VDC supply ▪ Small dimensions (1 1/8"H x 6 7/8"W x 4 3/8"D) make it appropriate for field work ▪ Applications include Video Toaster Systems and satellite uplink and downlink systems

KR-10 \$229.00

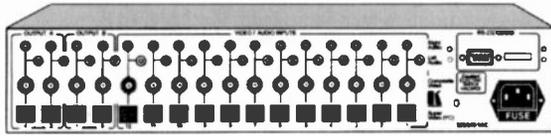
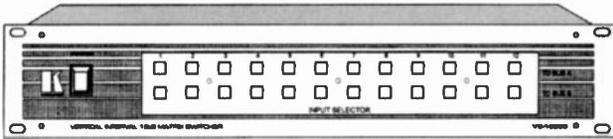
ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





Switchers

Comprehensive offers a broad selection of devices for a wide range of video and audio signal switching manufactured by Kramer Electronics. Choose between passive and electronic devices, vertical interval switching for flicker-free transitions with genlock feeds, and matrix switchers for user-directed routing of multiple signals in almost any combination of inputs and outputs.

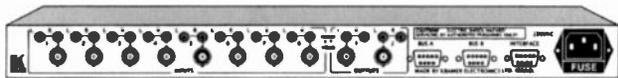
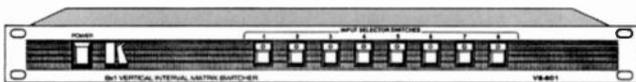


VS-1202S

VS-1202 Vertical Interval Switchers

Video/audio (stereo) switchers route 12 inputs, selectable on 2 sets of separate and parallel outputs. Audio-follow-video

- VS-1202S S-Video, composite video, stereo audio, RS-232, not loopable \$1725.00
- VS-1202 Composite video, looping inputs and stereo audio 1380.00
- VS-1202/RS-232 Same as VS-1202 with RS-232 interface 1555.00

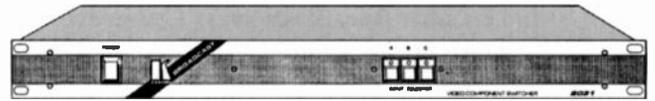


VS-401

VS-800/600/400 Series Vertical Interval Switchers

Used for applications requiring 8, 6, or 4 video/stereo-audio inputs to be switched to 1 set of parallel outputs. Audio outputs follow video. Units can be interconnected and cascaded. The VS-802, 602 and 402 models are identical, except that they provide 2 parallel outputs. RS-232 option is available for all models

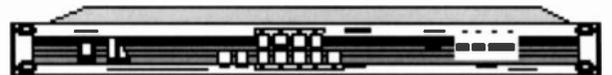
- VS-802/RS-232 \$1325.00
- VS-802 1150.00
- VS-602/RS-232 1095.00
- VS-602 920.00
- VS-801/RS-232 980.00
- VS-801 805.00
- VS-402/RS-232 980.00
- VS-402 805.00
- VS-601/RS-232 865.00
- VS-601 690.00
- VS-401/RS-232 755.00
- VS-401 580.00



BCS-2066 Matrix Switcher

- Broadcast quality 6 x 6 switcher designed for a variety of applications
- Includes adding inputs to an existing switcher or video mixer, as well as for on-air signal routing, duplication studios and surveillance systems
- Contains software protocol for component video switching (Y, U, V)
- Features electronic circuitry (no mechanical relays), DC coupled and clamped outputs, bright LED status display, low crosstalk and wide frequency response, and built-in RS-232 interface (software included)
- Video and audio can be switched independently when 2 of these units are interconnected, thereby providing "breakaway audio" while simultaneously switching SMPTE time code

BCS-2066 \$999.00



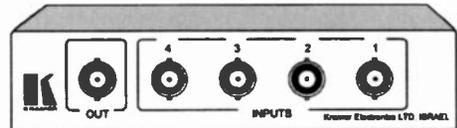
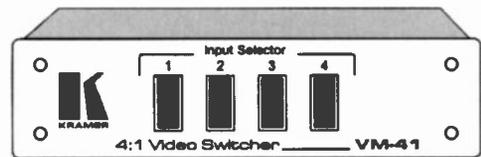
VIS 5 x 4

VIS 5 x 4 and SIS 4 x 4 Video/Stereo-Audio Matrix Switchers

- Adjustable audio output for each channel. All outputs are DC coupled.
- Includes DB-9 connector for RS-232 control.
- Video bandwidth exceeds 30MHz.
- Compact single rack height unit.
- Functions as a video/audio DA via front panel controls.
- Bright LED display of outputs.

VIS 5 x 4 \$599.00

SIS 4 x 4 4-input to 4-output video/stereo-audio vertical interval matrix switcher with S-VHS 999.00



VM-41 Passive Video-Only Switcher

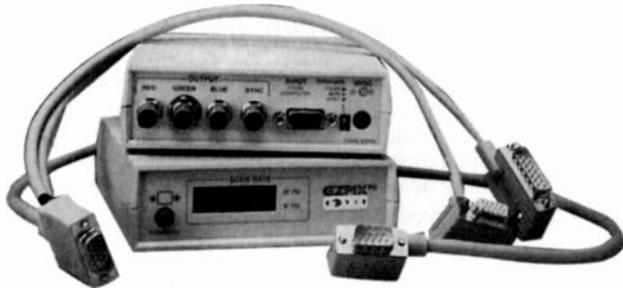
- Economical tool for switching 4 video devices to a single output
- All selected inputs are internally terminated at 75 ohms

VM-41 \$150.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



COMPUTER/VIDEO INTERFACES/ SCAN CONVERTERS



CVD 8185 EZPIXpc™ Universal Analog/ TTL Computer Interface

- Connects personal computers and workstations to projectors and data monitors
- Compatible with VGA, Super VGA, XGA, VESA, XGA-2, MAC, Quadra, PowerBook, Performa, PowerMac, and SuperMac
- 300MHz video bandwidth
- Picture centering position and scan rate combinations automatically memorized
- LCD displays source video horizontal and vertical scan rates
- RG5B and RGBS output
- Automatic: computer video termination, sync on green, cable length compensation
- Monitor breakout input cable included

The CVD 8185 computer video interface is easy to use. Covid has designed this interface to be exceptionally easy to install and use for the novice and professional user. Automatic computer video termination, sync on green, and cable length compensation are examples of features that make the CVD 8185 simple to use. An easy to read LCD displays the exact scan rates of the computer video source, answering your projector or monitor compatibility questions instantly. Picture position adjustments are automatically saved accommodating software selected video modes so the picture stays perfectly centered. A computer input cable is included that supports both IBM and Mac type personal computers.

CVD 8185 Ready for your presentation \$575.00

CVD 8184 Computer Video Interface

- Easy to use
- Covid has designed this interface to be exceptionally easy to install and use for the novice and professional user
- Automatic computer video termination, sync on green, and cable length compensation are examples of features that make the CVD 8184 simple to use
- Picture position adjustments are automatically saved accommodating software selected video modes so the picture stays perfectly centered
- A computer input cable is included that supports both IBM and Mac type personal computers

CVD 8184 Ready for your presentation \$529.00

CVD 8170 Universal Analog Computer Interface

- Connects personal computers and workstations to projectors and data monitors
- Compatible with VGA, Super VGA, XGA, VESA, XGA-2, MAC, Quadra, PowerBook, Performa, PowerMac, and SuperMac
- 250MHz video bandwidth
- Horizontal picture control
- Individually adjustable red, green, and blue gain controls
- Automatic



input selection: 1) horizontal and vertical sync, 2) composite sync or 3) sync on green input

- Accepts positive, negative or differential analog video input signals
- Color and monochrome input and output
- RGBS output
- Computer input cables available

The CVD 8170 computer video interface provides flexibility. Covid has designed this interface to be exceptionally rugged and easy to install and use for the professional user. Calibrated, individually adjustable red, green, and blue gain controls are examples of features that make the CVD 8170 a favorite with professionals. "Zero Drift" positioning of <150ns drift from 50° to 150°F helps ensure picture adjustments are maintained throughout long presentations. Covid offers cables for both IBM and Mac type personal computers, as well as BNC input cables and breakout cables for 13W3 based workstations

CVD 8170 Ready for your presentation \$475.00



CVD 7172 EZscan™ Super VGA & MAC Scan Converter

- Converts VGA, SVGA up to (800 x 600) and MAC (640 x 480) computer video signals to a television video signal (NTSC)
- True digital frame buffer technology for flicker-free operation
- Front panel controls for horizontal size and position, vertical size and position, picture brightness, and freeze frame
- Loophthrough for local monitor
- VGA and MAC input cables included
- Composite and S-VHS/S-Video output cables included

The CVD 7172 EZscan converts computer video signals for use with television monitors, projectors, video recorders, and video distribution. This small, portable unit has all the features you need for simply sharing your computer based presentations. The EZscan scan converter is compatible with personal computer operating systems and does not require any special software to be installed.

CVD 7172 Ready for your presentation \$695.00

CVD 7170 EZscan VGA Scan Converter

- Converts VGA, (640 x 480 - 60Hz) computer video signals to a television video signal (NTSC)
- Front panel switch for underscan/overscan, vertical image position control, and flicker reduction
- Loophthrough for local monitor
- VGA input cable included
- Composite and S-VHS/S-Video output cables included

The CVD 7170 EZscan VGA Scan Converter converts computer video signals for use with television monitors, projectors, video recorders, and video distribution. This small, portable unit has the basic features you need for simply sharing your computer based presentations. The EZscan scan converter is compatible with personal computer operating systems and does not require any special software to be installed.

CVD 7170 Ready for your presentation \$475.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





CVD 5108 RGBS, RG₅B Switcher, 8-Input, 1-Output

▪ Routes selected input to a monitor or projector ▪ Electronically switched input channels for red, green, blue video, and analog or digital sync ▪ Front panel channel selection buttons ▪ Optional wired, infrared or RS-232 control ▪ Input and output on BNC connectors ▪ Selectable sync output levels of 1.0V or 3.5V ▪ 300MHz video bandwidth ▪ Rackmountable ▪ External 110V or 220V power adaptor included

CVD 5108 Ready for your presentation \$1095.00

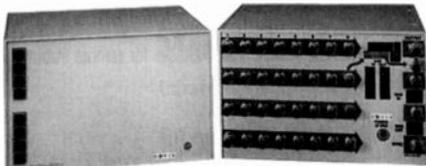
CVD 5104 RGBS, RG₅B Switcher, 4-Input, 1-Output

▪ Routes selected input to a monitor or projector ▪ Electronically switched input channels for red, green, blue video, and analog or digital sync ▪ Front panel channel selection buttons ▪ Optional wired, infrared or RS-232 control ▪ Input and output on BNC connectors ▪ Selectable sync output levels of 1.0V or 3.5V ▪ 300MHz video bandwidth ▪ Rackmountable ▪ External 110V or 220V power adaptor included

CVD 5104 Ready for your presentation \$995.00

CVD 9008 RGBS, RG₅B Distribution Amplifier, 1-Input, 8-Output

▪ Individually buffered outputs for data monitors, LCD panels or projectors
 ▪ Compatible with analog computer video signals on BNC connectors



▪ Adjustable RGB gain distribution amplifier ▪ Selectable sync output levels of 1.0V or 3.5V ▪ 300MHz video bandwidth ▪ Rackmountable ▪ External 110V or 220V power adaptor included

CVD 9008 Ready for your presentation \$775.00

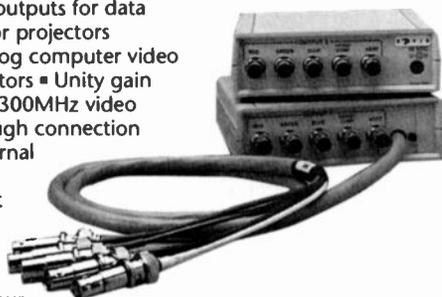
CVD 9004 RGBS, RG₅B Distribution Amplifier, 1-Input, 4-Output

▪ Individually buffered outputs for data monitors, LCD panels or projectors ▪ Compatible with analog computer video signals on BNC connectors ▪ Adjustable RGB gain distribution amplifier ▪ Selectable sync output levels of 1.0V or 3.5V ▪ 300MHz video bandwidth

▪ Rackmountable ▪ External 110V or 220V power adaptor included
 CVD 9004 Ready for your presentation \$650.00

CVD 9002 RGBHV, RGBS, RG₅B Distribution Amplifier, 1-Input, 2-Output

▪ Individually buffered outputs for data monitors, LCD panels or projectors
 ▪ Compatible with analog computer video signals on BNC connectors ▪ Unity gain distribution amplifier ▪ 300MHz video bandwidth ▪ Loophrough connection for local monitor ▪ External 110V or 220V power adaptor and BNC input cable supporting male or female connection included



CVD 9002 Ready for your presentation \$375.00

CVD 9702 SUN Distribution Amplifier, 1-Input, 2-Output

▪ Individually buffered outputs for data monitors, LCD panels or projectors ▪ Compatible with SUN type video signals on 13W3 type connectors ▪ Unity gain distribution amplifier ▪ 300MHz video bandwidth ▪ Loophrough connector for local monitor ▪ External 110V or 220V power adaptor and SUN type cable included

CVD 9702 Ready for your presentation \$350.00

CVD 9804 MAC Distribution Amplifier, 1-Input, 4-Output

▪ Individually buffered outputs for data monitors, LCD panels or projectors ▪ Compatible with MAC type video signals on 15-pin D connectors ▪ Unity gain distribution amplifier ▪ 300MHz video bandwidth ▪ Loophrough connector for local monitor ▪ External 110V or 220V power adaptor and MAC type input cable included

CVD 9804 Ready for your presentation \$275.00

CVD 9802 MAC Distribution Amplifier, 1-Input, 2-Output

▪ Individually buffered outputs for data monitors, LCD panels or projectors ▪ Compatible with MAC type video signals on 15-pin D connectors ▪ Unity gain distribution amplifier ▪ 300MHz video bandwidth ▪ Loophrough connector for local monitor ▪ External 110V or 220V power adaptor and MAC type input cable included

CVD 9802 Ready for your presentation \$240.00



CVD 9904 SVGA Distribution Amplifier, 1-Input, 4-Output

▪ Individually buffered outputs for data monitors, LCD panels or projectors ▪ Compatible with VGA type video signals on 15-pin HD connectors ▪ Unity gain distribution amplifier ▪ 300MHz video bandwidth ▪ Loophrough connector for local monitor ▪ External 110V or 220V power adaptor and VGA type input cable included

CVD 9904 Ready for your presentation \$260.00

CVD 9902 SVGA Distribution Amplifier, 1-Input, 2-Output

▪ Individually buffered outputs for data monitors, LCD panels or projectors ▪ Compatible with VGA type video signals on 15-pin HD connectors ▪ Unity gain distribution amplifier ▪ 300MHz video bandwidth ▪ Loophrough connector for local monitor ▪ External 110V or 220V power adaptor and VGA type input cable included

CVD 9902 Ready for your presentation \$215.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



MEDIA CONTROL SYSTEMS/CONTROL PANELS/TRANSMITTERS



Cresnet II MiniSystem Integrated Remote Control System

- 6 IR/serial/RS-232 ports
- 8 switch/contact inputs or solid-state outputs
- 16 isolated relay closures
- 2 bidirectional RS-232 or RS-422



communication ports with hardware handshaking

- 2 expansion slots accept Cresnet II control cards for added flexibility
- Supports all Crestron network panels and devices
- 75W power supply
- Dimensions: 3½"H x 19"W x 9½"D
- Weight: Approximately 14 lbs. with 2 optional control cards
- System software included
- Custom programming as required \$1800.00

Cresnet II Modular Media Control Systems

- Very friendly software
- Centralized software
- Symbolic graphic programming
- Symbolic editor
- Software utilities
- Software drivers
- Field programmable
- Co-pilot mode
- Plug-in card system
- Modular
- International power supply
- High function density
- Expansion rack
- Local area network
- Disk storage
- Infrared wireless
- Ease of installation
- Custom programming as required POR*

CNRACK Holds 10 control modules; supplied with CNMU master computer, CNPMM power management module. \$1950.00

Spectrum Wireless Touchpanels

- Exclusive RF technology
- Extended range and sleek design
- 6"-10" available
- Grayscale or color displays
- 1-way or bidirectional communications
- Adjustable tilt or handheld models
- Enjoy "Real Freedom" for small- to medium-sized boardrooms, conference centers, home theaters and whole-house control applications



- | | | |
|-----------|--|-----------|
| STX-3500C | 10" diagonal active matrix color touchscreen; 2-way RF; adjustable tilt enclosure. . . \$5500.00 | STX-3500C |
| STX-3000C | 10" diagonal color touchscreen; 2-way RF; adjustable tilt enclosure. \$4500.00 | |
| STX-3000 | 10" diagonal grayscale touchscreen; 2-way RF; adjustable tilt enclosure. 3450.00 | |
| ST-1500C | 6" diagonal color touchscreen; 1-way RF; angled molded enclosure 2400.00 | |
| STX-1500 | 6" diagonal grayscale touchscreen; 2-way RF; adjustable tilt enclosure. 2325.00 | |
| ST-1500 | 6" diagonal grayscale touchscreen; 1-way RF; angled molded enclosure 1350.00 | |

SmarTouch STS Wireless Control System

- Total, integrated solution for wireless remote control of virtually any electronic equipment or subsystem
- STS 6" diagonal LCD touchscreen communicates via radio frequency (RF) signals to the control processor, discreetly placed in the room
- Electronic equipment interfaces with the Control Processor
- Grayscale or color touchscreen
- High-clarity LCD touchscreen displays your choice of custom icons and graphics
- Lightweight touchscreen case is easily held in one hand
- Advanced Crestron RF technology allows complete freedom of movement—up to 300'—through walls, indoors or outside
- Interfaces with X-10 equipment
- Control processor includes Cresnet II network port for unlimited expansion
- Exclusive Crestron/Windows software gives you system programming options—use the included templates or create fully customized environments



- | | |
|-------|---|
| STS-C | SmarTouch System; RF; includes ST-1500C color touchscreen and ST-CP Control Processor \$3900.00 |
|-------|---|

- | | |
|-------|---|
| STS | SmarTouch System; RF; includes ST-1500 grayscale touchscreen and ST-CP Control Processor. . . \$2500.00 |
| ST-BC | SmarTouch Power Recharger; includes two ST-BP and high speed charger 375.00 |
| ST-BP | SmarTouch Rechargeable Power Pack 75.00 |
- Note: System interface modules and other user interfaces also available. Please call for availability and price.

Wired Control Panels

- All wired panels below operate on a 4-conductor network and have LED feedback indicators
 - Console panels are premounted in elegantly styled enclosures of high impact molded plastic with black lacquer trim
 - All panels include custom engraving, colored switch caps, choice of button configurations and panel finishes
 - Control panels may be positioned up to 1000' from the control rack
 - Wall mounted panels also available
- | | |
|-------------|---|
| CNWPBG2-64 | 64-function lectern; 2 bar graphs \$1200.00 |
| CNWP-64 | 64-function lectern 975.00 |
| CNPI-48I | Custom panel interface; up to 48 buttons; incandescent. 878.00 |
| CNPI-48L | Custom panel interface; up to 48 buttons; LED . . 878.00 |
| CNLCND-32 | Horizontal LCD 2-line display; 32 function buttons; lectern 825.00 |
| CNLCNDH-32 | Horizontal LCD 2-line display; 32 function buttons; handheld. 825.00 |
| CNWMBG2-34A | 34-function wall mount panel; 2 bar graphs; mounts in a 4-gang electrical box. 750.00 |
| CNWPBG2-32 | 32-function lectern; 2 bar graphs 713.00 |
| CNWPBG2-32B | 32-function console; 2 bar graphs 713.00 |
| CNWM-29A | 29-function wall mount panel; mounts in a 2-gang electrical box 675.00 |
| CNWM-10A | 10-function wall mount panel; mounts in a 1-gang electrical box 525.00 |
| CNWMBG-10A | Same as CNWM-10A, includes 1 bar graph . . . 525.00 |
| CNWP-32 | 32-function lectern 488.00 |
| CNWP-32B | 32-function console 488.00 |
- Special configurations, panel sizes and finishes are available on request. Custom wood enclosure is available for lectern mount panels. Please call for availability and price.

Handheld LCD Wireless Transmitters

- Units are housed in high impact, black plastic enclosure
 - CNLCDIRHT and CNLDRFHT transmitters have a high contrast back lit horizontal LCD display
 - Multiple function capability using 4 "soft" keys and up to 28 function keys
 - CNLCD series dimensions: 5.7"H x 3.6"W x 1.3"D
 - EasyKey Transmitters have a vertical LCD display which permits the viewing of up to 10 user-defined function keys simultaneously
 - Utilize up to 64 "pages" of programmable menus and function buttons
 - EasyKey dimensions: 7.5"H x 4.5"W x 1.3"D
 - Requires appropriate wireless receiver
- | | |
|-----------|--|
| CNEK-IR | EasyKey transmitter with vertical LCD; IR. \$1350.00 |
| CNEK-RF | EasyKey transmitter with vertical LCD; RF 1350.00 |
| CNEKI-IR | Same as CNEK-IR; for international use 1485.00 |
| CNEKI-RF | Same as CNEK-RF; for international use 1485.00 |
| CNLCDIRHT | With horizontal LCD; IR. 900.00 |
| CNLCDFHT | With horizontal LCD; RF 900.00 |
| CNLCDP | Programming unit; for use with CNLCDIRHT or CNLCDFHT. Required only for initial purchase of either unit above 300.00 |

Handheld Wireless Transmitters

- Wireless transmitters are housed in high impact, black plastic enclosure
 - All panels include custom engraving, colored switch caps, choice of button configurations and panel finishes
 - Requires appropriate wireless receiver
 - Dimensions: 15- and 30-function, 6.5"H x 2.75"W x 0.8"D
- | | |
|-----------|------------------------------------|
| CNIRHT-30 | 30-function; IR \$450.00 |
| CNRFHT-30 | 30-function; RF 450.00 |
| CNIRHT-15 | 15-function; IR 263.00 |
| CHRFHT-15 | 15-function; RF 263.00 |
- *Price On Request

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





TOUCH PANEL CONTROLS

Crestron VisionTouchSM VT-4000L Multimedia Color Touchscreen Control Panel

- Full-color video and computer graphics display
- Full-color palette for control graphics display
- Simultaneous display of up to 4 video sources with computer and control graphics
- Supports NTSC/S-Video/PAL video formats
- Supports IBM/Mac/Sun computer formats up to 71.7kHz
- Imports photographs, drawings and icons
- Pop-up subpanels reduce memory requirements, providing optimal speed and performance
- Allows video windows-within-windows
- RS-232 interface for stand-alone applications
- Operates on the Cresnet II or II MS Control System Network
- 8.7"H x 6.6"W (10.4" diagonal) screen
- Ideally suited to applications where simultaneous video, computer graphics and control graphics are required



VT-4000L	Lectern mount	\$12,750.00
VT-4000W	Wall mount	13,125.00
VisionVGA	Same as VT-4000L, but without integrated color LCD display; connects to any outboard VGA display	5,250.00
VisionPC	Windows [®] based software package; allows creation and use of custom control panels on PC; requires CNSNET interface	1,200.00
CNSNET	Cresnet to RS-232 interface. For use with VisionPC	563.00

Crestron VideoTouchSM VT-3500 Active-Matrix Video Touchscreen Control Panel

- Display full-screen video with just a touch
- Scale video windows to any size
- Pop-up windows (subpanels) expand your control options
- Video input: 2 video BNC input connectors
- DB-15HD VGA output
- 10.4" XtraBrite active-matrix display
- Real time video with NTSC/PAL/S-VHS capabilities
- Multimedia options include: microphone, audio playback and headphone jack
- Design control panel pages with VisionTools for Windows
- Import photos, icons, drawings
- RS-232 interface for stand-alone applications
- Operates on the Cresnet II Control System Network
- Available in tilt case, lectern or wall mount



VT-3500	Tilt enclosure	\$5,100.00
VT-3500L	Lectern mount	5,100.00

Crestron ColorTouchSM CT-3500 Active-Matrix Color Touchscreen Control Panel

- Incorporate color icons and dynamic feedback graphics
- Import photographs, icons and drawings; download custom
- Pop-up windows (subpanels) expand your control options
- 10.4 inch XtraBrite active-matrix display
- Increased memory
- Multimedia options include: microphone, audio playback, headphone jack
- Design control panel pages with VisionTools for Windows
- Import photos, icons, drawings
- RS-232 interface for stand-alone applications
- Operates on the Cresnet II Control System Network
- Optional feature button panel
- Available in adjustable tilt case or lectern mount

CT-3500	Tilt enclosure	\$4,500.00
CT-3500L	Lectern mount	4,500.00

Crestron ColorTouch CT-1500 Color Touchscreen Control Panel

- For applications where a low profile, high clarity touchscreen is needed
- 6" screen
- Slim tilt case
- Simplified color palette
- Pop-up subpanels reduce memory requirements, providing optimal speed and performance
- Multiple button, slider control and icon configurations
- Up to 999 functions and 96 screens
- Imports color photographs, drawings and icons
- Supports downloadable fonts—proportional and nonproportional
- Foreign language text
- RS-232 interface for stand-alone applications
- Operates on the Cresnet II Control System Network
- Optional feature button panel
- Printout of screen designs on standard printer



CT-1500B

CT-1500	Tilt enclosure	\$2,100.00
CT-1500B	Tilt enclosure with feature button panel	2,475.00
CT-1500L	Lectern mount	2,100.00
CT-1500BL	Lectern mount with feature button panel	2,475.00
CT-1500W	Wall mount	2,363.00

Crestron BriteTouchSM LC-3000 Grayscale Touchscreen Control Panel

- Ideally suited to any application requiring quick recognition of multiple, on-screen control graphics
- 10" screen
- 256-shade gray-scale display
- Slim tilt case
- Pop-up subpanels reduce memory requirements, providing optimal speed and performance
- Multiple button, slider control and icon configurations
- Up to 999 functions and 96 screens
- Imports photographs, drawings and icons
- Supports downloadable fonts—proportional and nonproportional
- Foreign language text
- RS-232 interface for stand-alone applications
- Operates on the Cresnet II or Cresnet II MS Control System Network
- Optional feature button panel
- Printout of screen designs on standard printer

LC-3000	Tilt enclosure	\$2,400.00
LC-3000B	Tilt enclosure with feature button panel	2,775.00
LC-3000L	Lectern mount	2,400.00
LC-3000BL	Lectern mount with feature button panel	2,775.00

Crestron BriteTouch LC-1500 Grayscale Touchscreen Control Panel

- Well-suited to any application where the price/performance issue is paramount
- 6" screen
- Slim tilt case
- Simplified grayscale display
- Pop-up subpanels reduce memory requirements, providing optimal speed and performance
- Multiple button, slider control and icon configurations
- Up to 999 functions and 96 screens
- Imports photographs, drawings and icons
- Supports downloadable fonts—proportional and nonproportional
- Foreign language text
- RS-232 interface for stand-alone applications
- Operates on the Cresnet II Control System Network
- Optional feature button panel
- Printout of screen designs on standard printer

LC-1500	Tilt enclosure	\$1,500.00
LC-1500B	Tilt enclosure with feature button panel	1,875.00
LC-1500L	Lectern mount	1,500.00
LC-1500BL	Lectern mount with feature button panel	1,875.00
LC-1500W	Wall mount	1,763.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



MEDIA RETRIEVAL/ DISTANCE LEARNING



Crestron SchoolNetSM Media Resource Management and Distance Learning System

SchoolNet is an interactive multimedia network that integrates voice, video and data on tomorrow's information highway. SchoolNet links individual classrooms or entire schools to a central Media Center which houses numerous multimedia resources. Media resources such as VCRs, laserdiscs and computers can be remotely accessed and controlled on a scheduled basis using a variety of remote controls in the classroom, including a wireless handheld transmitter (MRHC), wired control panel (MRWP or MRWPLCD), wireless keyboard interface (MRKB), telephone and computer.

SchoolNet features an open architecture design to support expansion and integration of any media. This software based system supports control over every multimedia device on the market today, including CD-Interactive, CD-ROM, video cameras and much more. Classrooms or media sources can be easily added or changed within the network with simple software modifications. SchoolNet supports both RF Broadband and Baseband/Fiber Optic network wiring architectures.

Applications include media retrieval and management, interactive distance learning, teleconferencing, study carrels, libraries, training facilities, and auditoriums. Other custom applications may be configured with existing hardware and modified software.

- Unlimited advanced scheduling of media events
- System software available in MS-DOS, Apple, or Microsoft WindowsTM
- Remote scheduling from classroom controller or computer LAN
- Interactive on-screen display
- Extensive help menus
- Source assignment by usage
- Courseware database and cataloging system
- View room and view channel functions
- Usage logs
- Master control of all classroom TV/monitors
- All-call and zone paging
- Master clock synchronization
- Messaging and E-mail
- Supports classroom use with the Laserdisc Barcode Wand
- Lesson Manager software and multimedia authoring

SchoolNet System Components

MRMT-21 RF Classroom System

- Provides access to all system features
- Internal RF broadband LAN
- Supports laserdisc barcode readers
- Supports wireless PC keyboards
- Auxiliary serial and parallel ports
- Supports alarm inputs and tamper detection
- Simple installation on existing bidirectional cable systems
- UL approved power pack



CNTV Classroom Media and Data Terminal

- Provides access to all system features
- Full-duplex RS-485 communication
- Provides visual feedback of system functions
- Synchronized clock
- Auxiliary serial and parallel ports
- Supports video all-call and zone paging
- Supports laserdisc barcode readers
- Supports wireless PC keyboards
- Supports alarm inputs and tamper detection
- UL approved power pack
- Optional large, easily viewed 5-character display

MRWP/MRWPLCD Classroom Wired Control Panels

- Commercial grade construction
- Color-coded buttons
- LED feedback indication of function status
- Tactile feedback
- Ergonomic design
- Simple 1-button-per-function design
- Used with MRMT-21 or CNTV
- 4-line by 20-character display for visual real time feedback (MRWPLCD only)

MRHC Classroom Wireless Handheld Remote Controls

- Commercial grade construction
- High power long range IR or RF control
- Color-coded buttons
- Tactile feedback
- Ergonomic design
- Simplicity of 1-button-per-function design
- Low battery indicator
- Integral universal barcode wand connector
- Used with MRMT-21 or CNTV



MRENC-1 Classroom Wall Enclosures

- Rugged metal construction
- Mountable wired control panels (MRWP or MRWPLCD)
- Hand control storage compartment
- Simplicity of 1-button-per-function design
- Low battery indicator
- Integral universal barcode wand connector
- Used with MRMT-21 or CNTV

MRENC-2 Classroom Wall Enclosure

- Rugged metal construction
- Mountable wired control panels (MRWP or MRWPLCD)
- Hand control storage compartment for MRHC
- Custom configured input/output panel
- Locking hinged door
- Surface or flushmounting
- Space to mount classroom telephone, dimensions: 10.50" H x 13.75" W x 5.65" D

CNRACK Central Control System Rack

- Plug-in card design
- 1 rack controls as many as 80 media sources
- Easily expandable to support an infinite number of sources
- Controls media sources of any make or manufacturer
- Software based communication network
- Supports simultaneous communication to all devices
- Source control provided via software device drivers
- Extensive diagnostic software program

MRTX Media Center RF Broadband Transceiver

- Creates high-speed control data LAN on a cable TV system
- Supports multiple media centers or remote hubs
- Supports inter-building communication
- Supports communication with up to 5000 classrooms
- Supports SUB, MID and HIGH split RF distribution systems
- LED diagnostic indicators
- No additional head end equipment required for classroom expansion
- Connect to Agile Modulator if input for data transmission

MRKB Wireless Keyboard Interfaces

- Interface a standard MS-DOS or Apple keyboard to the MRMS
- Simple operation
- Powerful IR wireless transmission
- Low battery indicator
- Auto power off
- Standard 9V battery

MRKB Keyboard and wireless interface

MRKB-WD MS-DOS computer interface

MRKB-WA Apple computer interface

Call For Pricing

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

See Our Ad on Page 23



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PZM®, PCC® and Desktop Microphones

- A PZM mic uses an electret-condenser capsule, mounted so it faces a surface and lies within the pressure zone ▪ All incoming sound is received free of coloration caused by phase interference between direct and reflected sound
- Hemispherical sound pickup pattern

PZM-6D Black, switchable for flat or rising response \$369.00

PZM-10 105.00

PZM-11 Security and surveillance mic. Inconspicuous, mounts in electrical box. Screw terminal output. 75.00

PZM-11LL Same as PZM-11, except line level, 24VAC power 129.00

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. . . 339.00

PZM-30D Black, switchable for flat or rising response 369.00

PZM-185 Tabletop, handheld or adaptor mounted mic. Built-in power supply interface, phantom power or internal battery. Fiber-reinforced high impact plastic body and boundary. 7" long. XLR connector . . . 199.00

PCC-160 Supercardioid surface mounted mic for stage floors, lecterns and news desks. Increases gain-before-feedback and rejects unwanted sounds to the rear. Male XLR connector on 15' cable, B/W 309.00

PCC-170 Same as PCC-160, but elegantly styled for conference tables. Black \$299.00

PCC-170GT Black, gated version of the PCC-170 299.00

PCC-170GT/SSP Black, gated version of the PCC-170 with ¼" stereo phone plug (special order) 299.00

PCC-170SW Black, multifunction membrane switch version of PCC-170 299.00

PCC-170 SW/SPP Black, gated version of the PCC-170SW with ¼" stereo phone plug (special order) 299.00

PCC-130 Like PCC-170 but smaller, cardioid, B/W. 285.00

LM-200A 17" supercardioid lectern mic with noise-free swivel mount, black or brown, phantom powered or optional plug-in PS-24, 24V supply 309.00

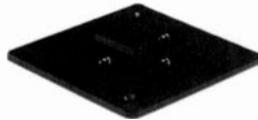
LM-300A Economical and elegant miniature gooseneck mic, low-cut filter, natural sound, 17" phantom powered 265.00

LM-300AL Same as LM-300A but 5" longer, dual goosenecks . . 265.00

LM-301A Similar to LM-300A/300AL with ¾" - 27 threaded adaptor for use with mating ¾" flange, mic stand, or boom. . . 295.00



PZM-6D



PZM-20R



PZM-185



PCC-160



D-150A II

D Series Single or Dual Channel Power Amplifiers

Common Features

- AB+B circuitry assures efficient use of output transistors while also incorporating protection against shorted, open, mismatched or low impedance loads ▪ Convection cooled ▪ Controls: Channel 1 and 2 level controls, ground lift switch, stereo/mono switch ▪ Color-coded dual binding posts (banana jacks) ▪ 3-wire male connector AC line attached to a 5' cable ▪ 19" standard rackmount

DC-300A II

▪ 110dB below rated output from 20Hz to 20kHz ▪ Maximum average output power: 175W-8 ohms, 305W-4 ohms ▪ 7"H x 9.75" depth behind mounting surface ▪ 45 lbs. \$1395.00

D-150A II

▪ 110dB below rated output from 20Hz to 20kHz ▪ Maximum average output power: 95W-8 ohms, 155W-4 ohms ▪ 5.25"H x 8.75" depth behind mounting surface ▪ 10 lbs. \$1025.00

D-75A

▪ 40W per channel into 8 ohms ▪ Bridged mode—110W into 8 ohms (1kHz, >0.1%) THD ▪ Ideal for variety of broadcast and professional applications ▪ Detented front panel controls ▪ IOC indicator provides an alert if distortion exceeds .05% ▪ Barrier block outputs for solid, fail-safe connection \$625.00



D-45

▪ Includes same features as D-75A, except: ▪ Delivers 25W into 8 ohms ▪ Bridged mode—70W into 8 ohms \$475.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

CAMERA SUPPORT EQUIPMENT



Camera Support Systems

Common Features:

Fluid Head = Pan Rotation: 360° = Base: Claw ball type = Drag: Variable viscosity system = Lock Devices: Caliper type = Handle Length: 14-22" Tripod = Spreader: Pull ring and hook = Leg Lock: Radial compression = Spikes: Rubber cover pads

System 45 Tripod/Head/Spreader With Dual Telescopic Handles

EFP40 Fluid Head = Load Capacity: (C.G.=5") 45 lbs. = Tilt Angle: +90°/-80° = Height (with ball): 7.50" = Width (less handle): 7.50" = Base: 100mm = Weight: 6.75 lbs.
 TD35 Tripod = Load Capacity: 40 lbs. = Min. Height: 17" = Max. Height: 68" = Min. Folded Length: 35" = Min. Folded Width: 6" = Bowl Diameter: 100mm = Weight: 7.55 lbs. = Includes soft case
 System 45 EFP \$5950.00

System 40 Tripod/Head/Spreader With Dual Telescopic Handles

EFP40 Fluid Head = Load Capacity: (C.G.=5") 45 lbs. = Tilt Angle: +90°/-80° = Height (with ball): 7.50" = Width (less handle): 7.50" = Base: 100mm = Weight: 6.75 lbs.
 TD30S Tripod = Load Capacity: 55 lbs. = Min. Height: 26" = Max. Height: 68" = Min. Folded Length: 35" = Min. Folded Width: 6" = Bowl Diameter: 100mm = Weight (w/spreader): 7.95 lbs
 System 40 EFP \$5795.00



System 35 Tripod/Head/Spreader With Telescopic Handle

ENG35 Fluid Head = Load Capacity: (C.G.=5") 30 lbs. = Tilt Angle: +90°/-80° = Height (with ball): 7.50" = Width (less handle): 6.25" = Base: 100mm = Weight: 6 lbs.
 TD35 Tripod = Load Capacity: 40 lbs. = Min. Height: 17" = Max. Height: 68" = Min. Folded Length: 35" = Min. Folded Width: 6" = Bowl Diameter: 100mm = Weight: 7.55 lbs. = Includes soft case
 System 35 ENG \$5195.00
 System 35C With carbon fiber legs \$595.00

System 30 Tripod/Head/Spreader With Handle/Dual Handles

ENG30 Fluid Head = Load Capacity: (C.G.=5") 30 lbs. = Tilt Angle: +90°/-80° = Height (with ball): 7.50" = Width (less handle): 6.25" = Base: 100mm = Weight: 6 lbs.
 TD30 Tripod = Load Capacity: 40 lbs. = Min. Height: 26" = Max. Height: 68" = Min. Folded Length: 35" = Min. Folded Width: 6" = Bowl Diameter: 100mm = Weight: 6.95 lbs.
 System 30 ENG With tube handle and soft case \$4795.00
 System 30 EFP With dual telescopic handles 4995.00
 System 30 CENG Carbon fiber, with MLS or floor spreader, tele handle and case 5500.00

System 28 Tripod/Head/Spreader With Telescopic Handle

ENG27A Fluid Head = Load Capacity: (C.G.=5") 8-30 lbs. = Tilt Angle: ±88° = Height (above tripod base): 6.38" = Width (less handle) 6" = Weight: 6.25 lbs. = Lock Devices: Positive caliper
 TD30 Tripod = Load Capacity: 40 lbs. = Min. Height: 26" = Max. Height: 68" = Min. Folded Length: 35" = Min. Folded Width: 6" = Bowl Diameter: 100mm = Weight: 6.95 lbs.
 System 28 \$3900.00

System 27ENG Tripod/Head/Spreader With Telescopic Handle

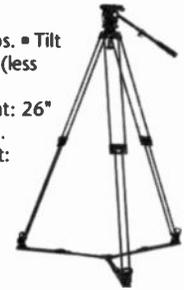
ENG27A Fluid Head = Load Capacity: (C.G.=5") 8-30 lbs. = Tilt Angle: ±88° = Height (above tripod base): 6.38" = Width (less handle) 6" = Weight: 6.25 lbs. = Lock Devices: Positive caliper
 TD 20 Tripod = Load Capacity: 40 lbs. = Min. Height: 26" = Max. Height: 68" = Min. Folded Length: 34" = Min. Folded Width: 5" = Bowl Diameter: 75mm = Weight: 5.70 lbs.
 System 27ENG \$3550.00

System 25 Tripod/Head/Spreader With Telescopic Handle

ENG20 Fluid Head = Load Capacity: (C.G.=5") 20 lbs. = Tilt Angle: +90°/-70° = Height (with ball): 6.50" = Width (less handle): 5" = Base: 75mm = Weight: 4.05 lbs.
 TD25 Tripod = Load Capacity: 30 lbs. = Min. Height: 17" = Max. Height: 63" = Min. Folded Length: 35" = Min. Folded Width: 5" = Bowl Diameter: 75mm = Weight: 6.90 lbs.
 System 25 \$2925.00

System 20 Tripod/Head/Spreader With Telescopic Handle

ENG20 Fluid Head = Load Capacity: (C.G.=5") 20 lbs. = Tilt Angle: +90°/-70° = Height (with ball): 6.50" = Width (less handle): 5" = Weight: 4.05 lbs.
 TD25 Tripod = Load Capacity: 30 lbs. = Min. Height: 26" = Max. Height: 63" = Min. Folded Length: 35" = Min. Folded Width: 5" = Bowl Diameter: 75mm = Weight: 5.90 lbs. = Spreader: Pull ring and hook = Leg Lock: Radial compression
 System 20 \$2750.00
 System 20C With carbon fiber legs and soft case \$3350.00



System 15 Tripod/Head With Spider and Telescopic Handle

ENG15 Fluid Head = Load Capacity: (C.G.=3") 22 lbs. = Tilt Angle: +90°/-80° = Height (with ball): 6.50" = Width (less handle): 4.50" = Weight: 4.10 lbs. = Lock Devices: Pressure type = Handle Length: 14" to 22"
 TD15 Tripod = Load Capacity: 30 lbs. = Min. Height: 29" = Max. Height: 64" = Min. Folded Length: 34" = Min. Folded Width: 5.50" = Bowl Diameter: 75mm = Weight: 5.15 lbs. = Spider: Integral = Leg Lock: Radial compression = Spikes: Dual with rubber cover pads
 System 15 \$1375.00



System 3 Tripod/Head With Spider and Handle

Load Capacity: 10 lbs. = Min. Height: 22" = Max. Height: 57" = Folded Length: 32" = Folded Width: 4.50" = Tilt Angle: ±90° = Ball Base: 50mm = Camera Plate: 1/4-20 camera screw with alignment pin = Weight: 5.50 lbs. = Handle: 20" = Pan/Tilt Action: Preset high viscosity fluid dampening
 System 3 \$480.00

System 2 Tripod/Head With Spider and Handle

Load Capacity: 8 lbs. = Min. Height: 22.50" = Max. Height: 53.50" = Folded Length: 24" = Folded Width: 5" = Tilt Angle: +90°/-70° = Ball Base: 50mm = Camera Plate: 1/4-20 camera screw with alignment pin = Weight: 4.30 lbs. = Handle: 14" = Pan/Tilt Action: Preset high viscosity fluid dampening
 System 2 \$330.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





CAMERA SUPPORT EQUIPMENT

System 50 Portable Studio Camera Pedestal System

- System comprised of TP50 portable pedestal and EFP40B fluid head
- Lightweight, compact portable unit
- Pneumatic center column has 3 elevation stages
- Pneumatics utilizing slipper ring seals and glass ball bearing guide rollers provide smooth, leak-proof operation
- Total elevation adjustment set mechanically and pneumatically
- 20 lbs. of hand pressure required to adjust elevation
- Includes hand pump, pressure valve, and gauge check valve for pressurizing the system
- 100mm attachment bowl provides 90° tilt angle for pan head
- Triangular base supported by 3 sets of 5" diameter dual boggy wheels with adjustable cable guards and 3-position inline track locks
- Combination axial and radial wheel brakes provided
- TP50 is a 2-section design weighing 37 lbs.
- Load capacity: 70 lbs.
- Max. height: 62" Min. height: 31"



System 50	TP50 pedestal and EFP40B fluid head	\$8995.00
TP50	Pedestal only	4550.00
EFP40B	Fluid head for use with TP50	4750.00

DOLLIES

DL40 Dolly for Systems 28, 30, 35 and 40

- Load Capacity: 65 lbs.
- Radius: 26" Wheel Diameter: 5.50"
- Folded Length: 28" Folded Width: 9.25"
- Height: 8" Weight: 12.50 lbs.
- Wheel Bearing: Needle Tire: Poly Finish: Black satin



DL40..... \$1050.00

DL30 Dolly for Systems 20, 25, 27, 28, 30, 35

- Load Capacity: 65 lbs. Radius: 23" Wheel Diameter: 5.50"
- Folded Length: 25" Folded Width: 9" Height: 8" Weight: 11.70 lbs.
- Wheel Bearing: Needle Tire: Poly Finish: Black satin

DL30..... \$875.00

DL15 Dolly for System 15

- Load Capacity: 40 lbs. Radius: 22" Wheel Diameter: 4.50"
- Folded Length: 24" Folded Width: 7.50" Height: 6.75"
- Weight: 9 lbs. Wheel Bearing: Ball Tire: Poly Finish: Black satin

DL15..... \$440.00

DL3 Dolly for System 3

- Load Capacity: 25 lbs. Radius: 19" Wheel Diameter: 3.50"
- Folded Length: 20" Folded Width: 6" Height: 5.50" Weight: 7 lbs.
- Wheel Bearing: Ball Tire: Rubber Finish: Black satin

DL3..... \$195.00

Tripods

TD35C	3-stage w/carbon fiber legs, MLS or spreader, 100mm bowl	\$1995.00
TD35L	3-stage w/spreader, 100mm bowl (82"H)	1700.00
TD30C	2-stage w/carbon fiber legs, MLS or spreader, 100mm bowl	1775.00
TD35	3-stage w/spreader, 100mm bowl	1600.00
TD20C	2-stage w/carbon fiber legs, MLS or spreader, 75mm bowl	1500.00
TD30	2-stage w/spreader or spider, 100mm bowl	1350.00
TD25	3-stage w/spreader, 75mm bowl	1150.00
TD20	2-stage w/spreader, 75mm bowl	900.00
TD15	2-stage w/spider, 75mm bowl	510.00
TD3	3-stage w/spider, 50mm bowl	265.00
TD2	2-stage w/spider, 50mm bowl	150.00

Fluid Heads

EFP40B	W/dual telescopic handles and 100mm ball base	\$4750.00
ENG30B	W/telescopic handle and 100mm ball base	3950.00
ENG27A	W/telescopic handle and 75mm/100mm ball base	2950.00
ENG20B	W/telescopic handle and 75mm ball base	2100.00
HD15	W/tube handle and 75mm ball base	1000.00
HD3	W/tube handle and 50mm ball base	300.00
HD2	W/tube handle and 50mm ball base	220.00

Accessories for Fluid Heads

HH6100	Hi-hat, 6"H/100mm bowl	\$295.00
R20/30	Telescopic handle for HD15 through EFP40B	180.00
R15	Handle, tube (second for HD15 through EFP40B)	95.00

CASES

SC Soft Case

- Constructed of 400D nylon Pac-cloth with 1.50" thick, medium density peripheral foam inserts
- Tripod/head system is held in place with velcro straps, and a heavy-duty zipper seals the top flap in position
- Equipped with a double handle strap and adjustable shoulder strap for perfect balance

SC-L	10" x 10" x 48" long. For Systems 28, 30, 35L, 40.	\$295.00
SC-M	8" x 8" x 40" long. For Systems 15, 20, 25, 27, 35, 35C	290.00

HC Hard Case

- Constructed of heavyweight Polyplex in a round configuration with a flat side to eliminate rolling
- Basic design utilizes a telescoping top cap with a 3" thick, high density foam pad insert and webbed belt/quick release latch to compress the tripod/head system and hold it in place
- Base of tube also fitted with a heavy-duty pad to eliminate penetration
- Carrying handle positioned for proper balance of CSI systems

HC-L	10" diameter x 40" to 50" long. Use for Systems 20, 20C, 27, 28, 30, 30C, 40	\$285.00
HC-M	8.50" diameter x 30" to 40" long. Use for Systems 15, 25, 35, 35C	275.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



VIDEO FORMAT SCREENS



VIDEO FORMAT PROJECTION SCREENS

Various models available with glass beaded, matte white, Video Spectra 1.5 or High Power surface, flame retardant and mildew resistant.

TRIPOD MODEL SCREENS

Picture King® With Keystone Eliminator— Video Format

▪ Extra heavy-duty screen ▪ Camlok metal roller system ▪ Automatic fabric lock and leg lock ▪ Plunger locks for positive stops ▪ Built-in keystone eliminator

Viewing Area H x W	Nominal Diagonal Size	Glass Beaded	Matte White	Video Spectra 1.5	High Power	Price
43" x 57"	72"	40115	40118	—	—	\$214.00
		—	—	74274	—	242.00
		—	—	—	77328	414.00
50" x 67"	84"	76025	76026	—	—	234.00
		—	—	73633	—	262.00
		—	—	—	77329	434.00
60" x 80"	100"	40134	40138	—	—	364.00
		—	—	73634	—	482.00
		—	—	—	77330	564.00
69" x 92"	120"	40147	40149	—	—	396.00
		—	—	73635	—	514.00
		—	—	—	77331	596.00

MANUAL WALL/CEILING SCREENS

Model B™ Video Format

▪ Large, ruggedly constructed screen ▪ No rub, flat back case ▪ Grooved metal rollers on larger sizes ▪ May be hung from wall, ceiling with map rail hooks

Viewing Area H x W	Nominal Diagonal Size	Glass Beaded	Matte White	Video Spectra 1.5	High Power	Price
43" x 57"	72"	74643	74644	—	—	\$140.00
		—	—	74645	—	168.00
		—	—	—	77322	340.00
50" x 67"	84"	74647	74646	—	—	164.00
		—	—	74648	—	208.00
		—	—	—	77323	364.00
57" x 77"	96"	74650	74649	—	—	206.00
		—	—	74651	—	268.00
		—	—	—	—	218.00
60" x 80"	100"	40194	40192	—	—	218.00
		—	—	73637	—	286.00
		—	—	—	77324	418.00
69" x 92"	120"	74653	74652	—	—	250.00
		—	—	74654	—	306.00
		—	—	—	77325	450.00

Deluxe Model B® Video Format

▪ Self-storing ▪ Automatic Tensionizer™ ▪ Use with extension type wall brackets

Viewing Area H x W	Nominal Diagonal Size	Matte White	Video Spectra 1.5	Price
43" x 57"	72"	74696	—	\$190.00
		—	74219	220.00
50" x 67"	84"	74697	—	214.00
		—	73639	260.00
60" x 80"	100"	74698	—	270.00
		—	73640	340.00

Fast-Fold Screens – Standard Sizes, With Frame, Regular T-Legs and Standard Luggage Type Case

Standard Screens Overall Size H x W	Net Picture Area	Front Projection				Rear Projection Da-Tex	
		Da-Mat		Pearlescent		Complete	Replacement Surface Only
		Complete	Replacement Surface Only	Complete	Replacement Surface Only		
54" x 74"	50" x 70"	\$412.00	\$142.00	\$ 489.00	\$179.00	\$ 505.00	\$232.00
63" x 84"	59" x 80"	532.00	135.00	617.00	211.00	676.00	277.00
6' x 8'	68" x 92"	573.00	217.00	709.00	265.00	730.00	373.00
7'6" x 10'	86" x 116"	673.00	327.00	826.00	402.00	871.00	524.00
9' x 12'	104" x 140"	752.00	450.00	923.00	567.00	1097.00	791.00
10'6" x 14'	122" x 164"	870.00	555.00	1088.00	677.00	1158.00	932.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

Model C™ Video Format

▪ Wall/ceiling installation ▪ Slat saddle distributes pull on heavy fabric for easier operation and longer life ▪ Floor stand to fit sizes 72" x 96", optional at extra cost

Viewing Area H x W	Nominal Dia. Size	Glass Beaded	Matte White	High Power	Price
60" x 80"	100"	40236	40237	—	\$346.00
		—	—	77781	546.00
69" x 92"	120"	40238	40239	—	374.00
		—	—	78701	574.00
87" x 116"	150"	77168	77169	—	488.00
105" x 140"	180"	77289	77290	—	630.00

ELECTRIC WALL/CEILING SCREENS

Cosmopolitan® Electrol® Video Format

▪ Custom crafted for visual presentations ▪ Embossed white steel case

Viewing Area H x W	Nominal Diagonal Size	Glass Beaded	Matte White	Video Spectra 1.5	High Power	Price
43" x 57"	72"	74655	74656	74657	—	\$ 769.00
		—	—	—	77794	923.00
50" x 67"	84"	74658	74659	74660	—	788.00
		—	—	—	77795	942.00
57" x 77"	96"	74661	74662	74663	—	805.00
		—	—	—	77796	958.00
60" x 80"	100"	40781	40782	73650	—	838.00
		—	—	—	77797	992.00
69" x 92"	120"	40788	40789	73651	—	872.00
		—	—	—	77798	1026.00
87" x 116"	150"	76739	76738	—	—	929.00
105" x 140"	180"	76741	76740	—	—	991.00

Boardroom Electrol® Video Format

▪ Sturdy wood case ▪ Comes assembled ready for in-ceiling installation

Viewing Area H x W	Nominal Diagonal Size	Glass Beaded	Matte White	Video Spectra 1.5	Price
43" x 57"	72"	74667	74668	74669	\$1577.00
50" x 67"	84"	74670	74671	74672	1592.00
57" x 77"	96"	74673	74674	74675	1608.00
60" x 80"	100"	40724	40725	73647	1620.00
69" x 92"	120"	74676	74677	74678	1666.00
87" x 116"	150"	76735	76734	—	1712.00
105" x 140"	180"	76737	76736	—	1774.00

Senior Electrol® Video Format

▪ Strong wood case with metal for either wall or ceiling installation ▪ 3-position control switch

Viewing Area H x W	Nominal Diagonal Size	Glass Beaded	Matte White	Video Spectra 1.5	Price
50" x 67"	84"	77387	77388	73643	\$1474.00
60" x 80"	100"	40586	40587	73644	1486.00
69" x 92"	120"	40591	40592	73645	1509.00

PORTABLE SCREENS

Fast-Fold® Video Format

▪ Snap-button surface snaps onto frame ▪ Frame height adjustable on legs in 6" increments ▪ Folding frame can be tilted for keystone



PRODUCTION SERIES



165A Compressor/Limiter With PeakStop™

▪ The original OverEasy® limiter with both automatic and user-selectable attack and release ▪ Precision expanded scale analog RMS metering ▪ Deci-linear dbx VCA ▪ True RMS detection ▪ PeakStop peak blocking ▪ Stereo strappable ▪ Standard 2RU, 19" rack space **\$1499.95**

166A Dual Compressor/Limiter With Dual Gate

▪ Compact ▪ High performance dual compressor system provides 2 independent channels, each combining dbx OverEasy compression ▪ PeakStop peak blocking and a soft knee expander gate ▪ Front panel selection of stereo or dual-mono operation ▪ Standard 1RU, 19" rack space **\$419.95**

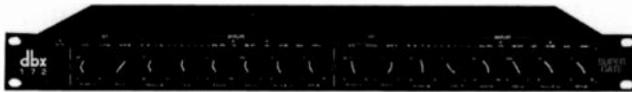
160A Compressor/Limiter

▪ Latest generation of the legendary 160X series ▪ Deci-linear dbx VCA ▪ True RMS detection ▪ OverEasy compression curve ▪ Precision full-range input/output and gain reduction metering ▪ Stereo strappable ▪ 1RU, 19" rack space **\$459.95**



168A Studio Dynamic Processor

▪ Dual channels ▪ Performs smooth, inaudible AGC leveling and/or dense sounding, aggressive compression ▪ Unique mix of dynamics processing works with voice or instruments, tracks and mixes ▪ Servo Timed Binary (STB) level detection and hybrid feed forward/feedback circuitry ▪ Each channel has compressor, feed forward de-esser, high frequency spectral enhancement, low frequency enhancement, silent gate and output level ▪ High resolution gain reduction ▪ Peak output LED metering ▪ Hardwire bypass ▪ Floating balanced XLR in/out ▪ Internally selectable for -10dBV or +4dBu **\$999.95**



172 SuperGate™ Expander/Gate

▪ Uses 24dB/octave voltage controlled filters (VCFs) to allow selective isolation of signal requiring gating ▪ Filter controls are parametric and control range optimized to speed setup ▪ Transient Capture Mode™ (TCM) uses a precision linear-phase all-pass filter to insert 0.3ms of delay in main signal path, allowing the 172 to capture the leading edge of complex transient waveforms ▪ Features a dedicated Expander Ratio control which has been scaled to contain only useful values for faster, repeatable setup ▪ OneShot™ mode enables the 172 to create consistent note length from irregular drum hits ▪ High resolution, easy to read LED display adds to ease of operation. **\$869.95**



760X Dual Microphone Preamp

▪ Provides 2 channels of high performance microphone preamplification ▪ Typical applications include direct-to-DAT or sampler recording, field recording ▪ Performance upgrade for existing microphone preamplifier stages in a mixer ▪ Transparent circuitry is flat +0, -0.15dB from 20Hz to 20kHz ▪ Bandwidth of 2Hz to 200kHz ▪ Each channel provides standard professional mic pre-features including: gain trim, polarity reverse, 48V phantom power and overload indication ▪ 1 rack high, ½-rack wide ▪ Includes hardware necessary for mounting in standard EIA 19" rack **\$349.95**

150X Type-I Noise Reduction, 2-Channel

▪ Provides more than 40dB of extra dynamic range for full bandwidth systems such as studio quality open-reel tape machines, full bandwidth digital recorders, etc. ▪ 1RU, ½-rack design . . **\$319.95**

140X Type-II Noise Reduction, 2-Channel

▪ Provides more than 40dB of extra dynamic range with typical limited bandwidth systems ▪ Ideal for cart machines, telco lines, videotape audio tracks, STLs, etc. ▪ 1RU, ½-rack design . . . **\$319.95**

1024 Dual Buffer Amplifier

▪ For properly interconnecting pieces of audio equipment that use different operating levels ▪ Applications include connecting studio level effects processors to -10dBV consoles and connecting consumer tape or CD players to professional consoles ▪ Direct-coupled, servo-stabilized gain stages ▪ 0.005% distortion specification ▪ 0.15Hz to 200kHz, flat ± 0.25dB from 20Hz to 20kHz bandwidth ▪ Cross-coupled transformerless XLR output stages will drive +25dBu signals into 600W and will drive any load ▪ All outputs are individually adjustable via brass shafted front panel trimmers and monitored for clipping by a front panel clip indicator ▪ Includes a switch selectable buffer mode in which XLR inputs are routed to XLR outputs as well as the IHF outputs **\$239.95**

30 SERIES GRAPHIC EQUALIZERS

3231L/3031/3031C/3215 Graphic Equalizers

▪ 31 ISO standard center ½-octave constant Q frequency bands ▪ Variable high pass and switchable low pass 12dB/octave filters ▪ Electronically balanced inputs, servo balanced outputs ▪ XLR, barrier strip and TRS connectors ▪ Switchable 6 or 12dB boost/cut ▪ Low phase shift circuit design ▪ ±12dB of input gain ▪ Passive bypass removes equalization from signal path when power is off ▪ 8-segment LED headroom bar graph ▪ Chassis ground lift capability ▪ Toroidal power supply transformer

3231L	Dual 31-band equalizer; 3RU	\$1199.95
3031	Single 31-band equalizer; 2RU	749.95
3031C	Single 31-band "Cut Only" equalizer. Features 10 or 20dB of cut for ring out of unwanted frequencies; 2RU	749.95
3215	Dual 15-band equalizer; 2RU	749.95
30T1	Input transformer option	129.95
30T0	Output transformer option	119.95

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





PERFORMER SERIES



120XP Professional Subharmonic Synthesizer

- Synthesizes Waveform Modeled™ bass notes 1 octave below the low bass information found in most musical program material
- Extends bass downward into the range where it provides physical impact to music
- Provides separate level controls for super-low 36-56Hz and ultralow 26-36Hz synthesized bass
- Master subharmonics level control and separate LF boost control
- Separate subwoofer signal output and subwoofer level control, along with normal stereo outputs
- Built-in crossover with selectable 80-120Hz crossover points can be used to provide mono-summed LF to the subwoofer output and stereo HF to the 2 stereo outputs . . . \$299.95

163A Compressor/Limiter

- Single-channel compressor/limiter with 1 slider for control of all key parameters
- High gain input on front panel with level trim
- Expanded LED display for monitoring compression
- Strappable with another 163A for stereo gating or stereo compression
- 1RU, ½ rack design
- Rackmounting hardware included \$169.95

263A De-esser

- De-esser with switchable high frequency or broadband filters
- 1 knob adjustment for rapid setup
- 12-segment display indicating sibilance reduction
- Front panel Hi-Z mic input with gain trim
- 1RU, ½ rack design
- Rackmounting hardware included \$169.95

AB-1 Balanced Output Card

- Active balanced output card for the 160X
- Not required for 160XT or 160A \$30.95

ACC Accessory Kit

- Rackmount hardware for dbx ½ rack products
- Includes all the parts needed for mounting units singly
- 2 kits required to mount units in pairs \$20.95

PROJECT 1 SERIES

- Ideal for both studio and sound reinforcement applications
- Each unit delivers real dbx sound and reliability



274 Quad Expander/Gate

- 4 independent channels of high performance gating or downward expansion in any combination of stereo pairs or mono channels
- dbx VCA and RMS detection circuitry provides ultrafast attack times to preserve the character of percussive sounds and an incredibly smooth release \$449.95

290 Stereo Digital Reverb

- S/N ratio: >87dB without noise gate
- Digital noise gate
- Responds to MIDI program changes
- 40kHz sampling rate, 18-bit DACs, full bandwidth response
- 3 ambience colors: dark, medium and bright
- ¼" balanced stereo inputs and outputs
- True stereo reverb processing
- 6 standard reverbs: room, hall, chamber, plate, cathedral and gated
- 1RU design \$399.95

296 Dual Spectral Enhancer

- Cleans up and details instruments, vocals and mixed program material on stage or in the studio
- Dynamic self-adjusting circuitry lets you add the right amount of sparkle and sizzle
- HF detail and hiss reduction work together
- LF detail solidifies the bottom while removing mid-bass mud \$349.95

286A Mic Processor

- Single channel studio quality mic pre-amp plus 5 dynamics processors
- dbx standard internal power supply
- +48V phantom power, and frequency controllable de-esser
- Premium pre-amp section and 2-knob compression
- Spectrum enhancer and an expander/gate
- 1RU rack design
- AC power supply included \$349.95

266A Dual Compressor Gate

- 2 channels of classic dbx compression with the standard dbx internal power supply and Auto-Dynamic™ attack and release controls
- OverEasy®/hard knee switch
- Program-adaptive expander gates
- Balanced inputs
- Precision LED metering and sidechain insert
- +/-10 operating switch on the rear panel
- Front panel selection of stereo or dual mono operation
- Standard 1RU rack design
- AC-1 power supply included \$229.95



242 Parametric EQ

- 3 bands of fully parametric peak/dip
- Switchable shelf slope of 6 or 12dB per octave for even more sound-shaping capability
- Front panel bypass switch
- 2 bands of frequency selectable shelving equalization for total tonal control
- Up to 16dB boost and 16dB cut at any bandwidth setting
- Balanced input
- Clip indicator \$299.95

223 Stereo 2-Way/Mono 3-Way Crossover

- TRS differentially balanced inputs/outputs
- Mode switch for stereo 2-way or mono 3-way operation
- Low frequency summed (subwoofer) output
- 10X range switch on both channels
- 40Hz high pass (low cut) filter both channels
- Phase reverse switch on all outputs
- Individual level controls on all outputs
- 24dB per octave
- Stereo/mono status LEDs indicate the selected mode \$249.95

234 Stereo 2-Way/3-Way/Mono 4-Way Crossover

- Includes the same features as 223 above except:
 - Mode switches for mono 4-way or stereo 2-way/3-way operation \$299.95



262 Compressor/Limiter

- 2 channels of classic dbx compression/limiting
- OverEasy or hard knee operation
- Balanced TRS inputs/outputs
- Negative compression ratios possible
- True RMS Power Summing™
- Internal power supply
- Single rack space design \$199.95

PB-48 Patch Bay

- Balanced ¼" TRS patch bay
- 48 jacks in front and rear . . . \$179.95

115 Power Light Module

- Rackmount unit
- 8 switched, grounded AC outlets on the rear panel
- 2 retractable light tubes
- Spike and surge protection
- Main power switch, light switch, light dimmer control
- Heavy gauge 10' power cable
- 15 amp capacity \$159.95

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





Delta Designs Workstations

Common Features

- Black nebula laminate with T-molded edging
- Metal surfaces have black satin and chrome finish

Wing Series Workstations

- 118"W x 36"D = 1-piece, 1 1/4" thick work surface
- Choice of 2 equipment racks or 2 shelf sets below surface
- DSS shelves are each 22" x 22" and adjust up/down in 1" increments
- Monitor bridges and wing accessories available



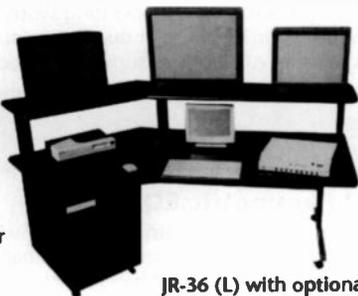
DSS-MWS with optional monitor bridge

Basic Wings

- DSS-MWS Two 2-shelf sets \$2371.00
- D-MWS Two 21" (12U) racks 1974.00

J-Reversible Workstations

- Angled, 1-piece, 1 1/4" thick work surface = 90"W x 36"D
- Includes a shelf set or an equipment rack below the return angle, or with legs
- All models include casters
- Available with right-hand or left-hand return angle
- Monitor bridges and additional shelves available



JR-36 (L) with optional monitor bridge

- JS-36 (R) or (L), one 2-shelf set \$1958.00
- JR-36 (R) or (L), one 21" (12U) rack 1754.00
- JL-36 (R) or (L), 2 end leg sets 1511.00

3684/3672/3660/LL-3648 Series Workstations

- 36" deep
- Rectangular
- Below surface storage space (except 3648) can be filled with equipment racks or shelves
- Monitor bridges and additional shelves available



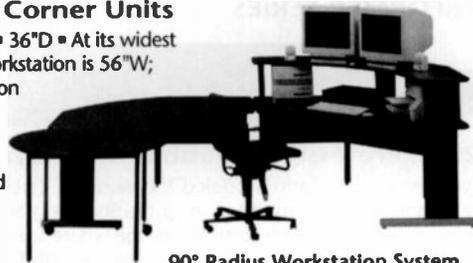
RR-3684

- 3684 Series**
- SS-3684 84"W, two 2-shelf sets \$2041.00
 - RR-3684 84"W, two 21" (12U) racks 1622.00
 - LS-3684* 84"W, one 2-shelf set and 1 end leg set 1445.00
 - LR-3684* 84"W, one 21" (12U) rack and 1 end leg set 1181.00
 - LL-3684** 84"W, 2 end leg sets 1026.00
- 3672 Series**
- LS-3672 72"W, one 2-shelf set and 1 end leg set \$1384.00
 - LR-3672* 72"W, one 21" (12U) rack and 1 end leg set 1054.00
 - LL-3672** 72"W, 2 end leg sets 927.00
- 3660 Series**
- LS-3660* 60"W, one 2-shelf set and 1 end leg set \$1323.00
 - LR-3660* 60"W, one 21" (12U) rack and 1 end leg set 965.00
 - LL-3660** 60"W, 2 end leg sets 838.00
- LL-3648 Workstation**
- LL-3648** 48"W, height adjustable \$762.00

*Please specify left or right for rack or shelf assembly.
**Worksurface adjusts from 24 1/2" to 36 1/2" high.

Radius and Corner Units

- 60° or 90° arcs = 36"D
- At its widest point, the 60° workstation is 56"W; the 90° workstation is 92"W
- Height adjustable from 24 1/2" to 36 1/2"
- Radius risers and corner monitor additions available



90° Radius Workstation System

Radius Workstations

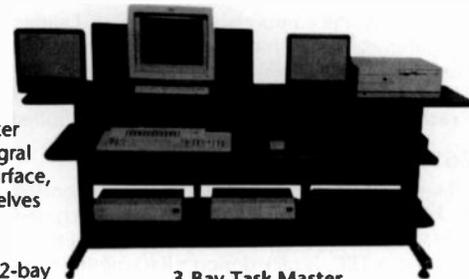
- D-RW90 90° workstation \$940.00
- D-RW60 60° workstation 714.00

A-Corner Workstation

- D-CU36 36"D to coordinate with Radius workstations ... \$940.00

Task Master and L-24/L-18 Series

- Design your own versatile edit/graphics workstation
- Choose a 2-bay or 3-bay Task Master frame with an integral top shelf, a work surface, and equipment shelves
- Worksurfaces are 18"D or 24"D and 48"W or 60"W for 2-bay workstations or 72"W or 84"W for 3-bay workstations
- Equipment shelves are 22"W and either 16"D or 22"D
- Worksurfaces and shelves can be adjusted up and down in 1" increments
- L-18 and L-24 series models are Task Master frames preconfigured with ES-22 equipment shelves



3-Bay Task Master

Task Master Series

Frames with Tops

- | | |
|---------------------------------|---------------------------------|
| 3-Bay | 2-Bay |
| TMF-2484 24" x 84" ... \$786.00 | TMF-2460 24" x 60" ... \$691.00 |
| TMF-1884 18" x 84" ... 767.00 | TMF-1860 18" x 60" ... 623.00 |
| TMF-2472 24" x 72" ... 760.00 | TMF-2448 24" x 48" ... 598.00 |
| TMF-1872 18" x 72" ... 718.00 | TMF-1848 18" x 48" ... 524.00 |

Worksurfaces

- | | |
|---------------------------------|---------------------------------|
| 3-Bay | 2-Bay |
| TMS-2484 24" x 84" ... \$521.00 | TMS-2460 24" x 60" ... \$367.00 |
| TMS-1884 18" x 84" ... 453.00 | TMS-1860 18" x 60" ... 299.00 |
| TMS-2472 24" x 72" ... 449.00 | TMS-2448 24" x 48" ... 294.00 |
| TMS-1872 18" x 72" ... 381.00 | TMS-1848 18" x 48" ... 204.00 |

Equipment Shelves (D x W)

- ESS-22 22" x 22" ... \$69.00
- ESS-16 16" x 22" ... \$65.00

L24/L-18 Series

3-Bay Consoles

- LL-24845 24" x 84" top, 5 shelves \$1186.00
- LL-24725 24" x 72" top, 5 shelves 1133.00
- LL-18845 18" x 84" top, 5 shelves 1076.00
- LL-18725 18" x 72" top, 5 shelves 1032.00

2-Bay Consoles

- LL-24603 24" x 60" top, 3 shelves \$804.00
- LL-24483 24" x 48" top, 3 shelves 752.00
- LL-18603 18" x 60" top, 3 shelves 728.00
- LL-18483 18" x 48" top, 3 shelves 684.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



VIDEO PRODUCTION EQUIPMENT



V-Clips Full Motion Video and Still Store

▪ Rugged rackmount chassis integrates proven DPS video disk recorder technology with Image North's Video Carte software ▪ A custom DPS control panel facilitates remote operation ▪ Can store from 15 minutes to many hours of video, depending on hard drive capacity from \$14,995.00



DPS-245 Quad Framestore/Synchronizer

▪ 4-channel composite video graphics buffer ▪ Single loopthrough video input ▪ 4 RS-170A video output channels ▪ Separate preview output channel ▪ View any of 4 main channels ▪ Digital proc amp controls with 10 presettable memories ▪ 6MHz bandwidth ▪ RS-232, RS-422 remote control capability ▪ Signal processing composite 8-bit at 4x fsc ▪ Infinite synchronizing range \$6,495.00



DPS-465 Serial Digital Frame Synchronizer

▪ Designed as a bridge between analog video sources and digital environments ▪ 10-bit processing ▪ Provides serial D-1 (SMPTE 259M), component, S-Video and wideband composite video inputs/outputs ▪ Features auto switch TBC and integrated digital test pattern generator \$5,495.00

DPS-265 Universal Synchronizer

▪ 4-field synchronizer ▪ Built-in TBC ▪ Automatic mode switching ▪ Direct tape playback from color under VTRs ▪ 6MHz bandwidth ▪ Digital adaptive comb filter ▪ Digital test signal generator and VITS inserter ▪ Composite signal processing ▪ Infinite synchronizing range . . . \$5,495.00

DPS-290 Component Transcoding TBC/Synchronizer

▪ Composite, Y/C, component analog video (Betacam or MII) inputs/outputs with digital recursive noise reduction and 3-D drop out compensation ▪ Single- and dual-channel configurations ▪ 3-line adaptive comb filter ▪ Component 4:2:2 processing ▪ Compatible with RC-2000/2001 remote ▪ Film mode strobe effect ▪ Luminance bandwidth >5MHz ▪ Can be used as a frame synchronizer and NTSC decoder ▪ 10-event scene memory

- DPS-290D Dual-channel version \$4,995.00
- DPS-290 Single-channel version 2,995.00
- RGB-290 Optional RGB I/O module 500.00
- RIO-290 Component I/O rackmount breakout panel 300.00

DPS-235 Component TBC/Synchronizer

▪ Composite and S-Video I/Os ▪ Single- and dual-channel configurations ▪ 3-line adaptive comb filter ▪ Component 4:2:2 processing ▪ Compatible with RC-2000/2001 remote ▪ Film mode strobe effect ▪ GPI freeze trigger ▪ True luminance bandwidth >5MHz ▪ 3-event scene memory

- DPS-235D Dual-channel version \$3,495.00
- DPS-235 Single-channel version 1,995.00

DPS-285 Sync and Test/Signal Generator

▪ 10-bit master sync/test signal generator with 32 digital test patterns, full-time SMPTE color bars, audio tone and 24-character source ID ▪ Sync pulses generated: 4 blackburst (selectable color/super black), composite blanking, subcarrier, composite sync ▪ Audio signals generated: 50Hz, 400Hz, 1kHz, manual or auto increment ▪ 5kHz, 9kHz, 15kHz 0dBm or +4dBm ▪ 600 ohms balanced out \$2,995.00

DPS-220 Wideband TBC/Synchronizer

▪ Frame synchronization in all modes ▪ 6MHz frequency response ▪ Component processing with advanced digital comb filter ▪ Single function front panel proc amp controls ▪ Advanced sync and subcarrier supports U-Matic direct mode \$2,995.00

DPS-295 TBC/Transcoder

▪ Chroma noise reduction ▪ Edge enhancement ▪ Adaptive comb filter ▪ AutoDOC-3D dropout compensation ▪ Digital effects ▪ Digital proc amp controls ▪ 6MHz frequency response in all modes including HET ▪ 3 selectable inputs: NTSC, S-Video and U-Matic dub ▪ 48 component/composite test patterns from built-in test signal generator ▪ 4 simultaneous output formats: Composite video, S-Video, U-Matic dub and CAV (Betacam or MII) \$5,495.00

DPS-210 Universal 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/C 3.58MHz; Y/688kHz; Y, R-Y, B-Y; analog RGB sync ▪ Output signals: Y/C 3.58MHz; Y/688kHz; Y, R-Y, B-Y; analog RGB sync ▪ NTSC composite monitor output ▪ 5.5MHz (-1dB) bandwidth; 60dB S/N ▪ 19" rackmountable \$1,495.00



AVS-2400 MicroSYNC-AV™ Audio/Video Synchronizer

▪ Combines VS-2400 4-field video synchronizer and the AS-2400 stereo digital audio synchronizer ▪ Compatible with direct color and monochrome sources ▪ Full video bandwidth ▪ Transparent signal quality ▪ Selectable black clip ▪ Full proc amp controls \$3,495.00

AVS-2410 MicroSYNC-AVX™ Audio/Video Synchronizer

▪ 10-bit video version of AVS-2400 3,995.00

AES-2400 Stereo Audio Synchronizer System

▪ Up to 334ms (20 NTSC fields) of audio delay ▪ Can compensate for errors caused when a video signal passes through multiple frame synchronizers or other digital processors ▪ 16-bit, 44.1kHz audio processing ▪ 2 low pass filters, 1 high pass filter ▪ In auto track mode, AES-2400 can provide 1-16 fields of additional fixed audio delay to compensate for lip sync errors upstream of your facility ▪ Single and dual channel configurations ▪ Rackmountable

- AES-2400D Dual Stereo Delay System \$3,495.00
- AES-2400 Stereo Delay System 2,090.00

ES-2000C 12-Slot Expansion System

▪ 4U rack chassis ▪ Includes power supply and RC-2000 front panel controller ▪ Will accept any combination of up to 12 Personal Series cards ▪ Optional redundant power supply \$1,495.00

ES-2000LC Same as above, except without RC-2000. 1,195.00

ES-2200T Dual-Channel Expansion System

▪ 1U rackmount chassis for single or dual TBC or MicroSYNC cards ▪ Includes power supply, front panel controls and serial port . . . \$595.00

ES-2200S Same as above, except for MicroSYNC 595.00

RC-2001 Master Remote Control

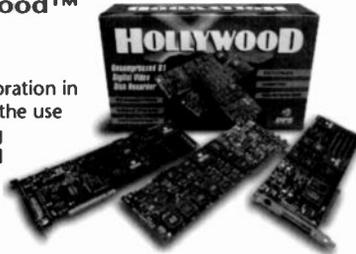
▪ Programmable multichannel, multilocation controller ▪ Provides RS-232 and RS-422 inputs/outputs ▪ Oversized back lit alphanumeric LCD labels functions of the 4 precision rotary shaft encoders ▪ Flash ROM technology \$850.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



**HVR-2800 DPS Hollywood™
Uncompressed D-1
Video Disk Recorder**

- Avoids progressive image deterioration in multiple-pass operations through the use of uncompressed digital recording
- Optional real time alpha channel (4:2:2:4 mode) ▪ For Intel or DEC Alpha PCI bus Windows NT™ workstations ▪ Serial D-1 (SMPTE 259M) and component analog (Betacam/MII) I/O plus composite and S-Video outputs
- 8-bit and 10-bit modes ▪ Requires 4 fast/wide A/V type SCSI hard drives



AC-2800 Alpha Channel Option for DPS Hollywood ▪ Requires 2 fast/wide A/V type SCSI hard drives \$1995.00

PVR-2500 Perception Video Recorder

- PCI based digital disk recorder capable of recording and playing back broadcast quality video in real time from a dedicated SCSI hard drive
- 10-bit, 2X oversampled video encoding ▪ PCI bus card ▪ Multiprocessor support via Windows NT software ▪ Component, composite and S-Video outputs
- Recordable 24fps mode ▪ CCIR 601 4:2:2 processing and integrated SCSI disk controller ▪ Optional real time video capture daughtercard provides component (Betacam/MII), S-Video and composite video inputs
- Integrates with your existing Windows NT software packages using a DPS file system in which video frames appear simultaneously in many different file formats ▪ Any software package capable of saving RGB images to or loading them from a hard drive can be used
- Stored files can be instantly played back in real time or slow motion ▪ Manual or automatic control over the compression level/quality settings

AD-2500 Perception Live Video Capture Daughtercard ▪ Adds component (Betacam/MII), S-Video and composite inputs to PVR-2500 for real time video digitizing \$999.00

DAR-2500 Perception A4V™ Digital Audio for Video Recorder ▪ PCI card provides analog and digital stereo audio I/O ▪ Real time playback of 4 stereo pairs ▪ Built-in SMPTE time reader/generator/inserter . . . \$1495.00

FX-2500 Perception PFX Transition Accelerator ▪ ISA bus card speeds up transition rendering times for nonlinear editing systems and adds keying capabilities ▪ Includes plug-in for Adobe Premiere 4.2 . . . \$999.00

SD-2500 Serial Digital I/O Card for PVR ▪ Adds 2 serial D-1 (SMPTE 259M) outputs, serial D-1 input and wideband NTSC input to PVR ▪ Combo ISA/PCI card can be used with or in lieu of AD-2500. \$1995.00

DF-V Digital Fusion Software by Eyeon

- Powerful, nonlinear, digital compositing and post-production program for Windows NT which offers direct support for the DPS Perception and Hollywood video disk recorders

VS-2400 MicroSYNC™ Video Synchronizer Card

- 8-bit, 4-field composite processing for truly transparent performance
- Clean, stable, wideband NTSC video ▪ Selectable frame and field freeze
- Variable strobe ▪ Digitally controlled proc amp with nonvolatile memories ▪ Hot-switching capability ▪ Color and monochrome modes
- RS-232 serial interface ▪ Ideal for synchronizing satellite, ENG and remote camera feeds ▪ Fits any IBM compatible PC

VS-2410 MicroSYNC-X™ Video Synchronizer Card ▪ 10-bit version of VS-2400 1995.00

AS-2400 Stereo Digital Audio Synchronizer Card

- 16-bit, 44.1 kHz digital audio processing ▪ Compensates for up to 20 fields of video delay ▪ Can provide a fixed audio delay, auto track the delay through a DPS video synchronizer, or both ▪ Built-in audio oscillator
- Noise gate ▪ Stereo and mono modes ▪ Compressor

VT-2600 Personal TBC IV TBC Card

- True 4:2:2 component processing ▪ S-Video input/output ▪ Software controlled color balance ▪ Freeze field/frame ▪ Film effect strobe mode
- Forced mono ▪ Optional comb filter input decoder ▪ Also functions as live video capture card for DPS DR-2100 and DR-2150 Personal Animation Recorders ▪ Plugs into any IBM PC compatible or DPS ES-2000 series expansion frames

VT-2600WB ▪ Wideband version ▪ Includes DC2600 comb filter decoder ▪ Provides 5.5MHz composite video bandwidth \$1495.00

VT-2500 Personal TBC III® TBC Plug-in Card

- Composite and S-Video inputs ▪ Rock-solid freeze field/frame ▪ Variable strobe ▪ Plugs into any IBM PC® compatible or in a DPS expansion system
- All video proc amp functions, system timing, scene memories and color balance can be adjusted with DPS Personal Series software or optional RC-2000 hardware remote control

DV-2000 DPS Spark Direct DV Editor

- Direct DV editing system for FireWire equipped DV camcorders and DVCRs
- Transfer DV data to and from computer hard drive in real time ▪ Includes Adaptec 1394 to PCI adaptor, FireWire cable, video tutorial and Adobe Premiere 4.2 nonlinear editing software (full version) ▪ For Windows 95/NT Pentium 133 or faster systems



DV-2000M PowerMac Version ▪ For PCI bus Power Mac computers 995.00

DV-2000U Unbundled Version ▪ Without Premiere 679.00

VM-2000 Personal V-SCOPE® Waveform Monitor/Vectorscope Card

- Produces a digitally synthesized waveform monitor and vectorscope display, which can be superimposed onto any video signal ▪ Includes control software ▪ Any NTSC video signal may be input
- Superimposed video output ▪ Full-time waveform/vector video output ▪ Waveform, vector or dual display modes ▪ Accuracy >1% ▪ Hardware rasterizer for real time display update
- Superimpose display over live video ▪ 2H and 1H display modes ▪ Switchable low pass filter ▪ Displays color component signals ▪ IBM PC compatible or use DPS ES-2000 series frame

PPC-2000 Personal Protocol Converter

- Enables Sony VCR internal TBCs to be controlled by DPS RC-2000 and RC-2001 multichannel remote controls ▪ Ideal for Sony UVW Betacam decks ▪ One PPC-2000 per VCR required

RC-2000 Personal Series Remote Control

- 8-channel controller for Personal TBC (II/III/IV), V-Scope, MicroSYNC, MicroSYNC-X, DPS-235, DPS-290/290D and ES-2000/2200 series
- Nonvolatile setup memory ▪ 1-cable serial connection

RS-2800 Personal Routing Switcher™

- 4 x 1 plus 8 x 1 composite routing switcher card with RS-232 control
- 8 x 1 mode only available when used in DPS ES-2000/2000LC expansion frames

VDA-1000/1050 Video Distribution Amp

- 1 x 4 video distribution amplifier on an ISA bus PC card ▪ 1 video input drives four 75 ohm loads ▪ Use in any PC or DPS expansion chassis

VDA-1000 IBM bus \$150.00

VDA-1050 Zorro bus 100.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



DL3 Series DataLift Projector Lifts

■ Provides hidden and secure location for video/data projectors ■ Safely and conveniently lowers projector into position for viewing or service ■ DL3 and DL3W designed as 3 stop lifts: fully retracted for storage, partially extended for viewing and fully extended for service ■ 12V trigger for simple integration with remote screens and projector power on ■ Projector power outlet ■ Cable management ■ Choice of remotes ■ Weight capacity: 350 lbs. (standard); 600 lbs. (with OPT8 option) ■ Retracted size: from 7.25" ■ Extended size: from 5.5' ■ Footprint: 23"W x 28.5"D (standard); 31.5"W x 33"D (Wide body) ■ Advanced digital circuit assures consistent performance with a maximum image deviation of under 1/6" ■ Safety belt system locks and holds the projector in the event of primary component failure



DataLift Standard

- DL3-13 13' drop distance, 19.5" retracted height, 172 lbs. . . \$4559.00
- DL3-11.5 11.5' drop distance, 18" retracted height, 163 lbs. . . 4409.00
- DL3-10 10' drop distance, 16.5" retracted height, 156 lbs. . . 4281.00
- DL3-8.5 8.5' drop distance, 15" retracted height, 145 lbs.. . 4121.00
- DL3-7 7' drop distance, 12" retracted height, 126 lbs. 3957.00
- DL3-5.5 5.5' drop distance, 10.5" retracted height, 118 lbs. . . . 3819.00

DataLift Wide Body

- DL3W-28 28' drop distance, 17.25" retracted height, 227 lbs. . \$6995.00
- DL3W-24 24' drop distance, 14.25" retracted height, 212 lbs. . . 6095.00
- DL3W-20 20' drop distance, 12.25" retracted height, 198 lbs. . . 5495.00
- DL3W-18 18' drop distance, 11.25" retracted height, 188 lbs. . . 4895.00
- DL3W-16 16' drop distance, 9.25" retracted height, 178 lbs.. . 4595.00
- DL3W-14 14' drop distance, 8.25" retracted height, 162 lbs. . . . 4295.00
- DL3W-12 12' drop distance, 7.25" retracted height, 152 lbs. . . . 3995.00

Note: Projector-to-Lift adaptors also available. Please call.

LCD-100 Series DataLite Projector Lifts

■ Fits between 2' ceiling tiles ■ Provides hidden and secure location for video/data projectors ■ Safely and conveniently lowers projector from out of sight into position for viewing ■ Lowest setting makes projector easily accessible for maintenance/repairs, thereby lowering service costs and minimizing downtime ■ 12V trigger for simple integration with remote screens and projector power on ■ Projector power outlet ■ Cable management ■ 4 models available with 4', 5', 6' and 7' drops ■ Weight capacity: 115 lbs. ■ Retracted size: from 5.75" ■ Extended size: from 48" to 72" ■ Footprint: 18.5"W x 17.87"D ■ Advanced digital circuit assures consistent performance with a maximum image deviation of under 1/6" ■ Safety belt system locks and holds the projector in the event of primary component failure

- LCD-107 7' drop distance, 8.75" retracted height, 80 lbs. . . \$3232.00
- LCD-106 6' drop distance, 7.75" retracted height, 75 lbs. . . 3018.00
- LCD-105 5' drop distance, 6.75" retracted height, 70 lbs. . . 2804.00
- LCD-104 4' drop distance, 5.75" retracted height, 65 lbs. . . . 2590.00

Custom Options

- OPT1 Ceiling closure panel \$ 488.00
- OPT3 Plenum rated housing 518.00
- OPT4 Ceiling tile mounting bracket 748.00
- OPT5 Bomb bay doors ceiling closure 1421.00
- OPT6 12V in trigger 143.00
- OPT7 Dual projector adaptor 714.00
- OPT8 Heavy-duty option. 714.00
- OPT9 RS-232 interface 300.00
- UMK Universal mounting kit 143.00

DC1 DataCart Projection Cart

■ Provides secure floor positioning for the largest video/data projectors ■ Safely and conveniently elevates the lens to 48" above floor height for projection over the heads of a seated audience ■ Allows for ±15° pitch and ±3° yaw ■ Wheels lock in all directions for use on inclined surfaces ■ Hydraulic lifting system able to position and maintain projectors weighing up to 500 lbs. ■ Collapsed DC1 unit only 19" tall ■ Can be fitted to any video projector ■ Footprint: 27"W x 51"D ■ Single stack cart

DC1 \$4995.00



DataSlim DLS Projector Lift

■ Fits between 16" floor joists ■ Provides hidden and secure location for your video/data projectors ■ Extends only 4" above the video projector ■ Lowest setting makes the projector easily accessible for maintenance ■ Supports projectors up to 250 lbs. ■ 12V trigger, projector power outlet, cable management are standard ■ Service drop of 4' ■ 3-stop service lift ■ 110V/220V ■ 8.25"H x 19"W x 52"L ■ Mounting adaptors available

DataSlim DLS \$3819.00

AVPAC Adaptable Video Projector Adjustable Cage

■ Supports projectors up to 500 lbs. ■ Minimum space requirements ■ ±15° pitch (front-to-back) control ■ ±3° yaw (side-to-side) control ■ Swivel control ■ Stackable ■ Flyable

- AVPAC-A Single unit for Ampro 7000 \$1595.00
- AVPAC-B Single unit for Barco Light Cannon Series. 1595.00
- AVPAC-H Single unit for Hughes/JVC 300 Series 1595.00
- AVPAC-2H Single unit for Hughes/JVC 200 Series 1595.00

SAM-CL-2 Stationary and Maintenance Cable Lift

■ Supports projectors up to 230 lbs. ■ Self-aligning ■ 15° tilt, 3° yaw ■ Adjustable mounting holes ■ Low voltage control switches ■ Handheld remote control standard ■ 110V/220V ■ 17" maximum drop distance ■ Available in black or white powder coat ■ All steel construction ■ 5"H x 19.25"W x 17.25"D ■ Mounting adaptors available

SAM-CL-2 \$1150.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

TEST EQUIPMENT



1800 CATV Audio Loudness/ Video Level Test Set

▪ Designed for quick setup comparisons of both audio and video levels in cable television ▪ Features loudness meter 10-B and video luminance meter 40-N(P/S) ▪ CATV cable converter

1800\$1995.00

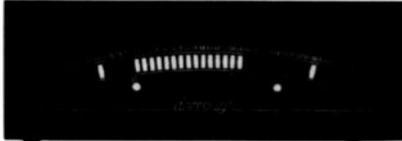
1200 Stereo Signal Test Set

▪ Simple and easy to operate gain set ▪ Allows stereo measurements of level, balance, crosstalk and signal-to-noise over the entire dynamic range of the system from noise floor to clipping ▪ L/R polarity and phase compatibility testing in either mono or stereo ▪ The solution to balanced stereo lines

1200\$1650.00

40-N Video Luminance Meter

▪ NTSC video level meter
▪ Displays the video signals of average and peak luminance, sync level and setup violations
▪ Sync range -50 to -32 IRE ▪ Meter resolution 4 IRE per LED



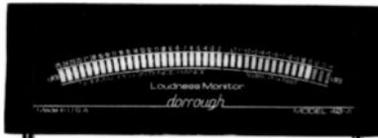
40-N\$750.00

40-P/S PAL/SECAM version750.00

ANALOG READING METERS

40-A2 Loudness Meter

▪ Simultaneous display of peak and average of the audio signal ▪ Standard loudness meter ▪ Scale allows 14dB of headroom in 1dB steps ▪ Stand-alone unit ▪ Internal power supply ▪ 8½" x 2¼" x 6½" ▪ Fully integrated peak-hold function



40-A2\$475.00

40-B2 Loudness Meter

▪ Simultaneous display of both peak and average of the audio signal
▪ Relative loudness to peak modulation meter ▪ Scale differentiation of the 40-A2 ▪ Calibrated in percent modulation with the lower scale in dB from +3dB to -36dB ▪ Fully integrated peak-hold function

40-B2\$475.00

Single and Dual Racks

▪ The 40 Series Meters can be optionally mounted in standard single or dual 2 RU racks

40-S Single rack\$45.00

40-D Dual rack45.00



20-A2 Series Dual (Stereo) Loudness Meters

▪ Straight line version of Model 40-A2 ▪ Available as a single or dual
▪ Fully integrated peak-hold function

20-A2* Specify A, B, or C scale\$475.00

20-S1 Single rack45.00

20-D1 Dual rack45.00

10-A2 Series Loudness Meters

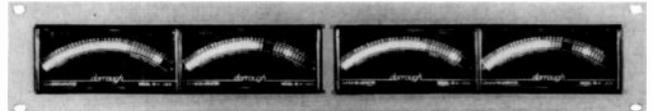
▪ Smaller version of the 40-A2 ▪ Measures 5" x 2½" ▪ Requires mounting into a standard panel ▪ Available as a single, dual or triple
▪ Fully integrated peak-hold function

10-A2* Specify A, B, or C scale\$475.00

10-S Single rack45.00

10-D Dual rack45.00

10-T Triple rack45.00



12-A2 Series Loudness Meters

▪ Dual version of the 10-A2 ▪ Measures 8½" x 3" ▪ 2 of these meters mount into a standard rack for a total of 4 metering channels ▪ Fully integrated peak-hold function

12-A2* Specify A, B, or C scale\$950.00

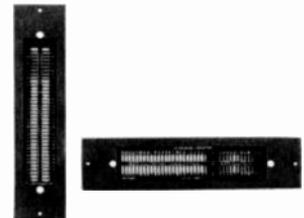
12-D Dual rack45.00

280-A/380-A 2-Channel Loudness Meters

▪ Single meter with 2 channels of audio ▪ Selectable peak-hold
▪ 1½" x 5" ▪ External power supply

280-A (H)\$850.00

380-A (V)850.00



DIGITAL READING METERS

280-D/280-E/380-D/380-E AES/EBU Digital Reading Loudness Meters

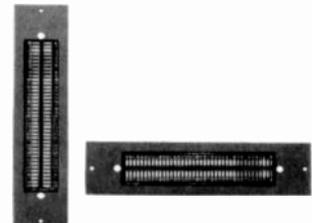
▪ Simultaneous display of peak and average ▪ Over-indication
▪ Peak-hold

280-D 40dB (H)\$850.00

280-E 60dB (H)850.00

380-D 40dB (V)850.00

380-E 60dB (V)850.00



*To order B scales, which are calibrated in percent modulation, substitute the letter "B" in the product code. To order C scales, which allow 20dB headroom, substitute the letter "C" in the product code.

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

DIGITAL VIDEO EDITING SYSTEM



Casablanca Digital Video Editing System

- Includes a full range of transitions and image processing effects
- 3 stereo audio tracks, maximum 48kHz 16-bit
- High resolution filter
- Motorola MC 68060-50 and Motorola MC 68040-25 processors
- 16M byte system RAM integrated
- Hard drive for video and audio
- Most fast SCSI II drives from 1-9G byte
- Software on 1.4M byte floppy
- Integrated graphics displays on TV
- Information display on front panel
- Audio inputs: stereo RCA jacks on both front and back
- Optional IEEE P1394 for DV and Mini-DV
- Audio outputs: stereo RCA jacks on rear
- Optional IEEE P1394 for DV and Mini-DV
- Motion JPEG compression type
- Compression ratio: 12 settings from 40:1-5:1
- Data rate: .5-3.5MBps—selectable bit-rate control
- Video inputs: Y/C and Composite on front and back
- Video outputs: Y/C and Composite
- CCIR 601, >400,000 pixels resolution
- Switchable NTSC or PAL (60 or 50 fields/sec.)
- Weighs 15.5 lbs.
- Dimensions: 4.5"H x 17.5"W x 14.75"D
- User friendly interface is clear and easy to understand
- Simple trackball operation using only a monitor or TV
- No hardware or software installation is required
- Allows editing of full screen video with frame precise accuracy
- Create slow motion, backwards motion, stutter effects and freeze frames
- Choose from a range of completely scalable fonts, unlimited color combinations and variable scroll/crawl speeds

The Interface of Casablanca

The user interface is clear, simple to use and easy to understand. You don't need any computer experience to edit with the Casablanca. After the device is cabled and switched on, the interface comes up immediately. The main screen offers 11 menus for complete nonlinear video and audio editing. Each of the 11 menus is focused on a specific aspect of your editing project.

The hard drive of the Casablanca is removable and can be changed at any time. The video and audio data is stored on the drive. If 2 or more drives are available, you can work on multiple projects. This feature makes the Casablanca perfect for educational settings. The trackball which is included can be replaced with a PC mouse. A PC keyboard can be connected for easier typing if you create long titles.

The following options are available:

Settings

Three menus are available for settings. The first, Land/Country, allows you to set the language, video type (NTSC or PAL), and the clock on the front. The second menu is Project Settings, where you select the data rate based on the video quality. Third, Video Settings allows you to have control over the incoming video brightness, contrast and saturation.

Record

From this window you digitize the footage to the hard drive.

Edit

You can split your video into scenes, and trim recorded scenes simply by setting the in and out points. You can copy scenes, create a colored background scene from an unlimited color palette, and delete unwanted scenes from your scene list. You can create reverse motion, slow motion, quick motion, strobe or a still of any length.

You always have complete access to your video. Rearranging a storyboard does not require any rendering. With hard cuts, trims and splits you have instant playback capabilities. Playback is full-screen, full-motion, 30 frame/second (25 in PAL) video.

Building a storyboard is simply a matter of choosing a scene and inserting it into the storyboard. To arrange the storyboard you use the insert, replace and delete buttons. Real time playback of the storyboard is available any time just by clicking on the play arrow. The storyboard is where the transitions, titling and audio work are done.

Transitions

In this window you choose and define the effects you want to use between scenes. Thousands of A/B roll and image processing effects are possible. Most effects have user-definable options and can also be layered.

A preview window lets you view what you're creating. The effects need to be rendered, which can be done at the end of a session in a batch render.

Image Processing

This option allows you to process specific frames, scenes or the whole storyboard. You can make recorded video negative, brighter, darker, or change the colors. You can also emboss, negative, solarize, stabilize or soften scenes.

Titling

Casablanca includes a powerful titler that allows you to add crisp and colorful text to your video. Text can scroll in multiple ways over a defined time. Colors are unlimited, font sizes are completely scalable, and the text can be saved and reloaded in other projects.

Audio Record

You can record audio from any source. Record a cut from a CD or add comments to your project. The volume is adjustable and the audio can be trimmed frame-by-frame.

Audio Mix/Dub

You can mix any audio sample created in Audio Record into the storyboard. You have 3 stereo tracks: one for the original audio, one for background music and one for comments. With the time range function you define exactly where on the video you want each piece of audio to begin and end. Volumes can be adjusted and the original audio can be muted.

Finish

From this window you copy the completed work to tape. The option to render all the unrendered effects is accessed here.

060 System with 9G byte drive	\$6995.00
060 System with 4G byte drive	5995.00
040 System with 9G byte drive	5695.00
060 System with 2G byte drive	5295.00
040 System with 4G byte drive	4695.00
040 System with 2G byte drive	3995.00

The 060 System is render-accelerated. A one-second 2-D effect takes about 25 seconds to render; 3-D effects start at 180 seconds. On the 040 System, rendering times double for 2-D effects and triple for 3-D effects.

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





OnLINE™ Version 3.0 Nonlinear Editing System

- Image quality up to 360K bytes/frame, less than 2:1 compression
- Fully scalable compression (20K bytes-360K bytes) ▪ Full CCIR-601 video: 60 fields/sec. NTSC (720 x 486), 50 fields/sec. PAL (720 x 576)
- 99 tracks for direct playback and multitrack compositing
- Simultaneous composite, Y/C and component (Betacam SP™: Y, R-Y, B-Y) output ▪ Serial digital via TARGA 2000 SDX ▪ Single field capture
- Genlockable output ▪ 500 editable audio tracks ▪ Play back over 24 simultaneous audio tracks (hardware dependent) ▪ Real time audio mixing: dynamic, on-the-fly level and pan setting ▪ Multitrack grouping
- 16 bits per sample, 44.1kHz or 48kHz rate ▪ 2 channels I/O of balanced and unbalanced audio (+4, -10dB)—TARGA 2000 DTX/RTX
- 2 channels digital audio I/O AES/EBU—TARGA 2000 SDX ▪ 14 different industry standard, bulletproof EDLs ▪ Graphic file formats: JPEG, TGA (24-/32-bit), TIFF, PCX, BMP, PICT and others ▪ Extended 3-point editing ▪ Open virtually unlimited number of bins and timelines
- Unlimited number of undo/redo operations saved with each program
- Jog clips from -50 to +50 times real time ▪ Customizable editing interface including resizable viewers ▪ POWER editing ▪ Digital audio scrub from timeline ▪ Capture at low resolution to maximize disk space then recapture only edited program at high resolution through AutoMASTER ▪ Print-to-tape including frame accurate assemble and insert, leader settings, bars and tone ▪ Real time effects—RT version: dissolves, wipes, fades, flip-flops, color effects, zooms and flying/scaling graphics ▪ Real time DVE preview ▪ Real time motion effects
- Concurrent video and graphics effects in real time ▪ Crystal Graphics 3-D Vortex™ bundle ▪ Real time alpha keyed graphics track ▪ Real time fades, transparency levels, graphics transitions and 2-D graphic scaling and movement ▪ Crystal Graphics Flying Fonts Pro™ bundle ▪ Supports Windows NT™ networking capabilities ▪ Native 32-bit multitasking, multiprocessor Windows NT software ▪ Interoperable with other Windows programs ▪ Recommended system and video requirements include: Pentium Pro CPU, 96M bytes RAM, 17", 1024 x 768 at 70Hz, VGA monitor (dual monitor mode also supported); 4G byte F/W ultrawide SCSI storage (dependent on video/audio quality and storage needs); Windows NT 4.0 (Workstation or Server); NTSC or PAL video monitor and custom integration through D-Vision Dealer network

Real Time Effects

OnLINE provides extensive real time capabilities including real time editing and playback, real time alpha keyed graphics, over 24 tracks of real time audio mixing and real time motion effects including freeze-frame and stutter effects. Create real time video and graphics transition effects like dissolves, fades and wipes simultaneously with real time alpha keyed graphics. Apply exciting new real time color effects like embossed video, chromatic video, flip-flops and colorization.

Use the TARGA 2000 RTX dual codec board for real time, full resolution effects or work in single field mode with the 2000 DTX still in real time.

D-Vision enables both real time modes offering ultimate flexibility and eliminating hardware limitations. OnLINE 3.0 also provides support for serial digital video and audio with the TARGA 2000 SDX.

Compositing and Keying

D-Vision has partnered with Artel to bring you powerful 2-D and 3-D motion path keyframe editing, advanced video filters and chroma/luma keying tightly integrated into OnLINE. In addition OnLINE RT provides two new features: multitrack (2-99 tracks) video compositing and time line synchronization between the key frame editor and OnLINE.

Application Enhancements

OnLINE has powerful new editing features including 3-point editing and real time fit-to-fill. Audio track grouping and audio scrub from the timeline enhance robust real time mixing capability. Major improvements in capture and data management include single field capture and direct logging and batch digitizing.

Open Systems Design

D-Vision enables the power of true open systems capability within the Windows NT desktop by providing AVI file interoperability, MPEG 1 encoding and third party plug-in support. Import or export your video clip in AVI format to powerful effects applications or add new NT based third party plug-ins to perform new compositing functions.

- 9360 OnLINE 3.0 RT Kit. Includes third party software from Boris Effects, Crystal Graphics Flying Fonts Pro, Crystal Graphics 3-D Vortex and Inscriber CG, Truevision Targa 2000 SDX board, and SDI input/output only. Compatible with Truevision Madras Transcoder. \$20,490.00
- 9355 OnLINE 3.0 RT Kit. Includes same third party software as 9360, Truevision Targa 2000 RTX board, analog component, composite, Y/C video I/O, and unbalanced and balanced audio I/O 44.1kHz and 48kHz (break out box included) . . . 19,490.00
- 9350 OnLINE 3.0 RT Kit. Includes same third party software as 9360, Truevision Targa 2000 DTX board, analog component, composite, Y/C video I/O, and unbalanced and balanced audio I/O 44.1kHz and 48kHz. 16,490.00
- 9250 OnLINE 3.0 XT Kit. Includes same third party software as 9360, Truevision Targa 2000 DTX Board, analog component, composite, Y/C video I/O, and unbalanced and balanced audio I/O 44.1kHz and 48kHz. 13,990.00
- 9300 OnLINE 3.0 RT software only. Includes same third party software as 9360 9,495.00
- 9200 OnLINE 3.0 XT software only. Includes same third party software as 9360 5,995.00
- 9300 OnLINE 3.0 XT to OnLINE 3.0 RT upgrade software only. Includes same third party software as 9360 4,000.00
- 8010 Hardware breakout box. Audio/video interface for Truevision Targa 2000 DTX board. 1,496.00
- 9004 D-Vision technical support pack. One year of unlimited hot-line telephone, faxes and E-mail support for software issues 995.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



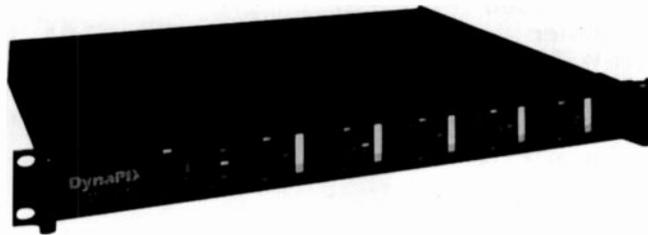
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MULTIRECEIVER DIVERSITY SYSTEM



DynaPIX

DTC Communications, Inc.



TRIAD™ Multireceiver Diversity System

■ Wireless video and stereo audio for mobile environments ■ Includes a multireceiver rackmount unit, transmitter and receiver antenna array
 ■ True diversity 3 receivers with option to upgrade to 5 receivers
 ■ Simple installation ■ Quick set-up ■ Proprietary Quality Video Detect (QVD)™ ■ Receivers are switched automatically at the horizontal line rate of ≈15,725 times/sec. using QVD method ■ QVD includes 4 basic elements: video synchronization detection circuit, balanced receiver architecture, DC restoration, and calibrated receive signal strength indication (RSSI) on each receiver ■ High performance receivers, -83dB sensitivity ■ 3 channels per system ■ 2.4-2.5GHz operation ■ Time code option ■ 12-32VDC operation ■ May be used in Electronic News Gathering (ENG) which requires an omnidirectional antenna array, and studio production applications ■ Other applications include: sports broadcasting, video assist, distributed educational video and robotic cameras ■ Convenient antenna options include: ENG Plate Array, Quick-Grip™ Mount, ENG Cross Bar Array and Omnidirectional, circularly polarized dipole antenna

Transmitter Specifications

Audio

Audio Subcarrier 6.0 and 6.5MHz
Audio Frequency Response 100Hz-15kHz
Total Harmonic Distortion <2.0%
Audio Input Level 1V p-p
Audio Impedance BNC 600 Ohms
 Lemo 47K Ohms

Video

Frequency Range 2.4-2.5GHz
Signal Formats NTSC, PAL
Modulation Bandwidth Wideband FM
Video Output 1V p-p
Video Deviation ±7.5MHz
Time Code LTC

Electrical

Input Voltage 12-32VDC
Input Current 500mA
Power Output VTX-100, FCC Part 15
 VTX-250, 250MW
 VTX-900, 1W

R-F Output Impedance 50 Ohms/TNC Connector
Signal To Noise 54dB
Channels 3, selectable across range

Mechanical

Dimensions without Anton/Bauer, 6.6"H x 4.1"W x 1.3"D
 with Anton/Bauer, 6.6"H x 4.1"W x 2.3"D
Weight 21oz.

Environmental

Operating Temperature -10°C to +50°C

Receiver Specifications

Audio

Audio Subcarrier 6.0 and 6.5MHz
Audio Frequency Response 100Hz-15kHz
Total Harmonic Distortion <2.0%
Audio Output Level 1V p-p
Audio Impedance 600 Ohms

Video

Frequency Range 2.4-2.5GHz
Signal Formats NTSC, PAL
Modulation Bandwidth Wideband FM
Video Output 1V p-p
Video Deviation ±7.5MHz
Automatic Gain Control yes
Time Code LTC

Electrical

Input Voltage 12-32VDC
Input Current 300mA (each RX)
R-F Input Impedance 50 Ohms/TNC Connector
Diversity System 3 RX min., 5 RX max.
Signal To Noise 60dB
Frequency Response 6MHz
Channels 3, selectable across range

Mechanical

Dimensions 1.75"H x 16.7"W x 14"D
Weight ≈8.5 lbs. (5 receivers)

Environmental

Operating Temperature -10°C to +50°C

PD-500	5 receiver rackmount system	\$14,599.00
PD-400	4 receiver rackmount system	12,299.00
PD-300	3 receiver rackmount system	9,999.00
PD-100-RX-A	Additional receiver module, installed after original sale	3,000.00
PS-1	Universal power supply, 90-230VAC input, 24VDC output, 40W	599.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

REFERENCE

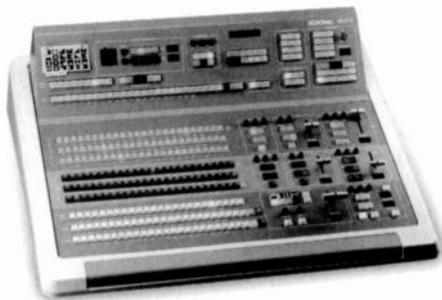


MVS Series Video Switchers

The MVS family has a modular design that supports all 3 analog formats, and will be upgradable to digital. The MVS Series switchers share a common chassis that takes up to 3 identical video cards. With 1 card installed it runs composite, with 2 it runs Y/C, and with 3 it's a component switcher. It is field upgradable in minutes.

All ECHOlab MVS analog switchers are digital-upgradable. The control panels are already digital, so only the analog frame will need to be traded-in on a new digital frame. You can install the highest performance analog switchers in their class today, and then upgrade to digital when needed.

Note: ECHOlab is introducing upgrade paths from every MVS analog switcher to new models in the 2000 and 5000 families. These take the risk out of buying analog today.



MVS9 Video Switchers

- 24 inputs, including 20 external, plus black and 3 colors
- Program/preset architecture so every shot is previewed before going to the air ▪ 2½ M/Es, including an extra ½ for much more flexible and powerful take transitions ▪ 5 keyers for 5 layers of linear keys, and 7 layers of video ▪ Live control with a dedicated button for every crosspoint, 10 dedicated displays for transition rates, and 5 fader arms ▪ Advanced key tracking so a keyer selects its signal with its associated setup ▪ Key priorities can be transparently changed in real time ▪ Timeline sequence memory saves 10 sequences of up to 999 steps each, for later recall ▪ 9 panel setup memories can recall an entire panel, or just 1 M/E or Key ▪ Undo button, so you can easily back up, and you can back up 11 times ▪ 2 pattern generators with 39 wipes each ▪ 3 digital colorizers ▪ Spotlight ▪ Standard auxiliary bus, including M/Es and clean feed ▪ Compact 2" thick control panel and 4RU chassis ▪ Control panel and chassis are connected with 2 standard coax cables, with up to 1000' separation ▪ NTSC or PAL

MVS9-3W Component switcher \$48,900.00
 MVS9-2W Y/C switcher. 40,900.00
 MVS9-1W Composite switcher 32,900.00

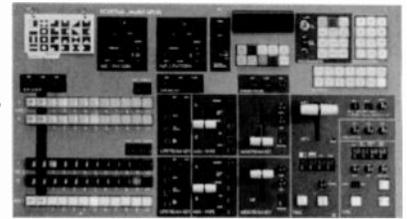
MVS8 Video Switchers

- Control panel ▪ Compact 4-rack unit frame ▪ 24 video inputs including 20 external inputs and 3 internal digital colorizers plus black
- 6 key inputs ▪ 1.5 M/Es ▪ 3 keyers ▪ Panel setup memory ▪ Timeline sequence memory ▪ 1 AUX bus output ▪ Options include: SMPTE 100 or 200 protocols; single or dual chromakeyers; 2 more AUX bus outputs; Off line storage; and spare power supplies ▪ NTSC or PAL

MVS8-3W Component switcher. \$39,900.00
 MVS8-2W Y/C switcher 32,400.00
 MVS8-1W Composite switcher. 24,900.00

MVS6 Video Switcher

- Up to 22 inputs
- 13 inputs are standard, including 11 external plus black and color background ▪ 9 more external inputs are optional ▪ 2½ M/Es for complex effects ▪ 5 keyers offer 5 layers of linear keys ▪ Up to 7 layers of video in a single pass
- 10 timeline sequence memories ▪ Dynamic swapping of keyer priorities ▪ 5 fader arms ▪ Flexible bus routing ▪ 6 key inputs ▪ Linear and luminance keying ▪ Master fade-to-black ▪ 9 panel setup memories to save the entire panel setting ▪ 39 wipe patterns
- 3 digital color generators ▪ Nonvolatile memory ▪ Genlock input
- Outputs for preview, 2 program, composite preview, composite program, 3 blackburst, tally and edit control interface ▪ Compact 2" thick control panels and 3RU chassis ▪ Control panel and chassis are connected with 2 standard coax cables up to 1000' away ▪ NTSC or PAL



MVS6-3W Component switcher \$21,900.00
 MVS6-2W Y/C switcher. 19,900.00
 MVS6-1W Composite switcher 17,995.00

MV55 Video Switcher

- 12 inputs, including 10 external inputs plus color background and black, each with its own button for fast-paced production ▪ Timeline sequence memory for saving a sequence of up to 999 steps for later recall on the air ▪ Optional midstream keyer ▪ Dedicated buttons for faster access to all control functions ▪ Flexible bus routing ▪ 6 key inputs ▪ Linear and luminance keying ▪ Master fade-to-black
- 9 panel setup memories to save the entire panel setting ▪ 39 wipe patterns ▪ 3 digital color generators ▪ Nonvolatile memory
- Genlock input ▪ Outputs for preview, 2 program, composite preview, composite program, 3 blackburst, tally and edit control interface ▪ Compact 2" thick control panels and 3RU chassis
- Control panel and chassis are connected with 2 standard coax cables up to 1000' away ▪ NTSC or PAL

MV55-3W Component switcher \$13,900.00
 MV55-2W Y/C switcher. 11,900.00
 MV55-1W Composite switcher 9,995.00
 MIDKEY-5 Optional third keyer for midstream 1,200.00

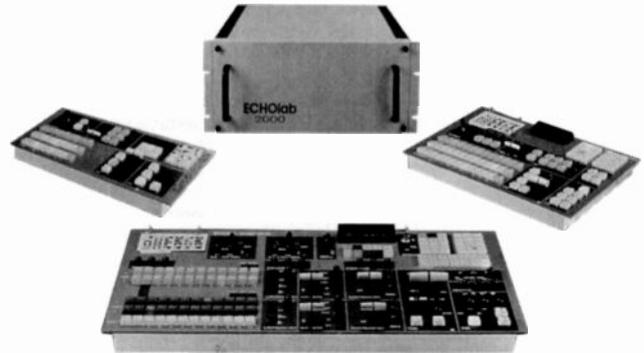
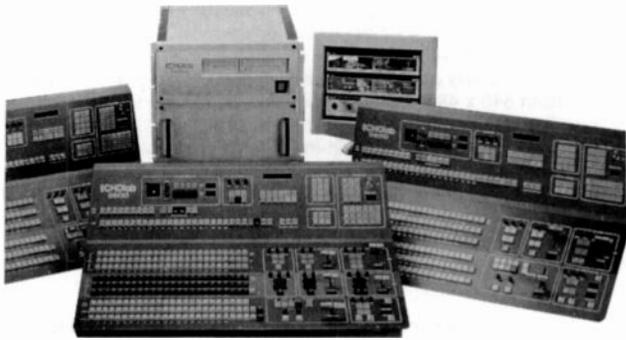
MVS3 Video Switcher

- 8 inputs, with 6 external plus color background and black ▪ 4 more external inputs are available with an optional shift button
- Program/reset architecture, the ideal for live production ▪ 1½ M/Es, with the extra ½ for flexible takes ▪ 2 keyers, including a downstream keyer ▪ Flexible bus routing ▪ 6 key inputs ▪ Linear and luminance keying ▪ Master fade-to-black ▪ 9 panel setup memories to save the entire panel setting ▪ 39 wipe patterns ▪ 3 digital color generators
- Nonvolatile memory ▪ Genlock input ▪ Outputs for preview, 2 program, composite preview, composite program, 3 blackburst, tally and edit control interface ▪ Compact 2" thick control panels and 3RU chassis ▪ Control panel and chassis are connected with 2 standard coax cables up to 1000' away ▪ NTSC or PAL

MVS3-3W Component switcher \$11,995.00
 MVS3-2W Y/C switcher. 9,995.00
 MVS3-1W Composite switcher 7,995.00
 SHIFT3 12-input option. 800.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





5000 Series Digital Video Switchers

Common Features

- Full-function program/preset layout, with up to 2.5 M/Es and 5 keys—2 upstream, 2 midstream and 1 downstream—with dual chromakeys, for demanding live or post-productions
- Quality 10-bit CCIR-601 component digital 4:2:2:YUV
- Up to 34 video and key inputs
- 17 outputs: 2 program/preview, 9 AUX bus (or ME), and 6 internal AUX output for internal DVEs, clip store and still store
- Supports 7 different digital and analog I/O formats: Digital: component (D1), composite (D2), and FireWire; Analog: component, composite, Y/C, and RGB
- Advanced memories for timeline sequences, setups, multiple undos and transition preview
- Built-in Pentium® computer running Windows NT®, and ready to accept open architecture options, including a clip store, still store, and DVEs
- Up to 128G bytes memory
- 4 Movie-2 bus® and PCI slots, 4 ISA slots and 6 disk bays
- Over 20G byte disk storage
- Movie-2 bus internal video highway handles 15 D1 streams (15X the effective capacity of PCI)
- Can connect into a studio's network to directly control devices all over the studio
- Dedicated real time co-processor for all critical switcher functions
- Fully redundant power supply available
- Includes: large color console monitor to display controls for switcher, clip store, DVEs, CGs, still store, network, etc.; Windows NT and ECHOlab software; CD-ROM and floppy drives; mouse and keyboard
- Supports all present and future Windows NT digital hardware and software
- 10RU frame
- Frame power: 300W
- Frame weight: 65 lbs.

5900

Includes common features, plus: 34 inputs: 27 external, 7 internal (24 direct access) 2.5 M/Es 5 keys Panel measures 6.3"H x 37"W x 27.3"D (16 x 94 x 69cm) Upgrade for MVS9 analog switcher \$52,000.00

5800

Includes common features, plus: 32 inputs: 27 external, 5 internal (24 direct access) 1.5 M/Es 3 keys Panel measures 6.3"H x 37"W x 22"D (16 x 94 x 56cm) Upgrade for MVS8 analog switcher \$39,900.00

5700

Includes common features, plus: 32 inputs: 27 external, 5 internal (14 direct access) 1.5 M/Es 3 keys Panel measures 6.3"H x 29"W x 22"D (16 x 75 x 56cm) \$29,900.00

2000 Series Digital Video Switchers

Common Features

- Ideal for live and post-production work
- Uses technology derived from the ECHOlab 5000 series
- 10-bit CCIR-601 component digital
- Modular frame accepts 7 different I/O formats: digital component (D1), digital composite (D2), analog component, analog composite, Y/C, RGB, and digital FireWire
- Modules are available in 8- or 10-bit
- Up to 16 external video and key inputs
- Up to 2.5 M/Es, 5 keys, and chromakeyer
- Precise digital keys for upstream, midstream, downstream and a YUV or RGB chromakey
- Each M/E has a digital wipe generator (up to 3 total for each switcher) with over 50 wipes, and several internal digital color generators
- NTSC or PAL
- Available as upgrades for MVS3, MVSS, and MVS6 analog switchers by using common control panels, so upgrading means simply swapping analog frame for digital 2000 frame

2600

Includes common features, plus: 2.5 M/Es 5 keys 5 fader arms 3 digital pattern generators 11 video and key inputs installed Timeline sequence memory of up to 999 steps Upgrade for MVS6 analog switcher \$28,995.00

2500

Includes common features, plus: 1.5 M/Es Optional third key 8 video and key inputs installed Timeline sequence memory of up to 999 steps Upgrade for MVSS analog switcher . . . \$18,995.00

2300

Includes common features, plus: 1.5 M/Es 2 keys 2 wipe generators 5 video and key inputs installed Upgrade for MVS3 analog switcher \$15,995.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





VistaPro™ DLP™ Projector

▪ Designed for large audience venues where vivid images (video/graphics/data) and high ambient light must work together ▪ 1300 ANSI lumens ▪ 3-chip Digital Light Processing (DLP) technology ▪ 500W CERMAX® integrated xenon lamp/reflector ▪ Proscan videoprocessing ▪ Compelling, film-like image quality ▪ Significantly reduced pixellization resulting in higher perceived resolution ▪ Ease of set-up—no convergence necessary ▪ Built-in image resizing ▪ Interchangeable fixed focal length (1.2:1, 3:1, 5:1 and 7:1) and zoom (1.5:3, 3:7) lenses ▪ RS-232 communication ▪ Intuitive graphical user interface ▪ 848 x 600 native resolution with resizing capabilities to scale down from 1280 x 1024 and 1024 x 768, and scale up from 640 x 480 ▪ Horizontal frequency: 15-64kHz ▪ Vertical frequency: 45-120Hz ▪ Greater than 100:1 contrast ratio ▪ Displays on-screen sizes from 5'-25' diagonal ▪ Multistandard video decoder module included ▪ Accepts component video ▪ Back lit IR remote control keypad included. \$39,995.00

**Marquee® 9500LC/9501LC ACON CRT
Video/Data/Graphics
Projectors**

▪ Liquid coupled, 9" electromagnetic focus CRTs and lenses with Scheimpflug adjustment ▪ 1200 peak lumens, 240 ANSI lumens including green filter for improved sharpness and video color ▪ 1500 x 1200 ANSI pixel resolution ▪ 67" to 25' diagonal screen size ▪ Built-in RGB and RS-232 inputs ▪ 120MHz (-3dB) bandwidth ▪ 15-130kHz auto lock horizontal scan frequency ▪ 38-180Hz auto lock vertical scan frequency ▪ Retrace: 2-6.5ms horizontal, less than 300ms vertical ▪ 650W maximum power ▪ Full-function infrared back lit remote control including 45-zone digital convergence with on-screen help ▪ Includes contrast modulation for improved color and brightness uniformity ▪ Multilanguage software ▪ 17"H x 28"W x 32"D ▪ Available in stereoscopic version for 3-D visualization

Marquee 9500LC \$34,995.00
Marquee 9501LC With ACON 36,995.00



**Marquee 8500/8500LC/8501/8501LC
ACON CRT Video/Data/Graphics Projectors**

▪ 8" electromagnetic focus CRTs with Scheimpflug adjustment ▪ Liquid coupled electromagnetic focus CRTs (LC models only) ▪ 900 peak lumens; 225 ANSI lumens (8500/8501), 235 ANSI lumens (8500LC/8501LC) ▪ 1350 x 1100 ANSI pixel resolution ▪ 67" to 25' diagonal screen size ▪ Built-in RGB and RS-232 inputs ▪ 100MHz (-3dB) bandwidth ▪ 15-130kHz auto lock horizontal scan frequency ▪ 45-150Hz autolock vertical scan frequency ▪ Retrace: 2.1-6.0ms horizontal, less than 300ms vertical ▪ 650W maximum power ▪ Full-function infrared back lit remote control including 45-zone digital convergence with on-screen help ▪ Includes contrast modulation for improved color and brightness uniformity ▪ Multilanguage software ▪ 17"H x 28"W x 32"D ▪ Available in stereoscopic version for 3-D visualization

Marquee 8500 \$23,995.00
Marquee 8501 With ACON 25,995.00
Marquee 8500LC 28,995.00
Marquee 8501LC With ACON 30,995.00

ShowStar Plus LCD Video/Data Projector

▪ Choice of 1.5:1, 2:1 or 3:1 standard fixed focal length lens ▪ Line doubling decoder ▪ High definition f/4.8 hybrid lens ▪ Capable of resolving 640 x 480 pixels or 550 TV lines ▪ 1200 ANSI lumens brightness ▪ 575W metal-halide arc lamp ▪ Preset keystone of 10° vertically to accommodate the majority of presentation settings ▪ Screen size range: 5-30' diagonal ▪ Accepts 1



composite video or S-Video, or 1 RGBHV with separate sync, composite sync or sync on green ▪ Video clock rate: 13-33MHz ▪ Horizontal scan: 14-37kHz ▪ Vertical scan: 49-72Hz (noninterlaced) ▪ RS-232 control of multiple projectors ▪ With appropriate cables and/or interface adaptors, the following sources may also be accommodated: IBM VGA (modes 1, 2 and 3); Macintosh 640 x 480, IBM 9-pin digital RGB (text mode); In Focus LiteShow II; Hercules 9-pin digital (text mode) ▪ Includes: high frequency, back lit remote control keypad; built-in full-function keypad; 5-language capability inherent in software (English, French, German, Spanish and Italian) ▪ Comes in light or dark gray case \$23,995.00

**ECP 4501 Plus/4500/3501/3500 ACON CRT
Video/Data/Graphics Projectors**

Common Features

▪ 7" high resolution electrostatic focus CRTs ▪ High definition f/1.0 hybrid lens ▪ 10 line pairs per mm ▪ Capable of resolving 1280 x 1024 pixels or 1020 TV lines ▪ Keystone circuitry ▪ ACON automatic convergence, on 4501 and 3501, aligns the 3 CRTs to a sharp image in less than 3 minutes with 4 keystrokes ▪ Selectable blanking time for source-to-source switching ▪ Automatically updates all parameters, including convergence, contrast, brightness, keystone, move, etc., when a new source is detected ▪ Input level 0.5-1.5V p-p, 75 ohms ±1% terminated ▪ Retrace time: less than 300µs ▪ 90-264VAC

ECP 4501 Includes common features, plus: ▪ ACON and 1 input module ▪ 70MHz bandwidth ±3dB ▪ Available in stereoscopic version for 3-D visualization ▪ 1005 lumens (10% peak white) brightness. \$20,995.00
ECP 4500 Same as ECP 4501, except does not include ACON and 1 input module 18,995.00
ECP 3501 Includes common features, plus: ▪ ACON and 1 input module ▪ 60MHz bandwidth ±3dB ▪ 725 lumens (10% peak white) brightness 13,995.00
ECP 3500 Same as ECP 3501, except does not include ACON and 1 input module 11,995.00

EPS800™ LCD Projection System

▪ 3 x 1.3" polysilicon panels ▪ SVGA (800 x 600) resolution ▪ Power zoom lens (1.3:1), power focus lens, power lens shift (0° to 10°) ▪ 420 ANSI lumens brightness ▪ 250W metal-halide lamp with 1000 hour life expectancy, user-changeable lamp system ▪ Horizontal frequency: 15-52kHz ▪ Vertical frequency: 50-77Hz ▪ Screen size: 20-300" diagonal ▪ RS-232 control ▪ >100:1 contrast ratio ▪ Accepts 1 composite or 1 S-Video ▪ 7"H x 13.3"W x 21"D \$7,995.00

**Retro IV Self-Contained 72" Rear Screen
Projection System**

▪ Easily collapsible to 32"D to fit in standard doorways ▪ Can be easily removed through back access door to use as a stand-alone projector or for service and maintenance ▪ Front access door allows adjustment of optics from front of unit ▪ Single mirror design provides superior image ▪ Heavy-duty concealed 4" casters ▪ Thin screen frame allows ganging and stacking of units for multiscreen images ▪ Accepts ShowStar Plus, ECP 3500 and 4500, Marquee 8110, 8500 and 9500LC and the VistaPro (with 1.2:1 lens in shallow version of the unit) ▪ 77"H x 58.5"W x 57"D (pullout adds 25" to depth) ▪ Color: Textured, semi-matte black steel with optional wood trim panels ▪ Screen: 72" diagonal, Dai Nippon high resolution, wide-angle screen \$7,295.00
Optional black-matrix screen unit. 7,895.00

ECP and Marquee Projector Accessories

Marquee signal switcher \$1,995.00
ECP IR video/data switcher 1,495.00
Marquee multistandard single scan decoder. 895.00
Marquee ceiling mount 895.00
ECP multistandard S-VHS decoder. 595.00
ECP mobile cart. 499.00
ECP ceiling mount. 355.00
Interface modules. 175.00-600.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



Video Display Systems

■ For commercial, retail, leisure, control room or broadcast applications ■ Product line features PROCUBE™ AC or CRT monitor displays and PICBLOC™ 3, IMAGESTAR™ and IMAGEMAG™ processing control systems ■ Systems can be custom designed to integrate video, sound, auxiliary effects and lighting

PROCUBE AC/AutoColor 41" Projection Cube

■ Designed for high impact, large-screen displays ■ Features the latest in rear screen technology for near seamless images and wide viewing angles ■ Includes AutoColor, a sophisticated measuring system/color analyzer that reduces color set-up time to just minutes per cube

CRT Monitor Displays

■ Electrosonic offers 25" and 27" monitors ■ Depending on monitor type, available inputs include RGB and/or composite ■ Some models include priority switching capabilities

PICBLOC 3 Videowall Control System

■ Sophisticated, widely used system ■ Available in a wide variety of configurations to meet virtually any display requirement, ranging from multisource video systems to computer

ESS928 High Resolution Input Card

■ Provides superior picture sharpness and color registration for standard video sources ■ Advanced image processing utilizing a digital comb filter ensures component-like quality from composite video sources

ESS927 Dual Output Card

■ Provides totally independent control of 2 monitor or projection displays ■ Advanced ASIC control provides full chroma and luma interpolation ■ Extensive post DAC filtering provides a superb, natural looking image quality up to 16 x 16 magnification

ESS924 HDTV Input Card

■ Cinema picture quality from high definition images is available ■ Input options include HDVS and European HD standards

ESS929 Workstation Input Card

■ RISC technology ■ Allows virtually any type computer graphics source, from VGA to workstation, such as 1280 x 1024 and beyond ■ Unique convolving technology allows the image to be displayed completely without loss of data

C-THROUGH™ for Windows® Programming Software

■ Electrosonic's PC program for videowall programming ■ Outstanding graphics interface makes full use of the VGA display screen ■ Easy to use for the beginner, comprehensive and fast for the expert ■ Compatible with Windows 3.1 and Windows 95 ■ Features new run-effects page and scheduler program ■ Desktop can be customized to user's preference

PICBOX™ Programmable Controller

■ Cost-effective, real time and programmable controller with preset effects ■ Offers simple pushbutton operation for up to 6 x 6 videowalls ■ Available in handheld or mounted versions

IMAGESTAR 31K and IMAGESTAR Processors

■ IMAGESTAR 31K is the highest quality, dual input videowall processor in the IMAGE range ■ Capable of producing dynamic displays without flicker on 31kHz monitor or projection cube videowalls ■ IMAGESTAR is a high quality dual input processor cable ■ Capable of producing flexible displays on a monitor or projection cube videowall ■ Operates with standard 15kHz display devices

IMAGEMAG 2 Processor

■ Low cost ■ Offers the most requested single source features for monitor walls ■ Easily installed and operated ■ Controls up to 36 screens ■ Choice of full magnification or 4 preprogrammed modes

Preconfigured Videowall Systems

PICBLOC 3 and PROCUBE AC—40" Projection Cubes

8 x 8	\$580,214.00	4 x 4	\$157,958.00
7 x 7	449,966.00	3 x 3	95,634.00
6 x 6	324,717.00	2 x 2	47,468.00
5 x 5	245,918.00		

PICBLOC 3 and ESIVWM25—25" Monitors

8 x 8	\$225,654.00	4 x 4	\$60,198.00
7 x 7	178,506.00	3 x 3	40,644.00
6 x 6	125,277.00	2 x 2	23,028.00
5 x 5	93,168.00		

IMAGESTAR and 3 x 3 Projection FrameWall

3 x 3	\$67,436.00
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Programmed IMAGEMAG 2 and ESIVWM25—25" Monitors

6 x 6	\$61,239.00	3 x 3	\$15,282.00
5 x 5	43,997.00	2 x 2	10,437.00
4 x 4	28,483.00		

C-THROUGH controlled and nonprogrammed IMAGEMAG systems also available.



2 x 2 Configuration

2xVIEW Modular Video Display System

■ Self-contained display that conveniently and efficiently houses the powerful IMAGESTAR processor ■ Suitable for applications such as sports bars, retail and other environments where space and accessibility are issues ■ Professionally displays 4 or 6 separate individual pictures while still allowing any one of them to be magnified ■ Front accessible components for easy set-up and service ■ Shallow 32" depth; may be installed against site walls ■ Built-in equipment rack space ■ Projection: Easily removable (65 lbs.) projector chassis (2 per module) with custom front surface mirrors ■ Screen: Size: 106" diagonal; Image Center: 60.5" above floor; Mullion: 0.19" per screen; Gain: 6.5, 2-piece, high contrast black stripe lenticular with fresnel lens ■ Processing: IMAGESTAR with digital comb filter and digital decoder, plus full third interlace motion interpolation ■ Accepts up to 6 separate NTSC inputs with full magnification available on any 1 selected input ■ Control: Integrated infrared remote control that allows individual or multiple projector control

2xVIEW 2 x 3 configuration	\$45,570.00
2xVIEW 2 x 2 configuration	31,875.00

MOBILEVIEW Modular Video Display System

■ Roadable version of the 2xVIEW ■ Durable encasement is a must for road crews requiring flexibility and reliability in their products ■ Shallow depth of only 37" ■ Built-in casters for mobility ■ Ready-to-go connect cable for modular setup ■ All components safely stowed for reliable repeat use under a cost-effective shipping container

*Price On Request

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



Electro-Voice®



MICROPHONES/ SPEAKER SYSTEMS/ AMPLIFIERS

Condenser Microphones

- RE2000 Supercardioid studio condenser microphone \$2450.00
- CS15P Cardioid condenser (phantom only) \$422.00
- RE1000 Supercardioid condenser microphone 928.00
- CT30 Full-range condenser desk mount microphone \$382.00
- RE500 Cardioid, true condenser handheld microphone 375.00
- RE200 Cardioid, true condenser instrument microphone 372.00
- CP218 Miniature gooseneck condenser microphone, 18" 297.00
- CP212 Miniature gooseneck condenser microphone, 12" 280.00
- CO2Pro Single and double mic holding, a single cable holding tie bars, mic and cable tie tack, mic and cable vampire clips and zippered carrying pouch 250.00
- CO2 Single and double mic holding, a single cable holding tie bars, zippered carrying pouch 209.00



CS15P

Dynamic Microphones

- 635A/B 6-Pack Package of six 635A/B microphones without accessories \$800.00
- 635A 6-Pack Package of six 635A microphones without accessories 800.00
- RE27N/D Variable-D® N/DYM® dynamic cardioid 744.00
- RE20 Variable-D dynamic cardioid 655.00
- RE38N/D N/DYM variable response single D dynamic cardioid \$582.00
- RE45N/D N/DYM dynamic Cardiline® handheld shotgun 564.00
- RE18 Shock mounted Variable-D dynamic cardioid 494.00
- RE16 Variable-D dynamic supercardioid with pop filter; Frequency Response: 80-15,000Hz, 7¾" long 465.00
- RE15 Variable-D dynamic supercardioid; Frequency Response: 80-15,000Hz, 6¾" long 439.00
- RE55 Dynamic omni, wide range 394.00
- RE11 Variable-D dynamic supercardioid with pop filter; Frequency Response: 90-13,000Hz, 7¾" long 312.00
- RE50N/D N/DYM shock mounted dynamic omni for ENG applications 299.00
- RE50N/D-B N/DYM shock mounted dynamic omni for ENG applications, flat black finish 299.00
- RE10 Variable-D dynamic supercardioid; Frequency Response: 90-13,000Hz, 6¾" long \$295.00
- RE50 Shock mounted dynamic omni for ENG applications 250.00
- RE50/B Shock mounted dynamic omni flat black finish 250.00
- DO56 Shock mounted, handheld dynamic omni 227.00
- 635N/D N/DYM dynamic omni 170.00
- 635N/D-B N/DYM dynamic omni, flat black finish 170.00
- 635L Long-handled version of the 635A 165.00
- 635LB Same as above, flat black finish 165.00
- 635A Dynamic omni 150.00
- 635A/B Dynamic omni, flat black finish 150.00
- MC200 Neodymium dynamic vocal microphone, unidirectional, on/off switch 158.00
- MC300 Directional dynamic vocal microphone 84.00



635A



RE27N/D



RE11

N/DYM Microphones

- N/D857B N/DYM dynamic supercardioid concert-sound vocal microphone, bass roll-off switch \$558.00
- N/D757B N/DYM dynamic supercardioid vocal microphone, Frequency Response: 25-22,000Hz 410.00
- N/D408B N/DYM dynamic supercardioid instrument microphone 324.00
- N/D457B N/DYM dynamic hypercardioid vocal microphone 322.00
- N/D308B N/DYM dynamic cardioid instrument microphone 278.00
- N/D3575B N/DYM dynamic supercardioid microphone; on/off switch 270.00
- N/D357B N/DYM dynamic supercardioid vocal microphone, Frequency Response: 25-20,000Hz \$256.00
- N/D257B N/DYM dynamic cardioid vocal microphone 190.00
- N/D157B N/DYM dynamic cardioid vocal/instrument microphone 144.00



DeltaMax™ Electronically Controlled Sound-Reinforcement Speaker Systems

- DMS-1183/64 ■ Full-range ■ Ultra-compact/high-level, 3-way design ■ EVX-180A low-frequency section: excellent linear excursion superior thermal capability ■ 12" mid-bass driver ■ Coaxially-mounted HF section includes ND4 compression driver for very high output, extremely rigid piston range performance ■ Fully rotatable MB/HF section for vertical or horizontal suspension ■ Front dimensions identical to DMS-2181 and compatible with MT-2/MT-2.5 series products \$5430.00
- DMS-2181T ■ Low frequency ■ Dual 18" manifold enclosure ■ EVX-180A woofer for maximum LF output capability with reduced distortion ■ 1200W long-term power handling ■ Flying system ■ 37 to 160Hz operating range 3434.00
- DMS-2181 ■ Low frequency ■ Dual 18" enclosure ■ EVX-180A woofer with almost 3dB additional LF output capability/reduced distortion ■ 1200W long-term power handling ■ Flying system ■ 36 to 100Hz operating range ■ Alternative grille design 3250.00
- DMS-1152/64 ■ 2-way ■ Full-range ■ Substantially improved vocal range performance ■ EVX-155 woofer with almost 3dB additional LF output, more power handling/lower distortion ■ DH2T compression driver ■ HF horn fully rotatable for vertical or horizontal suspension 2600.00
- DMS-1122/85 ■ 2-way ■ Full-range ■ 12" woofer design provides improved internal damping of cone ■ DH2T compression driver ■ Substantially improved vocal range performance ■ Full-track flying hardware with top/bottom strapping ■ HF horn 2259.00
- DMS-1181 ■ Low frequency ■ Full-range ■ EVX-180A woofer ■ Superior linear excursion capability ■ 36-100Hz operating range ■ Full flying capability 1667.00

KW Series Power Amplifiers

- 12Hz to 60kHz frequency response ■ 20Hz to 20kHz power bandwidth ■ S/N: ≥100dB below rated output ■ 20V-30V/μsec slew rate ■ >200 damping factor ■ 2RU ■ 3.5"H x 19"W x 18.5"D
- 2.0kW Output power per channel: 550W @ 8 ohms, 900W @ 4 ohms. Bridged output power: 1850W @ 8 ohms \$1709.00
- 1.5kW Output power per channel: 450W @ 8 ohms, 750W @ 4 ohms. Bridged output power: 1550W @ 8 ohms 1459.00
- 1.0kW Output power per channel: 300W @ 8 ohms, 450W @ 4 ohms. Bridged output power: 950W @ 8 ohms 1225.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



SPEAKER SYSTEMS/ PROJECTOR



Sentry® 100EL Professional Powered Monitor System

▪ Combines the advantages of the Sentry 100A monitor with a self-contained, high performance power amplifier ▪ Designed with the broadcast/recording studio engineer in mind, although it is well-suited for a wide variety of professional applications ▪ Offers uniform frequency response and dispersion across a wide-range, extended low frequency response ▪ Super Dome tweeter used to reproduce program material at high levels, with response out to 18kHz and uniform dispersion (120° at 5kHz) ▪ Low frequency section is an 8" direct radiator woofer installed in an optimally vented enclosure ▪ Housed in a utility cabinet wrapped in a special scratch-resistant, matte black vinyl ▪ Cabinet size is designed for rackmounting ▪ When coupled with the SRB-7 rackmount/wall mount kit, the Sentry 100EL can be integrated into virtually any environment that demands conservation of space such as mobile recording studio facilities ▪ Steel reinforced grille is covered with a custom gray cloth
▪ Frequency Response: 40-20,000Hz. \$909.00
SRB-7 Rackmount/wall mount bracket. 46.50

Sentry 500 Professional Monitor System

▪ Designed for the broadcast/recording studio engineer ▪ Combines 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 ▪ Frequency Response: 40-18,000Hz ▪ Impedance: 8 ohms ▪ 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. \$805.00
WB23 Wall mount kit. 53.50

Sentry 100A Monitor Speaker System

▪ High efficiency and extended low frequency response, high power capacity across the entire frequency range, uniform frequency response and dispersion, all in a compact package ▪ Housed in a utility cabinet wrapped in a special, scratch-resistant, matte black vinyl ▪ Cabinet size is 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 ▪ Steel reinforced grille is covered with a custom gray cloth ▪ Frequency Response: 45-18,000Hz ▪ Impedance: 6 ohms ▪ 17 1/2"H x 12"W x 11 1/4"D ▪ 28 lbs. \$459.00
SRB-7 Rackmount/wall mount bracket. 46.50

S-40 Compact Monitor System

▪ 2-way personal-sized monitor designed to accommodate a variety of monitoring and playback applications ▪ 5/8" direct-radiating polypropylene woofer coupled with a 1" ferro-cooled, soft dome tweeter ▪ Long-term power handling is rated at 160W per EIA standard RS-426A ▪ Includes EV's exclusive PRO™ circuit protection, providing independent protection for the woofer and tweeter ▪ Threaded inserts in combination with optional mounting hardware, providing a flexible mounting system ▪ Optimally vented enclosure constructed of high impact polystyrene structural foam
▪ Available in black or white



S-40TB S-40 with transformer, black pr./\$405.00
S-40TW S-40 with transformer, white pr./405.00
S-40B Black pr./317.00
S-40W White pr./317.00
S-40MBB Wall/stand mounting bracket kit for S-40B (black) pr./34.50
S-40MBW Same as above in white pr./34.50

S-80A 2-Way Speaker System

▪ Constant directivity system for uniform coverage ▪ 8" woofer ▪ 1 1/4" tweeter with dispersion controlling Direktor™ ▪ Automatically resetting tweeter protection circuit ▪ Screw terminals plus 1/4" phone jack allows

connection of multiple S-80s in parallel ▪ Speaker baffle easily rotates 180° ensuring flexibility in installation ▪ Combination of optimal crossover frequency and high frequency dispersion controlling Direktor eliminates "hot spots" and "dead zones" that might occur at certain frequencies with other 2-way speaker systems ▪ Mountable using OmniMount Series 75 mounting hardware. \$284.00
S-80-MB Mounting bracket 31.00

S-60B 2-Way Speaker System

▪ Constant directivity for uniform coverage ▪ 6 1/2" woofer ▪ 1 1/4" with dispersion-controlling Direktor ▪ Automatically resetting tweeter protection circuit ▪ Ideal for sound reinforcement and monitoring ▪ Both drivers feature low leakage magnet designs and the woofer is screened to permit use close to video monitors ▪ Mountable using OmniMount® Series 75 mounting hardware. \$237.00
S-60-MB Mounting bracket 25.50
S-60MBW Same as S-60MB but in white 25.50

System 200™ Modular Pro Audio Speaker System

▪ Composed of the S_x200 full-range speaker system, the S_b120a powered bass module (or the S_b120 nonpowered bass module) and the X_p200 electronic system controller
▪ The sound of the System 200 will please the most discriminating ears ▪ Flat response, depth and detail of expensive studio monitors ▪ Bass module available with or without an integral power amplifier ▪ Output in the 60-100Hz range increased on the order of 4dB ▪ Lightweight speaker systems (32-39 lbs.) may be stand mounted or suspended with their integral, safety certified hanging points



System 200a Two S_x200 full-range speaker systems, two S_b120a powered low frequency modules and one X_p200 system controller \$3563.00
System 200 Two S_x200 full-range speaker systems, two S_b120 low frequency modules and one X_p200 system controller 2800.00
S_b120a Lightweight, long throw, single 12", powered bass module with internal 400W amp 945.00
S_x200 Lightweight, 300W, 12", 2-way speaker system 755.00
S_x200W S_x200 in white 755.00
S_x100 Lightweight, 200W, 12", 2-way speaker system 577.00
S_b120 Lightweight, 300W, long throw, single 12" bass module. 544.00
X_p200A Dual channel electronic system controller for S_x100, S_x200, S_b120 and S_b120a 352.00
PDS_x Padded case for S_x100, S_b120, S_b120a, S_x200 and S_x200W 76.00
M_b300 Horizontal array kit for side-by-side arraying of two S_b120, S_x100 or S_x200 56.50
M_b300W M_b300 in white 56.50
M_b200W M_b200 in white 45.00
M_b200 Installation kit and wall/ceiling mounting bracket for S_b120, S_x100 and S_x200 45.00
M_b100 Forged eyebolt attachment kit (set of 3) for S_b120, S_x100 and S_x200 16.50
F200 Monitor foot adaptor for S_x200, S_x200W, S_x100 (pair) 16.50

High-Q Long-Throw, High-Frequency Projector

▪ Driver protected by PRO™ circuit for long life ▪ Resonant Drive™ technology for extended highs ▪ Unique coverage pattern, ideal for real life rooms ▪ Integral 1 1/2" stand mount for versatile mounting
▪ Professional-grade compression driver with titanium diaphragm for smooth response ▪ Polyethylene molded enclosure ▪ Universal input connector (1/4" phone jack) ▪ Built-in crossover. \$165.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





EV-X Visual Presenter For X-Rays

- Designed for telemedicine applications ▪ 1/2" IT 3-CCD camera
 - Approximately 1.2 million pixels ▪ 700 TV lines horizontal resolution
 - 3 video outputs: composite, S-VHS and RGB ▪ 12X powered zoom with powered extender ▪ Powered movable camera head for X-Y directions, 90° turnable (horizontal) ▪ Built-in 14" x 17" base light ▪ Auto focus and powered manual focus ▪ Auto/manual iris ▪ RS-232C terminal ▪ Gamma correction ▪ Color/detail/pedestal controls ▪ S/N: >58dB
- 9084 \$24,900.00

EV-700AF Visual Presenter

- 1/2" IT 3-CCD camera with top light
 - 410,000 x 3 pixels ▪ Captures 3-D objects, documents and transparencies (miniature slides and/or large 14 1/2" x 10" OHP films) with the built-in base light ▪ Negative/positive conversion possible ▪ 12X powered zoom lens with auto focus
 - True RGB/S-Video outlets ▪ RS-232C terminal for use through a computer ▪ Wired remote control terminal ▪ 70W, 120VAC, 60Hz ▪ S/N: 58dB
 - Over 650 TV lines horizontal resolution
 - 768(H) x 494(V) x 3 ▪ f/2.5 f=8.5-68mm (Mode A); f/3.3 f=13-106mm (Mode B)
- 9308 \$14,500.00



EV-500AF Visual Presenter

- 1/2" IT CCD camera ▪ Clear image video of any material from 3-D objects to transparencies ▪ 410,000 pixels CCD pickup ▪ Auto focus ▪ 10X powered zoom ▪ Front panel touch controls ▪ Rotating camera head
 - Top light ▪ Built-in base light for presentation of slides, OHP film and other transparent material ▪ Negative/positive conversion possible ▪ Auto white balance ▪ Color-B/W selection ▪ Iris control ▪ RGB output ▪ S-Video input ▪ AC outlet ▪ S/N: 48dB ▪ f/1.8-2.3 f=8.80mm ▪ 811(H) x 508(V)
- 9312 \$5,250.00

EV-400AF Visual Presenter

- 1/2" IT CCD camera ▪ High resolution, 410,000 pixel, color CCD chip yielding 450 lines horizontal resolution ▪ Versatile 8:1 power zoom magnifications ▪ Auto focus ▪ Letter sized base lighting and top lighting built-in ▪ RS-232C terminal for controlling functions through a PC ▪ Variety of optional accessories, including wired and wireless remote controllers
 - f/1.4-2.1 f=8.5-68mm ▪ More than 46dB S/N ratio
- 9318 \$4,250.00
 9360 Wireless remote control RCW-552 (EV-500/400AF) 360.00
 9359 Wired remote control RC-551 (EV-500/400AF):
 11' cable 115.00

EV-368 Visual Presenter

- 1/2" IT CCD camera ▪ f/1.4-2.1 f=8.5-68mm ▪ Front control powered or manual focus ▪ Auto ins ▪ Built-in A4 size base light box ▪ Auto/manual white balance ▪ Can be used for transparencies, slides, negatives or opaques
 - 3 video outputs including S-Video ▪ 360,000 pixels ▪ 400 lines horizontal resolution ▪ Color-B/W switch
- 9305 \$3,720.00
 9350 LU-100 Twin Lighting Unit, supplied with
 2 FL6W lamps 314.00

DT-100AF Desktop Presenter

- Includes features of larger video document cameras in a compact, lightweight design ▪ 1/2" 410,000-pixel CCD image sensor delivers over 450(H) lines of resolution ▪ 10X powered zoom lens ▪ f/1.8-2.7, f=5.8-58mm ▪ Auto focus ▪ IR wireless remote control ▪ RS-232C terminal allows PC control ▪ Auto white balance ▪ S/N ratio: more than 47dB ▪ Rotatable camera head can serve as a face camera ▪ LED light indicator allows a user to center any object, including 3-D images, on the video monitor ▪ Loophrough audio ▪ Built-in microphone ▪ Frame folds to 3.7" x 4.7" x 17.7" for storage
- 9343 \$1,700.00

DT-50 Desktop Presenter

- Low noise 1/2" 410,000-pixel CCD chip delivers over 450(H) TV lines of resolution ▪ S/N ratio: more than 47dB ▪ Camera is detachable from its post, transforming it into a flexible handheld camera which can be used for videoconferencing and numerous close-up imaging functions
 - Camera head freely attaches and slides up or down its post, creating a zoom effect ▪ Built-in microphone
- 9344 \$850.00



EDP-2100 3-LCD Data Projector

- Three 1 1/2" polysilicon TFT active-matrix LCD panels ▪ 1,557,504 pixels
 - SVGA, VGA, Mac-16 and compressed XGA computer compatibility
 - NTSC, S-Video, PAL and SECAM video compatibility ▪ 250W metal-halide lamp ▪ 500 ANSI lumens brightness ▪ Projection lens: f=50-70mm/F 3.6-4.1 manual zoom and focus ▪ 23"-300" diagonal image ▪ 3.6'-36' projection distance ▪ Built-in 1.5W monaural amplifier and speaker ▪ 120VAC, 50/60Hz ▪ 360W power consumption ▪ RS-232C control: D-sub 9-pin
- 9382 \$7,995.00

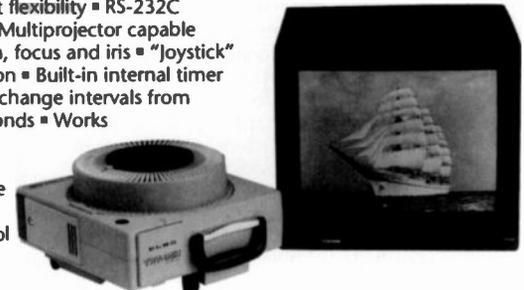
TRV-35RAS Random Access 3-CCD Slide Film-to-Video Converter

- Converts 35mm slide films into vivid high resolution video images for monitors, PCs or large screen projection devices ▪ Can be incorporated into a conferencing environment via direct video connection ▪ Three 1/2" CCD chips for a combined total of 1,230,000 pixels, producing 700 TV lines of resolution for all 2" x 2" 35mm slide formats ▪ Video output selections include composite, S-Video and RGB with sync ▪ Direct PC interface possible through the use of a video frame grabber card ▪ RS-232C terminal ▪ Any slide can be randomly selected by pressing the relevant numeric functions on the optional keyboard ▪ Built-in 2.5X zoom magnification enables image enlargement and horizontal and vertical cropping of slides ▪ Manual or auto control of focus, iris and white balance ▪ AV1/AV2 internal source ▪ Negative/positive invert ▪ Color-B/W switch ▪ Color adjustment selection
- 9083 \$14,500.00



TRV-35H Slide Film-to-Video Converter

- Video output flexibility ▪ RS-232C controllable ▪ Multiprojector capable
 - Power zoom, focus and iris ▪ "Joystick" color correction ▪ Built-in internal timer controls slide change intervals from 1.5 to 30 seconds ▪ Works with universal 80-slide trays and can utilize an external remote control for simple forward and reverse slide changing
 - Single 1/2" CCD chip yields 410,000 pixels ▪ Over 450 lines horizontal resolution for all 2" x 2" 35mm slides
- 9315 \$3,975.00
 8549-1 24V-6W lamp for TRV-35H (2 pieces in a box) box/6.60



VMX-4 4-Channel Video Mixer

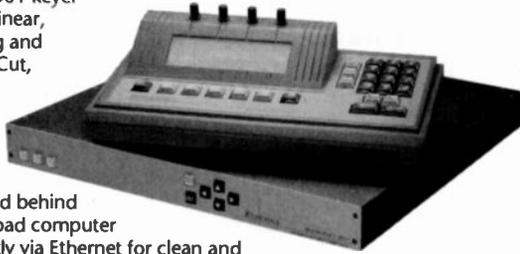
- 2 to 4 TRV-35Hs with a dissolve controller can be set-up for a multi-image system with fade-in, fade-out and dissolve directly controlled by the VMX-4
- 8772 \$630.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



Catalyst™ CV Serial Digital Keyer/Switcher

- 10-bit CCIR 601 keyer
- Luminance, linear, additive keying and chromakeys ▪ Cut, mix, dissolve keys and full-screen graphics
- Mix or wipe the background behind a key ▪ Download computer graphics directly via Ethernet for clean and simple keying ▪ Ethernet interface for control from SGI, PC and Mac
- Matte/Bkgd generators, drop shadow ▪ RS-422 ▪ 4 video buses: program background, program preset, key fill, and key source ▪ User-adjustable key source positioning with sub-pixel resolution contributes perfectly aligned graphics and key signals



Catalyst CV Keyer/Switcher	\$13,950.00
SmartStore Video frame buffer for CAT-CV	1,500.00
CAT-CV CTRL Control panel	1,000.00
CAT-CV Input Module	750.00
CAT-CV Output Module	750.00

Jacquard™ Graphics SGI Character Generator Solution

- SGI solution for use with Antero Ascent™ character generator in broadcast and post ▪ Key SGI generated CG material over live video
 - 10-bit CCIR 601 serial digital component with full analog interfaces available ▪ Cut, mix, dissolve keys and full-screen graphics ▪ Combine with Antero Ascent CG software and Silicon Graphics Indigo² IMPACT™
 - Multiple background, video and key inputs ▪ System provides multiple layers ▪ Program and preview outputs with key channel ▪ Seamlessly route and key any of the input signals, whether the source is live video or a workstation ▪ Complex wipe patterns generated in the workstation can be downloaded into Jacquard Graphics for use on air or in an edit session
- | | |
|-----------------------------------|-------------|
| Jacquard™ Graphics for SGI | \$12,500.00 |
| JaqStore video frame buffer | 1,500.00 |
| Input Module | 750.00 |
| Output Module | 750.00 |

MultiBuffer™ DS-1 Component Digital Image Store

- Flawless Mac, SGI, SUN and PC/NT video transfers ▪ Proper aspect ratio auto sizing ▪ Separate genlock reference input ▪ Supports 525/625 line format ▪ Networkable resource available to all Macs ▪ Key/alpha channel support ▪ Interfield flicker eliminated ▪ Integrate with digital and analog systems ▪ Full 10-bit digital CCIR 601/259M ▪ Digital Beta, D1, D5 and DCT compatible ▪ 1RU, 17" deep ▪ Includes Envoy™ software for Macintosh with Applescript™ ▪ Expandable to 4 inputs/outputs ▪ Closed caption insertion capability ▪ 2 SmartStore™ digital video buffers, expandable to 4
- | | |
|--|------------|
| DS-1 and Envoy | \$9,950.00 |
| CAT-CV Module Optional keyer module | 4,000.00 |
| SmartStore Up to 2 additional may be added | 1,500.00 |
| DS-1 Input Module | 750.00 |
| DS-1 Output Module | 750.00 |

MultiBuffer DS-2 Digital Image Store

- Dual buffer composite digital/NTSC frame buffer ▪ Effects layering with analog or digital switchers ▪ Analog and digital composite inputs and outputs ▪ Remote controllable ▪ NTSC to digital composite conversion
 - Upload and download Macintosh graphics ▪ Dual buffers store video and key signals ▪ Frame synchronization of input signals ▪ Digitally generates standard TV test patterns ▪ Mac based still store ▪ Genlock with adjustable timing ▪ Ethernet and AppleTalk™ interfaces for networking with multiple Macs ▪ Digitally transfer Mac animations to tape ▪ 1RU, 16" deep ▪ RS-422/232 serial ports ▪ Includes Envoy™ software for Macintosh with Applescript ▪ Ethernet included
- | | |
|---|------------|
| DS-2 and Envoy | \$6,200.00 |
| DS-2 Serial I/O Serial digital composite video I/O option | 1,800.00 |

Digital Composite Processing Amplifier

- Digital composite video proc amp 10-bit video processing amplifier
- | | |
|---|------------|
| DP-2, 2PP Chassis with 2 processors, parallel I/O | \$6,800.00 |
| DP-2, 1PP Chassis with 1 processor, parallel I/O | 4,500.00 |
| DP-2 Upgrade 1 Field upgrade to add 2nd processor | 3,000.00 |
| DP-2 Serial I/O Serial digital composite video I/O option | 1,500.00 |

Serial Box™ IV Analog Composite and Y/C To Serial Digital Component Converter

- Analog to 10-bit serial digital converter with 2X oversampling
 - Both composite and S-Video inputs are provided with 4 independently buffered Serial Digital Component outputs ▪ Ideal way to integrate composite signals into every component digital suite ▪ Use it to bring existing composite signals into a digital switcher ▪ Built-in adaptive comb filter reduces chroma crawl and can be switched on or off from the front panel ▪ Optional SmartStore™ buffer can be added for a frame of delay and enables fine timing adjustment up to ± 5 lines
- | | |
|--|------------|
| Optional Smartstore frame buffer | \$3,600.00 |
| Optional Smartstore frame buffer | 1,500.00 |

Serial Box V Serial Digital Component to Analog Converter

- Simultaneous component, composite and Y/C outputs ▪ Genlock reference input and timing controls ▪ Full chroma bandwidth and key channel support ▪ Full 10-bit 601 with colorspace conversion done at 12-bit precision ▪ 2X oversampled ▪ Converts both video and key signals in one package ▪ Second channel option offers key channel conversion for proper 4:2:2:4 support ▪ Active loopthrough from serial input provides one independently buffered re-clocked output ▪ Genlock reference input, looping ▪ Output timing control of sync and subcarrier
 - NTSC/PAL and Y/C (follows line rate)
 \$2,700.00 |
- Serial Box V Option Key channel, full chroma bandwidth support
4:2:2:4, 4:4:4 and 4:4:4:4
- | |
|--------|
| 600.00 |
|--------|

Serial Box III Analog Component to Serial Converter

- Full, 10-bit analog to digital converter utilizing 2X oversampling
 - Configurable to either RGB or YUV format signals ▪ Accommodates both sync on Y or external sync ▪ Serial digital component output conforms with CCIR 601 ▪ Built-in fan-out distribution amplifier
 - Proprietary automatic DC clamp circuit ▪ Horizontal positioning
 - Housed in same chassis as Serial Box I and II and any pair may be mounted together to form a single 1RU package.
 \$2,600.00 |
- | | |
|---|----------|
| 4:4:4 option | 3,600.00 |
| Serial Box III Minus Analog key signal to serial digital key signal converter | 2,100.00 |

Serial Box I Serial Digital to Analog Converter

- Integrates serial digital component signals into practical systems ▪ ½RU space ▪ Ideal for driving picture and waveform monitors, maintaining serial digital routing and signal distribution with analog conversion at the destination and feeding the inputs of analog VTRs ▪ Supports the complete range of analog component formats, including RGB, Y/R-Y/B-Y, SMPTE and BetaCam standards in both 525 and 625 line systems ▪ 10-bit resolution
- | | |
|---|------------|
| Serial Box I | \$1,200.00 |
| Serial Box II Same as Serial Box I plus PAL and S-Video outputs. . . | 1,600.00 |
| Serial Box I Minus Serial digital key signal to analog key signal converter | 900.00 |

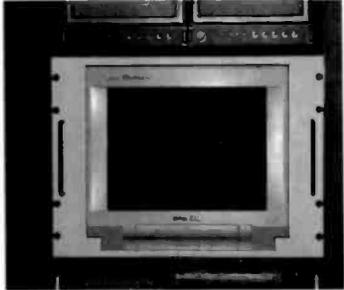
TC400D 4-Channel TBC Controller With Memory

- Provides full, independent control of the proc amp functions of up to 4 VTR time base correctors or D2 VTRs ▪ GPI and Editor interfaces provide frame-accurate access to transitions between registers ▪ The CP10, a remote panel, is also available for greater flexibility ▪ 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 ▪ Programmable transitions between TBC setups ▪ AppleTalk compatible LAN port for graphic interface and off-line storage on Apple Macintosh computers
 \$3,000.00 |

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



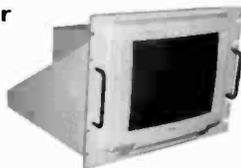
Rackmounted Computer Monitors



E2-SVGA15 15" XGA Monitor

- 0.28 dot pitch
- Multiscan high frequency 30-64kHz (continuous)
- 8 rack units (14")

E2-SVGA15 \$599.00



E2-SVGA17 17" XGA Monitor

- 0.26 dot pitch
- Multiscan high frequency 30-76kHz (continuous)
- 9 rack units (15.75")

E2-SVGA17 \$849.00



E2CKS-1 Rackmounted 101-Key Sliding Computer Keyboard Shelf

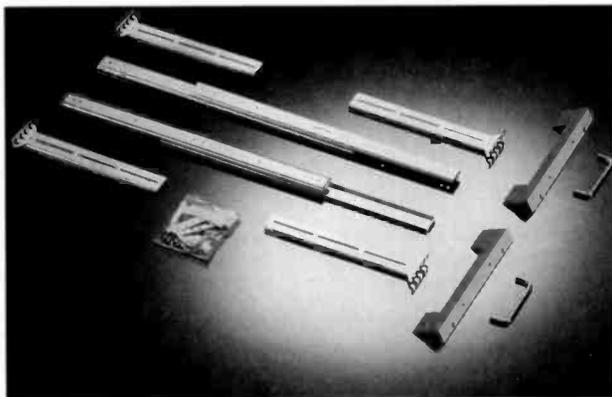


- Slide-out mousepad/rollerball pad adjusts to right or left handed user
- Takes 5 minutes to install
- Takes up only 3 rack units
- Padded wrist rest
- Front door conceals keyboard when not in use

E2CKS-1 \$209.95

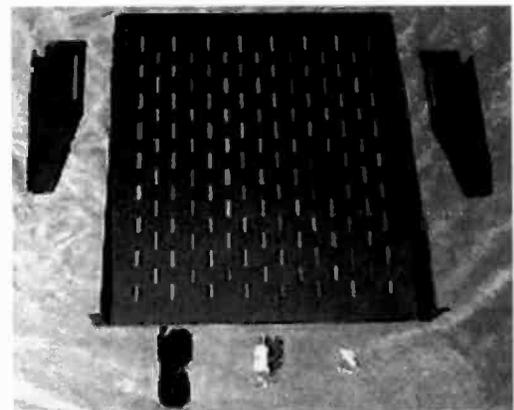


Rackmounts



Ergo offers a large assortment of Rackmount accessories and slidekits.

Flexi-Mount Static Rackmount System



Perfect for mounting the following:

- Monitors
 - Hard drives
 - Printers
 - Laserdiscs
 - Tower cases
 - Audio equipment
- Flexi-mount Prices start at \$84.95

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

DAs/MASTER CLOCKS/ REMOTE DISPLAYS



Note: Products with the "LX" Series prefix are designed with a streamlined enclosure that allows the product to fit perfectly into any environment. These black texture painted enclosures come with 1/2" bright yellow displays, that are viewable up to 20'.

Distribution Amplifiers

ES-209A Video/Stereo Distribution Amplifier ■ Designed to meet the needs of tape duplication systems as well as installations that require audio and/or video distribution ■ 1 x 12 video DA ■ 1 x 12 stereo DA ■ Professional audio and video quality ■ Left and right channel audio gain controls ■ Transformerless audio DA ■ Internal linearity control ■ Loopthrough audio and video inputs ■ Video DC, EQ and gain controls ■ Rackmount enclosure. \$495.00

ES-2940 Dual 1 x 4 Audio/Video Distribution Amplifier ■ Single rackmounted unit which contains 2 audio distribution amplifiers, 2 video distribution amplifiers and 5 output RS-170A blackburst sync generator ■ Designed to meet the requirements of systems which must interface with, distribute and synchronize video and audio signals ■ Video gain and EQ controls ■ Rackmount enclosure ■ Audio gain control ■ Accepts balanced or unbalanced audio ■ Broadcast quality audio and video. \$900.00

Master Clocks

ES-160A ■ Master clock/time code generator ■ Employs a temperature compensated/voltage controlled crystal oscillator which provides the ES-160A with an accuracy of one second per month ■ Six .56" yellow LEDs display real time while the unit simultaneously generates several types of time and date codes and a 1pps signal ■ Completely self-contained unit ■ Automatic daylight savings time correction ■ Rugged rackmount enclosure ■ 10-hour battery back-up ■ External time sync input ■ 12 or 24 hour display. \$1595.00

ES-180A ■ WWV master clock and time code generator ■ Displays 6 digits of time information as received from the NIST via the internal 5-channel WWV receiver ■ Generates 2 types of time code and a 1pps signal ■ These outputs allow the ES-180A to easily interface with new or existing computer and clock systems ■ Automatic daylight savings time correction ■ Headphone jack and audio output ■ 4-hour battery back-up ■ Time zone offset ■ Rugged rackmount enclosure ■ Self-calibrating crystal continuously improves accuracy . . . \$2195.00



ES-185A ■ GPS master clock and time code generator ■ Displays 9 digits of time and date information as received via the internal 8-channel GPS receiver ■ Generates several types of time code and an extremely accurate 1pps signal ■ These outputs allow the ES-185A to easily interface with new or existing computer, automation and clock systems ■ Automatic daylight savings time correction ■ Rugged rackmount enclosure ■ 4-hour battery back-up ■ GPS lock indicator ■ Indoor/outdoor antenna and 18" cable ■ Standard outputs include SMPTE/EBU, IRIG-B, ASCII (RS-232C) and ESE ■ Cable propagation delay correction ■ Loss of GPS signal output ■ Time zone offset \$2495.00

ES-192F/ES-194F ■ Feature a 6-digit yellow LED display and an ESE serial time code output ■ Accessible on the rear mounted 9-pin D-sub connector is a 1pps output ■ Remote access to the 3 setting controls ■ External sync input ■ Simple installation and operation ■ AM/PM indicator ■ External sync input \$270.00
LX-192F/LX-194F Same as ES-192A/ES-194A except with "LX" enclosure 370.00



Remote Displays (Digital Slaves)

Display sizes range from .4" high to 4" high and the enclosures available include desktop, console mount, wall mount and rackmount. These units are designed to decode and display ESE serial time code. The ESE time code may originate from any ESE master clock or an ESE converter. If the slave is to receive its time code from an ESE master clock with TC90 time code, the slave can be jumpered to display either time or date.

ES-161A Remote Digital Display ■ 5W power ■ 117VAC, 50/60Hz ■ Desktop enclosure ■ 6-digit .56" yellow display ■ 20' viewing distance. \$210.00
LX-161A Same as ES-161A except with "LX" enclosure 310.00

ES-166A Jumbo Clock Display ■ 5W power ■ 117VAC, 50/60Hz ■ Desktop enclosure ■ 6-digit 1" yellow display ■ 35' viewing distance. \$320.00
LX-166A Same as ES-166A except with "LX" enclosure 420.00

ES-171A Console Mount Remote Display ■ 4W ■ 117VAC, 50/60Hz ■ Console mount enclosure ■ 6-digit .4" red display ■ 10' viewing distance. \$192.00

ES-991A 4-Digit Serial Input Slave ■ 8W ■ 117VAC, 50/60Hz ■ Desktop enclosure ■ 4-digit 2.3" yellow display ■ 70' viewing distance \$410.00

ES-993A 6-Digit Serial Input Slave ■ 10W ■ 117VAC, 50/60Hz ■ Wall mount enclosure ■ 6-digit 2.3" yellow 1" sec display ■ 70' viewing distance \$575.00

Accessory

ES-195 ■ 6-digit Master Calendar display and time code generator ■ Designed to receive ESE serial time code and display 6 digits of date or 6 digits of time ■ 2 different time code outputs are accessible on rear-mounted connectors ■ ASCII RS-232C output is formatted to interface directly with a Grass Valley Group Master 21 switcher ■ ESE time code output is capable of driving up to 100 ESE serial time code displays. \$700.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





CLOCKS/TIMERS/ TIME CODE/TEST EQUIPMENT

Analog Systems

ES-162A Impulse Driver ■ Designed to drive up to 80 ES-162S impulse clocks or 20 favag clocks (12V) ■ Battery back-up ■ Can keep its analog clock synchronized to a master clock when driven from the Master's 1pps output. \$420.00
LX-162S Same as ES 162A except with "LX" enclosure 230.00

ES-165 Impulse Driver ■ Designed to provide continuous synchronized power to ES-168 impulse clocks ■ Up to 50 ES-168 impulse clocks can be driven by the ES-165 ■ An onboard battery and charger delivers power to the clocks for up to 12 hours should a power outage occur \$345.00

Self-Setting Analog Clocks ■ Set themselves to the correct time as received via SMPTE/EBU, ASCII or ESE time code inputs ■ Also able to synchronize with an alternating 12 or 24V impulse signal, or to act as a stand-alone clock ■ Sweep or step mode and time zone offset are user set via rear mounted DIP switches

- LX-5116 16" face dial \$675.00
- LX-5112 12" face dial \$75.00
- LX-5105 5" face dial \$75.00



ES-992A

Stand-Alone Clocks

ES-992A/994A 6-Digit Clocks ■ 12 or 24 hour format ■ Wallmount enclosure ■ 2.3" yellow LEDs readable at up to 70' ■ 8W ■ 117VAC, 50/60Hz ■ Pushbutton controls ■ Simple installation and operation ■ Master/slave arrangements available ■ Long-life LED displays . . \$540.00



LX-362A

Up/Down Timers

ES-362A ■ 100-minute up/down timers with an ESE serial timer code output ■ Timer information is displayed on .56" yellow LED displays ■ Features a 4-digit leverwheel switch that allows the time to be easily preset onto the display ■ 5 front-mounted pushbutton switches allow for simple operation of the up, down, stop, reset and preset functions ■ Rear-mounted 9-pin D-sub connector provides access to these same 5 functions ■ ESE serial timer code is accessible via a rear mounted BNC connector \$435.00
LX-362A Same as ES 362A except with "LX" enclosure 535.00

ES-391A Presettable Up/Down Timer ■ Leverwheel preset switch offers a quick and simple method for presetting the display for a subsequent countdown ■ Leverwheel and pushbutton controls mounted on a remote control plate connected to the unit via a 6' cable ■ Simple installation and operation ■ 100-minute timing range ■ Optional stop, reverse-count and relay closure at zero ■ Long-life LED displays \$615.00

Up Timers

ES-590A 60-Minute Timer ■ Designed for when the viewing distance is to exceed 20', or where viewer impact or the visually impaired are the main concern ■ Feature yellow LEDs and a rear mounted connector which allows access to the start, stop and reset controls ■ Specifying option "D" provides the 3 controls (pushbutton switches) mounted to a remote switchplate and connected to the unit via a 6' cable ■ 2.3" displays are easily read at up to 70' \$435.00



LX-366A

Timer Slaves

ES-361A ■ Perfect synchronization with master ■ Long-life LED displays ■ Simple installation ■ 5W power ■ 2-wire, 6' line cord ■ 117VAC, 50/60Hz ■ BNC connector ■ Desktop enclosure ■ 4-digit .56" yellow display ■ 20' viewing distance \$210.00
LX-361A Same as ES-361A except with "LX" enclosure 310.00
ES-366A Same as ES-361A, except displays are 1" high 320.00
LX-366A Same as ES-366A except with "LX" enclosure 420.00
ES-369A Same as ES-361A, except displays are 2" high 410.00

SMPTE and EBU Time Code Product

ES-488 SMPTE Time Code Generator/Reader/Insertter ■ Microprocessor-based unit which can generate, read and insert SMPTE time code ■ All controls are front panel mounted while the inputs and outputs are accessible via rear mounted connectors
Reader Features ■ Display hold control ■ Reads time or user bits ■ .55" yellow LED display ■ Reconstituted time code output ■ Error detection and correction ■ "On time" count ■ Reads from 1/8 to 30x play speed ■ Drop frame and non-drop frame modes
Generator Features ■ Hold control ■ Color frame input ■ Jam-sync capability ■ Generates time and user bits ■ Drop frame and non-drop frame modes ■ Time code sync'd to composite video
Insertter Features ■ Brightness control ■ Vertical and horizontal size and position controls ■ White video characters are located within a black "keyed" background ■ Other features are identical to those of the reader \$1195.00

Video Products

ES-206E Video Time and Date Generator ■ Superimposes time and date information upon a looped-through video signal ■ Unit generates 6 digits of date and 6 digits of time ■ Front panel mounted controls set the clock/calendar and allow the size, position and brightness of the display to be adjusted ■ Applications include security systems, video courtrooms, and in-house video time and date. \$580.00

ES-219A Blackburst Generator ■ Designed to provide a dependable and extremely stable composite blackburst signal ■ Output signal consists of sync, blanking, reference black setup level and color burst which is SCH phased ■ Sub-carrier frequency and SCH phase may be adjusted internally if desired ■ Optional audio reference tone ■ Enhanced noise suppression circuitry ■ Excellent temperature stability ■ Genlockable \$195.00
LX-219A Same as ES-219AF except with "LX" enclosure and 2 additional outputs 395.00
PC-219 Computer card. PC and Amiga compatible version of ES-219. 175.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





**Ensemble Gold Multi-Linear® Editing System/
Clip Cutter Nonlinear Newsroom
Editing System**

Supported Equipment

Professional editors must be able to control professional equipment in a way that satisfies the most exacting user. ETC! includes advanced drivers for all major VTRs, switchers and serial audio mixers. With the increasing popularity of digital disk recorders, we are pleased to supply drivers for those machines as well. All ETC! product software is constantly being updated to include support for the latest professional video equipment.

**Eliminate Time Consuming Predigitization
of Nonlinear Editing**

Wasting time digitizing video clips is now history. You can roll directly from your sources to the Tektronix Profile™. Manipulate your clips in the complete nonlinear workspace. Full clip management for easy access to predigitized material on the Profile expands the benefits of the Multi-Linear work environment.



Ensemble Gold

- Random access to video clips
- A timeline on which you can arrange segments and events
- The ability to arrange these clips and then rearrange them in a timely (near immediate) basis
- Edit Linear, make changes nonlinear
- Direct recording to the Tektronix Profile without predigitizing
- Simultaneously assemble and refine segments and projects
- Linear-style keyboard and screen for quick user transition with a minimal learning curve
- Adjustable handles for creative changes
- Use existing switcher for effects and transitions

Combining the best characteristics of linear tape and disk-based editing, Tektronix Profile's intelligent compression and ETC's Multi-Linear time saving features eliminate both predigitizing and the need to preselect scenes. Speed, flexibility, and an intuitive graphic representation of the timeline and EDL makes the Ensemble Gold unique. ETC's architecture allows virtually any external special effects and transition device to be used. Edit Linear, make changes in nonlinear and make different versions for different people in a snap.

Use Your Switcher and DVE in a Nonlinear Edit Suite

Ensemble Gold is open architecture. Combine existing hardware such as switchers, DVEs, and other professional video devices into the Ensemble Gold nonlinear system. New products, as they become available, can be easily integrated into the system. The Ensemble Gold design provides real time effects.

System Includes

Ensemble Gold is shipped with an industrial rackmount computer, two 4-port interface cards, 4 GPUs, custom keyboard, JS/200 control panel, Ensemble Gold and Ensemble Pro 5 software and manuals.

Available Options

- Extended GPI options card (adds 8 additional relays)
- PRA/100 Audio Preview Switcher

Ensemble Gold \$34,995.00



Clip Cutter

- Nonlinear News Editor for Tektronix Profile
- Edit Linear, make changes nonlinear
- Direct recording to the Profile without predigitizing
- Simultaneously assemble and refine segments and projects
- Use up to 4 Clip Cutters with one Profile
- Adjustable handles for creative changes
- Import clip segments from other Profile systems
- External VTR control

The question of disk-based vs. tape-based media management is no longer a debate. Editing Technologies and Tektronix offer a cost-effective solution for multichannel disk recording and editing. The ETC Clip Cutter controlling the Tektronix Profile is capable of multistation nonlinear editing. Up to 4 Clip Cutter work stations can control one Profile. Each station can digitize, edit and play to air independent of other disk activities. There is no more cost- or time-effective way to edit news.

System Includes

Clip Cutter is shipped with an industrial rackmount computer, interface card, custom keyboard, JS/200 control panel, Clip Cutter and Stiletto software and manuals.

Options Available

Optional Playout software to cue up to 100 edit lists for on-air play. Clip Cutter can be upgraded to Ensemble Gold in the field.

Clip Cutter \$17,495.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





Ensemble Pro High Performance Linear Editing System

Ensemble Pro is one of the finest and most respected editors on the market. This fourth generation system is expandable from 2-VTR to 9-VTR control. All systems have 10 EDL bins, each bin holding 2000 edits, extensive list management features, full-time Auto Save which protects you from power failures, and the built-in Quick Clean and Trace programs which make for clean lists at the push of a button. The 3-, 5- and 9-machine versions have top flight switcher control, and the most versatile preroll functions in the editing business. The 5- and 9-VTR editors also have audio mixer control and a TBC remote port of Ensemble Designs and Zaxcom controllers.

Features

- All supported VTR drivers included
- All supported switcher drivers included
- All systems upgradeable
- A and B mode auto-assemble
- Auto-assemble with pre-cue
- Direct serial VTR control
- Direct serial switcher control
- Online help system
- 2000-line EDLs
- 10 EDL bins
- Dual list mode
- 4-channel audio
- Quick Clean
- Back trace
- Tape logging database
- Scene files combine
- Full list management
- Insert edit
- Delete edit with ripple
- Replace edit with ripple
- Pull-down menus
- File menu
- Save list
- Load list
- Save set-up
- Load set-up
- Save macros
- Load macros
- Save constants
- Load constants
- Change directory
- Recover list
- Export list
- Import list
- Copy file
- Delete file
- Exit program
- Tools menu
- Back time
- Mid time
- Normal match
- VTR position match
- Extended match
- Back space edit
- Assemble edit
- Clear all
- Scene file combine
- Update software
- Blocks and global menu
- Move
- Copy
- Delete
- Change reel assignment
- Change A/V modes
- Save block
- Change transition rates
- Copy to clipboard
- Insert from clipboard
- Adjust menu
- Record start
- Renumber events
- Playback offset
- Push list
- Snap list
- Re-sort
- Undo
- Change code type (NTSC only)
- Immediate trigger
- Auto transition
- Fade-to-black
- GPI fire
- TBC freeze
- TBC un-freeze
- Set-up menu
- System code type
- Master VTR type
- Play VTR types
- Preroll
- Postroll
- Color frame phase
- Set code generator
- Switcher type
- Switcher crosspoints
- Audio switcher type
- Audio switcher crosspoints
- Error display
- Display record out/duration
- Color palette
- Track ball
- TBC remote type
- Record VTR assign
- GPIs
- Relay closure
- Switcher memory fire
- Downstream keyer
- Downstream fade-to-black
- Delete event
- Trim event
- Audio memory trigger
- 10 macros
- Record macro
- List macro labels
- Cascade macros
- Loop macro
- De-loop macro
- Sort by record
- Sort by event
- Sort off

Ensemble Pro 9	A/B/C/D/E/F roll editor	\$10,995.00
Ensemble Pro 5	A/B/C/D roll (5-VTR) editor	8,995.00
Ensemble Pro 3	A/B roll (3-VTR) editor	5,995.00
Ensemble Pro 2	Cuts only (2-VTR) editor	2,995.00

Stiletto Desktop Post Editing System

Stiletto offers the newest edge in cost effective editing systems. When speed and ease of use are your primary concerns, the Stiletto from Editing Technologies is the one for you. With its well designed Graphical User Interface and precise machine control, no other editor has the seamless blend of mouse and keyboard control as Stiletto. Both the cuts only and A/B version have the same built-in VTR drivers and Quick Clean utility as Ensemble Pro. Best of all, Stiletto can be upgraded to Ensemble Pro as your needs and business grow.

Features

- Graphical User Interface
- Frame accurate
- Jog
- Alpha reel assign
- Split ends
- VTR shuttle control
- Set in
- Trim out
- Eject tape
- Cue to out time
- Color framing
- Auto-assemble
- Online help
- Change directory
- Re-sort list
- Tag
- Insert into list
- Offset playback times
- Search for event
- Serial VTR support
- Quick Clean
- Park and preview
- Clear marks
- Mouse point-and-click
- 999-line EDL
- LTC, VITC, CTL, AUTO
- Insert edits
- Trim split edit
- Mark in
- Set out
- Set edit length
- Cue to preroll
- Adjustable preroll
- Preview
- Open end edits
- Save list
- Auto save list
- Recall
- Change record times
- Delete
- Push list
- Search for note
- Set VTR code generator
- Print list
- Park and record
- Upgradeable to Ensemble
- VTR drivers included
- Windows icon
- Keyboard control
- Mixed code editing
- Assemble edits
- Notes in the list
- Mark out
- Trim in
- Unthread tape
- Cue to in time
- Adjustable postroll
- Record
- Replay
- Load list
- Back time edit
- Match
- Renumber
- Delete with ripple
- Snap list
- Search for reel
- Auto save configuration
- TC jump mode
- Import/export list
- Optional J/S knob
- Clear list

Stiletto Plus	A/B roll (3-VTR) editor	\$3,495.00
Stiletto	Cuts only (2-VTR) editor with keypad appliques	1,995.00

Options

Industrial Rackmount Computer	\$2,500.00	
PRM/100 Pre-Read Monitor Switcher	Enhances preview capabilities for suites with pre-read record VTRs	1,995.00
8-GPI Option Card	Adds 8 additional GPI relays to Ensemble Pro 3, 5, or 9	995.00
VGA Monitor	500.00	
JS/100 Jog Shuttle Knob	Low friction jog knob and 8 pre-programmed keys	395.00
PRA/100 Audio Preview Switcher for Ensemble Gold	TBA*	

*To Be Announced

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





**RGB 300 Universal Analog Interface
With Digital Control**

- 25 memory blocks ▪ Variable level (256 levels of control) ▪ Peaking control ▪ Horizontal picture centering ▪ Vertical picture centering
- Automatic sync output selection ▪ Automatic sync stripping ▪ LCD menu driven ▪ Automatic troubleshooting indication ▪ Security lock-out ▪ User-programmable "Property Of" and serial number display ▪ 15-135kHz compatibility scanning range ▪ 220MHz RGB video bandwidth ▪ MBC power output ▪ RS-232 control port ▪ Internal power supply ▪ High impact plastic enclosure ▪ Windows® software

60-148-01 100-240VAC World version \$1150.00



**RGB 202xi Universal Analog/
ECL/TTL System Interface**

- Auto Power LED ▪ Level and boost control ▪ Peaking control
- Vertical and horizontal picture centering (with memory) ▪ Scan rate read out ▪ Internal power supply ▪ Blue enhance (TTL) ▪ Digital sync processing ▪ 2 inputs: 1 analog/ECL and 1 analog/TTL and audio ▪ Video amplifier bandwidth: 350MHz ▪ Frequency range: 15-150kHz ▪ Universal compatibility ▪ Termination switches
- Automatic sync stripping ▪ Automatic sync output detection
- Audio interface ▪ 2-input switching ▪ Metal enclosure ▪ Output: analog R_GB, R_GBs or RGBHV sync and balanced stereo audio
- Includes built-in PC audio to line level audio converter

60-173-02 100-240VAC World version \$1150.00

RGB 124 Universal Analog/ECL/System Interface

- 200MHz bandwidth ▪ Allows any computer or workstation with an analog or ECL signal output to connect to a compatible large-screen data projector or monitor ▪ 2 individually buffered RGBHV outputs
- Provides horizontal centering and variable level control via metal control pots ▪ Automatic sync output detection ▪ Compatible with all high resolution computers including Siemens, NEC, IBM, Apple, Mac/Quadra, PowerMac, PowerPC, VESA, VGA, SuperVGA, SGI,

SUN Sparc, RasterOps, SuperMac, Radius, NCD, DEC, NeXT, Tektronix, Philips and Compaq ▪ 12-125kHz horizontal frequency range ▪ High-impact plastic enclosure ▪ Internal power supply

60-227-01 100-240V World version. \$1150.00

**RGB 120p Universal Analog/ECL
Computer Interface**

- 200MHz bandwidth ▪ Horizontal and vertical centering with ON/OFF switch ▪ Variable level control ▪ Peaking adjustment
- Automatic sync output detection ▪ Automatic sync stripping from RGB ▪ Sync polarity tracking ▪ Built-in "LCD" and "DLP" signal processing ▪ Flush mounted, metal adjustment pots ▪ 75 ohm input termination switch ▪ Compatible with any analog computer signal from 15-125kHz ▪ Compatible with computer systems such as VGA, SuperVGA, XGA, XGA-2, Mac, Quadra, SUN, SGI and more

60-130-01 115V US/Canada version \$695.00

**RGB 118 PLUS Universal Analog/
ECL/TTL Interface**

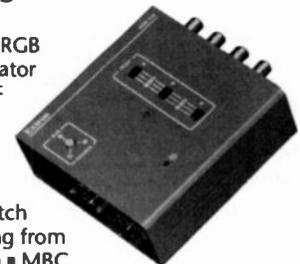
- 120MHz video bandwidth ▪ Horizontal and vertical picture centering with ON/OFF switches ▪ Peaking adjustment ▪ Vertical shift ▪ Variable gain controls (R, G, B) ▪ Sync on green switch for output ▪ Automatic sync stripping from RGB ▪ External control knobs ▪ Blue enhancement (TTL only) ▪ MBC power output
- Serration pulse removal switch ▪ SRI ▪ Compatible with any computer mainframe terminal, PC or workstation on the market
- LCD scan rate display detects H and V frequencies of any input computer source and displays those frequencies in Hertz

60-080-06 100-240VAC World version \$720.00
60-080-05 115V US/Canada version 695.00

**RGB 118 Universal Analog/
ECL/TTL Interface**

- Universal compatibility ▪ 120MHz RGB video bandwidth ▪ LED power indicator
- Horizontal centering with ON/OFF switch ▪ 3-position peaking/sharpness and gain control switch settings ▪ Variable gain controls (R, G, B) ▪ Serration pulse removal switch ▪ Sync on green switch for output ▪ Automatic sync stripping from RGB ▪ Blue enhancement (TTL only) ▪ MBC power output (MBC must be ordered separately) ▪ External control knobs ▪ Metal enclosure ▪ Horizontal frequency range between 15-100kHz ▪ 3 output configurations and special enhancement controls

60-080-02 100-240VAC World version \$520.00
60-080-01 115V US/Canada version 495.00



ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





RGB 103 PLUS Dedicated Mac/Quadra Interface

- Apple Mac, Quadra, PowerMac, Performa, PowerBook, E-Machines, Radius, Power Computing Corp. and SuperMac compatible interface
- Provides high resolution performance with pixel resolutions up to 2000 x 1620
- 300MHz RGB video bandwidth
- LCD scan rate indicator of horizontal and vertical scan frequencies
- 3-position peaking/sharpness switches
- 3-position gain switches
- Internal RGB gain controls
- Horizontal centering
- Automatic sync output detection
- Outputs RGBS, RG₅B or RGBHV
- Automatic sync stripping from R, G and B
- Metal enclosure
- Monitor Breakout Cable (MBC) input cable included
- Separate buffered local monitor output provided



60-131-02 100-240VAC World version \$720.00
60-131-01 115V US/Canada version 695.00

RGB 103E Dedicated Macintosh Interface

- Mac II Series, Performa, PowerBook, PowerMac, Power Computing Corp., Radius and Apple IIGS compatible interface
- Allows the video output of the Mac Series and Apple IIGS computers to be simultaneously displayed on the PC local monitor as well as a compatible large-screen data projector or data monitor
- Compatible with resolutions up to 640 x 480
- Horizontal centering control
- Color RGB and sync output
- Color RGB with sync on green output
- High-impact plastic enclosure
- MBC and termination adaptor included

60-120-01 115V US/Canada version \$310.00

RGB 109 PLUS Dedicated VGA, SuperVGA, XGA, VESA and XGA-2 Interface

- IBM VGA, XGA-2, SuperVGA and PowerPC compatible computer-video interface
- Provides high resolution performance for the high scan 31-107kHz graphics modes of SuperVGA and XGA-2
- 300MHz RGB video bandwidth
- 3-position gain and peaking/sharpness switches
- Computer 15-pin HD input cable included
- Separate buffered 15-pin VGA monitor output may be extended up to 75'
- LCD scan rate indicator of horizontal and vertical frequencies
- Automatic sync output detection
- Outputs RGBS, RG₅B or RGBHV
- Horizontal centering control with ON/OFF switch
- Metal enclosure
- MBC cable included
- Plug-and-play compatible

60-096-02 100-240VAC World version \$720.00
60-096-01 115V US/Canada version 695.00

RGB 109 Dedicated IBM VGA Interface

- Dedicated IBM PS/2, ValuePoint, Aptiva, VGA, VGA compatible and XGA computer-video interface
- Displays all modes of the IBM VGA and XGA display adaptor cards by tracking each mode and providing simultaneous local monitor viewing through an MBC
- Horizontal and vertical picture centering
- Color RGB and sync output
- Auto tracks all IBM VGA/XGA modes
- Auto power LED
- High impact plastic enclosure
- Easy installation and operation
- 4' MBC cable included

60-007-01 115V US/Canada version \$310.00

RGB 112 PLUS 13W3 Workstation (SUN/SGI) and IBM PowerPC Interface

- Universal 13W3 video connector computer-video interface connects any workstation using the 13W3 output connector to a

large-screen graphics projector or monitor

- Ideal for use with SUN, Silicon Graphics, NeXT, Solbourne, HP, DEC and IBM's PowerPCs using the 13W3 connector
- 300MHz RGB bandwidth
- LCD scan rate indicator of horizontal and vertical frequencies
- Horizontal centering with ON/OFF switch
- 3-position peaking/level switches
- Special sync processing for SGI and IBM
- Auto sync stripping from R, G and B video channels
- RGBS, RGBHV and RG₅B outputs
- Buffered local monitor output
- Metal enclosure
- High resolution MBC input cable included

60-149-02 100-240VAC World version \$720.00
60-149-01 115V US/Canada version 695.00

RGB 112 Dedicated SUN Workstation Interface

- Dedicated computer-video interface for NeXT and SUN SPARC station color computers with the 13W3 video monitor output connector
- 300MHz RGB video bandwidth
- Automatic horizontal picture centering
- LED power indicator
- RGB and sync color BNC output may be extended up to 150'
- Buffered monitor output may be extended up to 75'
- Looped monitor ID bits
- Internal variable gain (RGB)
- MBC cable included

60-097-01 115V US/Canada version \$525.00

RGB 105 Dedicated VGA and Mac Interface

- Dedicated IBM VGA, SuperVGA, VGA compatible and Mac/Quadra computer-video interface
- Will operate in a horizontal frequency range of 15-110kHz
- Design allows connection of both VGA and Mac computers through the same cable without degrading image quality and without the use of additional cables or buffers
- 200MHz RGB video bandwidth
- MBC cable included
- Variable level control
- Horizontal picture centering
- Separate local monitor outputs
- RGB and sync video outputs
- Automatic sync stripping
- High impact plastic enclosure
- Plug-and-play compatible
- Includes MFTA

60-142-02 100-240VAC World version \$520.00
60-142-01 115V US/Canada version 495.00

RGB 116pV/116pM/116pS/116pL (SuperVGA/Mac/SUN/Laptop) Computer-Video Interface Packs

- Dedicated analog computer-video interface sets for connecting specific computers to any large-screen presentation product
- Packs include: RGB 116p interface, MBC input cable



- 4 available packs
 - 15-100kHz scanning range
 - Compatibility includes Mac, IBM, VGA, SuperVGA, VESA, XGA, SGI, Quadra, Performa, DEC and PowerBook
 - 150MHz RGB video bandwidth (350MHz VAB)
 - Serration pulse removal switch
 - Horizontal centering control with ON/OFF switch
 - High impact plastic enclosure
 - Universal analog 9-pin input
 - RGBS or RG₅B output
- 70-043-04 RGB 116pL; VGA and Mac laptop interface pack \$345.00
70-043-03 RGB 116pS; SUN interface pack 345.00
70-043-02 RGB 116pM; Mac, PowerMac and Quadra interface pack 295.00
70-043-01 RGB 116pV; VGA and SuperVGA interface pack 295.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



VIDEO CONVERTERS



Extron Electronics
INTERFACING, SWITCHING AND DISTRIBUTION



Emotia™ Xtreme High Resolution Scan Converter

- 1600 x 1280 resolution scan converter
- Input signals: compatible with VGA, XGA, SUN, Silicon Graphics, PowerPC, VESA, NeXT, PowerMac, Quadra, PowerBook, Radius and more
- Output signals: composite video (NTSC/PAL), S-Video/S-VHS, RGBS and component video
- Horizontal/vertical sizing and positioning
- Professional genlock capabilities
- Multiscanning: recognizes all signals from 29-92kHz and resolutions from 320 x 200 up to 1600 x 1280
- Pan/zoom capabilities
- 6 levels of anti-flicker
- Digital signal processing
- 16 million colors

60-225-01 Emotia Xtreme MX version housed in rackmountable 1U high enclosure\$6500.00
60-218-01 100-240VAC World version\$995.00



Inertia™ CAD Workstation to VGA Graphics Trans-Converter

- Converts the video output from a CAD workstation, SVGA, Mac or Quadra computer to either standard VGA at 640 x 480 or SVGA at 800 x 600 resolution
- Compatible with SUN, SGI, PowerPC, SVGA, Radius, Quadra, Mac Series, SuperMac and E-Machine graphics from 32-64kHz (multiscanning)
- 1 BNC-4 and one 15-pin HD transconverted output capable of outputting VGA or SuperVGA
- Workstation monitor loophrough output with a 75 ohm termination switch
- 4 frequency indication LEDs
- Freeze-frame switch with LED indication
- Horizontal and vertical centering
- 2-position image zoom switch
- Includes cable adaptors for SUN, SVGA and Mac/Quadra

60-161-01 100-240VAC World version\$4595.00

Super Emotia™ High Resolution Scan Converter

- SuperVGA, XGA, SGI and high resolution Mac scan converter
- Compatible with all VGA, SuperVGA, XGA computers from 640 x 480 to 1024 x 768 resolution and Mac/Quadra at 640 x 480, 832 x 624 and 1024 x 768
- Freeze-frame switch
- Horizontal and vertical centering
- Outputs include RGBS (15.7kHz), NTSC/PAL and S-VHS, all capable of simultaneous operation
- Metal enclosure
- Underscan/overscan switch
- 3-position flicker reduction switch
- Includes VGA and Mac input cables and RCA and 4-pin DIN (S-VHS) output cables

60-159-01 Super Emotia GX with genlock and component video output\$2595.00
60-158-01 100-240VAC World version\$1695.00

Emotia PLUS VGA and Mac to NTSC/PAL Video Converter

- Compatible with 640 x 480 VGA and Mac from 31.5-38kHz with a 60-75Hz refresh rate
- Digital real time scan conversion from 31.5-38kHz to 15.7kHz NTSC and 15.6kHz PAL
- Freeze-frame switch
- Underscan/overscan switch
- Horizontal picture width adjustment
- Horizontal and vertical centering
- Output format: NTSC/PAL (switch activated), composite S-VHS and RGBS sync (simultaneously)
- 75 ohm termination switch for use with or without PC monitor (VGA only); Mac is switch activated
- Automatic anti-flicker filtering
- Interlaced/noninterlaced output switch
- User-friendly installation requires no special software or hardware configuration

60-212-01 100-240VAC World version\$1295.00

Emotia Jr. 800 VGA or VESA to TV Converter

- Compatible with 640 x 480 and 800 x 600 resolution VGA and VESA standard video graphics cards
- Multiscanning for VGA signal frequencies up to 48kHz
- Real time, digital scan conversion to NTSC or PAL composite video and S-VHS
- Freeze-frame switch
- Underscan/overscan switch
- Video and S-VHS outputs (professional quality)
- Anti-flicker switch
- Horizontal and vertical centering
- VGA monitor loophrough
- No software drivers
- Easy, 5-minute installation
- Sturdy plastic enclosure
- Compatible with any PC using VGA or VESA graphics from 640 x 480 up to 800 x 600 resolutions multiscanning from 31-48kHz

60-226-01 NTSC version 115V\$995.00
60-226-02 PAL version 230V\$995.00

LANCIA™ High Resolution Video Scan Line Doubler

- Doubles the resolution of standard video (at 525 lines) to 1050 lines
- Eliminates most of the chroma noise found in standard television video signals
- Includes a professional quad-standard digital decoder with comb filtering
- 2 inputs, 1 S-Video and 1 composite video, for compatibility with all video sources
- 2-input switcher
- Built-in TBC
- Motion Mode Interpolation feature reduces the "jaggies"
- Picture controls (color, hue, shift, contrast and detail) can be saved for up to 12 inputs
- Automatically selects whichever input has a signal present
- Output sync polarity can be changed via rear-panel DIP switches
- 1RU high, 1/4 rack width, rackmountable metal enclosure
- Rear-panel RS-232 control

60-213-01 100-240VAC World version\$2495.00



Andora™ NTSC and PAL Scan Doubler

- NTSC, PAL, S-Video and RGBS compatible
- Converts incoming video to VGA or 640 x 480 resolution
- Digital noise filtering (without motion interpolation)
- Outputs RGBS or RGBHV
- Picture controls include hue, color, contrast and horizontal shift
- RGBS input
- Includes a VGA pass-through as a second input
- Stereo audio-follow-video and VGA input switching
- Automatic or manual switching modes
- Includes video and S-Video (S-VHS) input cables
- Includes RGBHV breakout cable
- Compact
- Auto switchable power supply/plastic enclosure
- Applications include large-screen projection, desktop multimedia and LCD projection of video signals

60-144-01 100-240VAC World version\$1995.00

CD 400 Quad-Standard Decoder

- Converts video to an analog RS-170 standard RGBS/RGBHV signal
- Includes a digital noise filter
- Dual input design allows separate inputs for video (NTSC, PAL, SECAM) as well as S-Video (S-VHS)
- Remote control input selection
- Hue and detail adjustments
- RGB and sync output options
- Gamma correction
- Automatic input selection
- Factory presets and memory

60-145-02 100-240VAC World version\$1595.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

See Our Ad on Page 24

REFERENCE
CATALOG
97-98

203



SYSTEM SWITCHERS

System 4LQex 4-Input, 1-Output Projector Control Switcher with Built-In Line Quadrupler

- Built-in universal projector control and line quadrupling in 1 product
- Increases the horizontal scan rate by a factor of 4 (from 15.75kHz to 64kHz), allowing CRT-based projectors and monitors to obtain a range of optimum efficiency, maximizing light output
- Provides Motion Mode Compensation to remove motion "jaggies"
- 4 universal inputs are capable of accepting all computer RGB signals (RG_sB, RGBS, RGBHV), composite video standard signals (NTSC or PAL) and S-Video (S-VHS) signals
- Compatible with any digitally controlled graphic grade projector
- Switches balanced and/or unbalanced, 2-channel stereo audio with the ability to switch between the 4 audio inputs to follow any video or RGB signal or "breakaway" from any video or RGB channel

60-221-01 100-240VAC World version \$9995.00

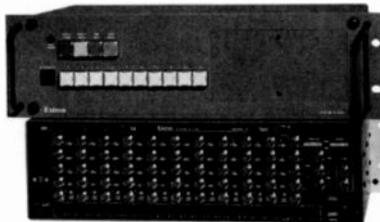
System 4LDex 4-Input, 1-Output Projector Control Switcher with Built-In Scan Doubler

- Built-in universal projector control
- Built-in video or S-Video scan doubling/line doubling to RGBS (NTSC, PAL or SECAM)
- 2 line doubling modes: motion compensation mode and still frame mode
- Split-screen mode shows NTSC/PAL/SECAM video and line doubler video side-by-side on the same screen
- 300MHz RGB bandwidth
- Universal inputs (RGBS, RG_sB, RGBHV, video and S-Video)
- RS-232 remote control
- Loopable with System 8 PLUS/10 PLUS and SW MX Series switchers
- Balanced or unbalanced stereo audio follow (or breakaway) switching on captive screw terminals
- Compatible with Sony, Barco, Ampro, Hughes/JVC, Runco, Mitsubishi, Electrohome, Panasonic, Toshiba and NEC projectors and more (uses their remote control for input selection)
- Line doubles video, S-Video and RGB signals (i.e. document cameras)
- RGBS or RGBHV output to the projector or monitor
- 1RU high, 19" rackmountable enclosure with internal auto switching IEC power supply

60-155-01 100-240VAC World version \$4295.00

System 8 PLUS/10 PLUS 8-/10-Input, 1-Output Universal Projector Control Switchers

- Built-in universal projector control allows bidirectional communication with major brand large-screen data/graphics projectors
- Compatible with Ampro, Barco, Electrohome, NEC, Runco, Hughes/JVC, Mitsubishi, Panasonic, Sony and Toshiba
- 300MHz video bandwidth
- Video loopback for routing video sources through external decoders/line doublers
- Triple-Action Switching® RGB to sync delay
- Universal inputs can accommodate any combination of RGBS, RG_sB, RGBHV, NTSC/PAL as composite video or S-Video
- Audio is input on captive screw connectors and may be programmed as audio-follow-video (or RGB) or as audio-breakaway so that any audio channel can follow any video or RGB input channel
- Separate output for each corresponding input signal type (RGBHV, video, S-Video and audio)
- Switcher control through front panel buttons, contact closure, RS-232 or projector manufacturer's infrared or hardwired remote
- Loopable up to 17 switchers
- Rear panel input indication via LEDs
- 3RU high, 19" wide, metal enclosure with auto switch internal power and IEC interconnect
- Rackmountable (includes hardware)



System 10 PLUS

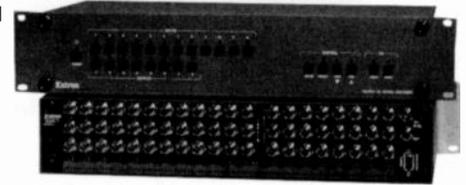
60-108-01 System 10 PLUS, 10 inputs.
100-240VAC World version \$3995.00

60-107-01 System 8 PLUS, 8 inputs.
100-240VAC World version \$3495.00

MATRIX SWITCHERS

Matrix 50 Series Switchers

- Modular design incorporates universal I/O slots for composite video, S-Video, component video and balanced or unbalanced 2-channel audio
 - 80MHz bandwidth
 - Vertical interval video switching provides smooth, seamless transitions from various inputs to the display output
 - Front panel audio level control
 - QuickSwitch™ front panel controller comes standard
 - Windows™ based Control Program Software
 - RS-232/RS-422 remote control port
 - 28 possible switcher combinations, including audio, provide a system configuration to suit every application
 - 4 different fixed input/output sizes: 12 x 8, 12 x 4, 8 x 8 and 8 x 4
- Matrix 50 Switchers POR*



Matrix 100/200 Series Switchers

- 175MHz bandwidth (Matrix 100), 410MHz bandwidth (Matrix 200)
- Point-and-click control with graphic icons via Windows-based Control Program software
- Front panel controller (Matrix 200), QuickSwitch controller (Matrix 100)
- RS-232 and RS-422 control
- Control microprocessor
- Smart Control™
- Video genlock
- Configuration memory block
- Audio breakaway
- RGB to sync delay switching
- Video, RGB and audio mute
- Rackmountable
- Auto switch 115V/230V supply
- Offers 3 configurations—4 x 4, 8 x 4 and 8 x 8, both switchers allow multiple RGB sources, video and stereo audio to be switched to a variety of presentation displays

	Matrix 100	Matrix 200
Basic Module Enclosure	\$ 925.00	\$1150.00
HRAM-High Resolution Analog Modules (for R, G, B—1 for each color)		
8 x 8	850.00	1649.00
8 x 4	595.00	1149.00
4 x 4	495.00	925.00
Video Modules (for video and S-Video)		
8 x 8	575.00	1125.00
8 x 4	420.00	875.00
4 x 4	345.00	795.00
Sync Modules (for composite or H & V sync)		
8 x 8	575.00	995.00
8 x 4	420.00	749.00
4 x 4	345.00	649.00
Audio Module		
8 x 8 only	1110.00	2149.00
QS-FPC		
Quick-Switch front panel controller	210.00	210.00
LCD-FPC		
LCD driven front panel controller	1825.00	1825.00
Redundant Power Supply	550.00	750.00
Blank Front Rack Panel	110.00	110.00

* Price On Request

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





MATRIX SWITCHERS (cont'd)

CrossPoint Series Matrix Switchers

■ Performance oriented approach to RGBS, video and audio signal routing with a true 200MHz (-3dB) bandwidth ■ 4 different models accept up to 12 or 8 RGBS input sources and switch up to 8 or 4 RGBS output destinations ■ Models 128A and 84A also offer up to 12 or 8 two-channel audio inputs and corresponding 8 or 4 two-channel audio outputs ■ Capable of switching RGBS analog, composite video and S-Video, as well as 2-channel audio (balanced or unbalanced) signals simultaneously or independently of each other ■ CrossPoint switchers can also simultaneously switch video and S-Video signals ■ Designate Y (Luma) to switch on the red channel, C (Chroma) to switch on the blue channel and V (composite video) to be switched on the green channel and label 1 or more outputs for video only and the CrossPoint becomes an RGBS, video and S-Video switcher in 1 box ■ Rackmountable, 3RU ■ RS-232 capability

- 60-196-01 CrossPoint 128A, 12 x 8 RGBS, video and stereo audio matrix switcher. 100-240VAC World version \$6549.00
- 60-196-02 CrossPoint 128, 12 x 8 RGBS and video matrix switcher. 100-240VAC World version 5649.00
- 60-195-01 CrossPoint 84A, 8 x 4 RGBS, video and stereo audio matrix switcher. 100-240VAC World version 2995.00
- 60-195-02 CrossPoint 84, 8 x 4 RGBS and video matrix switcher. 100-240VAC World version 2725.00

CrossPoint HV Matrix Switchers

■ As above, but for RGBHV video and audio signal routing ■ Able to switch separate horizontal and vertical sync signals as required by LCD, DLP and some CRT technology displays to ensure proper sync polarity and jitter-free output ■ Audio-capable versions provide audio follow and breakaway for flexibility in a conferencing or multiroom application

- 60-220-01 CrossPoint 128HVA, 12 x 8 RGBHV analog, composite video, S-Video and stereo audio matrix switcher. 100-240VAC World version \$7295.00
- 60-220-02 CrossPoint 128HV, 12 x 8 RGBHV analog, composite video and S-Video matrix switcher. 100-240VAC World version 6595.00
- 60-219-01 CrossPoint 84HVA, 8 x 4 RGBHV analog, composite video, S-Video and stereo audio matrix switcher. 100-240VAC World version 3595.00
- 60-219-02 CrossPoint 84HV, 8 x 4 RGBHV analog, composite video and S-Video matrix switcher. 100-240VAC World version 3295.00

MAV62 Audio/Video Matrix Switcher

■ 6-input/2-output composite video and 2-channel stereo audio (balanced or unbalanced) matrix switcher ■ Can switch up to 6 independent video and stereo audio sources to 2 independently matrix switched outputs ■ Any 1 input can be switched to any 1 or both of the 2 outputs ■ For professional teleconferencing, videoconferencing or audio/video environment ■ Audio inputs/outputs routed using 3.5mm, 5-conductor captive screw terminals ■ Video inputs/outputs routed using BNC connectors ■ Can switch NTSC, PAL, and SECAM video (quad-standard) ■ 100kHz audio/30MHz video bandwidths ■ 25K ohm audio/75 ohm video input impedances

- 60-215-01 100-240VAC World version \$1245.00

YCS SW 6 MX 6-Input, 1-Output Y/C Separator Switcher

■ 6-input, 1-output switcher that also separates the luminance (luma) and chrominance (chroma) of standard composite video and outputs to Y/C (S-Video) ■ Allows the use of both composite video and S-Video sources, with all switcher outputs in S-Video ■ Provides high performance Y/C output by way of a high quality, 3-line adaptive comb filter for either NTSC or PAL ■ All 6 inputs accept composite video signals and 4 accept S-Video ■ Y/C separator decodes composite video into Y/C (S-Video) for higher quality signal output ■ Can encode the 4 S-Video inputs into

composite video ■ Can decode all or any 1 of the 6 composite video inputs into S-Video ■ RS-232 control compatible with any third party control system

- 60-224-01 100-240VAC World version \$995.00

SW Series Switchers—External Power Supply

Common Features

■ Bidirectional ■ 250MHz bandwidth (-3dB) ■ Remote connector (contact closure) ■ Optional 2RU high rack shelf mounts 2 switchers ■ Optional auto switch versions ■ Unused inputs are 75 ohm terminated (except SW 2 VGA)

SW 2 VGA/SW 4 VGA/SW 6 VGA 2-/4-/6-Input VGA/XGA Switchers

Include common features plus:

■ Compatible with IBM PS/2, VGA, SuperVGA, XGA, VESA and XGA-2 computers ■ Input/output connectors are female 15-pin high density VGA style ■ Use male-to-male VGA cable for input to SW 2 VGA ■ ID bits are switched for bidirectional input/output switching (SW 2 VGA) ■ Optional Mac/VGA adaptor to adapt to 15-pin "D" Mac



SW 4 VGA

- 60-137-26 SW6 VGA with Auto Switch \$910.00
- 60-137-02 SW6 VGA, 6 inputs. 100-240VAC World version 830.00
- 60-136-26 SW4 VGA with Auto Switch 660.00
- 60-136-02 SW4 VGA, 4 inputs. 100-240VAC World version 585.00
- 60-099-26 SW2 VGA with Auto Switch 445.00
- 60-099-02 SW2 VGA, 2 inputs. 100-240VAC World version 395.00

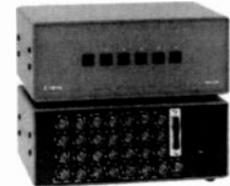
SW 2 MAC 2-Input Mac/Quadra and PowerMac Switcher

Includes common features plus: ■ Compatible with Mac II Series, Performa, Quadra Series, Apple IIGS, PowerBook and PowerMac ■ Input/output connectors are female 15-pin "D" Mac style ■ Use male-to-male Mac cable for input to SW 2 MAC

- 60-100-26 SW 2 MAC with Auto Switch \$445.00
- 60-100-02 SW 2 MAC, 2 inputs. 100-240VAC World version . . . 395.00

SW 2 AR/SW 4 AR/SW 6 AR 2-/4-/6-Input Analog RGBS Switchers

Include common features plus: ■ BNC input, RGB with separate composite sync or sync on green ■ Compatibility: analog RGB and sync, RGB with sync on green or NTSC/PAL video as a stand-alone video switcher



SW 6 AR

- 60-132-04 SW 6 AR with Auto Switch \$910.00
- 60-132-02 SW 6 AR, 2 inputs. 100-240VAC World version 830.00
- 60-012-26 SW 4 AR with Auto Switch 660.00
- 60-012-05 SW 4 AR, 4 inputs. 100-240VAC World version 585.00
- 60-011-26 SW 2 AR with Auto Switch 445.00
- 60-011-06 SW 2 AR, 2 inputs. 100-240VAC World version 395.00

SW 2 AR HV/SW 4 AR HV/SW 6 AR HV 2-/4-/6-Input Analog RGB H&V Switchers

■ Same as SW 2 AR/SW 4 AR/SW 6 AR above, except with separate horizontal and vertical sync

- 60-200-26 SW 6 AR HV with Auto Switch \$1145.00
- 60-200-02 SW 6 AR HV, 2 inputs. 100-240VAC World version . . 1085.00
- 60-199-26 SW 4 AR HV with Auto Switch 810.00
- 60-199-02 SW 4 AR HV, 2 inputs. 100-240VAC World version . . 785.00
- 60-198-26 SW 2 AR HV with Auto Switch 585.00
- 60-198-02 SW 2 AR HV, 2 inputs. 100-240VAC World version . . 530.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





MATRIX SWITCHERS (cont'd)

SW MX Series Switchers—Internal Power Supply

Common Features

- Bidirectional ▪ 350MHz bandwidth (-3dB) ▪ RS-232 or contact closure control ▪ Built-in auto switching ▪ Auto sequencing ▪ May be used with NTSC/PAL, S-VHS and audio ▪ Unused inputs are 75 ohm terminated

SW 2 AR MX/SW 4 AR MX/SW 6 AR MX 2-/4-/6-Input RGBS Switchers

- Include common features plus: ▪ Accepts RGBS, RG_B or composite video ▪ 2RU high metal enclosure ▪ Optional 2RU high rack shelf mounts 2 switchers

60-197-01	SW 2 AR MX, 2 inputs. 100-240VAC World version	\$1695.00
60-110-01	SW 6 AR MX, 6 inputs. 100-240VAC World version	1095.00
60-109-01	SW 4 AR MX, 4 inputs. 100-240VAC World version	895.00

SW 4 AR MXHV/SW 6 AR MXHV 4-/6-Input RGB H&V Switchers

- Same as SW 4 AR MX/SW 6 AR MX above, except with separate horizontal and vertical sync ▪ Accepts RGBS, RG_B or RGBHV ▪ 3RU high metal enclosure ▪ Optional 3RU high rack shelf mounts 2 switchers

60-110-03	SW 6 AR MXHV, 6 inputs. 100-240VAC World version	\$1595.00
60-109-03	SW 4 AR MXHV, 4 inputs. 100-240VAC World version	1450.00

SWITCHERS

Common Features

- 6 selectable inputs ▪ 2 outputs ▪ Captive screw terminal connectors and adjustable audio gain/attenuation per input on all audio capable units ▪ Genlock on all video capable units ▪ Front-panel power LED ▪ Switching of inputs can be accomplished by front-panel buttons or rear-panel RS-232 or Contact Closure control port ▪ Housed in a 1RU rackmountable metal enclosure, ½ rack width

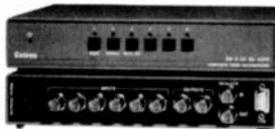
SW 6 AV MX—6-Input, 2-Output Composite Video and Stereo Audio Switcher

- Includes common features plus: ▪ Capable of switching up to 6 independent video and balanced and/or unbalanced stereo audio sources to 2 independently buffered and amplified outputs ▪ Video inputs are routed using female BNC connectors ▪ 100kHz audio bandwidth ▪ 25K ohm audio input impedance ▪ 30MHz video bandwidth ▪ Capable of switching NTSC, PAL and SECAM video (Quad-Standard) ▪ 75 ohm video input impedance ▪ Vertical interval switching

60-208-01	100-240VAC World version.	\$995.00
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SW 6 CV MX—6-Input, 2-Output Composite Video, Vertical Interval Switcher

- Includes common features plus: ▪ Capable of switching up to 6 independent composite video (line video) sources to 2 independently buffered outputs ▪ Sync in/out BNC connectors ▪ 30MHz video bandwidth ▪ Capable of switching NTSC, PAL and SECAM video (Quad-Standard) ▪ 75 ohm video input/output impedance ▪ Vertical interval switching



60-205-22	Auto switch version	\$795.00
60-205-01	100-240VAC World version.	695.00

SW 6 SV MX—6-Input, 2-Output S-Video (S-VHS & Hi8) Switcher

- Includes common features plus: ▪ Capable of switching up to 6 independent S-Video (S-VHS and Hi8) sources to 2 independently buffered outputs ▪ Sync in/out BNC connectors provide "seamless" vertical interval switching to an external sync source ▪ 30MHz video bandwidth ▪ Capable of switching NTSC, PAL or SECAM video (Quad-Standard) ▪ 75 ohm input/output impedance ▪ Vertical interval switching

60-207-01	100-240VAC World version.	\$695.00
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SW 6 SA MX—6-Input, 2-Output Stereo Audio Switcher

- Includes common features plus: ▪ Capable of switching up to 6 independent balanced and unbalanced stereo audio sources to 2 independently buffered outputs ▪ 100kHz bandwidth ▪ 25K ohm input impedance

60-206-01	100-240VAC World version.	\$695.00
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DISTRIBUTION AMPLIFIERS

Common Features

- Provides 6 outputs, each individually isolated, buffered and amplified ▪ Outputs can be driven up to 150' ▪ Housed in a 1U (1.75" height) rackmountable metal enclosure ▪ Internal 100-240VAC switchable power supply

CVDA 6 MX QUAD—Four 1-Input, 6-Output Composite Video Distribution Amplifiers

- Includes the same features as the CVDA 6 MX, but is actually 4 separate DAs in 1 box ▪ Any 4 video sources with an NTSC, PAL, or SECAM video output can be split into 6 different outputs

60-202-03	100-240VAC World version.	\$1095.00
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SADA 6 MX QUAD—Four 1-Input, 6-Output Stereo Audio Distribution Amplifiers

- Includes the same features as the SADA 6 MX, but is actually 4 separate 1-input, 6-output, stereo audio DAs in 1 box

60-203-03	100-240VAC World version.	\$1195.00
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SADA 6 MX DUAL—Two 1-Input, 6-Output Stereo Audio Distribution Amplifiers

- Includes the same features as the SADA 6 MX, but is actually 2 separate 1-input, 6-output, stereo audio DAs in 1 box ▪ ½ rack width

60-203-02	100-240VAC World version.	\$625.00
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CVDA 6 MX DUAL—Two 1-Input, 6-Output Composite Video Distribution Amplifiers

- Includes the same features as the CVDA 6 MX, but is actually 2 separate DAs in 1 box ▪ Any 2 video sources with an NTSC, PAL, or SECAM video output can be split into 6 different outputs ▪ ½ rack width

60-202-02	100-240VAC World version.	\$595.00
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SADA 6 MX—1-Input, 6-Output Stereo Audio Distribution Amplifier

- Includes common features plus: ▪ Distributes both balanced and unbalanced audio signals ▪ Bandwidth: 100kHz ▪ Impedance: High Z ▪ Utilizes 5 conductor captive screw terminal connectors (3.5mm) ▪ Frequency response: 20Hz to 20kHz ▪ ½ rack width

60-203-01	100-240VAC World version.	\$375.00
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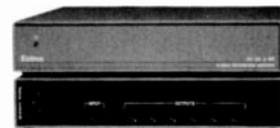
CVDA 6 MX—1-Input, 6-Output Composite Video Distribution Amplifier

- Includes common features plus: ▪ Distributes any video source (i.e. camera, VCR, laserdisc, etc.) with an NTSC, PAL or SECAM video output ▪ Video input level: 0.5-2V p-p ▪ Video bandwidth: 30MHz (less than ±0.5dB) ▪ Inputs and outputs each use professional female BNC connectors for 75 ohm impedance ▪ ½ rack width

60-202-01	100-240VAC World version.	\$350.00
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SVDA 6 MX—1-Input, 6-Output S-Video (S-VHS and Hi8) Distribution Amplifier

- Includes common features plus: ▪ Distributes any video source (i.e. camera, VCR) with an NTSC, PAL or SECAM S-Video output ▪ Video inputs level: 0.5-2V p-p ▪ Video bandwidth: 30MHz (less than ±0.5dB) ▪ Inputs and outputs each use professional female 4-pin mini DIN connectors ▪ Impedance: 75 ohms ▪ ½ rack width



60-204-01	100-240VAC World version.	\$350.00
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ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



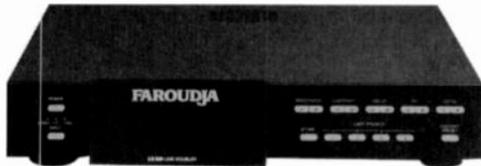


VP400A NTSC Line Quadrupler

▪ Takes advantage of the patented processors found in the VP250 while increasing the number of horizontal scan lines by a factor of 4 when compared to standard NTSC ▪ VP400A adds a patented Vertical Detail Processor to provide a significantly improved level of detail over the original VP400 ▪ When used on direct-view displays or projectors that can scan to 62.94kHz, the image has increased detail and brightness plus is free of decoding, motion and scanning artifacts ▪ Closely matches film in dramatic impact \$24,000.00

VP400A-U PAL/NTSC Line Quadrupler

▪ Same performance as the VP400A ▪ Unit switches automatically from PAL to NTSC and vice versa ▪ Accepts inputs from 525 lines/60Hz to 625 lines/50Hz sources: PAL, NTSC, component and RGB \$25,500.00



VP250 NTSC/PAL Line Doubler/Line Processor

▪ Combines the quality of patented, proven Faroudja technology in the field of decoding, motion tracking and bandwidth expansion ▪ Accepts inputs from all conventional interlaced NTSC and PAL formats: composite, S-VHS, Hi8, component YUV/RGB, converting them into progressive scanned high resolution, artifact free signals to be connected to large screen direct-view monitors or projection systems ▪ Ideal companion for high quality video displays, producing film-like image detail, color and depth ▪ New features include a D15 connector for computer signal pass-through, infrared and RS-232 control, on-screen display and up to 32 custom presets ▪ By combining patented technology and increased flexibility, the VP250 provides an unparalleled theater experience that easily integrates into applications requiring the finest images possible at line doubled (31.5kHz) frequencies. \$13,500.00

LD200 NTSC Line Doubler/Line Processor

▪ Similar in performance to the VP250 without the component inputs and PAL capability ▪ Up to 8 custom presets can be programmed. \$9,950.00

LD200-U PAL/NTSC Line Doubler

▪ Same performance as LD200 ▪ Switches automatically from PAL to NTSC and vice versa ▪ Accepts inputs from 525 lines/60Hz to 625 lines/50Hz sources: PAL, NTSC composite and Y/C. \$11,500.00

VP100 Adaptive Detail Enhancer

▪ Using similar custom integrated circuits found in their line doublers, the VP100 offers significantly improved picture detail for standard scan rate direct TVs and CRT/LCD-based projectors ▪ Includes adaptive decoding, luminance bandwidth expansion and chroma/luminance delay correction ▪ Input is composite NTSC and outputs are 2 S-VHS connectors ▪ Detail level and chroma delay are adjustable via front panel controls. \$699.00

DFD-U NTSC/PAL Digital Decoder

▪ Fully digital NTSC/PAL to D1/YUV/RGB converter ▪ Particularly useful in applications where absence of artifacts is required, such as digital compression and transmission of video signals ▪ Includes a 10-bit digital adaptive decoder, a bandwidth expansion circuit, a time base corrector and a full frame synchronizer ▪ Accepts composite or Y/C inputs, even from sources (such as VHS) which are not time base corrected outputs, which are frame synchronized to an internal or external reference ▪ Output signals may be in the D1 format, parallel and serial, or in any of the YUV/RGB analog formats currently in existence ▪ Image delivered is free of cross-color, cross-luminance artifacts and displays full chroma resolution ▪ Luminance rise times of soft sources may also be reduced through the use of digital bandwidth expansion technology

- Option 1 Analog outputs \$12,450.00
- Option 2 Digital outputs 16,950.00
- Option 3 Analog and digital outputs. 19,950.00

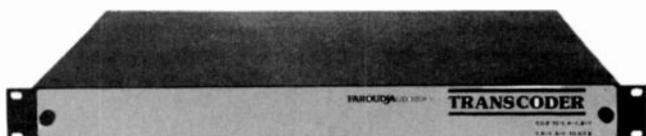
CFD-SN Super NTSC® Precision Decoder

▪ High quality NTSC to RGB comb filter decoder for use in critical applications where high resolution and absence of artifacts are required ▪ Active comb filtering method leads to a much more effective suppression of color subcarrier dot crawl present with standard comb filter designs with no visible loss of resolution ▪ Luminance bandwidth extends to 6MHz ▪ Chroma enhancement circuitry eliminates ringing and apparent loss of chroma bandwidth often associated with NTSC signals ▪ 4-pin multi-DIN Y/C 3.58 input and output connectors 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 cross-color; chroma enhancement suitable for Y/C 3.58 or Hi8 applications is provided. \$6,550.00



A²D1F Converter With Frame Synchronizer

▪ 10-bit NTSC composite video to D-1 converter with frame synchronizer ▪ Patented decoding technology ▪ For critical applications requiring analog composite to digital component conversion where high resolution and absence of artifacts are required ▪ Adaptive decoding ▪ Bandwidth expansion ▪ Accepts NTSC composite input ▪ Output serial D1 (SMPTE 259M) \$7,500.00



CTC-2 Bidirectional Transcoder With Color Bar Generator

▪ High quality bidirectional, multistandard, component transcoding processor with unique features, such as unequalled precision and stability with a matrix accuracy of ±0.1%, which are not present in any other transcoder ▪ Capable of bidirectional transcoding and processing of component signals from either RGB to MII or Betacam, or from Betacam or MII to RGB. \$4,800.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





blue. Interdigital Post Workstation™

blue. is the world's first Interdigital Post Workstation. An Interdigital Post Workstation (IPW) is a new category of digital post production which allows for editing Every In, Any Out™ multiformat freedom in Native Digital™ quality. An IPW preserves the quality of the video regardless of the format by keeping the video in it's Native Digital environment.

blue. is unique because it is the only system capable of handling all formats (digital and analog) and combining them in their native formats to produce the best possible quality.

blue. combines Every In, Any Out format freedom in Native Digital quality for editing with uncompressed 10-bit, MPEG-2 and DV formats. blue. includes unrivaled productive tools such as 3-layer real time mixer (2 video + title + alpha), dual MPEG-2 and dual DV CoDecs, customizable user interface, real time 3D effects option, QSDI™ (4X real time up/download) option, ClipLink™ (good/bad shot markers) option, and background multitasking in a turnkey workstation solution.

The Guts

- Interdigital multiformat editing
- MPEG-2 4:2:2P@Ml editing
- Dual MPEG-2 CoDecs
- Dual DV CoDecs*
- SDI (259M) interface
- IEEE 1394 interface
- FASTWire™ interface
- Open, unique, customizable interface
- QSDI (4X real time download)*
- Cliplink™ (good/bad shot markers)*
- Real time 4-layer mixer (2 video/2 titles + alpha)
- Real time 3-D effects*
- 10-bit uncompressed I/O*
- 10-bit analog component I/O
- 20-bit digital audio (AES/EBU)

- Balanced analog audio (XLR)
- ITU-R.BT601 (720 x 486)
- NTSC/PAL
- Movie-2 bus
- 2X Philips TriMedia™ processors
- Multithreaded background processing
- Machine control (2X RS-422)
- blue.connect (I/O box)
- blue.control (jog/shuttle)
- blue.workstation (Turnkey PC)
- 8-channel audio
- *Optional

blue.connect

- Every In, Any Out — Accepts every analog or digital audio or video format (i.e. D1, D2, D3, D5, DCT, Digital Betacam, Betacam SX®, Digital-S, DVCPRO50, DVCPRO, DVCAM, DV analog composite, Y/C, and component) ▪ Solid, shielded, grounded 19" rackmountable chassis protects audio/video from noisy environments ▪ Reduces cable hassles via FASTWire
- Uses all standard connects (composite, Y/C, YUV, SDI (SMPTE 259M), IEEE 1394, AES/EBU, balanced XLR, RS-422 9-pin)

FASTWire

- FAST's unique high-speed, shielded SDDI link between the blue.connect and the blue.workstation ▪ FASTWire keeps the quality pure by keeping the A/D-D/A conversion in the blue.connect and away from noisy computer environment. Only digital information is sent between blue.workstation and the blue.connect ▪ FASTWire lets you remotely locate blue.connect in a rackmounted source room up to 25m (75') away and much further with a Fiber SDI extender



blue.control

- Tactile, ergonomic design helps during long edit sessions
- Good for both "lefties" and "righties"; assisted for immediate response
- Every editor is unique—user programmability enables each editor to set up controls the way they want to work
- Heavy, sturdy feel with free-spinning jog wheel
- Connection with long single cable enables you to edit from lap or across the room
- jog/shuttle controls other blue. functions (sliders, controls, DVE's, timeline, etc.)

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



VIDEO MACHINE FAMILY DESKTOP VIDEO SYSTEMS

FAST Electronic brings advanced desktop digital video editing systems to more affordable levels and to a wider range of video professionals. Video Machine is a complete video editing suite on a single PC card with a full array of seamlessly integrated options. Available in linear and nonlinear configurations, the Video Machine family includes: Video Machine PC, the "hybrid" nonlinear editor Video Machine Digital Player/Recorder (DP/R) and 2 DP/R turnkey solutions—Studio QUAD and Portable Quad. Video Machine is ideal for a wide range of professional applications including: broadcast, industrial, animation, corporate, and event production uses. All PC based models offer jog/shuttle, Studio Control Box, YUV Component and nonlinear editing upgrade options.

The DP/R delivers the widest range of compression levels in the industry, from off-line editing quality at 200:1, to better than Betacam SP/MII at 2:1. And the entire range is selectable in .25" increments. FAST-engineered, 60 fields/second Motion-JPEG compression provides visibly superior image detail at higher compression rates. Off-line editing at 100:1 provides 1.5 hours of video per G byte of storage. Radical increases can be attained by daisy-chaining up to 14 additional fast SCSI-2, and 15 Wide SCSI-2 drives (to 29 total drives). Eight digital audio channels can be mixed, recorded and played back simultaneously at sampling rates up to 48kHz (DAT quality). DP/R audio files are compatible with the WAV file format and can be exported to third party editing software for sweetening and special effects. The DP/R offers live trim function, and the software interface can be split-configured to dual monitors for maximum viewability. Video Machine Studio software offers Windows 95 compatibility, auto scene detection for unattended digitization of clips, and forward/reverse digital slow motion.

The DP/R supercharges animation productions offering features such as batch digitizing and the ability to split any video clip to individually numbered frames for techniques such as rotoscoping. Animation recording time is reduced to 1/3 of the time normally required for single-frame recording, and animation playback is in real time once recorded to disk.

Video Machine PC

- Includes Video Machine Family features plus:
 - Provides online and off-line editing capabilities with Edit Decision List (EDL) generation in CMX, Sony and GVG compatible formats
 - Can be used as a genlocked live switcher between 8 video input sources or cameras
 - An Edit Control Panel provides graphical editing interface based on Sony's popular BVE910 hardware based switcher, making the transition from hardware switchers to desktop video editing
 - An extensive library of more than 400 precreated DVEs, wipes and dissolves and 18 test pattern generators
 - Graphics, titles, special wipes and effects can be created using alpha channel information

- VM-50100 Video Machine PC \$ 3,995.00
- VM-70100 Video Machine Corporate Studio—Includes Video Machine, Studio Control Box and Professional Filter 6,295.00
- VM-70101 Video Machine Professional Studio—Includes Video Machine, Studio Control Box and rackmountable Component YUV interface 8,495.00
- VM-50110 Video Machine SC—Includes Video Machine and Studio Control Box 5,950.00

- VM-50120 Video Machine Multi I/O Pro—Includes Video Machine and Multi I/O Professional \$ 4,995.00
- VM-50515 Digital Player/Recorder (2 digital channels) 6,995.00
- VM-70102 Nonlinear Studio—Includes Video Machine, Digital Player/Recorder and Studio Control Box 12,495.00
- VM-70103 Professional Nonlinear Studio—Includes Video Machine, Digital Player/Recorder, Studio Control Box and Component (YUV) Interface 15,295.00
- VM-50521 Digital Player/Recorder Audio Box 850.00

Portable QUAD

First full-featured, online-quality editing bay in an easily transportable 25 lb. carrying case, no larger than an airline carry-on bag. This fully integrated Video Machine Digital Player/Recorder turnkey system is built on a Dolch Pentium PAC. It offers optional Component YUV Interface, simultaneous hybrid editing capabilities—from hard disk and/or videotape—real time effects, 8 digital audio channels and selectable compression from 2:1 to 200:1.

Portable QUAD—Hybrid Editing \$29,995.00



Studio QUAD

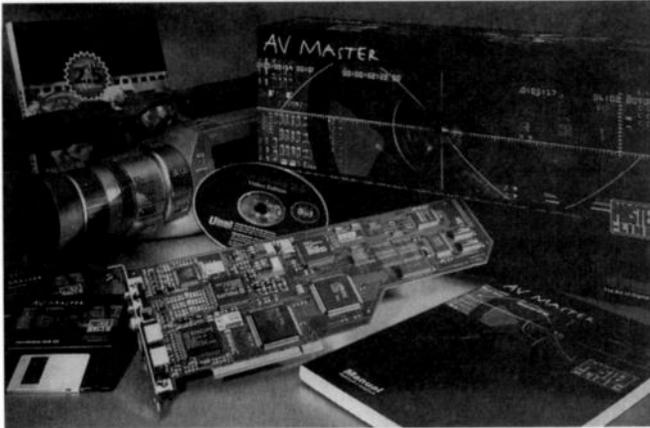
Studio QUAD is designed for easy installation in television, broadcasting and higher-end post-production facilities. Housed in a Pentium server, all system components are rackmountable. This top-of-the-line system includes Video Machine with Digital Player/Recorder, YUV Component option, Jog/Shuttle, Studio Control Box (for balanced audio), dual monitor SVGA card with two 17" monitors, 8G byte Video Storage, CD-ROM, sound card and Cayman Graphics Power CG software.

VM-90101 Studio QUAD—Hybrid Editing in Component YUV \$34,995.00

VM-Studio PLUS Software

- Optional software for Video Machine Digital Player/Recorder
 - Features accelerated software rendering for creating multiple layers of video, graphics and titles—as well as continuous timeline playback/record in Video Machine
 - Renders and records timeline events directly to disk, whereby new clips are created which can be reinserted with new material in the timeline
 - Makes it possible to render 3-D digital video effects from any Adobe compatible plug-in DVEs and effects, such as with software editing programs Adobe Premiere and Ulead MediaStudio
 - Includes Flying Fonts Pro from Crystal Graphics, and F/X Studio and PhotolImpact from Ulead Systems
- System Requirements:
 - Minimum 486DX2/66 (Pentium recommended)
 - Video Machine
 - Double DP/R
 - Windows 95 with 16M byte RAM (recommended 32M byte)
 - CD-ROM drive
- VM-S2000 \$995.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



AV Master™ Video Editing and Capture Card

- PC card designed to meet the price, performance and feature requirements of the digital media producer
- Combines onboard audio, bus-mastering and 4:1 MJPEG compression
- Designed with state-of-the-art Philips chip technology
- Offers exceptional video quality with data transfer rates up to 5M bytes/second (4:1 compression)
- PCI busmaster and Direct Memory Access (DMA) technology enable high performance and allow the system bus to be controlled by the application
- AV Master protects the PCI bus from access by the operating system, ensuring the maximum possible bandwidth for the audio/video data stream, a method superior to approaches that work in slave mode and offer no control of the bus
- AV Master digitizes audio and video together onboard, which ensures synchronization during recording and playback
- Comes with MediaCache, a proprietary playback driver for Windows 95™ that replaces Video for Windows (VFW)
- MediaCache improves playback performance and provides smooth jitter-free playback with no dropped frames at low compression ratios
- Processes the full video resolution (NTSC at 640 x 480 and PAL at 768 x 576) with 24-bit color depth and provides a full image refresh rate of 60 (NTSC) and 50 (PAL) fields per second
- Data generated by the Motion-JPEG technique can be compressed to ratios as low as 4:1, equivalent to a constant data throughput of approximately 5M bytes/second on the AV Master board
- Any CVBS and S-Video source can be connected to AV Master
- With the optional bit-rate feature and active filtering, AV Master always uses the system's full potential to produce the best possible image quality
- Requires Windows 95
- Plug-and-Play compatible for easy installation
- Windows NT™ compatible
- Bundled with Ulead MediaStudio software for hard-disk-based nonlinear video editing
- Additional software includes Crystal Graphics Flying Fonts for 3-D title animations and MediaMais FAST Video Edition for special effect sequences

System Requirements

- PCI slot (V.2.0)
- 486/50MHz (Pentium recommended)
- 16M bytes RAM
- SCSI-2 hard disk
- VGA monitor
- CD-ROM drive
- Windows 95 or Windows NT

MM-50100 AV Master Bundle \$899.00

DV Master™ Digital Editing System

DV Master is a DV hardware CoDec card with PCI Bus Master capability. It is a complete digital editing solution that can be integrated in a suitable computer configuration for professional editing. It provides both DV IEEE/1394 FireWire digital inputs/outputs, as well as analog inputs and outputs for both audio and video. With its hardware based CoDec (compression/decompression) engine, DV Master can also transcode your existing archive of analog material directly into a DV format VTR or camcorder and onto tape in real time. DV Master is supported by an extensive collection of editing and compositing software applications including Adobe Premiere and After Effects, in:sync Speed Razor and Ulead Media Studio.

- 3 digital IEEE 1394 ports, switchable for 2 external devices, and an internal FireWire™ port for video in/out, audio in/out (4-channel stereo 32kHz, 2-channel stereo 48kHz)
- DV device control and time code via FireWire
- I/O box for analog devices (NTSC/PAL): 1 video input S-VHS/Hi-8 (Y/C) or VHS/8mm (incl. composite adaptor); 1 video output for S-VHS/Hi-8 (Y/C), 1 component YUV output (3 BNC-YC_bC_r)
- 1 audio input and 1 output (L/R 2x mono) in CD quality 16-bit 44.1kHz stereo
- 1 stereo headphone or studio monitor connector
- Resolution: 24-bit true color (16.7 million colors), NTSC (720 x 480), ITU-R.BT601 (CCIR601), PAL (720 x 576) in accordance with DV specification
- Compression/decompression in DV standard with Sony DVBK-1
- Data transfer rate: standard compression 5:1 DV format (approx. 3.6MB/sec)
- Live display (via Sony DVBK-1) as PCI Bus Master Inlay on PC monitor and/or analog video monitor
- PCI bus mastering
- Professional editing software

System Requirements

- PCI (V.2.0) slot
- Pentium 133MHz or faster
- 16M bytes RAM, 32M bytes recommended
- Fast/Wide, ultra or ultra/wide SCSI host adaptor
- Dedicated SCSI 2 AV-type HDD for DV data recommended
- CD-ROM drive
- Windows 95 or Windows NT
- Compatible SVGA graphics adaptor for PCI Bus Master Inlay support
- Color SVGA computer monitor with 800 x 600 resolution
- NTSC or PAL video display with Y/C or component YUV input
- Analog S-VHS/Hi-8mm or DV video recorder for video output
- Optional BetaCam or MII record VTR for component YUV output

MA-50200 DV Master Bundle \$3995.00
 MA-70260 DV Edit Station Includes DV Master and DV Drive to provide a complete digital editing system for the DV format \$6995.00
 MA-50260 DV Drive Internal drive specifically designed to work with DV Master in the PC. Reads and writes DV mini cassettes in the DV format. Ideal for editors that do not have a FireWire connection on their DV camcorder, or who want to reduce wear and tear on the camcorder mechanics. \$3495.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

DIGITAL VIDEO RECORDERS/TIME CODE EQUIPMENT



Omega Digital Video Recorders

- Digital video replacement for broadcast analog tape decks
- YUV analog component (Y, R-Y, B-Y) and composite inputs and outputs
- 30-frame (60 fields)/second NTSC, 25-frame (50 fields)/second PAL
- Motion-JPEG compression ratios as low as 2:1
- Converts to the industry standard CCIR-601 4:2:2 format
- 2 channels of balanced CD quality audio per video channel
- Genlock input locks analog video output to external sync
- SMPTE/EBU Longitudinal Time Code (LTC) and Vertical Interval Time Code (VITC)
- Sony/SMPTE RS-422 protocol with Odetics Broadcast extensions
- Fast and wide SCSI II disk controller
- Compatible with Videomedia edit controllers and Pinnacle Aladdin
- Front panel controls with LCD touch-screen

Omega Deck Single-channel DVR \$6,995.00

Omega Double Deck Includes all the features of the Omega Deck, with 2 independent channels in the same chassis with independent inputs/outputs for storage and control

Omega Double Deck \$10,995.00

Omega RAID Deck Dual-channel digital video recorder with built-in RAID (disk array) controller. 2 independent channels in the same chassis with shared video storage for each channel to facilitate real time A/B roll editing in conjunction with Videomedia edit controllers and Pinnacle Aladdin. Omega RAID Deck can simultaneously record video on 1 channel and play back pre-recorded video from the other for pre-read capability

Omega RAID Deck \$13,995.00

Bandit SG Digital Video Recorder

- SCSI external peripheral for the SGI workstation
- SGI software driver optional
- Includes analog component and S-VHS input/output, CCIR-601 internal resolution (720 x 486 NTSC and 720 x 576 PAL), 8 minutes video storage
- Quality equivalent to Beta SP (21 minutes S-VHS)

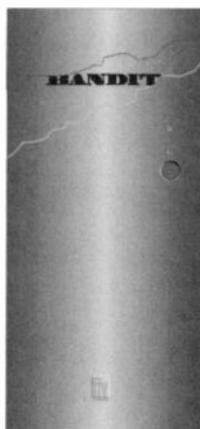
Bandit SG \$12,995.00

Bandit Digital Animation and Video Recorder

- SCSI external peripheral device for the IBM PC or compatible running Windows or DOS
- Records full bandwidth video from a composite analog source (YC, Beta optional)
- Video is compressed, loaded into Bandit's mass storage and output as professional quality video at full resolution, 30-frames (60 fields)/second
- Includes composite input/output in square pixel NTSC (640 x 480), DOS and Windows driver
- Storage not included
- 4RU high

Bandit \$7,995.00

Note: Call for prices on optional storage and video inputs/outputs.



F22 Time Code Generator/Reader/Character Inserter

Generator

- Drop or nondrop frame longitudinal time code
- Locks to video or syncs to internal crystal
- Preset hours, minutes, seconds
- Front panel pause button
- Continuous jam sync function matches incoming code

Reader

- Forward and reverse
- 1/8 to 20X play speed
- Automatic error bypass
- Regenerate function corrects waveform and phase errors
- Generator with pause

Character Inserter

- 16 variable sizes
- Window dub user bits
- Display on/off, background on/off
- Combined display
- User bits and time code simultaneously

MIDI Time Code

- Converts SMPTE time code to MIDI time code

User Bits

- Preset from front panel

F22 \$1,095.00



F30 Time Code Generator/Reader/Character Inserter

Includes same features as the F22, plus:

- RS-422 serial control from computer or edit controller (9-pin D-sub connector)
- GPI output with RCA connector
- EBU 25-frame time code can translate between SMPTE and EBU
- Color frames to PAL 8-field sequence
- 24-frame rate time code for film work, synced to line
- User bits preset from front panels, 8-digit ISO 4-character

F30 \$1,595.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





VCR Rackmount Kits for JVC VCRs						
For Model(s)	Choose FEC Accessory	Description	# Rack Units Required (1RU=1 1/2")	Rail Depth Required Between Front & Rear Cabinet Rails	Mounts on (F)ront Rail or (R)ear	Price
BRD50U BRD80U BRD85U	RKS822U(b) (for any VTR to the left)	Rackslide kit with custom ears/handles	4	22"-30"	F & R	\$210.00
SRS360U	RK360U	Custom rack kit	3	14 1/2"	F	90.00
BR5378U	RKS378U	Rackslide kit with custom ears/handles	3	18"-30"	F & R	200.00
BR5500U BR5800U	RKS500U (for either VTR)	Rackslide kit with custom ears/handles	3	18"-30"	F & R	200.00
BR5525DXU BR5622DXU BR5822DXU	RKS822U(b) (for any VTR to the left)	Rackslide kit with custom ears/handles	4	22"-30"	F & R	210.00
SR3260U	RK3250U	Custom rack kit	2	12"	F	90.00
BR5747U BR5777U BR7030U BR7040UAL	RKS7030 (for any VTR to the left)	Rackslide kit with custom ears/handles	8	22"-30"	F & R	260.00
SRS365U	RKS365U	Custom rack kit	3	18"-30"	F & R	200.00
SR3360U	RK3360U	Custom rack kit	3	9 1/2"	F	90.00
SR9070U	RK9070U	Custom rack kit	3	14 1/2"	F	95.00
VCR Rackmount Kits for Sony VCRs						
BVU900 BVU920 BVU950	RKS-SBVU9 (for any VTR to the left)	Rackslide kit with custom ears/handles/top cover. FEC equivalent to Sony Model RMM-950	5	24"-30"	F & R	\$225.00
BVW60/65 BVW70/75	RKS-SBVW (for any VTR to the left)	Rackslide kit with custom ears/handles. FEC equivalent to Sony RMM-100US	5	21"-30"	F & R	215.00
DSR30	RKS-SVR30	Custom rackslide kit	3	18"-30"	F & R	200.00
DVW500/510 DVWA500/AS10	RKS-SPVW2 (for any VTR to the left)	Rackslide kit with custom ears/handles. FEC equivalent to Sony RMM-110US	5	21"-30"	F & R	215.00
EVO9720	RKSSVO58	Custom rackslide kit with ears/handles.	3	18"-30"	F & R	200.00
EVO9800 EVO9850	RKS-SE98 (for either VTR to the left)	Custom rackslide kit with ears/handles.	3	18"-30"	F & R	200.00
PVW2600/2650 PVW2800/2850	RKS-SPVW2 (for any VTR)	Rack slide kit with custom ears/handles. FEC equivalent to Sony RMM-110US	5	21"-30"	F & R	215.00
SVP1000A SVO1250	RKSVO1250 (for either VTR)	Custom rack kit	2	12"	F	90.00
SVO1450 SVO1550	RKSVO1550 (for either VTR)	Custom rack kit	3	13 1/2"	F	90.00
SVO1320/1420 SVO1520/1620	RKS-VO1810 (for any VTR)	Custom rack kit	3	13 1/2"	F	90.00
SVO2100	RKSVO2100	Custom rack kit	3	14 1/2"	F	95.00
SVP5600 SVOS800	RKSSVO58 (for either VTR)	Custom rackslide kit with ears/handles	3	18"-30"	F & R	200.00
SVP9000 SVO9600	RKSSE98 (for either VTR)	Custom rackslide kit with ears/slides. FEC equivalent to RMM-980	3	18"-30"	F & R	200.00
UVW1200/1400 UVW1600/1800	RKSSUVW (for any VTR to the left)	Rackslide kit with custom ears/handles. FEC equivalent to RMM-130US	4	20"-30"	F & R	215.00
VP5000/5030 VOS600/5630 VOS800/5850 VO9800/9820 VO9850	RKS-SS9 (for any VTR to the left)	Rackslide kit with custom ears/handles for Type V & IX VTRs. FEC equivalent to Sony Model RMM-501US	5	20"-30"	F & R	215.00
VP5020/7000 VP7020/7040 VO7600/7630 VP9000/VO9600	RKS-S7 (for any VTR to the left)	Rackslide kit with custom ears/handles for Type VII VTRs. FEC equivalent to Sony Model RMM-507US	4	20"-30"	F & R	225.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



VCR Rackmount Kits for Panasonic VCRs						
For Model(s)	Choose FEC Accessory	Description	# Rack Units Required (1RU=1K")	Rail Depth Required Between Front & Rear Cabinet Rails	Mounts on (F)ront Rail or (R)ear	Price
AGD5540 AGD5550	RKSP7350 (for either VTR to the left)	Custom rackslide kit—includes rack ears (Panasonic AGM730E not needed)	3	18"-30"	F & R	\$200.00
AJD640 AJD650 AJD750	RKSPAJ75 (for any VTR to the left)	Complete custom rackslide kit—includes rack ears (Panasonic rack ears not required)	4	18"-30"	F & R	200.00
AGD5840 AGD5850	RKSP850 (for either VTR to the left)	Custom rackslide kit—includes rack ears (Panasonic rack ears not required)	3	18"-30"	F & R	200.00
AG1300/1310	RKP1300	Custom rack kit	3	13"	F	90.00
AGW1	RKSPAGW1	Rackslide kit with custom ears/handles	3	18"-30"	F & R	225.00
AG1980	RKSP1970	Rackslide kit with custom ears/handles	3	20"-30"	F & R	195.00
AG7150 AG7350 AG7355	RKS-P7350 (for any VTR to the left)	Complete custom rackslide kit—includes rack ears (Panasonic AGM730E ears not needed)	3	18"-30"	F & R	200.00
AU62/63 AU65/650 AU660/665 AUW32/33 AUW35	RKS-PAU6 (for any VTR to the left)	Complete rackslide kit—includes rack ears (Panasonic AUM60 ears not needed)	6	21 1/2"-30"	F & R	286.00
Monitor Rackmount Kits for JVC Monitors						
BMH1300SU	RKBM13	Custom rack kit	8	15 1/2"	F	\$135.00
BMH1900SU	RKBM19	Custom rack kit	10	18 1/2"-30"	F & R	170.00
TMA9U TM915U	RK9UM9 BP9UM9 WF1730M9 (for either monitor)	Dual rackmount for 2 TMA9U/TM915U/TM9U Blank panel for RK9UM9 Waveform adaptor for Tektronix 1700 Series Use with RK9UM9	6 6 6	15" — 18"	F — —	135.00 40.00 125.00
TM123U	RK123U	Custom rackmount with faceplate	8	13"	F	110.00
TM131/130	RK130SU	Custom rackmount kit with faceplate	8	10 1/2"	F	125.00
TM910SU	RK910SU BP910SU WF910SU	Dual rackmount for TM910SU Blank panel for RK910SU Waveform adaptor for Tektronix 1700 Series Use with RK910SU	6 6 6	14" — 19"	F — —	130.00 40.00 125.00
TM910SU	RKMOB910	Dual rackmount kit for mobile applications Occupies 5RU space Provides extra rear support No waveform adaptor available	5	14 1/2"-25"	F & R	150.00
TM550U	RK550U	Dual rackmount kit	3	12 1/2"	F	130.00
TM923U	RK923U	Dual rackmount for 2 TM923U	6	11"	F	120.00
TM1400SU	RK150ESU	Rackmount with custom faceplate	8	16"	F	135.00
Monitor Rackmount Kits for Sony Monitors						
PVM97	RKPM8044(A)	Dual rackmount for 2 monitors	5	11 1/2"	F	\$135.00
PVM122	RKPM12	Custom rackmount kit	8	11 1/2"	F	120.00
PVM14N1U PVM14N2U PVM135/137 PVM1350/1351 PVM1354/1355	RK-PM1341 (for any monitor to the left)	Custom rackmount kit	8	15 1/2"	F	135.00
PVM20N1U PVM20N2U	RKSPVM20 (for either monitor)	Custom rackslide shelf. Professional appearance. Requires 11RU panel space.	11	20"-30"	F & R	190.00
PVM1954U	RKPM1954	Custom rackslide shelf	10	19"-30"	F & R	170.00
PVM5041	RKPM5041	Custom triple monitor rack kit	4	13 1/2"	F	135.00
PVM8040 PVM8041 PVM8044 PVM8044 PVM8044	RK-PM8044(A) (for any of these monitors) BP8044 WF8044	Dual rackmount for 2 monitors Blank panel for RKPM8044 Waveform adaptor for Tektronix 1700 Series Videotek and similar, RKPM8044 required	5 5 5	13" — 17 1/2"	F — —	135.00 40.00 125.00
SSM20N1U	RKSPVM20	Custom rackslide shelf. Requires 11RU.	11	20"-30"	F & R	190.00
Monitor Rackmount Kits for Panasonic Monitors						
BTS900Y BTS901Y	RBT901 (for any of these monitors)	Dual rackmount for 2 monitors Requires 6RU space	6	13"	F	\$125.00
BTS901Y BTS901Y	BPT901 WFB901	Blank panel for RBT901 Waveform adaptor for Tektronix, Videotek and similar	6 6	— 17 1/2"	— —	40.00 125.00
BTH1350Y BTS1360Y BTS1370Y	RBT1370 (for any of these monitors)	Custom rackmount FEC equivalent to Panasonic BA131	8	15"	F	120.00
CT1384Y CT1384VY	RCT1383 (for any of these monitors)	Custom rackmount kit	9	11"	F	125.00
CTS1390Y	RCT1390	Custom rackmount kit	7	14 1/2"	F	95.00

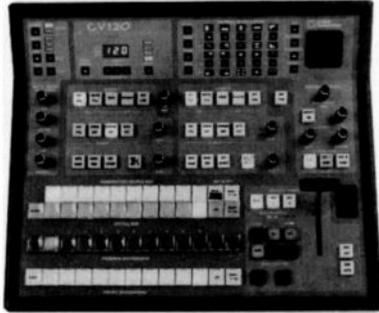
ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





CV-120 Component Digital Video Mixer

- Four 13 primary video input crosspoint buses
- 10 primary 601 video inputs
- Two 10 external key cut crosspoint buses
- Change background or keys in any combination with fader or 1-999 frame auto transition
- One-frame auto transitions
- 2 color background generators
- 5 separate color matte generators
- Both identical keyers have linear and luminance keys, chromakeys and wipe pattern inserts over background video
- Key priority
- Built-in key memory system
- Fill the keyer from the key fill bus or its own dedicated matte generator
- Select the key cut from either the separate video key cut buses, the external key cut buses, chromakeyer or wipe generator
- 100 wipe patterns
- 2 key mask box generators
- Last button for undoing a memory recall or program
- Look ahead preview output
- 6 GPIs
- Dedicated positionable shadow generators for each keyer
- Program output pulse processing
- Tally outputs for primary and external cut inputs
- Dedicated DSK cut and auto transition
- Master fade-to-black auto transition button, 1 to 999 frame fades
- Self timing
- Selectable for either NTSC or PAL

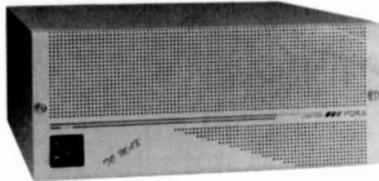


VPS-300 Video Mixer

- Component 4:2:2 signal processing
- 1 frame memory
- 2 field correction range
- Input signals: composite, Y/C 358, Y_PP_R, and GBR
- Blackburst: 0.429V p-p, 75 ohms (2 outputs)
- Preview: composite, 1.0V p-p (1 output)
- Monitor: composite, 1V p-p, 75 ohms (1 output)
- 15-pin, D-sub connector GPI interface
- 9-pin D-sub, RS-422, GVG-100 protocol editor interface
- 9-pin D-sub, RS-422 AFV interface
- RS-232C 25-pin, D-sub connector
- Quantization: Y, 8-bit; C, 8-bit
- 2% DG
- 2° DP
- 2% K-factor
- 1% H/V tilt
- ≥54dB p-p/rms S/N ratio
- Crosstalk: ≥53dBn @3.58MHz

LDR-110 Live Digital Recorder

- Nonlinear, random access, 3:1 compression-based disk recorder
- NTSC, PAL, PAL-M or PAL-N selectable
- D1, Y_PP_R analog composite, Y/C input/output
- 2 audio channels, with optional 4-channel audio capability
- Selectable JPEG compression rates
- Go to, fast, slow and frame grab capabilities
- Full process comb filtering
- MS-DOS™-based PC control software standard
- Excellent time capacity



CV-60 Compact Component Digital Keyer/Mixer

- 4 crosspoint buses
- 6 video inputs
- 2 video outputs
- Modular inputs and outputs for mixed format applications (analog/digital)
- Manual and auto transitions
- Downstream fade-to-black
- Change background or keyer in any combination with fader or 1-999 frame auto transition
- One frame auto transition will select a true 1 frame rate for soft cuts
- Color background generator
- Color matte generators for key fills, key shadow and edges
- Positionable key shadow offers adjustable color and transparency
- Linear and luminance keying over background
- Built-in key memory system
- Select the key cut from any input source
- Select the key fill from any input, matte generator or color background generator
- Key mask creates adjustable box for masking
- 6 memory registers for effects

- store and recall
- Effects sequences can be programmed along with transition type
- Last button for undoing a memory recall or program
- Five GPIs
- Tally outputs for all buses
- Self timing

UDP-510 Universal Digital Processor

- Median filter can be selected to either remove impulse noise spikes from signals such as satellite transmissions, or to compensate for large amounts of dropout in badly downgraded or poor quality signals
- Standard RF related dropout correction performed when RF input present; other dropout factors compensated for when no RF input present
- Median filtering performed for removal of chroma noise, which affects overall picture results
- Color corrector balances color tone in low, high level picture areas for best results
- Recursive filter helps solve such problems as low-light or multigeneration tape noise
- Image enhancement function improves overall picture to give sharper, clearer results

MF-310 Multiflex™ Digital Image Processor

- 2-D/3-D digital effects generator
- Composite, Y/C, component inputs/outputs, key output
- 8-bit internal 4:2:2 processing
- A/B switching
- Background input, internal mix for stand-alone operation
- Internal frame synchronizer
- Page turns, waves, ripples, cylinders, bursts, and other effects
- Highlight, shadow, edge modifiers
- Multiple memory functions
- MU standard EIA 1RU height

FA-140 TBC Frame Synchronizer

- Flexible unit with NR capability and front panel process/phase control with analog to serial digital conversion
- Combines TBC, FS, and noise reduction with A/D signal conversion in one compact EIA 1RU size unit
- Accepts analog composite, Y/C and component
- Outputs analog composite, Y/C plus serial digital component
- Digital comb filtering
- 5.5MHz bandwidth
- 4:2:2 digital component processing
- Field inversion prevented and low power consumption
- Quantization 8 bits Y and C
- 4x fsc sampling

FA-510 Time Base Corrector

- Unique color correction function that controls red and blue, white and black balance as well as the Y gamma characteristic
- Motion-compensated noise reduction achieves output signal-to-noise ratio up to 9dB
- Y/C and composite inputs plus the optional Y_PP_R input
- Simultaneous availability of composite video, Y/C 358 and Y_PP_R outputs for interfacing with all of the most widely used video equipment
- Compatible with 4 formats
- Wideband CCD comb filter maintains 5.0MHz luminance bandwidth for composite sources
- Dynamic tracking option
- Full frame memory for infinite window correction
- Dropout compensation
- Shuttle lock to 40X play speed

CVX-64Q Digital Video Quad Split Module

- Allows monitoring of up to four 601 serial digital video signals on a single monitor
- GPI closures or optional pushbutton remote controller selects individual sources or displays all 4 sources on a split screen
- Accepts four serial 601 inputs
- Outputs are 4 identical quad split images (or single selected signal)
- Remote control is via RJ12 control cable
- Uses half of a 2 module rack frame/power supply which can also house any CVX converter product for use with analog monitors

VTW-150 Video Typewriter

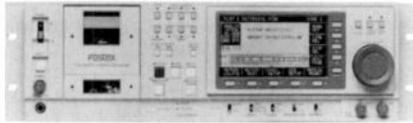
- Simple and easy to operate composite or Y/C video typewriter
- Main unit has PS/2 interface for control by any standard IBM™ type keyboard
- Multilingual support option
- Generates color or B/W characters with contrast edge
- Up to 12 lines of 24 characters in up to 8 different colors per page
- 5 character sizes (1 font) and up to 50 pages stored to memory
- Keyboard or remote initiated page change and superimpose
- All page data protected during power loss
- Flexible, compact and economical

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



D-30 DAT Master Recorder

- Large, high resolution back lit LCD display
- 10 soft function keys situated around display
- 4-motor mechanism ▪ 2M bytes of RAM for 10 seconds of storage permanently available ▪ Scrub both the audio and time code together whenever tape is stopped ▪ Independent channel recording ▪ Variable length crossfades (0ms-300ms) ▪ Spot erase and auto cue-up ▪ Dual function fast forward and rewind keys to motion the transport at 5X or 100X play speed ▪ In tape shuttle mode search at 1/2X-16X play speed or use tape jog mode for more precise location of points ▪ Fully implemented chase/lock synchronizer ▪ Reads, generates and regenerates time code ▪ Incorporation of a wideband LTC and a VITC reader ▪ 2 RS-422 ports ▪ Pull up and pull down of 44.1kHz and 48kHz sampling frequencies ▪ 799 program numbers and a user-settable level for auto recording ▪ 2 expansion slots
- 18-bit A/D and D/A converters **\$10,995.00**



D-25 DAT Master Recorder

- 16M byte RAM buffer allows automatic storage and access to audio for instant start and insert edits ▪ SMPTE/EBU time code generator/reader—all formats will sync to external sources ▪ RS-422 port allows VTR emulation and interface with digital audio workstations
- Onboard synchronizer with full chase/lock operation with offset
- Pull up and pull down film to video and video to film transfers with fast, precise off-line editing ▪ Independent recording of left and right channels ▪ Analog style "reel rocking" for precise location of cue point; scrub from tape or RAM buffer ▪ Jog/shuttle manual search control of tape speed in either direction from 1/2X-16X ▪ Full digital copying including subcode (TCs and IDs) ▪ Variable speed operation ±1.2% ▪ User adjustable crossfade times ▪ Parallel port, standard
- 4-head/motor transport, off tape confidence monitoring, punch-in/out recording, fully professional **\$7,995.00**



PD-4 v2 Professional Portable Timecode DAT Recorder

- 4-motor transport ▪ 4-head drum with off tape confidence monitoring ▪ Anti-jam transport mechanism ▪ 3 sampling frequencies (44.1, 48, 48.047kHz) ▪ Full time code capability including 30df and Jam Sync ▪ Subcode functions ▪ Onboard 3 to 2 mic/line mixer with 3 position pans and master output control ▪ Comprehensive illuminated display and transport direction tallies ▪ 2 hours of record time with NP1B type batteries ▪ Accepts most Betacam power sources ▪ Weighs 6 lbs. including battery ▪ Continuously variable filters ▪ Onboard phantom 48V power supply ▪ Stereo limiter
- 2-tone error alert signals help clarify different alert signals ▪ 20dB attenuation pads for each channel ▪ Improved blank search functions upon start-up **\$7,395.00**

D-15 Production DAT Recorder

- Chase mode functions built-in ▪ Instant start without preloading
- Holds peak reading on the digital bargraphs with a choice of 5 different settings ▪ Software set front panel lockout function
- Set cue levels and times to suit preferences ▪ All frame rates are supported including 30df ▪ Offset key allows you to adjust TC offsets against the master machine ▪ Skip ID mode now offers 3 choices of

- operation: off, stop or play ▪ Transport utilizes a 4-motor design
- 120 minute tape shuttles in about 60 seconds ▪ Parallel interface standard ▪ Reference levels can be set to -12, -18 or -20 ▪ Inputs utilize 18-bit/64X oversampling ▪ Outputs use 20-bit/8X oversampling ▪ XLR and phono connectors are supported. . . **\$3,295.00**

D-5 Studio DAT Recorder

- State-of-the-art 16-bit A/D D/A converters ▪ Subcode information on tape (IDs) can be read at 100X normal speed ▪ 48kHz, 44.1kHz and 32kHz sampling frequencies for up to 2X the normal recording time (analog audio only) ▪ Professional, rugged design with 4-motor transport ▪ Standard AES/EBU and SPDIF I/O professional interfaces, including a GPI trigger ▪ Start IDs, end IDs, skip IDs and program numbers are available for TOC, library and search functions ▪ Optical input reads the Q code from a compact disc and facilitates instant start ▪ On/off status of auto ID and input switch conditions retain at powering down **\$1,195.00**

D-160 16-Track Removable Hard Disk Recorder/Editor

- Cut/copy/paste/move editing ▪ Vari-speed control offers ±6% speed variation in calibrated 0.1% steps with no loss in audio quality ▪ Jog and shuttle operation for pin-point locating and setting operating parameters
- Program messages of up to 15 words can be assigned to the virtual reels ▪ All of the 6 locate points can be assigned to each song program independently and archived together with song data
- MTC-only chase function ▪ Programmable offset of up to 24 hours
- 2.55G byte hard drive offers 30 minutes of uncompressed 16-track recording **\$3,995.00**



D-90 Removable Hard Disk Recorder/Editor

- Rackmount removable hard disk recording/editing with removable front panel for full-function remote control ▪ 8-track simultaneous recording ▪ No compression 16-bit linear CD quality sound ▪ Random access cut/copy/paste/move editing with undo/redo and jog/shuttle control and large, bright fluorescent display ▪ ADAT™ "Light Pipe" digital I/O ▪ ADAT tapes can be downloaded and edited ▪ Vari-speed control adjusts changes ±6% of normal speed with no loss of audio fidelity ▪ 44.1kHz and 48kHz sampling rates ▪ Provides and optional +4DBU balanced I/O interface via D-sub 25-pin connectors
- Optional SCSI-2 port ▪ 2.55G byte removable hard drive offers about 60 minutes of 8-track recording. **\$2,595.00**

DMT-8VL Digital Multitracker

- 8-track HD recorder/mixer ▪ 4-track simultaneous record capability (2 analog, 2 digital) ▪ Input trim settings on channels 1 and 2 for setting proper recording levels when using microphones ▪ Built-in hard disk is 540M bytes which allows about 12 minutes of recording time ▪ Quantization is 16-bit linear ▪ 44.1kHz sampling frequency
- Each channel has an input signal select switch (input/track)
- 2-point high/low shelving equalization ▪ 60mm long throw fader for precise level settings ▪ Stereo inline monitor section and a stereo aux send ▪ 2 stereo aux returns, direct inputs and outputs and independent monitor outputs ▪ Random access editing tools are pushbutton easy and straightforward to use ▪ Cut/copy/paste and move allow you to manipulate music files ▪ A/D converter: 18-bit, 64X oversampling ▪ D/A converter: 20-bit, 128X oversampling **\$1,295.00**

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





MINI-FILLS

Standard Mini-Fills

• A compact professional light designed to accept 20W to 100W bulbs for various ENG or EFP productions • Measuring 2.0" by 4.25" at 12 oz., the Mini-Fill runs from any 12V to 14.4V or 30V battery and is designed for all on camera applications



MF-NP1S with Optional MFDF Dichroic Filter

- MF-NP1S Mini-Fill with NP connector for NP batteries. Recommended bulb, 50W or less (2' cable) \$195.00
- MF-NP1 MF-NP1S with 4' cable and NP connector 195.00
- MF-PT Mini-Fill with power tap connector 195.00
- MF-12S Mini-Fill with Sony connector for Pag-Lok Bracket 195.00
- MF-12C Mini-Fill with BP90 type coax plug 195.00
- MF-30 Mini-Fill with 2-pin amphenol connector for 30V operation 195.00
- MF-4X Mini-Fill with XLR-4 connector 185.00
- MF-5X Mini-Fill with XLR-5 connector 185.00
- MF-12P Mini-Fill with cigarette lighter plug 185.00
- MFNP1-HC Mini-Fill with handle clamp and self-contained NP battery bracket 325.00

Dimmer Control Mini-Fills

• Include a built-in dimmer control using pulse width modulation for adjusting light output • This innovation provides the performance of a 50W to 100W light from a 100W bulb, and 20W to 50W from a 50W bulb

- MFIC-NP1S Mini-Fill Dimmer with NP connector for NP batteries. Recommended bulb, 50W or less (2' cable) . . \$295.00
- MFIC-NP1 MFIC-NP1S with 4' cable and NP connector . . . 295.00
- MFIC-PT Mini-Fill Dimmer with power tap connector . . . 295.00
- MFIC-12S Mini-Fill Dimmer with Sony connector for Pag-Lok Bracket. 295.00
- MFIC-4X Mini-Fill Dimmer with XLR-4 connector 285.00
- MFIC-5X Mini-Fill Dimmer with XLR-5 connector 285.00
- MFIC-12C Mini-Fill Dimmer with BP90 type coax plug . . . 295.00
- MFIC-12P Mini-Fill Dimmer with cigarette lighter plug . . . 285.00
- MFIC-30 Mini-Fill Dimmer with 2-pin amphenol connector for 30V operation. 295.00
- MFIC-NP1HC Mini-Fill Dimmer with handle clamp and self-contained NP battery bracket 425.00

CAMERA BRACKETS/POUCHES

NP1-CB Camera Bracket

• Lets you slip in a 2nd NP battery on back of your existing Sony NP1 battery box for powering your light • Dimensions: 5.7"H x 3.05"W x 1.7"D • Weight: 3.4 oz \$105.00

NP1 Pouch

• This sleek pouch lets you keep one or two NP batteries on your waist belt for powering your light or for backup • Dimensions: 7.5"H x 3.5"W x 2.25"D \$38.00

BP90 Pouch

• If you need the power of a 12V, 5AH battery but don't want to carry it, this waist pouch will make it easy • Dimensions: 7.5"H x 5.25"W x 3.25"D \$38.00

PAG Brackets

• Call to verify availability of Pag-Lok brackets \$130.00

Snap-On Brackets

• Call to verify availability of Snap-On brackets \$130.00-195.00

HM-NP1-1 Snap-On Battery Box

• Lets you use a NP-type battery for powering a camera with a Snap-On battery bracket. \$195.00

HM-NP1-2 Snap-On Battery Box

• Lets you use two NP-type batteries for powering a camera with a Snap-On battery bracket \$245.00

HM-90B Snap-On Battery Box

• Allows you to use existing BP90s to power a camera with a Snap-On bracket \$225.00

High Performance NP-Type Batteries

• Provide high performance power for broadcast cameras and portable video recorders in a slim lightweight design • When used with the Frezzi NP1-CB camera bracket on back of the Sony battery box, you can use NP-type batteries to power a Mini-Fill light with a 50W bulb or less

- NPX-1 13.2V, 1.8AH, 24Wh; dimensions: 7.20"H x 2.75"W x 0.95"D; weight: 1.5 lb. . . \$95.00
- FNP-1S 12V, 2.3AH, 28Wh; dimensions: 7.20"H x 2.75"W x 0.95"D; weight: 1.5 lb. 95.00

MFK-90 Standard Mini-Fill Kit

- (1) MF-12C Mini-Fill with BP90 type coax plug
- (2) — Choice of spare bulb
- (1) FBP-90 High energy battery with Sony connector
- (1) BC-124S Trickle charger for FBP-90 battery
- (1) MFDF Daylight corrector dichroic filter accessory
- (1) MFCC Rugged transportation case
- (1) 9807A All purpose mounting clamp, comes with LS-1A
- MFK-90 \$795.00

Mini-Fill Filters

- MFDF Daylight corrector dichroic filter accessory, converts 3200°K to 5500°K. \$95.00
- MADF Dichroic filter accessory, converts 5500°K to 3200°K (HMI only) 95.00

Lamps for Mini-Fills

Code	Watts	Volts	Color Temp. (°K)	Approx. Life (hrs.)	Beam Spread	Price
Lamps for Standard and Dimmer Control Mini-Fills						
BAB	20	12-14	2925	2000	Flood	\$25.00
FMW	35	12-14	3000	4000	Flood	25.00
EXN	50	12-14	3050	3000	Flood	25.00
EYC	75	12-14	3050	3500	Flood	25.00
EXV	100	12	3350	50	Flood	25.00
EKP	80	30	3350	25	Flood	25.00

Lamp for HMI Mini-Fills Only

FAB	24	—	5500	500	—	\$225.00
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FL-650 High Power Portable Light

• Runs on AC and DC • Flood and spot control • Power cord and bulb not included. . . \$235.00



M1100 Fast Charger

• Charges all manufacturer battery packs 12V, 13.2V, 14.4V, 1-7AH • Universal input voltage (90-240 VAC, 50-60Hz) world wide operation • Advanced charging protocol system • High strength rugged aluminum chassis • Alpha-numeric high quality LCD with back light • Anti-self discharge program \$895.00

M2100 Fast Charger

Same features as M1100, plus: • AH in/out indicator • Discharge/analyzer • Bargraph ammeter for power supply mode • Battery rescue mode for abused or over-discharged batteries . . \$1195.00

Note: Complete line of microcomputer-controlled fast chargers not listed here are available. Call for additional information.

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

BROADCAST/ PROFESSIONAL TV LENSES



A10x4.8EVM/ERD



A15 x 8EVM/ERD



A18 x 9RM

3/8" ENG/EFP Lenses

Model No.	Focal Length	Zoom Ratio	Extender	Maximum Aperture Ratio	M.O.D.	Object Dimensions At M.O.D.	Angular Field Of View	Macro	Size	Weight (w/o Lens Hood)
A10x4.8EVM/ERD †***+	(1X) 4.8 - 48mm (2X) 9.6 - 96mm	10X	2X	f/1.8	0.3m	4.8mm 624 x 468mm 48mm 62 x 47mm	4.8mm 85° 01' x 69° 01' 48mm 10° 28' x 7° 52'	Yes	244.4mm	1.85kg (EVM) 1.92kg (ERD)
A15x8EVM/ERD †***+	(1X) 8 - 120mm (2X) 16 - 240mm	15X	2X	f/1.7	0.65m	8mm 669 x 502mm 120mm 45 x 33mm	8mm 57° 37' x 44° 50' 120mm 4° 12' x 3° 09'	Yes	202mm	1.38kg (EVM) 1.45kg (ERD)
A16x9ERM †	(1x) 9 - 144mm (2X) 18 - 288mm	16X	2X	f/1.8	0.9m	9mm 815 x 611mm 144mm 51 x 38mm	9mm 52° 07' x 40° 17' 144mm 3° 30' x 2° 38'	Yes	183.3mm	1.35kg
A18x9RM †	9 - 162mm	18X	—	f/1.8	0.9m	9mm 814 x 611mm 162mm 45 x 34mm	9mm 52° 07' x 40° 17' 162mm 3° 07' x 2° 20'	Yes	190.3mm	1.15kg
A18x9ERM †	(1X) 9-162mm (2X) 18-324mm	18X	2X	f/1.8	0.9m	9mm 814 x 611mm 162mm 45 x 34mm	9mm 52° 07' x 40° 17' 162mm 3° 07' x 2° 20'	Yes	190.3mm	1.28kg
A20x8EVM/ERD †***+	(1X) 8 - 160mm (2X) 16 - 320mm	20X	2X	f/1.7	0.8m	8mm 819 x 614mm 160mm 41 x 31mm	8mm 57° 37' x 44° 50' 160mm 3° 09' x 2° 22'	Yes	221.8mm	1.75kg (EVM) 1.82kg (ERD)
A24x11.5ERD	(1X) 11.5 - 276mm (2X) 23 - 552mm	24X	2X	f/2.0	1.8m	11.5mm 1296 x 972mm 276mm 54 x 40.5mm	11.5mm 41° 52' x 32° 01' 276mm 1° 49' x 1° 22'	Yes	261mm	2.9kg
A24x16.5ERD	(1X) 16.5 - 400mm (2X) 33 - 800mm	24X	2X	f/2.8	1.8m	16.5mm 903.3 x 677.5mm 400mm 37.3 x 27.9mm	16.5mm 29° 51' x 22° 37' 400mm 1° 15' 0" 56'	Yes	270mm	2.9kg
A36x10.5ERD †	10.5 - 378mm	36X	2X	f/2.0	2.2m	10.5mm 1726 x 1295mm 378mm 48 x 36mm	10.5mm 45° 28' x 34° 54' 378mm 1° 20' x 1° 00'	Yes	341.5mm	4.5kg
A36x14.5ERD †	(1X) 14.5 - 520mm (2X) 29 - 1040mm	36X	2X	f/2.7	2.2m	14.5mm 1250 x 938mm 520mm 35 x 26mm	14.5mm 33° 46' x 25° 39' 520mm 0° 58' x 0° 44'	Yes	363.3mm	4.58kg

1/2" ENG/EFP Lenses

S12x5BRM †	50 - 60mm	12X	—	f/1.8	0.5m	5mm 638 x 478mm 60mm 53 x 39mm	5mm 65° 14' x 51° 17' 60mm 6° 05' x 4° 35'	Yes	183mm	1.2kg
S15x6.1EVM/ERD †***	6.1 - 91.5mm	15X	2X	f/1.4	0.65m	6.1mm 736 x 552mm 91.5mm 44 x 37mm	6.1mm 55° 22' x 42° 57' 91.5mm 4° 00' x 3° 00'	Yes	206.5mm	1.38kg(EVM) 1.45kg(ERD)
S16x6.7RM †	6.7 - 107mm	16X	—	f/1.4	0.9m	6.7mm 796 x 597mm 107mm 50 x 37mm	6.7mm 51° 03' x 39° 25' 107mm 3° 25' x 2° 34'	Yes	165mm	1.2kg
S16x6.7ERM †	(1X) 6.7 - 107mm (2X) 13.4 - 214mm	16X	2X	f/1.7	0.9m	6.7mm 796 x 597mm 107mm 50 x 37mm	6.7mm 51° 03' x 39° 25' 107mm 3° 25' x 2° 34'	Yes	188.5mm	1.35kg
S18x6.7RM †	6.7 - 121mm	18x	—	f/1.4	0.9m	6.7mm 796 x 597mm 121mm 46 x 34mm	6.7mm 51° 03' x 39° 25' 121mm 3° 02' x 2° 16'	Yes	195mm	1.15kg
S18x6.7ERM †	(1X) 6.7 - 121mm (2X) 13.4 - 242mm	18X	2X	f/1.4	0.9m	6.7mm 796 x 597mm 121mm 46 x 34mm	6.7mm 51° 03' x 39° 25' 121mm 3° 02' x 2° 16'	Yes	195mm	1.25kg

3/8" Format Teleconferencing Lenses

Model No.	Focal Length	Zoom Ratio	Maximum Aperture	M.O.D.*	Iris Range	Iris Control	Field Angle -Wide Angle -Telephoto	Front Thread	Weight (w/o Lens Hood)
A4x7.5MD	7.5 - 30mm	4X	f/2.8	0.45m	f/2.8 - 16	Auto, Remote/Manual	60° 48' x 47° 30' 16° 41' x 12° 33'	52mm/P=0.75	0.75kg
A8x12MD	12 - 96mm	8X	f/2.8	1m	f/2.8 - 16		40° 16' x 30° 45' 5° 15' x 3° 56'	52mm/P=0.75	0.7kg
A16x9MD †	9 - 144mm	16X	f/1.8	0.9m	f/1.8 - 16		52° 07' x 40° 17' 3° 30' x 2° 38'	77mm/P=0.75	1.25kg
A18x9MD †	9 - 162mm	18X	f/1.8	0.9m	f/1.8 - 16		52° 07' x 40° 17' 3° 07' x 2° 20'	82mm/P=0.75	1.15kg

1/2" Format Teleconferencing Lenses

S4x5.5MD	5.5 - 22mm	4X	f/2.0	0.45m	f/2.0 - 16	Auto, Remote/Manual	61° 37' x 48° 11' 16° 57' x 12° 45'	52mm/P=0.75	0.75kg
S8x8.8MD	8.8 - 70mm	8X	f/2.0	1m	f/2.0 - 16		39° 58' x 30° 30' 5° 14' x 3° 56'	52mm/P=0.75	0.7kg
S14x7.3BWMD	5.5 - 77mm	14X	f/1.9	0.53m	f/1.9 - 16		60° 23' x 47° 09' 4° 46' x 3° 34'	82mm/P=0.75	1.15kg
S16x6.7MD †	6.7 - 107mm	16X	f/1.4	0.9m	f/1.4 - 16		51° 03' x 39° 25' 3° 25' x 2° 34'	77mm/P=0.75	1.25kg
S18x6.7MD †	6.7 - 121mm	18X	f/1.4	0.9m	f/1.4 - 16		51° 03' x 39° 25' 3° 02' x 2° 16'	82mm/P=0.75	1.15kg

†Aspheric Technology *0.07m or less with macro operation **Quick Zoom • Inner focus +DEVM model features 16:9/4:3 ratio converter

Call For Pricing

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

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REFERENCE
DATE 001
97-90



TELECONFERENCING EQUIPMENT TI7200 Teleconferencing Interface

- For audio and videoconferencing ▪ Uses acoustical and telephone echo cancellation technology ▪ Provides 7kHz bandwidth when used in 4-wire/video applications ▪ Parallel or RS-232 control ▪ Bridge port for additional phone lines ▪ 100% digital audio processing
- Completely full-duplex operation \$4995.00

GT724 Group Teleconferencer

- Designed for audio and videoconferencing applications
- Simultaneous 2-wire and 4-wire operation allows you to bring a "phone add" into a videoconference ▪ Provides 7kHz bandwidth in 4-wire mode ▪ "One-box" solution with a 3-channel mic mixer and speaker amp built-in ▪ Expandable with additional equipment such as the MPA II ▪ Full duplex operation \$3250.00

GT724 System Includes 2 omni mics and 1 wall mount speaker 3695.00

GT300 Group Teleconferencer

- Designed specifically for audio teleconferencing applications ▪ Uses Gentner's proven acoustical and telephone echo cancellation for superior audio quality ▪ Use as a "one-box" solution with the built-in 3-channel microphone mixer and speaker amplifier or expand for additional microphone or speaker coverage
 - Completely full-duplex operation \$2195.00
- System 300 Includes 2 omni mics and 1 wall mount speaker \$2650.00



AVT7100 Teleconferencer

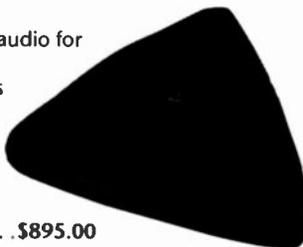
- Specifically designed for videoconferencing applications requiring the highest audio quality ▪ 4-wire echo canceller ▪ Built-in 3-channel microphone mixer and speaker amplifier ▪ Callers can be added to a conference using the AVT7000's bridge port and a Gentner DH1a Digital Hybrid or a TH120 ▪ Parallel or RS-232 control ▪ 7kHz bandwidth ▪ Transparent, natural sounding audio ▪ Full-duplex operation \$2995.00

AVT7000 Teleconferencer

- Audio for video teleconferencer ▪ Specifically designed for videoconferencing applications requiring the highest audio quality
- 4-wire echo canceller ▪ Connects directly to a videoconferencing CODEC and to the room audio system ▪ Callers can be added to a conference using the AVT7000's bridge port and a Gentner DH1a Digital Hybrid or a TH120 ▪ Parallel or RS-232 control ▪ 7kHz bandwidth ▪ Transparent, natural sounding audio ▪ Full-duplex operation \$2695.00

ET100 Room Conferencer

- High quality, full-duplex telephone audio for offices or conferencing rooms
- Works with analog or digital phones (via handset connector)
- Audio module has 25' cable to reach center of most tables ▪ 3 high quality professional microphones, 4" speaker ▪ 3 mute buttons ▪ Attractive design \$895.00



ET10 Room Conferencer

- Brings high quality, full-duplex telephone audio to the desktop
- Works with analog or digital phones (via handset connector)
- Compact, attractive design
- Headset port provides extra convenience ▪ Optional extension mic expands coverage
- Mute button for privacy \$399.00



MPA II Mixer/Power Amplifier

- 8-channel, automatic gated microphone mixer and 2-channel power amplifier ▪ Microcomputer controls all mixing parameters
- Easy installation and setup with 6 preset programs for the most common applications ▪ 6 more programs may be configured by the user with a PC connected to the unit's RS-232 port ▪ Locking front panel prevents unauthorized access to controls ▪ "One-box" solution
- Expandable ▪ Switchable microphone phantom power ▪ Logic outputs for controlling cameras \$2995.00

ASSISTIVE LISTENING SYSTEM

TX-37A Transmitter

- Universal input stage provides input for mix, line or speaker level, balanced or unbalanced
- Multiproc adaptive audio processing ▪ Field-selectable channel selection with digital tuning ▪ Built-in test tone to aid receiver tuning ▪ Flex antenna mount and cable ▪ Audio input level meter ▪ Adjustable RF level
- External power supply ▪ Rugged steel chassis ▪ Audio monitor jack with volume control ▪ Increased intelligibility for both hearing impaired and nonimpaired listeners ▪ Improved S/N ratio ▪ No clipping or overmodulation ▪ Superior overall sound quality ▪ Easy receiver tuning ▪ Easy to use \$599.95



PTX Portable Transmitter

- Compact design ▪ Tunable to all 37 channels ▪ 6 channel presets for easy selection ▪ LCD display indicates channel and low battery
- Mic or aux input, or a mix of both ▪ Lavalier mic included ▪ May be recharged in BC10A battery charger when used with NiCad batteries \$399.00

RX-6 Receiver

- 6 user-selectable channels ▪ Large on/off/volume control ▪ Built-in belt/pocket clip ▪ Power LED, indicating power is on and batteries are charged
- High power output stage (140mW) ▪ Inset earphone plug included ▪ Field tunable to all FCC approved assistive listening channels . . . \$135.00



RX-1A Receiver

- Simple design ▪ Large on/off/volume control
- High power output stage (140mW) ▪ Built-in belt/pocket clip ▪ Inset earphone plug included. \$75.00

SRX Wireless Receiver/Speaker

- Combines functions of both a speaker and an assistive listening receiver ▪ Receives audio transmitted by an FM listening transmitter
- Ideal for applications in which amplified sound is needed ▪ Brings audio from a program into separate or adjacent rooms ▪ Powered by 6 "C" batteries, or may be plugged into an outlet ▪ Tunable on-site to all FCC channels (72-76MHz) \$199.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





TS612 Multiline Telephone System

- Connection for 6 telephone lines with simple expansion to 12 lines
- Call screening ▪ Talk off-air with a caller at the same time other callers are on-air ▪ Telephone handset and keypad built-in to control surface
- Add up to 2 extra control surfaces to the mainframe in order to use the system from 2 different studios
- 2 built-in digital telephone Superhybrids
- Control via RS-232 provides direct connection to a PC or digital storage system
- VIP button that allows line 6 or 12 to be placed in a mode that that cannot be deselected or put on hold
- NEXT feature that selects call waiting the longest
- REC (record control) button for simple recording of calls
- MUTE function cuts off caller audio to the console
- 2 AUX buttons for controlling external equipment such as a delay dump

TS612 (12 lines) \$4195.00
 TS612 (6 lines) 3149.00
 Line expansion card 1195.00
 ScreenWair call screening software package 625.00
 Additional control surface 489.00

G2500 Superhybrid Digital Telephone Hybrid

- Can be used with any audio board or console
- Auto Mix Minus permits you to feed program output down the telephone line, even when the output contains caller audio
- Automatically removes the caller audio from its feed path
- Automatic answer/disconnect
- RS-232 control
- Single cable conferencing with additional G2500s
- Acoustic echo suppressor further reduces the chance of feedback. . . . \$2095.00

Digital Hybrid III Auto Nulling Telephone Hybrid

- Designed specifically for fast-paced studio settings
- May be used in virtually any application requiring connection of a telephone line to professional audio equipment
- CUE control is used to talk with callers off-air: it automatically switches its send audio from the console's mix-minus output to an auxiliary source such as a mic preamp
- REC automatically activates your tape recorder and sends audio to the tape
- Can also be tied to your console logic to automatically perform these functions when activated. . . . \$1895.00



DH22 Dual Digital Telephone Hybrid

- Telephone interface that interconnects between 2 standard telephone lines and audio equipment
- 2 digital hybrids in on chassis
- 16-bit DSP digital technology
- Auto mix-minus
- Selectable cross conferencing
- Built-in speaker amplifier
- Balanced audio in and out
- Mic or line input
- Selectable AGC
- Selectable caller ducking
- Selectable auto answer/auto disconnect
- Remote control and status
- Accepts all worldwide voltages. \$1595.00



DH20 Digital Telephone Hybrid

- Telephone interface that interconnects between a standard telephone line and audio equipment
- 16-bit DSP digital technology
- Easy to install, simple to operate
- Auto mix-minus
- Built-in speaker amplifier
- Balanced audio in and out
- Mic or line input
- Selectable AGC ensures all callers are at same audio level
- Selectable caller ducking
- Selectable auto answer/auto disconnect
- Remote control and status
- Accepts all worldwide voltages. \$995.00

TH100 TeleHybrid Digital Telephone Hybrid

- Digital hybrid for digital phones
- Turns telephone into "on-air" system
- Makes phone calls for broadcast, teleconferencing and pro-audio easier
- Connects to existing telephone, delivering full duplex audio to console or conference system without echo or feedback
- Connects to single line, multiline, analog or digital set telephones. \$749.00

TC100RTT Telephone Hybrid

- Answers incoming calls after 1-7 rings and automatically disconnects when the caller hangs up
- Upon answering the call, an internal relay can start your tape equipment for recording or playing a message
- Converts 2-wire phone circuits to 4-wire systems for placing calls on-air, sending IFB or recording interviews
- Simulates telephone battery for private intercom systems or powering computer modems
- Equipped with a DTMF decoder that provides remote control for up to 16 sources, such as audio feeds. \$659.00



SPH10 Analog Telephone Hybrid

- Audio filtering and equalization
- Balanced input/output
- Balanced and unbalanced mix output for recording both sides of the conversation
- Built-in monitor amp allows hands-free monitoring of calls without a headset
- Simple to install and to operate
- Automatically accepts all worldwide voltages
- Worldwide compliant including FCC, CSA and CE
- Operates on standard telephone lines and connects to the telephone system with a standard RJ-11G modular jack. \$499.00

TeleSwitch Call Director

- Up to 5 lines can be directly connected, placed on hold and routed to your hybrid or telephone set
- Uses standard RJ-11C telephone connectors
- Control panel lights indicate whether the line is ringing, in use, on hold or available
- When installed inline with a business phone system, calls can be answered, screened and put on hold by the regular phone system; when they are needed on-air, TeleSwitch can take the call and route it to the telephone hybrid. \$1045.00

Auto Coupler/Auto Coupler CP 2-Way Telephone Coupler

- Automatic answer and disconnect
- Adjustable mix of send and receive audio
- Selectable operation from automatic to manual coupling
- Included wall adaptor
- Standard modular connections for telephone line and set \$349.00
- Auto Coupler CP Disconnects where loop drop is not provided. 349.00

Hybrid Coupler 2-Way Telephone Coupler

- Passive (uses no power)
- Adjustable mix of send and receive audio
- Selectable seize and tap positions
- Standard connections for telephone line and set \$199.00

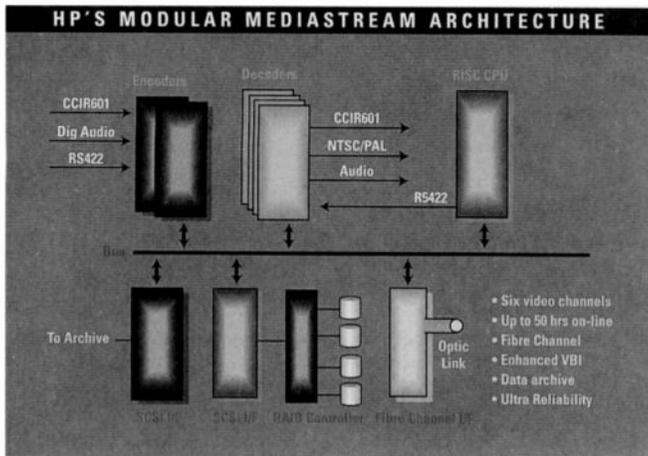
Microtel Portable Telephone Interface

- Replaces the handset on standard telephones
- Sends and receives audio over the telephone
- Battery operated (uses 9V battery)
- External power not required
- Takes mic and line levels \$272.00
- AC wall transformer 29.00



ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





MediaStream Broadcast Server and MediaStream Disk Recorder

Provide complete disk-based storage solutions for on-air applications including: spot insertion (stand-alone and/or caching), multichannel broadcasting, network delay, program playback and archiving and NVD. Working as stand-alone units or connected through Fibre Channel networking, they take advantage of MPEG-2 compression technology for superior picture quality and storage efficiencies. Open system architecture allows a choice of automation software and archiving through partners such as A-bit, Columbine JDS, Floralca, Louth, Pro-Bel, Storage Tek and others.

MediaStream Broadcast Server

Complete digital storage and playback solution designed for maximum reliability, expandability and affordability. Comprehensive on-air solution for today as well as a cost-effective avenue for transitioning into an integrated, all-digital future.

Features:

- Up to 6 channels and up to 50 hours of award-winning video in 1 powerful package
- High-speed Fibre Channel networking for even more channels and cost-effective redundancy
- Rugged file system and real time operating system with true multitasking capabilities ensure consistent performance
- Integrated RAID protection, hot-swappable disk drives, redundant fans and hot-swappable power supplies
- Comprehensive support: 24 hours per day, 7 days per week

MediaStream Disk Recorder

Digital storage and playback solution with the functionality of a high-performance video server and the small footprint and low price of a traditional disk recorder. Affordable, reliable and flexible on-air unit. Through Fibre Channel connectivity, the MediaStream Disk Recorder can also be used in concert with the MediaStream Broadcast Server.

Features:

- Integrated RAID protection
- Scaleable input/output—supports 1-5 channels internally
- Scaleable storage—configurable with 5, 9 or 18 hours of integrated content storage
- High-speed Fibre Channel networking for virtually unlimited expandability

Specifications

Video

- CCIR-601 resolution, full IPB MPEG-2 (MP/ML)
- 6-15Mbps, user selected—clip by clip
- Serial digital component input/output, 75 ohm BNC (SMPTE 259M)
- NTSC analog monitoring outputs
- NTSC/PAL output

Audio

- 4 or 6 channels per video channel (Broadcast Server); 4 channels per video channel (Disk Recorder)
- AES/EBU 48kHz, 16-bit input/output
- Musicam compliant
- XLR and 75 ohm BNC connectors available with optional interface
- 2-channel analog output per video channel

Control

- RS-422 control for each channel
- Back-to-back frame-accurate play
- Genlock video reference required for frame-accurate system operation
- Supplied system console provides a Windows™ based interface for server setup, diagnostics, and emergency play-to-air and dubbing
- Includes modem for remote diagnostics

Vertical Blanking Interval

- Preserves any 6 of the following user-selected lines, luminance only: 525—lines 10–21 and 273–285; 626—lines 7–22 and 320–335

MediaStream Broadcast Server Starting at \$100,000.00*

MediaStream Disk Recorder Starting at 65,000.00*

* Pricing on specific configurations available upon request.

BIT-RATE vs STORAGE			
BIT-RATE*	CONFIGURATION	HOURS OF STORAGE	NUMBER OF 30-SEC SPOTS
15 Mb/s	Base	10	1200
	Opt. 41	19	2300
	Opt. 42	29	3500
10 Mb/s	Base	14	1600
	Opt. 41	28	3300
	Opt. 42	43	5100
8 Mb/s	Base	18	2200
	Opt. 41	36	4300
	Opt. 42	54	6400
6 Mb/s	Base	24	2900
	Opt. 41	48	5800
	Opt. 42	72	8600

QA 100 Quality Advisor/EDH 10 Inserter

- Eliminates clipping problems with real time color calculation
- Indicates RGB colors, video levels and EDH errors that are "illegal" in NTSC broadcasting
- Uses 4 different highlighting styles for troubleshooting accuracy
- Allows for manual adjustment of source material through "Show Legal" functions
- Automatically adjusts video levels and color with "Make Legal" function
- Maintains picture contrast by using soft and hard color limits with an adjustable gain slope
- Identifies specific pixel values for troubleshooting or color matching
- Ensures proper text, etc. placement with built-in safe-tile/action generator
- Stores settings for future recall
- Automatically logs EDH (Error Detection and Handling) errors with DVITC (time code)
- EDH 10 EDH Inserter monitors 4:2:2 digital video for transmission errors in the data streams
- A checksum is computed for the full field, active field and ancillary fields
- Downstream, the data is monitored and compared to the checksums for detection of transmission error per SMPTE 259M

HP E2550A QA 100 Quality Advisor \$8,000.00

HP E2553A EDH 10 EDH Inserter 4,000.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



Z-V1 One-Piece 1/2" 3-CCD Digital Camera/Recorder

▪ Merges a digital processing camera and three 1/2" 410,000 pixel CCDs with a DVCPRO format VTR

▪ Sensitivity: f/11.0 at 2000 lux ▪ Minimum sensitivity of 0.5 lux with f/1.4 lens, 24dB gain and 12dB ultragrain ▪ 850 TVL resolution

▪ 10-bit A/D converters and 13-bit processing ▪ S/N: 63dB ▪ Viewfinder with 600 TVL resolution ▪ Bayonet VF mounting ▪ Rec review function ▪ Built-in time code generator/reader ▪ Sync system: Internal or genlock ▪ Setup parameters stored on removable setup cards ▪ Gamma correction: 0.35 to 1.0 (on/off switchable) ▪ Geometric distortion: below measurable limit ▪ Registration: 0.05% (excluding lens) ▪ Electronic shutter adjustments in 1H steps ▪ Automatic electronic shutter mode ▪ Upright viewfinder ▪ Information display ▪ Built-in mic amp for phantom power supply ▪ Real time auto white balance ▪ Remote control options ▪ Auto iris ▪ Auto knee ▪ Lithium battery for back-up power ▪ Flare correction



Z-V1 PAK Package includes Z-V1 camera/recorder, GM-8AN 1.5" viewfinder, TA-ZV tripod adaptor, CL-ZV carrying case, YJ17x9.5B4KRSP-12 or A16x9BRM-27 lens \$24,000.00

Z-2010 1/2" 3-CCD Digital Color Camera

▪ 13-bit digital RGB processing in single LSI device ▪ 10-bit A/D converter ▪ Digital detail ▪ 850 TVL resolution ▪ Double Sampling Aperture circuit ▪ S/N: 63dB ▪ Sensitivity: f/11.0 at 2000 lux ▪ Minimum sensitivity: 0.5 lux at f/1.4 (ultragrain) ▪ 2 menus: Easy Menu and Full Menu ▪ Setup data can be transferred between cameras ▪ "Plug and Play"



eliminates the need to use menu setup when using RU-Z1 or RU-Z2 control units ▪ Character display on camera head video output allows the menu to be displayed on a large monitor for easy viewing and operation ▪ Powerful and expanded colorimetry control ▪ CCD flare is tightly controlled with the improved black mask processing and digital flare correction ▪ Fleshstone detail ▪ 6-vector and linear matrix ▪ High chroma detail ▪ Selectable detail center frequency ▪ Special gamma ▪ 4 scene files ▪ Real time automatic white balance ▪ Full-featured electronic shutter with 5-step fixed speeds and lock scan with adjustments in 1H steps ▪ ID display ▪ Battery fuel gauge with Anton/Bauer battery displays battery remaining in viewfinder ▪ Programmable battery warning indicator in viewfinder allows for the use of batteries with different voltages ▪ 12-memory auto white balance ▪ 600 line, 1.5" viewfinder ▪ Viewfinder rotates 95° for easy carrying ▪ Flip-up viewfinder hood for easy viewing from a distance ▪ Optional color LCD viewfinder ▪ User choice of master gain: low 0dB; mid +6/+9/+12dB; high +12/+18/+24dB ▪ Optional remote filter wheel ▪ Flexible remote control options ▪ Remote control provides gain selection 0 to +24dB in 3dB steps ▪ Applications include ENG/sports/studio

Z-2010-ENG Package includes Z-2010 camera head, GM-8 1.5" viewfinder, TA-Z1 tripod plate and CL-Z1 carrying case. Requires CA-Z1A or CA-Z2 camera adaptor and lens \$13,870.00

Z-One-C 1/2" 3-CCD Portable Color Camera

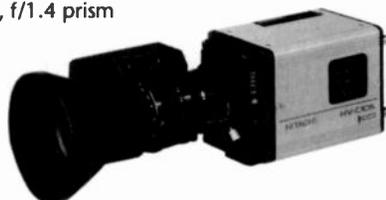
▪ 400,000 pixel CCD with micro lenses, f/1.4 prism ▪ 750 TV lines horizontal resolution ▪ Minimum sensitivity: 1.5 lux at f/1.8 (ultragrain) ▪ S/N: 62dB ▪ Built-in microprocessor and correction circuits ▪ Complete line of accessories available, permitting the camera to be used in handheld, with/without docked VTR, and studio configurations ▪ 4 scene files ▪ Full-featured electronic shutter with 5-step fixed speeds and lock scan with adjustments in 1H steps ▪ Automatic electronic shutter mode ▪ 600-line, 1.5" viewfinder ▪ Bayonet lens mount ▪ Adjustable viewfinder offers 90° rotation for easy carrying ▪ Information display ▪ Built-in mic amp for phantom power supply ▪ Real time auto white balance ▪ Docks directly to Betacam SP ▪ Flexible remote control options ▪ Auto iris ▪ Auto knee ▪ 6-memory auto white balance corresponds to optical filters ▪ Memory back-up by EPROM (no battery needed) ▪ Masking circuit ▪ Flare correction ▪ Switchable field/frame integration ▪ ID display function in the color bar mode ▪ Used in ENG and dockable 1/2" broadcast VTR applications and in EFP/studio applications ▪ User choice of master gain: low 0dB, mid +6/+9/+12dB, high +12/+18/+24dB

Z-One-CF Includes camera head, Fujinon A16x9BRM-27 zoom lens, camera adaptor, 1.5" viewfinder, tripod adaptor, carrying case, operation manual \$12,715.00*

Z-One-CC Same as Z-One-CF, except package includes Canon 17:1 zoom lens \$12,715.00*

HV-C10A 1/2" 3-CCD Color Camera

▪ IT CCDs with micro lenses, f/1.4 prism ▪ 682H x 492V effective pixels ▪ 700 TV lines horizontal resolution ▪ S/N: 58dB ▪ Genlock ▪ Field/frame integration ▪ 4-position filter wheel ▪ 2H enhancer ▪ Auto knee ▪ Flare correction ▪ Masking circuit ▪ SMPTE color bars ▪ Auto white balance ▪ Auto black balance ▪ 3 auto white balance memories for each optical filter ▪ Self-diagnostic function of automatics with display function ▪ EPROM memory back-up ▪ CCD iris ▪ Lock scan provides shutter speed control in 1H steps ▪ Auto electronic shutter ▪ Multicore and serial remote control ▪ NTSC and Y/C outputs ▪ RGB adaptor available ▪ Uses bayonet lenses ▪ 12VDC



HV-C10A \$ 5,400.00
HV-C11 Same as HV-C10A except with RGB output ... \$5,735.00
HV-C10F Same as HV-C10A except with FIT CCDs ... \$10,925.00

HV-C20S4 1/2" 3-CCD Color Camera

▪ 410,000 pixel IT CCD with micro lens, f/1.6 prism ▪ C-mount prism optics ▪ Uses include teleconferencing, image processing and optical instrumentation ▪ 768H x 494V effective pixels ▪ 700 TV lines horizontal resolution ▪ S/N: 60dB ▪ Genlock ▪ AGC or manual gain control ▪ Adjustable flange focal distance accommodates a variety of C-mount lenses ▪ Auto shading ▪ Knee circuit ▪ Comprehensive on-screen menu ▪ Lock scan provides shutter speed control in 1H steps ▪ Auto electronic shutter ▪ Character generator ▪ External mode allows a field on demand mode to capture an image in synchronization with an external trigger ▪ Serial remote control available ▪ NTSC, RGB and Y/C outputs ▪ 12VDC
HV-C20S4 \$4,700.00
HV-C20M Medical version of the HV-C20S4 with a precision prism \$5,140.00

* Call for information about additional camera configurations.

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



LIGHT-VALVE PROJECTORS

Series 300 Image Light Amplifier Projectors

- 2300-6800 lumens brightness
- Super Contrast (SC) models available
- Variable throw
- Full-function digital remote control
- PAL/SECAM/NTSC decoder included
- Easy to service
- Liquid crystal light-valve technology at an affordable price
- Combine the brightness and long throw capabilities of oil-based light-valve projectors with the high resolution and graphics capabilities of CRT projectors
- 3 proprietary 100% solid-state ILAs® (Image Light Amplifiers)
- Liquid crystal material is solid film—there is no matrix and therefore no grid pattern or dead pixels
- Lens Options: All glass 1.5:1, 3:1, 5:1, 7:1 (330/330SC/340SC/370SC); all glass 1.875:1, 3.75:1, 6.25:1, 8.75:1 (310E/310ESC)
- Throw Distance: 6'-360'
- Screen Size: 4'-60" (370SC); 4'-50" (340SC); 4'-45" (330/330SC); 3.2'-40" (310E/310ESC)
- Convergence: Digital, 30 memories
- Light Modulator: 3 proprietary image light amplifiers
- Light Source: Single 3000W (370SC), 2000W (340SC) or 1500W (330/330SC/310ESC/310E) xenon lamp
- Video Bandwidth: 150MHz
- Horizontal Frequency: 15-90kHz
- Vertical Frequency: 45-120Hz
- Source compatibility: up to 2500 (H) x 1340 (V)
- Resolution (HxV): 1600 x 1200 (310E/310ESC), 2000 x 1340 (330/330SC/340SC/370SC)
- Blanking: H:<2.3µs, V:<500µs
- Power: 220VAC, 60Hz
- Inputs: 2 RGBHV
- Communication Ports: 2 RS-232C; 1 for PC/terminal or technician's remote control, 1 for switcher
- Size: 20.6"H x 33.5"W x 53.4"L (370SC); 20.6"H x 27.5"W x 53.4"L (310E/310ESC/330/330SC/340SC)
- Weight: 342 lbs. (310E/310E SC/330/330SC/340SC); 380 lbs. (370SC)
- Price Includes: 1 standard lens option, wireless full function remote control, wireless executive remote control, operation manual



340SC

Model 370SC	6800 lumens, 1000:1 contrast.	\$150,000.00
Model 340SC	4200 lumens, 1000:1 contrast.	95,000.00
Model 330SC	3000 lumens, 1000:1 contrast.	77,000.00
Model 310ESC	2300 lumens, 1000:1 contrast.	67,000.00
Model 330	3000 lumens, 250:1 contrast.	65,000.00
Model 310E	2300 lumens, 200:1 contrast.	55,000.00

Series 200 Single Lens Graphics ILA Projectors

- 100% solid-state ILAs provide picture with superior resolution, brightness and contrast with no pixel matrix
- Displays signals up to 1600 x 1200 (200/200SC/220/220SC/230/230SC) or 1700 x 1250 (230H/230HSC) without downconverting
- Motorized zoom lenses allow remote zoom and focus
- 99 digital memories/channels for input and recall of a wide variety of sources
- 110VAC and 220VAC, 60Hz operation
- Horizontal scan frequencies from 15-105kHz
- Accepts virtually any source, including video, HDTV, data and high resolution graphics up to 2000 x 1545 lines
- Deliver up to a 800:1 contrast ratio, for a bright, crisp picture up to 27' wide
- Available with 1:1, 1.5:1, 7:1, 3:1 (200/200SC/220/220SC/230/230SC) fixed or 2.6-5.1:1 (200/200SC/220/220SC/230/230SC);



230H

- 2.0-4.0:1 (230H/230HSC) zoom lens, featuring motorized electronic zoom and focus
- Both 4:3 and 16:9 aspect ratios can be displayed with the same lens, so there's no need for the separate anamorphic lens required by LCD projectors
- Advanced software with pull-down menus
- Improved dichroic filtering produces pure, realistic colors
- Video Input Card slots allow customization of inputs
- All Series 200 projectors are factory preset for the most common sources, for easy setup
- Brightness: 1400 lumens (200/200SC), 2000 lumens (220/220SC), 3000 lumens (230/230SC/230H/230HSC)
- Video Bandwidth: 100MHz except Models 230H and 230HSC have 120MHz
- Horizontal frequency: 15-90kHz (models 230H and 230HSC have 15-105kHz)
- Vertical frequency: 45-120Hz
- Blanking: <2.3µs (H); <500µs (V)
- Source compatibility: 2000 (H) x 1545 (V)
- Resolution: 1600 (H) x 1200 (V), except for models 230H and 230HSC: 1700 (H) x 1250 (V)
- Video Resolution: 1000 TV lines (4:3), except for models 230H and 230HSC have 1250 TV lines (4:3)
- Color: SMPTE 240M
- Light Modulator: 3 proprietary ILAs
- Power: 220VAC, 10A, 60Hz or 110VAC, 20A, 60Hz
- Light Source: 750W xenon arc lamp (model 200), 900W Cermax lamp (Model 220); 1600W xenon arc lamp (model 230/230SC/230H/230HSC)
- Throw Distance: Zoom: 13'-102' (all models except 230H/230HSC which has 10'-80'); Fixed: 7'-210' (for all models except 230H/230HSC)
- Screen Size: Zoom: 5'-20' wide Fixed: 7'-30' wide
- Keystone: ±15° (V), ±5° (H)
- Inputs: 3 Video Input Card (VIC) slots; 1 RGBHV VIC Standard, 2 additional VIC slots available
- Communication Ports: 2 RS-232C
- Size: 16.1"H x 24.2"W x 49.7"L
- Weight: 260 lbs.
- Operating Temperature: 50°-104°F
- Price Includes: User's guide, 1 RGBHV Video Input Card (VIC), executive and full-function wireless remotes and cable allowing use as tethered remotes, setup restoration disk and 110VAC, 60Hz power cord
- Lenses priced separately

Model 230HSC	3000 lumens, 800:1 contrast.	\$85,000.00
Model 230SC	3000 lumens, 600:1 contrast.	75,000.00
Model 230H	3000 lumens, 250:1 contrast.	75,000.00
Model 230	3000 lumens, 200:1 contrast.	65,000.00
Model 220SC	2000 lumens, 600:1 contrast.	65,000.00
Model 220	2000 lumens, 200:1 contrast.	55,000.00
Model 200SC	1400 lumens, 600:1 contrast.	55,000.00
Model 200	1400 lumens, 200:1 contrast.	45,000.00

Lenses for Series 200 ILA Projectors

103952	3:1 fixed lens (simulator).	\$10,500.00
103746	2.6-5.1:1 zoom lens (motorized zoom and focus).	10,000.00
104130	1:1 fixed lens.	9,800.00
104337	7:1 fixed lens.	9,000.00
104003	1.5:1 fixed lens	5,000.00

ILA-12K ILA Projector

- 12,000 lumens brightness
- Super contrast ratio: 1000:1
- 150MHz RGB bandwidth
- Compatible with a wide range of sources including the 1920 x 1080 HDTV Standard, High Resolution Graphics to 90kHz and NTSC and PAL video
- Horizontal frequency: 15-90kHz
- Vertical frequency: 45-120Hz
- Aspect ratio: 4:3-16:9 (variable)
- Source compatibility: 2500 (H) x 1340 (V)
- Graphics resolution: 2000 (H) x 1340 (V)
- Video resolution: 1500 TV lines (4:3)
- Inputs: 2 RGBHV
- Convergence: digital with 30 memories/channels
- Light modulator: 3 proprietary image light amplifiers
- Power: 220VAC, 30A, 3φ, 60Hz
- Light source: 7000W xenon arc lamp
- Lens options: 0.885:1, 1.5:1, 3:1, 5:1, 7:1, 10:1 (throw: screen width)
- Throw distance: 6'-360'
- Screen size: 4'-60' wide

\$250,000.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





ICE Digital Media Products

Integrated Computing Engines, Inc. software and hardware products bring supercomputer-class performance and improved functionality to standard Windows® NT and Mac® OS systems by combining supercomputing, graphics and imaging expertise with multiprocessing technologies developed at MIT's Lincoln Laboratory. These products provide innovative, standards-based multiprocessing solutions for the creation and delivery of digital media content for digital post-production, graphics arts, broadcast, animation and internet access.



ICEfx™ SOFTWARE

ICEfx is a family of technology that enables users to render the latest computer-generated special effects at faster speeds. Software plug-ins for Adobe After Effects™ (Mac OS and Windows NT platforms) reduce rendering times from 2X to 20X for screen, preview and final renders when compared to traditional rendering methods. ICEfx accelerates standard effects such as Gaussian Blur, Glow, Twirl and many new effects, including the ones below

New Effects

- **Waterwaves**—Simulates water ripples or wind movement
- **DigiEffects Aged Film**—Adds realistic film grain, scratches and dust
- **3D Relief**—Quickly creates a 3-D bump map based on alpha, luminance or RGB channel information; includes 2 highlight controls to enhance the 3-D effect; creates eye-catching logos, titles and funky backgrounds
- **LightBlast**—A super-fast lighting effect for logo treatments
- **LightWhirl**—LightBlast with a twirl control
- **Video Fragment**—Creates multiple overlapping copies of an image that can fly apart or come together
- **Fractal**—Mandelbrot, Julia and other fractals for backgrounds, bump maps or for effect
- **LensStar**—Star-like lens effects for spot highlights
- **Spin**—Creates spin effects based on blur or smear controls (blur controls affect the entire image; Smear controls can be eased in or out within the image)
- **Zoom**—Blur and smear controls of Spin with zoom effects

Hardware

GreenICE™ is a 16-processor array that is installed as a PCI board within a PC, workstation or server host. It features 1.9G flops peak performance, 2M bytes on-chip SRAM, 1.3G bytes/sec. of communications bandwidth. Based on exclusive license of MIT's MeshSP massively parallel processing architecture. Utilizes ADSP-21062 SHARC microcomputers.

Software

Applications leverage ICE engines in 2 ways:

- I. Application can "call" ICE multiprocessing plug-in libraries (such as image or video compression) already parallelized for ICE engines
- II. Plug-in libraries can be written using the ICE Parallel Engine Manager (PEM) SDK

ICE compute engines are based on the MeshSP hardware architecture and integrate with standard PC workstations over the PCI bus. Standard workstations (like Compaq) run standard Internet applications under the Windows NT operating systems. Standard applications access ICE parallelized software libraries through their plug-in interfaces or by interpreting their file formats. Parallelized ICE software libraries access ICE hardware compute engines using the Performance Engine Manager (PEM). If existing ICE software libraries do not provide the desired functionality, standard applications can directly access ICE hardware compute engines using the PEM SDK.

ICEfx Technical Specifications

Mac OS authorized minimum configuration:

- ICEfx software plug-ins
- GreenICE rendering engine: 16 RISC processors, 2 PCI slot set
- Mac 9500 or Daystar Genesis MP
- Mac OS 7.0 and higher
- After Effects 3.1 and higher
- 24M byte RAM minimum, 64M byte RAM suggested
- 1G byte disk plus hard drive, 21" monitor, keyboard and mouse

ICEfx.MAC	ICEfx software, GreenICE rendering engine, customer documentation	\$11,990.00
ICEfx.MAC.SOFTsite	ICEfx software site license	2,995.00
ICEfx.MAC.SOFTfive	5 ICEfx software licenses	1,595.00
ICEfx.MAC.SUPPORT	Priority support . . . . .	.995.00
ICEfx.MAC.SOFT	ICEfx software license . . . . .	.495.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





HIGH PERFORMANCE BATTERY PACKS

NP-L40 NP-Type Lithium Ion Battery Pack

14.4V 40W 6-level LED power status indicator High capacity Lightweight, rechargeable Weighs only 0.86 lbs. No memory effect \$310.00

BP-95dx BP-90 equivalent 12V, 5.3AH Nickel Cadmium LED indicator as fuel gauge for remaining power Comes in 7 colors: black, gray, yellow, red, blue, green and brown Protection circuit . . . \$250.00

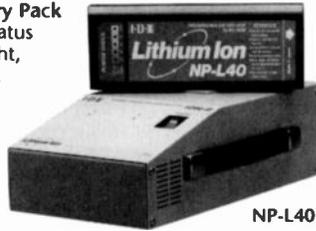
NP-23dx 12V, 2.3AH Nickel Cadmium LED indicator as fuel gauge for remaining power Comes in 6 label colors: black, gray, yellow, red, blue and green Protection circuit \$98.00

NP-23 NP-1B equivalent 12V, 2.3AH Nickel Cadmium Comes in 6 label colors: black, gray, yellow, red, blue and green Protection circuit \$89.00

NP-1dx NP-1B equivalent 13.2V, 2.0AH Nickel Cadmium LED indicator as fuel gauge for remaining power Comes in 6 label colors: black, gray, yellow, red, blue and green Protection circuit \$98.00

AG-BP20dx AG-BP20 equivalent 12V, 2.0AH lead acid 48.00

AG-BP212dx AG-BP212 equivalent 12V, 2.3AH lead acid 43.00



NP-L40



NP-23dx

NICAD SEQUENTIAL DISCHARGERS/CHARGERS

GX-2 4-Channel Sequential Discharger/Charger for BP/NP Battery Packs Quick charge current: 1.8A Discharge current: 2.5A (at 12.5V) Input voltage: 100-240VAC Power consumption: 90VA max. Low cost version of Graphix Series discharger/charger with battery analysis and conditioning \$1380.00

DELTA 4a PLUS 4-Channel Sequential Discharger/Charger Plus Camera Power Supply BP/NP sequential quick charger with 1 DC output (4.4A) charger DC output can operate simultaneously Quick charge current: 1.8A Discharge current: 2.5A (at 12.5V) Input voltage: 100-240VAC Output voltage: 13.8VDC (approx. 60W) Power consumption: charger 90VA max., DC out 60VA max. \$885.00

DELTA 4a 4-Channel Sequential Discharger/Charger Discharges and quick charges 4 BP or NP batteries sequentially Quick charge current: 1.8A Discharge current: 2.5A Trickle current 50mA Input voltage: 100-240VAC Power consumption: 90VA max \$610.00

KX-2 4-Channel Sequential Field Charger Quick charges 4 BP or NP batteries sequentially Quick charge current: 1.8A Trickle current: 50mA Input voltage: 100-240VAC Power consumption: 90VA max \$510.00

NICAD SIMULTANEOUS DISCHARGERS/CHARGERS AND ANALYZERS

αX-5G 10-Channel Simultaneous Discharger/Charger for BP/NP Battery Packs Graphical curve and numeric data display of battery condition in charge and discharge (channels A-D) Channels 1-6 display shown as battery capacity in AH Quick charge current: 1.8A Discharge current: 2.5A (at 12.5V) Input voltage: 100-240VAC Power consumption: 600VA max. \$5100.00

αX-2G 4-Channel Simultaneous Discharger/Charger for BP/NP Battery Packs Built-in graphical and numeric display of battery in both charge and discharge modes of each battery channel selected Analyze and determine battery condition Quick charge current: 1.8A Discharge current: 2.5A (at 12.5V) Input voltage: 100-240VAC Power consumption: 250VA max. \$2500.00

DBC-440a 4-Channel Simultaneous Discharger/Charger for BP/NP Battery Packs Automatic quick charging begins after discharging of 4 batteries Dedicated charging or discharging Quick charge current: 1.8A Discharge current: 2.5A (at 12.5V) Input voltage: 100-240VAC Power consumption: 200VA max. . . . \$1750.00

LITHIUM ION CHARGERS

LX-8 8-Channel Simultaneous Quick Charger for Lithium Ion Battery Packs Quick charge current: Lithium Ion 3A; NiCad and NiMH 1.8A Input voltage: 100-240VAC Power consumption: 150VA max. Dimensions: 4.48"H x 17.5"W x 12.6"D Weighs 17.6 lbs. . . . \$4000.00

LX-4 4-Channel Sequential Quick Charger for Lithium Ion Battery Packs NP/BP type Lithium Ion and NiCad, NiMH battery 4-channel quick charger designed for portable use Quick charge current: Lithium Ion 3A; NiCad 1.8A and NiMH 1.8A Input voltage: 100-240VAC Power consumption: 150VA max. \$1725.00

LX-2 2-Channel Simultaneous Overnight Charger for Lithium Ion Battery Packs Charge current: 0.5A Input voltage: 100-240VAC Power consumption: 38VA max. \$600.00

ION-4 4-Channel Simultaneous Fast Charger 4-channel simultaneous Lithium Ion charger for NP-L40 batteries Input voltage: 100-240VAC Quick charge current: 2A Dimensions: 3.25"H x 9.8"W x 10.5"D Weighs 6.8 lbs \$1350.00

ION-2 Dual Channel Simultaneous Fast Charger 2-channel simultaneous Lithium Ion charger for NP-L40 batteries Input voltage: 100-240VAC Quick charge current: 2A Dimensions: 3.25"H x 5.5"W x 10.5"D Weighs 4.6 lbs. \$895.00

CL-1 Lithium Ion Automobile Charger 1-channel quick charger for Lithium Ion batteries Quick charge current: 2A Input voltage: 12VDC Power consumption: 4.1VA max. \$700.00

KL-4 4-Channel Sequential Quick Charger for Lithium Ion Battery Packs For Lithium Ion batteries only Quick charge current: 1.8A Input voltage: 100-240VAC Power consumption: 90VA max. \$725.00

NICAD TRICKLE CHARGER

TX-6N 12-Channel Trickle Charger for NP-Type Battery Packs Keeps battery charge levels topped up to avoid charge loss during storage Input voltage: 100/220VAC types Trickle current: 50mA Power consumption: 21VA max. Weight: 6.6 lbs. \$850.00

NICAD POWER PACKAGES

PKG605 NiCad Power Package Package includes: 4 NP-23dx 1 DELTA 4a 1 IA-60 1 CA-4XLR 1 NH-100 \$1215.00

PKG607 NiCad Power Package Package includes: 4 NP-23dx 1 DELTA 4a PLUS 1 CA-4XLR 1 NH-100 1135.00

CAMERA POWER SUPPLIES

AC-112a Camera Power Supply With Charger 3 DC output channels (total 7A) with 2 channel BP/NP battery simultaneous quick charger Input voltage: 100-240VAC Power consumption: 200VA max. Quick charge current: 1.5A Output voltage: 12-17VDC variable (approx. 100W) \$1485.00

AC-111 Camera Power Supply 3 DC output channels (total 11A); voltage level can be verified with the digital display Input voltage: 100-240VAC Power consumption: 170VA max. Output voltage: 12-17VDC variable (approx. 165W) \$940.00

AC-23 Camera Power Supply (NP Battery Size) Input voltage: 100-240VAC or 220-240VAC (switch selectable) Output voltage: 13.8VDC (50W) Power consumption: approx. 90VA \$700.00

AC-95 Camera Power Supply (BP Battery Size) Input voltage: 100-240VAC Output voltage: 12-16VDC variable (approx. 50W) Power consumption: 70VA max. \$435.00

Type-I Uses same connection as BP battery \$30.00

Type-II Direct connection to camera bracket. \$30.00

IA-200 2-Output Camera Power Supply Input voltage: 100-240VAC Output voltage: 13.5VDC (approx. 100W) Power consumption: 140VA max. \$615.00

IA-60 1-Output Camera Power Supply Ultracompact Portable Input voltage: 100-240VAC Output voltage: 13.5VDC (approx. 60W) Power consumption: 80VA max. \$350.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





DNG—Digital News Gathering

For the first time ever, a hard disk drive has been integrated into a field news acquisition recorder. That recorder is being introduced in 2 configurations, an all-in-one disk camera and recorder, the DNS-11 and DNS-101, and a dockable disk recorder, the CamCutter™.

This technology revolution was created by Avid and Ikegami. Working together, these 2 companies combined their technical expertise—Avid in disk-based recording and editing, and Ikegami in high performance imaging electronics and manufacturing. The results of this collaboration will change the industry, as well as the current methods of working and recording.

More than just a camcorder, nonlinear field editing functions have been added to these news acquisition recorders.

- RetroLoop™ constantly records in a user-defined loop ▪ Intelligent recording function allows data to be written onto free tracks on the disk without losing the original video ▪ Time-lapse recording enables intermittent recording at predetermined intervals for a predetermined period of time ▪ Audio can be recorded while video is played back ▪ With location control, a desired point can be accessed from multiple recorded video clips ▪ Editing functions added to camera ▪ Erase unwanted video ▪ Switching of multiple signals within the camera ▪ Auto recording of clip number, minimizing burden on the spot ▪ Power of random access ▪ Saves OH running costs ▪ Highly dependable shock-proof mechanism ▪ Environmental resistance only hard disk can offer ▪ Compliant with Avid OMF™ (Open Media Framework) format ▪ FieldPak™ removable hard disk ▪ FieldPaks may be plugged into a field pack adaptor for instant access to Avid's NewsCutter Editing System or to an entire network environment



CamCutter Recorder

- Separate record control of video and 4 tracks of DAT audio
- Provides SMPTE/EBU time code for frame-accurate navigation and control
- Intelligent Record Management prevents accidental record over
- Time-lapse control or manual single frame recording
- Automatic clip numbering for fast, nonlinear editing
- Delete unusable clips or move them to the out-takes bin at any time
- All setup functions and diagnostics are logically indexed for easy access
- Edit, view, save, recall or modify sequences at any time

CamCutter..... \$22,000.00

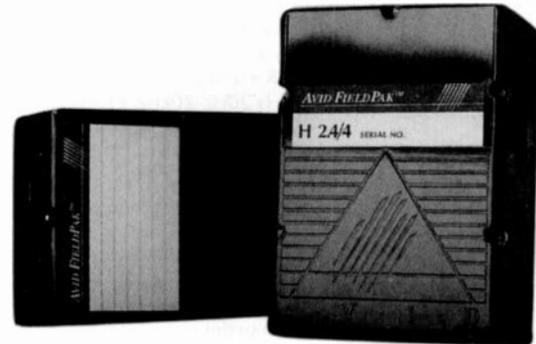


DNS-11

DNS-11 FIT/DNS-101 IT ⅜" CCD Disk Camera Recorders

- Newly developed digital processing IC chips deliver improved reliability for the video processing circuitry ▪ 400,000-pixel CCD
- Digital processing guarantees stability and gripping picture quality with a superior S/N ratio under all operating conditions ▪ High level of performance with S/N ratio of 62dB or more ▪ Horizontal resolution over 700 lines ▪ Standard subject illumination over f/8.0
- Versatile functions such as Diagonal DTL, Slim DTL, Skin DTL and 8-step variable DTL boost frequency, used in Ikegami's HL-57/59, achieve superb image quality
- Implements a compact camera design with versatile functionality
- Each panel is designed for ease of operation
- External video input and video playback from camera/recorder

DNS-11 ⅜" FIT CCD\$55,000.00
 DNS-101 ⅜" IT CCD40,600.00



FieldPak Removable Hard Disk

- Replaces tape ▪ Compact, rugged, weathertight package ▪ Hard drives designed to withstand the rigors of life on the road ▪ Rated to over 2500Gs shock protection and up to 15Gs operating
- Digital random access format ▪ Video can be recorded directly to the FieldPak, facilitating immediate online nonlinear editing and saving considerable time
- Through direct access to Avid's Field Editing System, a total DNG system can be implemented from video acquisition to playback and editing to transmission

H4/6 \$2,300.00
 H2.2/4 1,950.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





HL-V77W/V77/V73 DVCPRO Digital Camera/Recorder Series

Common Features

- All-in-one portable digital camera/recorder with built-in DVCPRO VCR
- Compact and lightweight with high image quality
- Camera head employs digital processing ICs to deliver improved reliability and stable picture quality with a superior S/N ratio of 62dB
- ICs achieve a substantial reduction in power consumption to as low as 25W including the VCR
- DTL functions include Diagonal DTL, Skin DTL, Soft DTL and variable 8-step DTL boost frequency
- 5 preset shutter modes
- Continuously Variable Shutter Speed (CVSS)
- Super-V enhances vertical resolution
- Takes full advantage of DVCPRO's characteristics to dramatically enhance portability as a full-fledged ENG/EFP camera
- VCR records up to 63 minutes of footage with an M cassette
- "Video In" capability is available to permit external sources other than camera-captured video to be recorded
- Lightweight body with a low center of gravity promotes stability
- High performance, 1.5" viewfinder with 600 lines H resolution
- Trimmers located on the front of the viewfinder facilitate brightness/contrast/peaking adjustments
- Rotary encoder in camera head allows straightforward camera calibration and maintenance without any remote control panel
- Full-color playback of recorded footage eliminates need for a playback adaptor
- Flexible options allow remote control, triax operation and output of analog component signals to an external VTR
- 3 high performance models available
- Audio frequency response is 20Hz-20kHz ±1dB



HL-V77W DVCPRO Digital Camera/Recorder

Includes common features, plus: 520,000-pixel 3/8" FIT (Frame Interline Transfer) CCD, 16:9/4:3 aspect ratio switchable

- CVSS shutter: 1/60.4-1/57.3, 1/60.5-1/430
- Sampling frequency: 18MHz
- Horizontal resolution: 600 TVL (16:9), 700 TVL (4:3)
- Modulation depth: 5MHz 65% or more

.....\$43,300.00

HL-V77 DVCPRO Digital Camera/Recorder

Includes common features, plus: 520,000-pixel 3/8" FIT CCD

- CVSS shutter: 1/60.4-1/57.3, 1/60.5-1/430
- Sampling frequency: 18MHz
- Horizontal resolution: 850 TVL
- Modulation depth: 5MHz 65% or more

.....\$36,900.00

HL-V73 DVCPRO Digital Camera/Recorder

Includes common features, plus: 400,000-pixel 3/8" IT CCD

- CVSS shutter: 1/60.3-1/67
- Sampling frequency: 14.318182MHz
- Horizontal resolution: 750 TVL
- Modulation depth: 5MHz 55% or more

.....\$32,000.00

HL-V55 1-Piece Betacam SP® Camera/Recorder

- FIT CCD with 420,000 pixels
- 700 TVL
- 62dB S/N
- High sensitivity of f/8.0 (at 2000 lux)
- Super high sensitivity comparable to that of a low light camera with image intensifier can be achieved with the Hyper Gain switch (+30dB gain)
- 1.5" fast start type viewfinder, 550 TVL of resolution at center
- Low pass filter dramatically reduces moire noise patterns
- 15.2 lbs. or less including lens, viewfinder and battery
- Built-in Betacam SP VCR

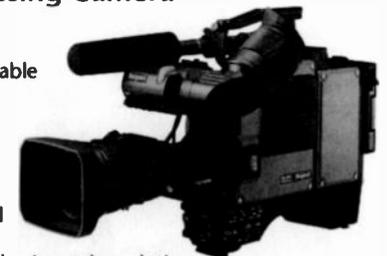
- Registration ±0.03%
- Highlight compression
- 8-step electronic shutter, including continuously variable speed from 1/60.5-1/350 sec.
- White shading correction
- Dynamic DTL (compensates for loss in lens peripheral resolution)
- Auto black balance (including BLK set)
- SMPTE color bar generator
- Genlock function (full color lock)
- Audio monitor speaker
- Audio level controller (can adjust the level of camera microphone)
- Movable shoulder pad
- Playback signal can be provided by using a playback adaptor
- System connector provides component video output via a 26-pin VCR connector (26-pin VCR connector is an option)
- Recording review function
- Backspace edit function
- Built-in time code generator/reader
- Diagnostic system
- 48V phantom power provided for microphone
- 12V A/B power also possible (back connectors: 48V phantom power only)
- Audio signal recording of FM and longitudinal tracks can be recorded simultaneously (when metal tape is used)
- CTD (Compressed Time Division Multiplex) signals can be monitored so that chroma signal can be checked
- LCD multiple display (VCR status can be clearly displayed)



HL-V55\$59,800.00
 TA-V55 Triax system for HL-V5526,170.00
 TA-V55CA Triax camera head adaptor only12,900.00

HL-59 Digital Processing Camera

- Employs 520,000-pixel high-performance FIT CCD imaging sensors with switchable 16:9/4:3 aspect ratios
- Horizontal resolution of 850 lines or greater
- Digital Processing ASIC reduces power consumption
- High S/N ratio of 62dB
- Standard high performance 1.5" viewfinder with 600 lines of horizontal resolution
- Rotary pulse encoder facilitates various camera setups, including shutter speed setup, in a menu-driven manner
- Redesigned, user-friendly, switch panel
- Master gain control can be preselected within a wide range: -3/0/+6/+12/+18/+30/+36dB (+36dB with use of Offset Pixel Addition)
- In addition to 7 preset shutter modes, CVSS is available in 2 ranges
- Shutter speed can be continuously varied from 1/60.5 to 1/67 and for an extended range from 1/61.1 to 1/420 of a second
- Super V function switches in 4 steps and allows vertical resolution from 400 to 480 TV lines while minimizing loss of sensitivity
- Electronic Horizontal Level Indicator (EHL)
- Slim DTL
- Skin DTL
- AHD (Auto Hue Detect)
- Diagonal DTL
- DTL Boost Frequency
- Black stretch enhances the video level of only low-luminance areas to improve black detail of the subject shadow areas
- Personal function switch on the front of the camera controls the following functions: hyper gain (+36dB); auto knee; Skin DTL; Soft DTL; black press/stretch -7%, -5%, -3%, +3%, +5%, +7%; scene file No.1-No.8
- Can be integrated with various types of broadcast 1/2" VCRs and used with a host of accessories of the Unicam series directly
- Capable of use with a Triax/multi-extension system



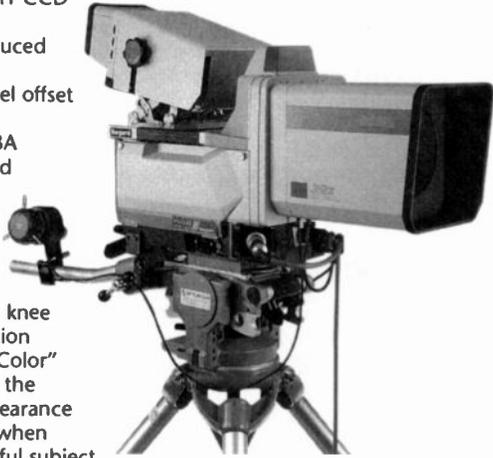
HL-59\$43,300.00
 HL-59W 16:9/4:3 switchable version46,200.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



HK-343A Studio/Field CCD Camera System

- 400,000-pixel IT CCD sensors with substantially reduced FPN and smear
- A precision pixel offset and processing technology, SHBA (Super High Band Aperture), achieves a horizontal resolution of 850 TVL
- Improved auto knee and flare correction circuits, "Super Color" circuitry, reduce the washed-out appearance that may occur when shooting a colorful subject with very high brightness
- Black Stretch function enhances shadow areas of high contrast scenes, and Black Press function makes shadow areas appear darker in hazy, low contrast scenes
- In addition to conventional mix DTL, the camera incorporates a chroma aperture circuit which operates on objects containing no green component
- High resolution can be maintained even when shooting an object in red, blue or magenta which could not be previously corrected by traditional image enhancement systems
- Soft DTL reduces harsh edges of a subject and provides for smooth and natural edge compensation
- Equipped with Super V capability to improve vertical resolution
- High resolution 7" viewfinder incorporates PIP capability so RET video can be monitored at all times
- VF DTL, an "edge compensation circuit" dedicated to the viewfinder signal, provides superior edge compensation unattainable with conventional peaking schemes
- This results in improved resolution for the viewfinder
- Viewfinder has a special 140% wide dynamic range to enhance visibility for camera operators during highlight shots
- Continuously variable electronic shutter speed range from 1/60.2 to 1/17.3, and fixed speeds of 1/100, 1/120, 1/250, 1/500, 1/1000, 1/2000 sec.
- f/8.0 at 2000 lux
- Employs a cost-effective 2-channel (luminance/chrominance) triax transmission system, allowing R/G/B, Y, P_R and P_B signals to be simultaneously output at the base station in addition to composite signals
- The distance between the base station and the camera can be extended to 1000m with 14.5mm diameter triax cable
- The HK-343A triax system achieves 8MHz bandwidth for the luminance signal to provide a resolution of about 750 TV lines at the base station output
- Skin DTL permits a softening of skin tone while retaining detail in the rest of the scene
- Optical axis adjustment mechanism gives full correction of optical axis of the prism block



HK-343ABT \$47,000.00

HL-45 High Quality Portable CCD Camera

- 1/3" IT CCD = 520,000 pixels
- Newly developed 10-bit digital processing ICs result in reductions in size, weight, and power consumption
- Dockable and adaptor-free with a Betacam VCR (analog/digital) and other types of VCRs
- Low smear level of -120dB
- Independent vertical DTL signals for R, G, and B to enhance sense of resolution
- RGB prism type f/1.4
- Sensitivity of f/8 at 2000 lux
- Internal/external sync
- 900 TV lines horizontal resolution
- 400 TV lines/450 TV (Super-V) lines vertical resolution
- 1/3" bayonet lens

mount = S/N ratio: 63dB = Shutter speed: 1/100, 1/120, 1/250, 1/500, 1/1000, 1/2000
 = Aspect ratio of 4:3 = Memory card for storing the operating status to facilitate camera setup = When connected with an existing TA/BS/OCP, the HL-45 can be operated as a triax system configuration = Power consumption of 14W (excluding VF) . . . TBA*



HC-390 3/4" 3CCD Professional Color Camera

- 380,000 pixels
- SHBA circuitry and hyper-precision pixel staggering technology
- Horizontal resolution of 800 lines
- VCR dockable through rear panel adaptor
- Flexibly designed shoulder pad with a non-slip mechanism adjusts for angle of tilt and weight balance
- Ultracompact, lightweight body
- Eliminates about 50% of previous menu controls for error free, stable operation
- Single switch accessed EV mode enhances the level of detail, type of detail and chroma saturation level
- AWB memory switching can be effected smoothly and effortlessly
- Electronic color temperature conversion matches ambient lighting conditions with a range of 3000K to 5600K without manipulation of the filter wheel
- Super sensitivity position equivalent to +36dB permitting use in light levels as low as 1.75 lux
- Operating the initialized switch returns the custom preset to the initial default setting
- Wide dynamic range, in conjunction with Auto Knee, provides optimum contrast without a washed-out appearance
- Super V function provides a 20% boost in vertical resolution
- A built-in Video Matrix circuit compensates for optical color rendition
- Provides a stepped variable electronic shutter with speeds up to 1/6000 of a second and continuously variable shutter that can be set from 1/60.2 to 1/2000.0 of a second
- Dust-free filter wheel permits selection of a color temperature conversion filter that matches the surrounding lighting condition
- Effect filters with cross/soft effects give the camera operator artistic and creative freedom
- Auto white balance comes in 2 memories with a preset position at 3000K and a 4-channel scene file to allow rapid setup changes during shooting
- Standard +12V phantom power output
- High resolution CRT viewfinder
- VF detail function mixes a dedicated detail signal onto the VF signal to increase vertical resolution
- Quick Start and VH Light offer operating versatility
- Suite of character indicators help in checking control status on the VF screen such as battery remainder, audio level/audio control, zebra indicator, recording time indicator, VF marker, menu and color bar

HC-390 CA/WL	With lens	\$11,990.00
HC-390 CA	Without lens	9,320.00
HC-390 TC	Teleconferencing configuration	7,640.00
MA200A CCU	Camera control unit	2,600.00
RCU-240A	Remote control unit	1,020.00

*To Be Announced

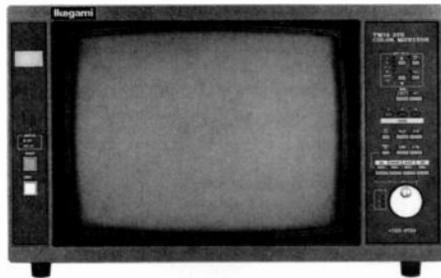
ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



TM20-30RH 20" 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
- Safe title generator (100, 95, 90, 85, 75%, 100+ 90+ 80% selectable) reference and variable horizontal position
- Test signal
- Video A/B split (reference and variable vertical position)
- Color/mono split (reference and variable vertical position)
- Beam feedback system
- Menu assist

TM20-30RH \$8650.00



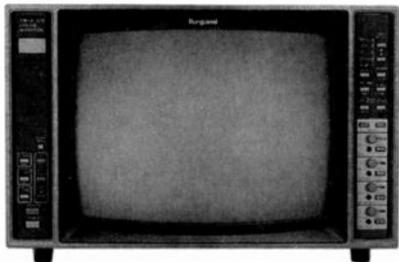
TM14-20RH

TM20-20RH 20"/TM14-20RH 14" Color Monitors

- Fine dot pitch shadow mask
- Dot trio pitch 0.31mm for TM14-20RH and 0.43mm for TM20-20RH
- Inline self-converging electron gun assures convergence stability
- Black matrix surrounding phosphor dots
- Digital control system
- Auto setup system with probe
- Infrared remote control operation
- Serial interface
- Beam feedback system
- 3 composite video inputs and an RGB or a component (Y/R-Y/B-Y) input as standard
- Plug-in boards—many can be removed while monitor is mounted in rack
- Optional D1, D2, PAL/SECAM and others available with plug-in boards

TM20-20RH 20" \$5790.00

TM14-20RH 14" \$580.00



TM14-19RHS

TM20-19RHS 20"/TM14-19RHS 14" Color Monitors

- Beam feedback system assures long-term stability by detecting CRT cathode current
- Wideband R-Y/B-Y precision demodulation
- Color filter preserves input signal resolution, switchable to notch filter
- Keyed back porch clamp prevents black level fluctuation over 0-100% APL range
- Automatic frequency phase control
- Variable aperture correction increases displayed picture sharpness
- Regulated high voltage holds raster size constant within 0.5% over 0-100% APL range
- R-Y/B-Y outputs available for use of X-Y display as vectorscope
- Pulse delay
- Residual subcarrier test circuit evaluates input signal condition
- Underscan switch
- Setup switch to disable vertical deflection for adjustment of low light white balance
- Individual switches to disable RGB beams
- On-demand degauss circuit

TM20-19RHS 20" with case \$4790.00

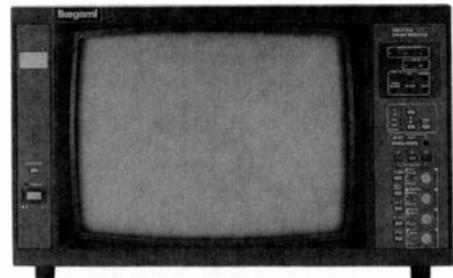
TM14-19RHS 14" with case 4560.00

TM20-18R 20"/TM14-18R 14" Color Monitors

- 600 TVL or more
- All switching operations digitally controlled
- 2 composite video inputs, 1 RGB/component input, 1 Y/C input and 1 external sync input provided
- Construction allows circuit adjustment and module removal
- Feedback clamp system ensures black level and white balance stability
- Automatic degaussing circuit
- Inline gun, dot shadow mask CRT
- CRT protection circuit
- H defeat/H.V. circuits permit stable raster size at all times against rapid APL change or high brightness signal input

TM20-18R 20" \$3970.00

TM14-18R 14" 3730.00



TM20-17R

TM20-17R 20"/TM14-17R 14" Color Monitors

- Inline, self-converging electron gun assures convergence stability
- Black matrix surrounding CRT face
- NTSC/PAL mode selection
- Screen aspect ratio of 4:3 or 16:9
- Beam Feedback System (BFS)
- Comb filter selectable to notch filter
- Sweep failure protection circuit
- 4 video inputs (A/B/YC/RGB or Y, Pb, Pr)
- Horizontal time constant can be selected in either 0.5ms or 2ms
- Underscan switch
- Pulse cross switch for sync signal verification
- Digital inputs (D1, D2, D3 formats) available with optional modules
- 500 lines resolution

TM20-17R 20" \$2290.00

TM14-17R 14" 1740.00



PM9-5A 9" Broadcast Monochrome Monitor

- Keyed back porch clamp, switchable to DC restore
- Dual (A/B) inputs, internal/external sync, normal/wide scan, all front panel selectable
- 800 lines resolution
- D6500K phosphor
- Scan delay/normal
- Tally light
- Remote control (video select, sync select, tally on/off)
- 9" configurations available as cabinet and 19" rackmounting in an 8 1/2"H, single with WFM space, single with vectorscope space and dual units

RM9-SARM2 Dual rackmounts \$960.00

PM9-5A 440.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

CHARACTER GENERATION SYSTEM



VideoCarte Digital Clip/Still Store for Broadcast and Post Production

- For open platform Windows™ 95 or NT 4.0 based systems
- Offers up to 3 NTSC or PAL online video channels ▪ Composite, RGB, Y/C, Betacam and DI with linear key are all available for video input, output and preview ▪ Can operate in Preview/Program or multiple-channel mode ▪ Stores bitmap images and clip file images
- Formats: BMP, TGA, VII, JPEG, TIFF, PhotoCD, PCX, HKF ▪ DPS clip formats: AVC, AVI, PVD ▪ Save frame grabs directly on supported hardware include images in a lossless compressed database or reference from external media, including network drives and compact discs ▪ Multiple postage stamp display in sizable window
- Set-up and take control directly from the store display with keyboard Shot Box or mouse control ▪ Print selected images or entire folio ▪ Searching and sorting using keywords, date file type, index number, or file date ▪ Complex searches with AND and OR multiple key searches ▪ Group and sort images in 12 custom folios
- Assign events to 1, 2 or 3 display channels ▪ Sets display and timing for each event ▪ Groups events for editing long event lists
- Page transitions dissolve at variable speeds, tile in 31 directions and 5 sizes ▪ Event triggering is interactive and either random or sequential ▪ VITC and LTC time code support ▪ Object-oriented relational database engine implements fast new database technology ▪ Data integrity checking and diagnostic tools
- Variable-length records store both large and small images in guaranteed contiguous blocks ▪ Up to 4GB store size for records
- Remote access through OLE (Windows NT only) ▪ Video support formats: Composite, RGB, Y/C, Betacam, D1 linear key output
- Rise-time filter applied to luminance and key signal ▪ Preview channel on Windows monitor or secondary display buffer \$2295.00

Inscriber® CG Supreme Broadcast and Post Production Character Generator

- Provides the character generation tools needed to create professional looking titles, rolls and crawls ▪ For online operation CG Supreme uses video hardware from desktop broadcast vendors like Interlace, Matrox and Truevision to offer up to 3 NTSC or PAL video channels ▪ Works with composite, RGB, Y/C, Betacam, and D1 linear key for video input, output and preview ▪ Direct support of TrueType™ fonts ▪ Anti-aliased to an effective resolution of <16nS, based on video hardware ▪ Elliptical filtering of character edges
- Drop, offset, extrude and soft shadows to 127 pixels, cast in any of 8 directions ▪ Outline, glow and emboss edges to 127 pixels
- Displays RGB, HLS, or HSV color model ▪ Automatic NTSC/PAL video color and legalization ▪ Eyedropper tool selects and matches any color on screen ▪ Online sizing from 5 to 999 scan lines
- Expand/compress characters from 35° to 335° ▪ Slant text from

- 45° to +45° in 1° increments ▪ Kerning from -99% to 99%
- Leading between characters or entire line from -127 to 127 scan lines ▪ Rotation from -180° to +180° ▪ Small caps from 10% to 99%
- Multiple fonts, color, attributes on a line with freeform styles
- Character-pair manual override for kerning and baseline ▪ 16.7 million color palette ▪ 256 levels of transparency, blends in angles from 0° to 90° ▪ 8 or 32 color chips per layout store color, texture, font, size and attributes ▪ Anti-aliased for use as text backdrops ▪ 12 graphic shapes to choose from ▪ Outline, position and style objects
- Video transparent, color or shaded backgrounds ▪ Use full color logos complete with alpha channel ▪ Supported formats for logos include BMP, VII, I GA, JPEG, TIFF, PhotoCD, PCX, and HK
- Dynamic motion effects include roll, crawl and reveal ▪ Editable effect windows for all motion effects ▪ Cut transitions ▪ Dissolves at variable speeds ▪ Tile, wipe and louver transitions in various directions and sizes ▪ Sequencing methods include random, GPI trigger, time code and timed ▪ Logo Maker converts image files and frame grabs to fully anti-aliased color or monochrome ▪ Converts color images to monochrome ▪ Maintains alpha channel in 32-bit images ▪ Generates alpha channel based on image's luminance or chrominance ▪ Alpha calculations occur on the entire image or a specific region ▪ Field or frame display to reduce flicker ▪ Video formats include RGB, Y/C, BETACAM and D1 ▪ Linear key output
- Rise-time filter applied to luminance and/or key signal ▪ NTSC/PAL resolutions supported \$2295.00

Inscriber FeaturePak/CG Character Generator for Nonlinear Editing Systems

- A full-featured character generator for professional users who create still pages, rolls and crawls for use as titles in their desktop video system ▪ Available as an upgrade for the Inscriber/CG that comes bundled with many nonlinear editing systems ▪ TrueType fonts (direct access) ▪ Font database support ▪ Typeface preview
- Automatic anti-aliasing ▪ Variable text sizing (5 to 999 scan lines)
- Slant, kerning and leading control ▪ Outline, glow and embossed edging ▪ Drop, offset and extruded shadows ▪ Soft shadows
- Rotated text ▪ Simple graphic objects (rectangle, panel) ▪ Complex graphic objects (polygon, spline, etc.) ▪ Flat beveled graphic objects
- Complex bevels (tube, round) ▪ 16.7 million color palette ▪ 256 levels of transparency ▪ Video rise-time filtering ▪ NTSC and PAL color legalization ▪ Logo objects ▪ Textures on text and draw objects
- Zoom Capability ▪ Scrapbook ▪ Imports: BMP, VII, TGA, JPEG, TIFF, PhotoCD, PCX, HKF ▪ Exports: BMP, VII, TGA, VM, PICT
- Windows 95 or Windows NT 4.0 operation ▪ Integrates with the following nonlinear editing systems: Adobe Premier, D-Vision OnLine, Genie Desktop Studio, Pinnacle Alladin StudioPak, Avid MCXpress, FAST Video Machine, in:sync Speed Razor

- FeaturePak/CG \$995.00
- Far East Option for FeaturePak/CG (Chinese, Korean, Japanese) 600.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



Ultra Series

- Advanced NTSC/PAL VideoWall technology and super high resolution system for projection cube and sophisticated monitor wall applications
- Maximum 756 lines active picture horizontal resolution (1512 active pixels)
- Patented signal processing algorithm provides a fully interlaced artifact-free image, plus 3-field interpolation
- Quantization at 30MHz/24-bit RGB
- Up to 4 simultaneous inputs, including RGB, composite or Y/C (with supplied decoder), VGA (with interface card)
- RS-232/RS-422 control interface, (selectable)
- Full special effects capabilities
- Individual frame stores, color washes and fully addressable: any input can be assigned to any monitor, in any position, in any magnification
- Choice of Windows based touch-screen and show control software
- Fully expandable to 8 x 8 with full addressability
- Each output card can drive up to 4 separate identical VideoWalls
- 2-year warranty

Ultra VideoWall Processors—Sample size pricing*

8 x 8 Quad card	\$152,050.00
6 x 6 Quad card	84,790.00
5 x 5 Quad card	62,955.00
4 x 4 Quad card	39,250.00
3 x 3 Quad card	25,355.00
ImTouch Standard touch-screen software	3,995.00

*Ultra prices are for 4 inputs with 1 digital decoder.



UltraMAX Series VideoWall Processors

- For real time display of all video and computer graphics formats through 1280 x 1024 and HDTV
- Accepts virtually any horizontal/vertical input frequency
- Outputs virtually any horizontal/vertical frequency, independent of input frequency
- Outputs are genlockable for broadcast (59.97Hz or 50Hz), regardless of input source frequencies
- RS-232/RS-422 control interface (switchable) up to 115K baud
- Allows full image control and effects, plus image positioning and 24-bit color washes
- Individual frame stores
- Each chassis will accommodate a combination of up to 20 input and output cards (e.g., 4 input cards plus 16 output cards)
- Full addressability: any input can be assigned to any display, in any position, in any magnification up to 256 x 256
- 2-year warranty

UltraMAX VideoWall Processors

Processor pricing examples (including controller and configuration software):

4 x 4 System with one 120MHz input (e.g. for 1280 x 1024 display)	\$72,965.00
3 x 4 System with one 60MHz input (e.g. for HDTV display)	56,525.00
3 x 3 System with one 60MHz input (e.g. for SVGA display)	47,720.00

Classic Series VideoWall Systems

- Affordable monitor wall system instantly displays any NTSC video signal from various sources: any format VCR, laserdisc, camera, computer or via tuner, any broadcast, cable or satellite signal
- Enhanced 8-bit digital encoding, separate R, G and B processing and unfiltered outputs for optimum picture contrast and maximum visual impact
- Will accept any composite video, analog RGB or Y/C
- Special effects system provides direct individual screen control, plus over 100 preprogrammed special effects
- Special effects system board has serial, parallel and LAN connections for interfacing with other A/V equipment designed to run continuously and unattended with unparalleled ease of setup and use
- A single digital processor will run 2 complete VideoWalls located as much as 250' apart
- 5-year warranty

Classic 4 VideoWall System

4 x 4 with fully automated special effects, cables and 16 VideoWall monitors	\$34,170.00
4 x 4 with fully automated special effects	13,850.00

Classic 3 VideoWall System

3 x 3 with fully automated special effects, cables and 9 VideoWall monitors	\$21,280.00
3 x 3 with fully automated special effects	9,850.00

Classic 2 VideoWall System

2 x 2 with fully automated special effects, cables and 4 VideoWall monitors	\$11,930.00
2 x 2 with fully automated special effects	6,850.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

LCD VIDEO/ DATA PROJECTORS/ PANEL



InFocus
SYSTEMS

LitePro® 720 LCD Multimedia Projection System

- 450 lumens ▪ SVGA polysilicon LCD optical system ▪ 12 lbs. ▪ True SVGA (800 x 600) resolution with compression for 1024 x 768 XGA ▪ Plug-and-project auto synchronization, tracking, positioning, source detect and black/white level detect
- Intelligent auto sensing feature for instant-on brilliant images ▪ Advanced polysilicon LCD optical system technology ▪ Dichroic optical system ▪ 16.7 million colors ▪ Zoom/wide-angle projection lens with 1:3 zoom ratio ▪ 150W metal-halide lamp with 2000 hours of life ▪ PC and Macintosh compatible ▪ CableWizard™ system ▪ Compatible with NTSC, NTSC 4.43, PAL and SECAM ▪ 3W, built-in speaker with stereo loopthrough capabilities (audio outputs for satellite speakers)
- Back lit, ergonomic and intuitive Smart Remote that also controls PC and Mac mouse ▪ Power supply: 100-240V at 50-60Hz ▪ 250W power consumption



LitePro 720 \$9199.00

LitePro 620 DLP™ Multimedia Projection System

- 400 lumens DLP display technology ▪ True SVGA 800 x 600 resolution (also available in 640 x 480 VGA for LitePro 610)
- Gray-scale mode for monochrome projection at 1400 lumens ▪ Ideal for Windows 95™ and Macintosh graphics
- Choice of varifocal lens or power zoom lens
- Advanced audio engineering and 4 JBL speakers
- Includes 2 tweeters and 2 full-range speakers ▪ Smart Remote
- Auto sensing electronics ▪ CableWizard system ▪ Plug-and-play simplicity ▪ 270W metal-halide lamp ▪ SVGA, VGA and Macintosh compatible ▪ 0.85:1 projection ratio ▪ Full NTSC, PAL and SECAM

LitePro 620 Zoom/video \$8499.00
LitePro 620 Data/video (zoom) 7999.00



LitePro 760 Portable LCD Projection System

- Enhanced TSTN® (Triple Supertwist Nematic) technology projects high resolution computer graphics ▪ 400W quartz halogen lamp
- 150 ANSI lumens ▪ Displays up to 24,389 colors at 1024 x 768 resolution ▪ Connects to computer via a single cable without additional hardware or software ▪ 15:1 contrast ratio ▪ Built-in loopthrough ▪ On-screen setup menus ▪ Rear projection mode
- Remote control ▪ Plug-and-play compatible ▪ Compatible with Macintosh computers running at up to 1152 x 870 resolution
- Project from X-terminals and workstations from Sun, DEC, HP/Apollo, Intergraph, Silicon Graphics, NeXT and others at up to 1184 x 884 resolution

LitePro 760 \$7299.00
CA-C110 LitePro shipping case 300.00

LitePro 580 Advanced LCD Multimedia Projection System

- 16.7 million colors ▪ Supports 32-bit computer graphics ▪ 200:1 contrast ratio
- 640 x 480 resolution ▪ Three 1.3" diagonal polysilicon active-matrix LCDs
- 25ms response time ▪ 4:3 screen aspect ratio ▪ Up to 350 ANSI lumens typical



- Built-in keystone correction ▪ 150W metal-halide lamp ▪ Zoom lens with 1:1.4 ratio, adjustable to project image size of 21"-300" ▪ Built-in loopthrough ▪ Rear screen projection mode ▪ 6' Y-cables provided
- Smart Remote control with trackball and software for controlling PC and Macintosh mouse movement and controlling projector functions ▪ Intuitive on-screen menus ▪ 220W power consumption
- Full support for NTSC, PAL and SECAM ▪ Composite and S-Video, computer and audio inputs ▪ Integrated 2W stereo audio system with 2 speakers and external speaker support ▪ A/V cable for video and audio
- Active-matrix LCDs, dichroic optics and full-motion video with stereo sound ▪ Projects any software from Macintosh or PC

LitePro 580 \$5999.00
CA-C76 LitePro 580 soft carrying case 100.00

LitePro 220 Portable LCD Multimedia Projection System

- Designed to adapt to growing multimedia presentation requirements ▪ Full-screen enhanced NTSC, true PAL and SECAM ▪ Smart Remote ▪ JBL sound system
- Active-matrix LCD display
- 270W metal-halide lamp
- Choice of lenses: varifocal or zoom
- Auto sensing electronics ▪ CableWizard system ▪ 800 x 600 SVGA resolution with image compression for 1024 x 768 computer graphics

LitePro 220 Data/video \$5499.00
LitePro 220 Data only 4999.00



LiteShow® Pro Presentation Player

- Includes a built-in 100M byte lomega ZIP® drive ▪ 1.2G byte integrated hard drive ▪ A single cable and a built-in connector let you link instantly to a LitePro multimedia projector ▪ Supports any presentation application and file format, including Microsoft PowerPoint, Microsoft Office '97 application-based presentation graphics and Adobe Acrobat PDF files ▪ No calibration is required
- Plug-and-project calibration ▪ Easily handles large presentation files and ensures fast, accurate playback of sophisticated presentation video elements from its hard drive ▪ Auto play option ▪ Includes built-in audio and support for embedded presentation video elements

LiteShow Pro \$1799.00

PowerView™ 820 Color LCD Projection Panel

- 800 x 600 resolution ▪ Active-matrix LCD ▪ Plug-and-play connections, auto-sensing and intuitive controls
- 16.7 million colors ▪ Audio with built-in speaker that can connect to external speakers
- Temperature and light sensitive fan ▪ CableWizard system ▪ Video signal, monitor loopthrough, mouse and audio connect with just one cable ▪ Video compatible with full NTSC, PAL and SECAM composite, S-Video and audio inputs ▪ Back lit, ergonomic Smart Remote

PowerView 820 Data/video \$4999.00
PowerView 820 Data only 4499.00



ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



IN1224 Scan Doubler With On-Screen Menus

- Digital decoding and line doubling for composite and S-Video sources
- Provides a solid, film-like image, virtually free of visible scan lines
- Compatible with monitors, LCD displays, and data projectors which are capable of displaying a 640 x 480 VGA signal
- Flexible output sync format: RGBHV, RGBS, or RsGsBs
- 4-input video/audio switcher
- Video blanking
- Closed caption decoder
- Controls for contrast, sharpness, brightness, color, hue, gamma, volume, balance, muting
- On-screen control menus for adjustment and setup
- RS-232 control of all functions \$1995.00

IN1424 Rack Sized Scan Doubler With On-Screen Menus

- Same as IN1224, but with the following differences:
- EIA 19" rack width—mounts in 1U space using provided rack ears
 - Full professional connectors for video/audio inputs and outputs
 - Digital freeze-frame \$2495.00



IN1024 Compact Scan Doubler with On-Screen Menus

- Easy control using on-screen menus or RS-232
- Separate controls for hue, color, contrast, brightness, sharpness and gamma
- 3-input video switcher: 2 composite video inputs, 1 S-Video input
- High quality digital decoding and line doubling for NTSC/PAL/SECAM
- Compact unit mounts easily on any flat surface using optional mounting brackets \$1495.00

IN1776 VGA/Mac to Video Scan Converter

- Converts VGA or Mac video signals to composite or S-Video for viewing on conventional monitors or recording to videotape
- RGBS output for connection to professional equipment
- Accepts resolutions up to 800 x 600 and refresh rates up to 80Hz
- Handheld IR remote controls all functions
- Controls for zoom, pan, freeze, underscan, position, width and brightness
- Advanced 3-position flicker filter
- Durable, professional design: metal case, internal power adaptor \$1325.00



IN2001/IN2000 Universal Analog/TTL/ECL Interface

- Fully automatic operation with analog or digital signals
- Output signal format: RGBS, RG_sB, or composite monochrome
- 100MHz bandwidth
- Horizontal position and gain controls
- Uses IN5100 Series input cables

- IN2001 Internal 110/220V power adaptor \$660.00
- IN2000 External power adaptor 465.00

IN2005HR Universal Analog/TTL/ECL Interface

- 5-BNC output connectors
- Works with analog or digital signals
- Flexible output signal format: RGBHV, RGBS, RG_sB, or composite monochrome
- 230MHz bandwidth
- Horizontal position control
- Gain and sharpness controls
- Uses IN5100 Series input cables \$550.00



IN2025R Universal Analog/TTL/ECL Interface

- Same as IN2005HR except with 2 outputs, internal power and rackmountable case \$725.00

IN2013R High Resolution 13W3 Workstation Interface

- Compatible with SUN, SGI, IBM PowerPC, NeXT
- Two 5-BNC outputs with automatic output sync selection
- Flexible output signal format: RGBHV, RGBS, RG_sB, or composite monochrome
- 230MHz bandwidth
- Horizontal position, gain and sharpness controls
- Monitor emulation switches
- Buffered output for local monitor
- Internal universal power transformer \$660.00

IN2022R High Resolution VGA and Mac II Interface

- Compatible with VGA/SVGA/XGA and Mac
- Two 5-BNC outputs with automatic output sync selection
- Flexible output signal format: RGBHV, RGBS, RG_sB, or composite monochrome
- 230MHz bandwidth
- Horizontal position, gain and sharpness controls
- Monitor emulation switches
- Buffered outputs for local monitor
- Internal universal power transformer \$660.00



IN2020 VGA and Mac II Interface

- Compatible with VGA/SVGA/XGA and Mac
- RGBS output on 4 BNC connectors
- No termination plug or input cable required
- 100MHz bandwidth
- Horizontal position control
- Loopthrough output for local monitor \$450.00

IN2080 Dedicated VGA Video Interface

- Compatible with VGA/SVGA/XGA signals
- RGBS output on 4 BNC connectors
- 100MHz bandwidth
- Horizontal position control
- Loopthrough output for local monitor \$300.00

IN2100 High Resolution Analog Video Interface

- 400 MHz bandwidth—superb performance with analog video signals at any resolution
- 15-pin HD standard VGA connectors for input and buffered local monitor output
- Connect directly to VGA computers and local monitors using IN8000 series VGA extension cables
- Adaptor input/local monitor output cables available for MAC, SUN and Workstations (BNCs)
- 5-BNC output with selectable output sync-RGBHV, RGBS, RG_sB
- Sync polarity preservation switch
- Picture centering control
- Monitor emulation DIP switch \$280.00

IN2111 Installation Interface With Modular A/V Pass-Through Connectors

- Same features as IN2100 plus:
- Unit installs in a wall, floor box, podium or conference table
 - Unit mounts in standard 4-gang junction box (included)
 - Handles extend to protect input/output connector modules and attached cables
 - Unit accepts up to 3 audio/video/phone connector modules to create an A/V connector plate customized for each application
 - Connector modules available with popular audio, video, phone and data connectors
 - Available in white finish (IN2111W) or black finish (IN2111B)
 - Comes with 3 connector plates \$570.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

INTERFACES/ DISTRIBUTION AMPLIFIERS



IN2200 High Resolution Computer Video Interface

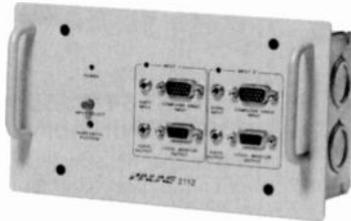
- Universal compatibility for analog video signals including VGA, SVGA, MAC, SUN, SGI and other high resolution workstations = 300MHz bandwidth = 2 input switcher with memory automatically stores and recalls unique position, gain, sharpness settings for each input
- 3 switching modes: manual, auto switch and remote (contact closure)
- Buffered local monitor outputs = 15-pin HD standard VGA-type connectors for input and local monitor output = Large LCD display shows horizontal and vertical frequencies of current input = Automatic output sync format selection: RGBHV/RGBS/RGSB = Gain control increases signal to drive long cables or smoothly fades image to black = Dual outputs drive a local monitor plus up to 2 data displays = Stereo audio switching and unbalanced to balanced signal conversion. \$1285.00

IN2160 High Resolution VGA Video Interface

- Compatible with VGA, SVGA and XGA = 400MHz bandwidth = 15-pin HD connectors for input and buffered local monitor output = 5 BNC connectors for output to data display = Selectable output sync: RGBHV negative polarity, RGBHV mirror input polarity, RGBS, RGSB = Horizontal position control = Monitor emulation switch \$395.00

IN2112 Installation Interface With 2-Inputs

- 400MHz = Unit installs in wall, floor box, podium or conference table in a standard 4-gang junction box (included) = 2 inputs enables connection of 2 computers simultaneously = 2 buffered local monitor outputs = 3 switching modes—manual, auto switch or remote (contact closure) = 15-pin HD VGA connectors for input/local monitor output—connects directly to VGA computers and local monitors using standard VGA extension cables like IN8000 = Compatible with MAC, 13W3, 5-BNC workstations using input/local monitor output adaptor cables = Stereo audio switching with unbalanced to balanced conversion = 5-BNC output with flexible output sync format: RGBHV, RGBS, RGSB = Available in white finish (IN2112W) or black finish (IN2112B). \$745.00



IN3256/IN3254 1-In, 6-Out/ 1-In, 4-Out RGBHV Distribution Amplifiers

- Selectable output gain: 1.0 or 1.3 = Sync level selector: high/low = 375MHz video bandwidth
- BNC connectors for input/outputs = Internal 110/220 power adaptor

IN3256 1-in, 6-out RGBHV distribution amplifier \$1250.00
IN3254 1-in, 4-out RGBHV distribution amplifier 925.00



IN3236/IN3234 1-In, 6-Out/1-In, 4-Out RGBS Distribution Amplifiers With Adjustable Gain

- Adjustable gain controls for each RGB output connector = Individually buffered outputs = 300MHz video bandwidth = BNC connectors for input/outputs = Internal 110/220 power adaptor

IN3236 1-in, 6-out RGBS distribution amplifier \$1200.00
IN3234 1-in, 4-out RGBS distribution amplifier 1080.00

IN3206/IN3204 1-In, 6-Out/1-In, 4-Out RGBS Distribution Amplifiers

- Selectable output gain: 1.0 or 1.3 = Sync level selector: high/low = 375MHz video bandwidth = BNC connectors for input/outputs
- Internal 110/220 power adaptor

IN3206 1-in, 6-out RGBS distribution amplifier \$760.00
IN3204 1-in, 4-out RGBS distribution amplifier 650.00

IN3268/3264 1x8/1x4 VGA Distribution Amplifiers

- 300MHz bandwidth = 4 or 8 buffered outputs can drive long output cables = Sharpness controls = 15-pin HD input/output connectors connect directly to VGA computers, data displays and LCD projectors using IN8000 Series VGA extension cables = Compatible with MAC, SUN, SGI and other high resolution analog video signals and displays by using optional input/output adaptor cables = Passes all sense pins to output 1
- Ideal for use with LCD/DMD projectors

IN3268 1x8 VGA distribution amplifier \$585.00
IN3264 1x4 VGA distribution amplifier 420.00

IN3058/IN3056 1-In, 8-Out/ 1-In, 4-Out S-Video Distribution Amplifiers

- Compatible with NTSC/PAL/ SECAM signals in the S-Video (Y/C) format = 4-pin mini DIN connectors for input/outputs = Individual gain controls for chroma and luma = 100MHz video bandwidth

IN3058 1-in, 8-out S-Video distribution amplifier \$475.00
IN3056 1-in, 4-out S-Video distribution amplifier 310.00



IN3248/3248R 1x8 Stereo Audio Distribution Amplifier

- 8 individually buffered inputs = Compatible with balanced or unbalanced stereo audio line level signals = Maintains signal as balanced or unbalanced or converts to other formats = Selectable input impedance: 20K ohm/600 ohm = IN3248 has 5-pin captive screw connectors for input/output = IN3248R has RCA jacks for inputs/outputs \$450.00

IN3252HR 1-In, 2-Out RGBHV Distribution Amplifier/Line Driver

- 600MHz bandwidth = 2 buffered outputs = Individual gain controls for RGB can increase voltage up to 40% to drive long cables = Sharpness control enhances clarity and visibility of fine details = Loop output can drive a local monitor or feed signal to additional amplifier to create a larger DA system. \$450.00

IN3012 1-In, 2-Out RGBS Distribution Amplifier

- Compensates for signal attenuation in long cable runs = Individual gain and peaking controls for RGB = 330MHz bandwidth = BNC connectors for input/outputs \$410.00

IN3218/3214 1x8/1x4 Composite Video Distribution Amplifier/Line Driver

- 300MHz bandwidth = 4 or 8 buffered outputs can drive long output cables = Split mode operation—unit can operate as 2 independent amplifiers = Gain controls = Sharpness control = Passive loop output feeds signal to an additional local monitor or additional amplifiers to create a larger amplifier system

IN3218 \$335.00
IN3214 275.00

IN3262/3262D 1x2 VGA Distribution Amplifier

- 400MHz bandwidth = 2 buffered outputs can drive long output cables = 15-pin HD connectors for inputs and outputs = Passes all sense pins to monitor connected to output 1 = Ideal for use with LCD/DMD panels and projectors = Durable metal case

IN3262 Permanently attached 4' input cable \$255.00
IN3262D Removable 6' input cable 225.00

IN2076 1-In, 2-Out Mac II Distribution Amplifier

- Compatible with Mac II type video signals on 15-pin D connector: Mac II, Quadra, Centris, Power Mac = Loopthrough connector for local monitor = Buffered output for an LCD panel, data monitor or projector = 100MHz video bandwidth \$220.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

REFERENCE
CATALOG



IN3556

**IN3556/IN3554 6-In, 1-Out/
4-In, 1-Out RGBHV Switchers**

- Front panel channel selection buttons with LED indicators
- Remote control port (contact closure) ▪ 200MHz video bandwidth
- BNC connectors for inputs/output ▪ Internal 110/220 power adaptor

IN3556	6-in, 1-out RGBHV switcher	\$1275.00
IN3554	4-in, 1-out RGBHV switcher	975.00

IN3586/IN3584 6/4 Input RGBS Auto Switchers

- Automatically switches to active input ▪ Internal power transformer
- 200MHz video bandwidth

IN3586	6-in, 1-out RGBS auto switcher	\$875.00
IN3584	4-in, 1-out RGBS auto switcher	660.00

**IN3506/IN3504 6-In, 1-Out/
4-In, 1-Out RGBS Switchers**

- Front panel channel selection buttons with LED indicators ▪ Remote control port (contact closure) ▪ 200MHz video bandwidth ▪ BNC connectors for inputs/output ▪ Internal 110/220 power adaptor

IN3506	6-in, 1-out RGBS switcher	\$790.00
IN3504	4-in, 1-out RGBS switcher	585.00

IN3526vi 6x1 Composite/S-Video Switcher

- 300MHz bandwidth ▪ Control from front panel, RS-232 serial commands or contact closure ▪ Auto loop: combine 2 or more switchers together to create a large switching system ▪ Internal universal power supply ▪ Switches during vertical blanking interval when used with synchronous sources ▪ Auto sequence—unit will automatically scan through selected inputs ▪ Blank button sends video black to output while passing sync signal from input 1

\$550.00

IN3552 2-In, 1-Out RGBHV Switcher

- Front panel input selector ▪ Remote control via contact closure
- 250MHz video bandwidth ▪ BNC connectors for inputs/output
- Internal 110/220 power adaptor

\$370.00

IN3582/IN3592 2-In, 1-Out Auto Switchers

- Automatically switches to active input ▪ Composite or RGBS signals
- IN3582 bandwidth: 280MHz ▪ IN3592 bandwidth: 100MHz

IN3582	RGBS auto switcher	\$325.00
IN3592	Composite video auto switcher	260.00

IN3546R 6-In, 1-Out Stereo Audio Switcher

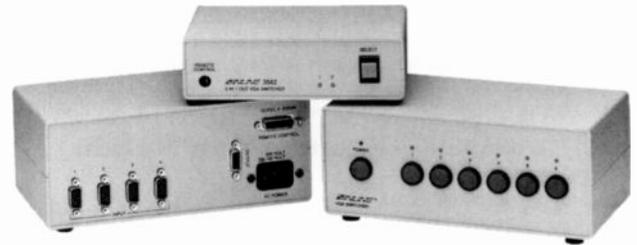
- Operates with IN3500 Series RGB switchers to add audio-follow-video switching ▪ Individual L/R attenuators for each input ▪ RCA connectors for inputs/output

\$335.00

**IN3576/IN3574/IN3572 6/4/2-In,
1-Out Mac II Switchers**

- Front panel channel selection buttons with LED indicators
- Remote control port (contact closure) ▪ 150MHz video bandwidth
- 15-pin D connectors for inputs/output ▪ Internal 110/220 power adaptor

IN3576	6-in, 1-out Mac II switcher	\$900.00
IN3574	4-in, 1-out Mac II switcher	660.00
IN3572	2-in, 1-out Mac II switcher	360.00



**IN3566/IN3564/IN3562 6/4/2-In,
1-Out VGA Switchers**

- Front panel channel selection buttons with LED indicators
- Remote control port (contact closure) ▪ 150MHz video bandwidth
- 15-pin HD connectors for inputs/output ▪ Internal 110/220 power adaptor

IN3566	6-in, 1-out VGA switcher	\$750.00
IN3564	4-in, 1-out VGA switcher	660.00
IN3562	2-in, 1-out VGA switcher	350.00



IN2062

IN2062 Hum Suppressor

- Effectively suppresses video hum, removing visible effects caused by ground loops ▪ Simple operation—no adjustment or calibration required ▪ 390MHz video bandwidth ▪ No external power required

IN2062	RGBHV hum suppressor	\$1045.00
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**IN6902/IN6901 RS-232 to
Control Relay Converters**

- Converts RS-232 serial commands to contact closures ▪ Works with IN3500 Series switchers and any other device requiring contact closure control

IN6902	RS-232 to 17 relays	\$720.00
IN6901	RS-232 to 6 relays	300.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

RGB/VIDEO MATRIX SWITCHERS



PATHFINDER HR™ Series High Resolution RGB Matrix Switchers

- 200MHz bandwidth driving any number of outputs
- RGB/RGBS/RGBHV matrix switching
- RCA or Phoenix brand captive screw terminals for audio connections
- Available in fixed or reconfigurable versions
- 16-port reconfigurable models have 10 input/output ports which may be set as inputs or outputs using software control
- 16-port reconfigurable units may operate as any of the following matrices: 14 x 2, 13 x 3, 12 x 4, 11 x 5, 10 x 6, 9 x 7, 8 x 8, 7 x 9, 6 x 10, 5 x 11, 4 x 12
- Control via RS-232 or front panel
- Recall mode—press a single front panel button to recall and execute a pre-stored input/output configuration
- Board groups—switch video and audio boards together or separately
- Path mapping display—a single screen shows all current input/output patches
- Setup software included



IN60016HRVP

PATHFINDER™ Series Matrix Switchers

- Available in fixed or reconfigurable versions
- 16-port reconfigurable units have 14 input/output ports which may be set as inputs or outputs using software control, allowing a 16-port reconfigurable unit to operate as a 15 x 1 matrix, a 1 x 15 matrix or any intermediate configuration
- Video/audio boards switch together or separately
- Front panel LCD shows current input/output patches
- Control via RS-232 or front panel controls
- RGB delay (IN6000 Series only)
- Rackmountable in 3U space using provided hardware
- Bandwidth: IN50000—50MHz, IN60000—120MHz



IN60016 (IN60000 Series)

IN60000 Series PATHFINDER RGBS Matrix Switchers

- IN60000 Series models come standard with 4 video boards plus 2 audio boards
- IN60000G models have 4 video boards only

Reconfigurable matrix models \$5,195.00-7,550.00
 Fixed matrix models 4,350.00-6,100.00

IN50000 Series PATHFINDER Video Matrix Switchers

- Standard configurations include 1 video board and 2 audio boards
- Additional video board available for S-Video switching

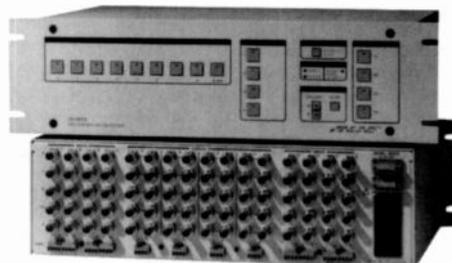
16-port reconfigurable matrix models. \$4,400.00
 Fixed matrix models \$2,745.00-3,325.00

16-Port Reconfigurable Matrix Switchers

IN60016HRVP	RGBHV + Phoenix stereo audio	\$12,750.00
IN60016HRSA	RGBS + RCA stereo audio.	11,775.00
IN60016HRSP	RGBS + Phoenix stereo audio.	11,775.00
IN60016HRV	RGBHV.	11,775.00
IN60016HRA	RGB + RCA stereo audio.	10,775.00
IN60016HRP	RGB + Phoenix stereo audio.	10,775.00
IN60016HRS	RGBS.	10,775.00
IN60016HR	RGB.	9,795.00

12-Input, 4-Output Matrix Switchers

IN61204HRVP	RGBHV + Phoenix stereo audio	\$7,590.00
IN61204HRSA	RGBS + RCA stereo audio.	6,790.00
IN61204HRSP	RGBS + Phoenix stereo audio.	6,790.00
IN61204HRV	RGBHV.	6,790.00
IN61204HRA	RGB + RCA stereo audio.	6,190.00
IN61204HRP	RGB + Phoenix stereo audio.	6,100.00
IN61204HRS	RGBS.	6,100.00
IN61204HR	RGB.	5,590.00



IN3808 Presentation Switcher

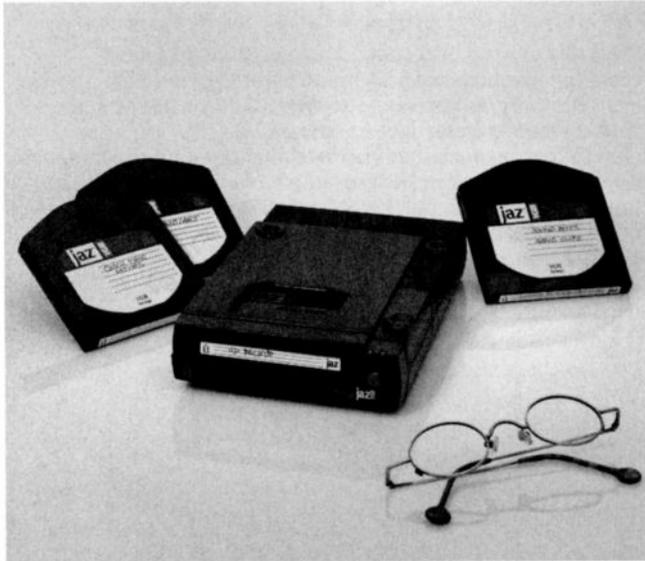
- 8 x 4 matrix switching for RGBHV + stereo audio
- 250MHz video bandwidth
- 10 configuration memories
- Dual switching modes: direct mode for simple one touch operation, matrix mode for sophisticated applications
- Can store and transmit user-provided serial codes to control projectors and other A/V equipment
- Volume control and mute \$3,795.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





HARD DRIVES



Iomega® Jaz® Personal Hard Drive

Larger software programs and creative presentation files require large amounts of storage space and easy portability. The Jaz personal hard drive allows the user to create memory-intensive presentation programs that can be transported from office to presentation site with ease.

- Jaz hard drive is available as an internal drive and 2 lb. portable, external drive
- Vast files can be stored on easily transportable 1G byte memory cartridges
- A 10-12ms seek time means the Jaz provides faster performance than most hard drives

Performance

Average Seek Time:	10ms read, 12ms write
Sustained Transfer Rate:	6.6MBps maximum, 5.4MBps average, 3.4MBps minimum
Burst Transfer Rate:	10MBps
Rotational Speed:	5394rpm
Average Start/Stop Time:	10/10 seconds
Long Format Time (Surface Verify):	20 minutes
Short Format Time:	10 seconds
Buffer Size:	256K byte read/write

Reliability and Service

MTBF:	250,000 hours
Service Life:	5 years
Bit Error Rate:	1 in 10 ¹²
Disk Drop Height:	3'
Disk Estimated Shelf File In Case:	10 years
Warranty-Drive/Media:	1 year/limited lifetime

General

Disk Storage Capacity:	Uses 1020M byte Jaz disks (PC-formatted capacity)
Operating System Compatibility:	DOS, Windows, Mac OS, OS/2, Windows 95, Windows NT
Interface:	Fast SCSI II
Connections:	2 50-pin high density SCSI-II (HD-50) external
Power Requirements (Insider):	5V, 0.5 amp nominal, 0.75 amp peak; 12V, 0.25 amps nominal, 1.0 amp peak
Power Requirements (Portable):	Universal input (auto-switching) 100-240VAC 50/60Hz
Acoustical Noise (Operating):	Less than 42dBA
SCSI Termination:	Automatic and/or switchable
Dimensions (Internal):	1"H x 4"W x 6"D
Dimensions (Portable):	1.5"H x 5.33"W x 8.0"D
Weight:	2 lbs.
Read/Write Protection:	Via software (optional password protection)

Operating Conditions

Relative humidity (noncondensing):	
Operating:	10% to 80%;
Nonoperating:	10% to 90%
Vibration:	
Operational:	.03" p-p @ 5-10Hz, .5g p-p @ 10-300Hz, .2g p-p @ 300-500Hz;
Nonoperational:	0.4" p-p @ 2-10Hz, 4g p-p @ 10-500Hz
Shock @ 11ms duration ½ sine wave:	
Operational:	3g;
Nonoperational:	80g
Altitude (operating):	10,000' maximum

Jaz External Hard Drive	\$399.00
Jaz Internal Hard Drive	299.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





System 41® Modular Audio Signal Processing System

System 41 is built around the concept of using a single internal bus mainframe to house a customized array of plug-in modules in order to provide audio signal processing that is free of multiple chassis, power supplies and power lines. Applications include distance learning, conference rooms, paging systems, courtrooms, churches and general sound reinforcement.

- Internal bus structure distributes DC power to each module, but there are no signal buses
- Inputs and outputs for each module are available on rear panel terminals, providing rapid interconnection and highly visible signal routing
- User controls, signal level monitors and output equipment can be connected at any point on the system
- Hum pickup, crosstalk and ground noise are eliminated by extensive use of balanced inputs and outputs
- I/O signals are hard wired without intervening connectors to reduce the possibility of contact failure
- The power supply features a toroidal transformer and an RFI/EMI line noise filter

System 41 Mainframes

DJ-4100 Mainframe Provides 14 mounting spaces, ± 24 VDC power and security panel.

DJ-4101 Mainframe With Monitor and Balanced Attenuators As above, but with 2 attenuators and monitor with 2-position selector switch, LED peak level display, 3.0W amp, headphone jack, amp level control, monitor speaker on/off switch and amp LED clip indicator.

DJ-4150 2 x 2 Mainframe Provides 4 mounting spaces, ± 24 VAC power and security panel.

DJ-4151 Integrated Audio System Provides 14 mounting spaces, ± 24 VDC power, security panel and a dual channel, 25W/channel power amplifier.

System 41 Modules

DJ-4114A Voice-Matic® Microphone Input Module 4 mic/line input automatic mixing module with remote input switching and level control.

DJ-4115A Voice-Matic Master Mixes into 2 outputs the audio signals from 1 or more DJ-4114A input modules and 2 line level inputs.

DJ-4115A-1 Voice-Matic Master As above, but also provides aux mic input and remote VCA level control of all inputs and outputs.

DJ-4131A Voice-Matic Link Enables unlimited input expansion of Voice-Matic mixing system.

DJ-4129A Voice-Matic Combiner Used to combine mixer control signals for room combining and "Mix-Minus" applications.

DJ-4109A Level-Matic® AGC Senses variation in input level and adjusts gain to maintain a uniform output level.

DJ-4171A Digital Audio Recorder/Player Provides up to 8 field recordable messages with a total of 8 minutes of recording time at a 6.8kHz bandwidth. Messages can be remotely triggered via contact closure and monitored via headphone output.

DJ-4102 6 x 2 Microphone Mixer 2-output standard mic mixer with 4 mic/line inputs and 2 line inputs.

DJ-4116A Quad Mic Preamp/Mixer 4-channel mic/line preamp and mixer, with an aux line input.

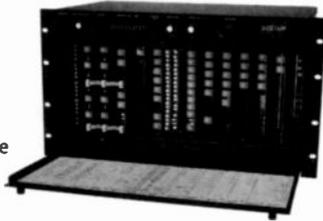
DJ-4103 6 x 2 Line Mixer 6 inputs mixed to 2 outputs.

DJ-4113A Line Select Mixer Provides remote selection of any combination of 4 inputs to a single mixed output with remote VCA level control.

DJ-4123A 6 x 2 Line Select Mixer Provides remote selection of any combination of 6 inputs to either of 2 outputs with remote VCA level control

DJ-4145 Audio Distribution Switch 8 active-balanced inputs and 7 active-balanced outputs.

DJ-4117A 29-Band Transversal Equalizer Provides 29 bands of TEQ® on $\frac{1}{2}$ -octave centers, selectable high-pass and low-pass band limiting filters, selectable high frequency shelving pre-emphasis and remote VCA level control.



DJ-4101 Mainframe with System 41 Modules

DJ-4107A 9-Band Transversal Equalizer Provides 9 bands of TEQ equalization, selectable band limiting filter and remote VCA level control.

DJ-4106A 5-Notch Filters Provides the 5 tunable notch filters for suppressing feedback in sound reinforcement systems.

DJ-4108 Crossover/Phase Align Provides a 2-way 18dB/octave Butterworth active crossover.

DJ-4110 Limiter Provides low distortion limiting of audio peaks; greater than 20:1 limiting ratio above threshold.

DJ-4124 Custom Module Single width, customizable, with a 16-position barrier block on rear panel for external circuit connections.

DJ-4125 Custom Module Double width, customizable, with two 16-position barrier blocks on rear.

DJ-4122 4 x 4 Matrix Mixer 4 active-balanced inputs and 4 active-balanced outputs.

DJ-4126 8 x 8 Matrix Mixer 8 active-balanced inputs and 8 active-balanced outputs.

DJ-4122-1 Remote Controlled 4 x 4 Matrix Mixer 4 active-balanced inputs and 4 active-balanced outputs (requires DJ-4128-4).

DJ-4128-4 Remote Matrix Controller Remote control module for a DJ-4122-1 mixer.

DJ-4126-1 Remote Controlled 8 x 8 Matrix Mixer 8 active-balanced inputs and 8 active-balanced outputs (requires DJ-4128-8).

DJ-4128-8 Remote Matrix Controller Remote control module for a DJ-4126-1 mixer.

DJ-4111 Remote Level Control/VCA Provides 2 channels of independent or ganged remote level control.

DJ-4111-1 Remote Level Control/VCA With Multilocation Control As above but with multilocation up/down ramp control.

DJ-4137 Remote Display/Control Wall mounted, 10-segment LED level display and up/down momentary rocker switch for adjusting program level. Operates with the DJ-4111-1.

DJ-4104A Audio Distribution Amplifier 2 active-balanced inputs programmable to 6 transformer isolated outputs.

DJ-4118AA Audio Distribution Amplifier 4 transformer isolated outputs driven from 1 active-balanced input.

DJ-4105 4 Line Drivers Provides 4 line drivers with gain trim control on each channel.

DJ-4132 Audio Signal Delay Provides a delayed output selectable in 1.0ms steps to 255ms maximum.

DJ-4133 Delay Output Expand Provides 2 independently delayed outputs selectable in 1.0ms steps to 255ms maximum.

DJ-4134 Delay Extend Lengthens the delay duration of other System 41 delay modules.

DJ-4135 Precision Signal Delay Provides 2 independently delayed outputs and a "zero-delay" reference output.

DJ-4136 Precision Output Expand Provides 2 independently delayed outputs adjustable in 3.9 μ s steps up to 256ms maximum.

AM-3080 8-Channel Voice-Matic Automatic Microphone Mixer

- 3-band TEQ equalization on all mic inputs
- AGC on main output
- Smooth NOM attenuation control
- Linkable chassis
- Active-balanced mic inputs
- Transformer isolated main output
- 2 electronically balanced aux inputs
- Power transient noise suppression circuitry

AM/DE-4080 8-Channel Voice-Matic Automatic Microphone Mixer

- 3-band TEQ equalization on all mic inputs
- AGC on main output
- Smooth NOM attenuation control
- Remote linkable chassis for expansion or room combining
- Transformer balanced mic/line inputs
- Transformer isolated main output
- 2 electronically balanced aux inputs
- 2 independently adjustable aux outputs
- Power transient noise suppression circuitry

DE-4024E Voice-Matic Microphone Mixer

- 4 transformer isolated mic inputs
- Transformer isolated outputs
- Fixed and adjustable gain aux inputs
- Aux output for tape/broadcast
- Ideal connections for teleconferencing
- Optional remote control
- Smooth NOM attenuation control

Call For Pricing

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





SPEAKERS/ ACCESSORIES

CONTROL® SERIES MONITORS

Control 5™ 175W 2-Way Monitor

▪ Frequency range (-10dB): 50Hz to 20kHz ▪ Power capacity¹: 175W ▪ Sensitivity (1W, 1m)²: 92dB³ ▪ Nominal impedance: 4 ohms ▪ Crossover frequency: 3kHz ▪ Enclosure material: Structural foam ▪ Terminations: Spring terminal (adapted to accept dual banana jacks) ▪ Dimensions: 15.25"H x 9.875"W x 9"D ▪ Net Weight (Each): 10 lbs.

Control 5 each/\$251.00

Control 1AW/70 All-Weather Loudspeaker

▪ Frequency range (±3dB): 120Hz to 20kHz ▪ Power capacity²: 150W ▪ Sensitivity (1W, 1m)²: 87dB SPL ▪ Nominal impedance: 4 ohms ▪ Crossover frequency: 6kHz ▪ Enclosure material: UL[®] 94 V-O flame class rated ▪ Dimensions: 9.25"H x 6.25"W x 5.625"D ▪ Net weight (each): 5 lbs.

Control 1AW/70 each/\$236.00



Control 1™ 150W 2-Way Monitor

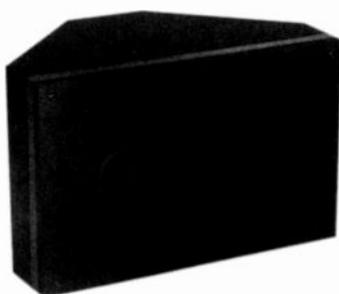
▪ Frequency range (-10dB): 70Hz to 20kHz ▪ Power capacity¹: 150W ▪ Sensitivity (1W, 1m)²: 90dB³ ▪ Nominal impedance: 4 ohms ▪ Crossover frequency: 6kHz ▪ Enclosure material: Structural foam ▪ Terminations: Spring terminal (adapted to accept dual banana jacks) ▪ Dimensions: 9.25"H x 6.25"W x 5.625"D ▪ Net weight (each): 4 lbs.

Control 1 each/\$146.00

CONTROL CONTRACTOR SERIES

Control SB-2 Subwoofer

▪ Slot-loaded vented bandpass subwoofer
 ▪ Dual voice coil 10" bass transducer
 ▪ Features passive attenuation by use of the Load Baffle
 ▪ 8 ohm stereo inputs with full bandwidth satellite outputs
 ▪ Dimensions: 15"H x 23"W x 11.5"D



Control SB-2 \$295.00

Control 28 175W 2-Way Speaker

▪ Frequency range (±3dB): 100Hz-20kHz ▪ Power capacity: 175W ▪ Sensitivity (1W, 1m): 92dB
 ▪ Nominal impedance: 8 ohms
 ▪ Crossover frequency: 2.8kHz
 ▪ Enclosure material: High impact polystyrene ▪ Terminations: Spring clips (adapted to accept dual banana plugs) ▪ Dimensions: 15"H x 11"W x 8.5"D ▪ Net weight (each): 12 lbs.

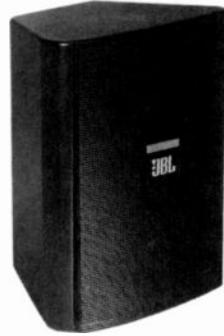
Control 28 each/\$221.00



Control 25 150W 2-Way Speaker

▪ Frequency range (±3dB): 150Hz-20kHz ▪ Power capacity: 150W
 ▪ Sensitivity (1W, 1m): 88dB
 ▪ Nominal impedance: 8 ohms
 ▪ Crossover frequency: 3.0kHz
 ▪ Enclosure material: High impact polystyrene ▪ Terminations: Spring clips (adapted to accept dual banana plugs) ▪ Dimensions: 9.5"H x 7.3"W x 5.6"D
 ▪ Net weight (each): 5 lbs.

Control 25 each/\$126.00



Control 23 50W 2-Way Speaker

▪ Frequency range (±3dB): 225Hz-20kHz ▪ Power capacity: 50W
 ▪ Sensitivity (1W, 1m): 87dB ▪ Nominal impedance: 8 ohms
 ▪ Crossover frequency: 3.5kHz ▪ Enclosure material: High impact polystyrene ▪ Terminations: Spring clips (adapted to accept dual banana plugs) ▪ Dimensions: 7.5"H x 5.5"W x 4.3"D
 ▪ Net weight (each): 4 lbs.

Control 23 each/\$98.00

CONTROL CONTRACTOR SERIES ACCESSORIES

MTC-2V Series Brackets

▪ Mounting kit that allows up to 3 Control speakers to be wall mounted, directing sound to specific separate levels ▪ Utilizes the patent-pending Invisiball™ mounting system

- MTC28V \$66.00
- MTC25V 62.00
- MTC23V 61.00

MTC-2H Series Brackets

▪ Mounting kit that allows 2 Control speakers to be horizontally wall mounted with play angles of 120° ▪ Using 3 brackets forms a 360° array suspension mount of up to 6 speakers ▪ Utilizes the patent-pending Invisiball mounting system

- MTC28H \$63.00
- MTC25/23H 59.00

1 Rating based on test signal of IEC filtered random noise with a peak-to-average ratio of 6dB, 2 hours duration.
 2 Sensitivity is based on an input of 2.83V at 8 ohms or 2.0V at 4 ohms.
 3 Averaged from 500Hz to 2.5kHz.

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



AUDIO AMPLIFIERS/ PROCESSORS



MPA Series Power Amplifiers

Common Features

- Rated output power of 275, 400, 600, 750 and 1100W per channel, both channels driven into 4 ohms, 20Hz-20kHz
- Rated into 2 ohm loads; bridgeable into 4 ohm loads
- Forced air cooling linearly tracks heat-sink temperature
- Stepped input level controls with "lock-out" capability
- Compact, lightweight and road-worthy design
- XLR-type and barrier strip input connectors
- Neutrik Speakon and dual 5-way binding post output connectors
- Fully short-circuit, temperature and DC offset protected
- Open Input Architecture™ allows the input to be configured for a wide variety of signal processing
- Switchable stereo, dual mono and bridge operating modes
- Protective output limiters prevent the amplifiers from going into distortion



MPA1100	Dual channel, 1100W per channel at 4 ohms, 720W per channel at 8 ohms	\$2764.00
MPA750	Dual channel, 750W per channel at 4 ohms, 500W per channel at 8 ohms	2338.00
MPA600	Dual channel, 600W per channel at 4 ohms, 900W per channel at 8 ohms	1858.00
MPA400	Dual channel, 400W per channel at 4 ohms, 275W per channel at 8 ohms	1539.00

MPA275 Dual channel, 275W per channel at 4 ohms, 175W per channel at 8 ohms **\$1219.00**

MPX Series Power Amplifiers

Common Features

- Rated output power of 300, 600 and 1200W per channel, both channels driven into 4 ohms, 20Hz-20kHz
- Forced air cooling linearly tracks heat-sink temperature
- Stepped input level controls with "lock-out" capability
- Compact, road-worthy design
- XLR, 6.3mm (¼") and removable barrier strip input connections
- Dual 5-way binding post output connectors
- Switchable stereo, parallel and bridged mono operating modes
- Fully short-circuit, temperature and DC offset protected
- Switchable 30Hz high pass filters for infrasonic protection



MPX1200	Dual channel, 1200W per channel at 4 ohms, 800W per channel at 8 ohms	\$2342.00
MPX600	Dual channel, 600W per channel at 4 ohms, 400W per channel at 8 ohms	1383.00
MPX300	Dual channel, 300W per channel at 4 ohms, 200W per channel at 8 ohms	957.00

M Series Electronics

- Comprised of 4 high quality signal processing components: 2 frequency variable electronic crossovers; 4-channel noise gate; 2-channel gated compressor/limiter
- All 4 models offer performance and features associated with much higher priced products
- These products have been designed with the "total system" in mind and are carefully matched for component interfacing



M552 2-Way Stereo/3-Way Mono Variable Electronic Crossover

- Constant-directivity horn pre-emphasis allows for smooth, flat frequency response from JBL 2360 Series and 2380 Series Flat-Front Bi-Radial® horns, or other CD horns
- Bright graphics produce improved visibility of control nomenclature and scales under low light conditions
- 24dB Linkwitz-Riley filters generate seamless transitions between loudspeaker components for improved high frequency driver protection as well as reduced lobing and phase distortion
- LF summing combines both channels for subwoofer applications where only 1 mono channel is needed
- Subsonic filtering for protection of low frequency transducers from over excursion
- RF filtering to defeat extraneous noise and ultrasonic oscillations
- External ground link terminals for independent access to signal and chassis grounds, permitting greater flexibility in system grounding
- XLR input and output connectors
- Servo-balanced outputs provide automatic output level adjustment to accommodate either balanced or unbalanced feeds
- 117dB dynamic range
- Extremely low distortion; THD 0.004%
- Wide bandwidth, flat response; 10Hz-75kHz **\$521.00**

M553 3-Way Stereo/4-Way Mono Variable Electronic Crossover



M553/M552

Same as M552 with the exception of an additional channel in each mode **\$617.00**

M712 2-Channel Gating Compressor/Limiter

- Complete user control over threshold, attenuation, attack and release controls
- Gate function with independent threshold control for each channel
- Stereo linkable
- High visibility 8-element LED metering
- Wide bandwidth, flat response; 10Hz to 50kHz
- Extremely low distortion; THD 0.03%
- Subsonic filtering for protection of low frequency transducers from over excursion
- External ground link terminals for independent access to signal and chassis grounds, permitting greater flexibility in system grounding. **\$499.00**

M644 4-Channel Noise Gate

- Combines 4 independent channels of noise gate in a compact 1 rack space chassis
- Increased versatility through extremely broad threshold control range (-60 to +20dBu)
- External key inputs on each channel allows gate triggering from external sources
- User adjustment of threshold, attenuation, attack and release controls
- 115dB dynamic range for lower noise, greater headroom, and unparalleled transient response
- Extremely low distortion; THD 0.03%
- Bright graphics produce improved visibility of control nomenclature and scales under low light conditions
- Servo balanced outputs provide automatic output level adjustment to accommodate either balanced or unbalanced feeds
- Subsonic filtering for protection of low frequency transducers from over excursion
- Wide bandwidth, flat response; 10Hz-40kHz
- External ground link terminals for independent access to signal and chassis grounds, permitting greater flexibility in system grounding. **\$499.00**



M644/M712

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





KY-D29UCH 3-CCD Digital Processing Color Camera

- 3-D Digital Noise Reduction is provided that, unlike other DNR systems, removes only objectionable visible noise elements without erasing underlying information
- Three $\frac{3}{8}$ " CCDs with 14-bit digital signal processing
- Delivers sharp pictures under wide-ranging light conditions
- 850 lines of horizontal resolution with a sensitivity of f/11 at 2000 lux
- Automatic shooting from 4 lux to 24,000 lux from full auto shooting (FAS) mode
- S/N Ratio of 65dB (DNR ON)
- In the Super LoLux mode and supported by 3-dimensional DNR, the KY-D29U captures top-quality pictures with just 0.35 lux minimum illumination
- Vertical resolution is selectable from V. Max. 450 lines; V. Plus 420 lines; and V. Normal 380 lines
- Auto White Detection circuit for fast and accurate white balance adjustments
- Wide dynamic range of 600% can shoot high luminance subjects under high contrast conditions without losing color details
- Other features include: accu-focus, adjustable white clip, adjustable gamma point, adjustable detail enhancement frequency, star filter, audio level control and "live" white balance
- Large 1.5" black-and-white viewfinder with high resolution of 600 horizontal lines, easy focusing and visibility adjustment function
- Time Date Generator is built-in to simplify production management \$8,950.00

ENG-2940 Docking Digital-S Camcorder Package

- KY-D29UCH camera head
- BR-D40U dockable recorder
- Does not include a lens, viewfinder or shipping case \$16,445.00

ENG-2910 Docking DV Camcorder Package

- KY-D29UCH camera head
- BR-DV10U mini-DV dockable recorder
- Does not include a lens, viewfinder or shipping case . . \$12,445.00

ENG-2922 Docking S-VHS Camcorder Package

- KY-D29UCH camera head
- BR-S422U S-VHS portable VTR
- Does not include a lens, viewfinder or shipping case \$12,445.00

KY-D29ST Studio Package Less lens

- KY-D29UCH camera head
- KA-27U camera adaptor
- VF-P400U 4" studio viewfinder
- RM-P200U remote control unit . . \$12,101.00

KY-D29U ENG Package Less Lens

- KY-D29UCH camera head
- KA-27U camera adaptor
- VF-P116U 1 1/2" viewfinder
- CB-27U carrying case \$11,637.00



KY-19UCH 1/2" 3-CCD Color Video Camera Head

- In LoLux mode, 2 lux minimum illumination
- LoLux combines electrical gain with a unique pixel readout method resulting in an effective gain of 30dB without the noise usually associated with that much amplification
- 750 lines of horizontal resolution
- 62dB S/N ratio
- Three 1/2" CCDs
- Full auto shooting with manual override
- Advanced memory system
- Multizone iris weighting
- Color matrix circuit
- Black paint control
- 1 1/2" viewfinder with 600 lines of resolution
- Viewfinder status overlay
- Tripod base
- Enhanced variable gain (ALC)
- Extended electric iris
- Full time auto white
- Variable scan for shooting computer screens
- Docks with S-VHS, MII, Hi8 and Betacam SP
- 380,000 pixels
- f/8, 2000 lux sensitivity \$5,145.00

ENG-1910L13 Docking DV Camcorder Package With Lens

- KY-19UCH camera head
- BR-DV10U mini-DV dockable recorder
- VF-P115U 1 1/2" viewfinder
- YH13X75K12 13X Canon zoom lens \$11,106.00

ENG-1922 Docking Camcorder Package Less Lens

- KY-19UCH camera head
- BR-S422U S-VHS portable VTR
- VF-P115U 1 1/2" viewfinder
- CB-27U carrying case \$9,785.00

ENG-1910 Docking DV Camcorder Package

- KY-19UCH camera head
- BR-DV10U mini-DV dockable recorder
- VF-P115U 1 1/2" viewfinder \$9,327.00

KY-19ST Studio Package Less Lens

- KY-19UCH camera head
- KA-27U camera adaptor
- VF-P400U 4" studio viewfinder
- RM-P200U remote control unit \$8,295.00

KY-19U ENG Package Less Lens

- KY-19UCH camera head
- KA-27U camera adaptor
- VF-P115U 1 1/2" viewfinder
- CB-27U carrying case \$7,330.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



CAMCORDERS/ RECORDER



GY-X2BU 1/2" IT 3-CCD S-VHS Camcorder

- S-VHS, 3-chip, full-sized, integrated camcorder
- Designed as a single unit, thus providing the benefits of S-VHS recording and 3-chip camera technology in a single package
- Low light capability (1.5 lux minimum)
- 750 TV lines horizontal resolution
- Lightweight ergonomic design (less than 15.5 lbs.)
- 2-hour recording time
- Low power consumption (less than 22W)
- Plug-in VITC/LTC time code generator (optional)
- Quick-start recording
- f/8.0 at 2000 lux
- 380,000 pixels
- 4 audio channels with 2 Hi-Fi channels and 2 linear channels
- Automatic white balance has 2 digital memories
- Employs three 1/2" CCDs with micro lenses
- Multizone iris weighting
- Variable scan view
- Electronic shutter
- Viewfinder status overlay
- 2 external microphones can be connected via the 2 XLR connectors or 1 stereo mic via a 6-pin connector
- Tripod base provides quick, secure attachment
- Full-sized video heads and advanced editing function
- Back lit LCD panel
- Auto review function
- Built-in speaker
- Insert edit function
- Retake function by edit search
- Auto EQ
- Automatic level up improved multigeneration chroma S/N
- Built-in genlock circuit
- Accepts JVC (NB-G1U) or Sony (NP-1A) battery (not included)
- 62dB S/N
- SMPTE color bars

..... \$6770.00



GY-X3U 1/2" IT 3-CCD S-VHS Camcorder

- 3 high sensitivity 1/2" CCDs
- 270,000 pixels each CCD
- Superb low light performance (4 lux)
- Sensitivity of f/8.0 at 2000 lux
- 60dB S/N ratio
- Full-sized S-VHS with full-sized head drum
- Full-sized 1.5" viewfinder
- Solid, lightweight design with durable twin-frame aluminum diecast body (12.8 lbs. with lens and viewfinder)
- Low power consumption (19W)
- Full automatic shooting (FAS) automatically adjusts gain, iris, audio level and color balance with manual override of all functions
- Built-in electronic iris
- Built-in time/date generator
- Built-in CTL time code generator
- Fujinon 14X servo zoom lens with manual override of zoom and iris
- Superior sound quality with built-in microphone and separate inputs for 2 Hi-Fi audio tracks
- Comprehensive status indications in viewfinder and LCD panel
- 1/60-1/2000 sec. variable scan for shooting CRTs
- Quick-release tripod adaptor plate included
- NB-G1/NP-1 battery holder included

..... \$4950.00

AB-CPS2PAK Battery system package for GY-X3U which includes: 2 Trimpac 14 batteries; CP-S2 AC adaptor/charger; QR-27 mounting bracket; Q-RX3 mounting bracket; CC XLR-4 pin cable (10'). 1535.00



BR-DV10U Mini-DV Dockable Recorder

- Provides high quality, DV format picture when used in a system with a JVC professional-use camera
- Standard mini-DV 60-minute record time (tapes play back in DV, DVCPRO (with adaptor) and DVCAM)
- Equipped with 2-channel, 16-bit, 48kHz sampling, high quality digital audio capability
- Lightweight, compact and capable of direct connection with a camera
- Highly reliable XLR terminals for 2-channel, balanced audio input
- Y/C and composite video output capability
- Aluminum diecast body
- Re-shoot function
- Recording time and remaining tape time display (min.)
- Hour meter display function
- 12VDC power supply with 9.5W power consumption
- Weighs approximately 4.4 lbs.
- Docks with KY-19U, KY-27 series and others*
- JLIP interface (RS-422 with optional SA-K38U).

..... \$3495.00

*Other cameras require adaptor supplied by camera manufacturer.

GR-DV1UP Digital CyberCam Mini-DV Camcorder

- Image sensor: 570,000 pixels, 1/2" CCD
- 10X optical zoom lens
- Automatic focus and white balance
- Docking station for easy connection to VCR or video system
- Digital image stabilizer
- High shutter speed to 1/600 second
- Random assemble editing function
- 5 3/8" H x 3 3/8" W x 1 3/8" D
- Weighs 1.1 lbs. with tape, battery and handstrap
- Package includes: docking station, AC adaptor/charger (AA-V70UP), lithium-ion battery (BN-V712UP), 30-minute tape, soft case, wireless remote, stand and cables
- DV-XP2



Pro Package Includes standard accessories plus: extra battery, 10 pieces of M-DV60MEUP (60-minute tape) \$3100.00

AA-V70UP AC adaptor/charger 120.00

CU-V778UP Power handgrip 95.00

BN-V712UP Lithium-ion battery 70.00

M-DV60MEUP** 60-minute mini-DV cassettes 15.00

M-DV30MEUP** 30-minute mini-DV cassettes 13.50

**Tape must be ordered in lots of 50 pieces.

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



DIGITAL S

**BR-D85U/D80U/D51U/D50U/D750U/D350U
Editors/Recorders/Players and BR-D40U
Dockable Recorder**

Digital-S is the first affordable studio quality 4:2:2 component digital recording format. It represents a dramatic breakthrough in both quality and price. It is a true component digital recording system (not a digital version of S-VHS) that uses JVC's proven 1/2" tape transports and a robust metal particle tape. Digital-S provides a significant improvement in features and quality over conventional analog formats such as Betacam SP, and is measurably better than the 4:1:1 DV formats that use 6mm tape. It is truly studio quality digital video.

4:2:2 Sampling With Mild Compression

By utilizing a 50Mbps data rate, Digital-S is able to take advantage of 4:2:2 sampling for higher color detail (twice that of Betacam SP) and effectively lossless compression. 4:2:2 is the preferred format among broadcasters and high end production studios because it offers the resolution and color detail necessary for keying, compositing and recording the most demanding video signals and computer graphics. Digital-S's mild 3.3:1 compression ratio allows multigeneration recording without visible picture degradation. This is important when editing and when transferring to and from nonlinear editing systems.

Pre-Read

Video Pre-Read, a feature previously found only on the most expensive digital studio VTRs, is available on the BR-D85U/UNS. It allows you to create composite images, video layers, or add titles to an existing tape—even A/B roll style editing with 2 VTRs instead of 3. The BR-D85U is able to play back a recording while simultaneously recording a new signal in its place. The signal can be modified by either an analog or digital switcher, effects unit or character generator before it is re-recorded. Adding a single BR-D85U to your existing analog system will allow you to begin doing these advanced effects while maintaining first generation quality in the format you are currently using.

Digital-S Features

- 4:2:2, 8-bit component processing
- Mild 3.3:1 compression
- 540 lines horizontal resolution
- 720 pixels
- Auto rewind
- Uses an intraframe compression recording method which allows frame by frame recording/editing
- Counter search
- Remote control via RS-422A interface using industry standard command set
- External sync analog reference signal input
- Capstan bump for frame synchronization
- Preroll function with user designated time setting
- Headphone output
- Playback error checking with LED status display
- Auto tracking
- Time code regeneration external TC or jam sync
- Manual audio recording level adjustment
- ORC (optimized record current) auto setting in the adjustment mode
- On-screen menu system

**BR-D85U/80U
Digital-S
Editors/Recorders**

Common Features

- Digital-S recording/playback capability
- 2-channel PCM sound with 16-bit, 48kHz sampling
- Built-in time code generator/reader
- Complete analog interface with input/output connectors
- Serial digital interface (SDI) (optional for BR-D85UNS/D80U)
- Assemble/insert editing
- Frame by frame recording and editing
- Jog/search dial
- Noiseless slow playback capability within a range of ±1/2
- 120VAC, 60Hz power requirement
- 180W power consumption
- 20Hz to 20kHz +1/-1.5dB frequency response



BR-D85U

- BR-D85U** Includes common features plus: ▪ Video pre-read which allows A/B roll editing with 2 VTRs instead of 3, includes serial digital interface (SA-D80U) \$19,500.00
- BR-D85UNS** Same as BR-D85U, except serial digital interface is optional 16,000.00
- BR-D80U** Same as BR-D85U without pre-read and serial digital I/O is optional (SA-D80U) 14,500.00

**BR-D50U/D51U
Digital-S Players**

- Digital-S playback capability
- 2-channel PCM sound with 16-bit, 48kHz sampling
- Built-in time code reader
- Complete analog interface with output connectors
- Serial digital interface (optional)
- Jog/search dial
- Noiseless slow playback capability
- 120VAC, 60Hz power requirement
- 160W power consumption
- 20Hz to 20kHz +1/-1.5dB frequency response
- BR-D50U** \$10,500.00
- BR-D51U** Same as BR-D50U, plus S-VHS playback capability, provides serial digital output of S-VHS tapes (when using SA-D50U) 9,995.00



BR-D50U

BR-D750U/D350U Digital-S Recorder/Player

- Offers full quality and performance of Digital-S products except: jog/shuttle control (retains jog/shuttle control capability through RS-422A interface), dual cue audio tracks are replaced with a single "smart track" that maintains a recording of the audio mix on digital tracks 1 and 2
- Full 4:2:2 recording (BR-D750) and playback
- Two 48kHz, 16-bit PCM audio tracks, 1 cue track
- Optional serial digital interface
- Built-in VITC/LTC time code
- BR-D750U** Digital-S Editing Recorder, serial digital input/output optional (SA-D80U) \$9,995.00
- BR-D350U** Player version of BR-D750U, serial digital output optional (SA-D50U) 7,995.00

BR-D40U Digital-S Dockable Recorder

- Includes the same quality, detail and recording time of other Digital-S products
- Docks to JVC and other professional cameras
- Automatic editing function which utilizes a built-in time code reader/generator
- Time code input/output slave-lock function
- 50-pin camera interface
- LCD display with back light
- Balanced audio input
- Monitor speaker
- Self-diagnostics function
- Remote pause connector
- 12VDC power requirement
- Less than 1.6A power consumption
- Records up to 104 minutes (with DS-104 tape) \$7,495.00

DY-700U Digital-S Camcorder

- 4:2:2 digital acquisition
- Ideal for use with BR-D750U/350U studio VTRs
- Lossless 3.3:1 compression, 50Mbps data rate
- 104-minute maximum recording time
- Three 1/2" IT CCDs (380,000 effective pixels each)
- High sensitivity (f/8 at 2000 lux)
- Full time auto white balance
- Full auto shooting
- Continuous auto black circuit
- 750 line resolution
- 62dB S/N ratio (camera section)
- Built-in SMPTE time code generator
- 2-channel PCM audio (16-bit, 48kHz sampling)
- Remote control connector for start/stop control
- Comprehensive back lit LCD display
- Built-in diagnostics \$11,999.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



22DX SERIES

BR-S525DX S-VHS Variable Tracking Feeder/Player

- Brings broadcast standard, post-production features to S-VHS editing
- Automatic variable speed tracking heads
- High quality, jitter-free variable speed playback from -2X to 3X
- Programmable playback for time compression/expansion (fit and fill)
- Slow motion or reverse edits with instant, jitter-free starts from still frames
- High-speed visual search at up to 32X
- Field-by-field playback
- Highest quality S-VHS pictures with advanced signal processing
- Built-in, full-field TBC with component output
- Digital noise reduction
- Built-in SMPTE LTC and VITC time code reader/generator
- Loading mechanism accepts full-sized or compact cassettes
- Menu and on-screen display for easy setup and trouble-free operation
- 4 balanced audio channels (2 linear and 2 Hi-Fi channels) using XLR connectors
- Independent audio output level controls for all 4 channels
- 2 playback audio level meters switchable between Hi-Fi and normal audio
- 8-digit time counter for indication of TC or CTL data
- External sync/reference video input
- RS-422 serial control compatible with DMC controllers. . . \$6,900.00

BR-S822DX S-VHS Full-Featured Editing Recorder

- Highest quality S-VHS pictures with more than 47dB S/N
- Loading mechanism compatible with full-sized or compact cassettes
- Built-in VITC/LTC time code reader/generator
- Built-in 2-machine editor controls most VTRs
- Editing functions include: assemble/insert editing, precision search/jog dials, high-speed search at up to 32X, preview, review and edit point entry
- 8-digit counter/edit data display
- 4-channel balanced audio (2 Hi-Fi and 2 linear with switchable Dolby B™ noise reduction) using XLR connectors
- Built-in RS-422 serial remote control interface
- Black finish
- Optional plug-in digital TBC with component signal output and Hadamard digital noise reduction
- Optional Y-688 dub out for ⅜"
- Optional 33-pin or 45-pin parallel interface cards . . . \$5,775.00



BR-S622DX S-VHS Feeder/Recorder

- Same basic features as BR-S822DX without the editing functions
- Designed primarily to serve as an edit source
- 4:2:2 TBC included
- Image freeze
- Digital noise reduction
- Betacam component signal output . . . \$5,180.00

BR-S522DX S-VHS Feeder/Player

- Same picture quality and basic features as BR-S822DX, but player version only
- Designed primarily to serve as an edit source
- 4:2:2 TBC included
- Image freeze
- Digital noise reduction
- Betacam component signal output . . . \$4,640.00

BR-S422U S-VHS Dockable Recorder/Player

- Lightest, most compact S-VHS dockable recorder
- High quality S-VHS pictures with built-in chroma noise reduction
- Reduced power consumption (1.3W)
- Quick response REC start
- Optional plug-in time code generator
- Auto EQ
- 4-channel audio (2 linear and 2 Hi-Fi channels)
- High quality pictures
- More than 400 lines . . . \$3,495.00

EDITING SYSTEM PACKAGES

VES-27DX Editing System Package

Package includes: BR-S822DX S-VHS editing recorder, RM-G870U A/B roll editing controller, BR-S525DX S-VHS feeder/player and 2 VC-G9050U 9-pin to 9-pin cables . . . \$18,205.00

VES-22DX Editing System Package

Package includes: BR-S822DX S-VHS editing recorder, BR-S622DX S-VHS recorder/player, RM-G860U A/B roll editing controller and 2 VC-G9050U 9-pin to 9-pin cables . . . \$14,970.00

VES-25DX Editing System Package

Package includes: BR-S822DX S-VHS editing recorder, BR-S522DX S-VHS feeder/player, RM-G860U A/B roll serial controller and 2 VC-G9050U 9-pin to 9-pin cables . . . \$14,435.00

Accessories

- SA-T22U Optional time base corrector for BR-S522DX (plug-in) with component output panel. . . \$614.00
- SA-K33U Adaptor for connection to Sony 33-pin editors . . . 454.00
- SA-R200U VITC/LTC time code generator for BR-S422U and GY-X2B. . . 447.00
- SA-N22W Optional digital noise reduction board for BR-S822DX, plugs into SA-T22U. . . 436.00
- SA-K28UA 45-pin parallel interface card . . . 406.00
- SA-K37U Enhanced RS-232C serial interface card . . . 244.00
- BH-P27U Battery holder for BR-S422U. . . 168.00
- SA-E68U Y-688 dub output card for sending Y/C signals to ⅜" editing VTRs. . . 125.00
- SF-P27UA Application builder. . . 100.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





**BR-S800U S-VHS
Editing Recorder/
Player**



▪ Comprehensive insert-and-assemble editing ▪ 4 audio tracks (2 Hi-Fi, 2 linear) ▪ Independent dubbing of CH1 and CH2 linear audio ▪ Fast tape handling (100X search speed) ▪ Built-in CTL time code generator/reader ▪ Heavy-duty transport, motherboard construction ▪ Open architecture with 2 plug-in card slots ▪ Over 400 lines of resolution ▪ Manual audio level controls and meters ▪ Menu display and on-screen mode check ▪ 6-digit time counter for CTL and time code data ▪ External timer playback/recording capability ▪ Automatic repeat playback and counter search **\$3200.00**

BR-S500U S-VHS Player/Edit Feeder

▪ Companion player to BR-S800U editing recorder ▪ 4 audio tracks (2 Hi-Fi, 2 linear) ▪ Fast tape handling (100X search speed) ▪ Built-in CTL time code reader ▪ Heavy-duty transport, motherboard construction ▪ Open architecture with 2 plug-in card slots ▪ Menu display and on-screen mode check ▪ 6-digit time counter for CTL and time code data ▪ Audio monitor output ▪ Automatic repeat playback and counter search ▪ Over 400 lines resolution . . . **\$2750.00**

Edit-Desk System

▪ Professional-level video editing for videographers ▪ Comprehensive insert-and-assemble editing ▪ 4 audio tracks (2 Hi-Fi, 2 linear) ▪ Separate dubbing of CH1 and CH2 linear audio ▪ Fast tape handling (100X speed search) ▪ Built-in CTL time code generator/readers ▪ Heavy-duty transport, motherboard construction ▪ Open architecture using plug-in option cards ▪ Professional jog/shuttle dial ▪ Scene finder makes it easy to locate scenes on tape ▪ A/B roll ▪ Auto trim ▪ Frame grabber allows you to grab still frames when using SA-N50U

- VES-58AB** Consists of BR-S800U editing recorder, 2 BR-S500U S-VHS players and 1 RM-G805U editing controller **\$9900.00**
- VES-88** Consists of 2 BR-S800U S-VHS editing recorder/players, 1 RM-G800U editing controller (with cables) **6845.00**
- VES-58** Consists of BR-S800U editing recorder, BR-S500U S-VHS player and RM-G800U editing controller **6395.00**

Edit-Desk Accessories

- RM-G805U** A/B roll editing controller for Edit-Desk . . . **\$1200.00**
- SA-N50U** Plug-in time base stabilizer/DNR board **489.00**
- SA-K33U** 33-pin interface board for Sony controllers . . . **454.00**
- RM-G800U** Editing controller for Edit-Desk **445.00**
- SA-K28UA** 45-pin plug-in board for interface with parallel JVC **406.00**
- SA-R50U** VITC/LTC plug-in reader/generator (piggy-backs to the SA-K26U, SA-K37U, SA-K50U) . . . **328.00**
- SA-K37U** RS-232C plug-in board for computer interface (replaces SA-K27UA and accepts SA-R50U) . . . **244.00**
- SA-K26U** RS-422 plug-in board for 9-pin serial control. . . **225.00**
- SA-K50U** Adaptor board for SA-R50U (required when not using either SA-K26U or SA-K37U) **123.00**
- SF-P27UA** Application builder **100.00**
- VC-G2050U** Y/C cable (7p male—4p S-type) (5m) **76.00**

- VC-G3030U** Y/C cable (7p female—4p S-type) (3m) **\$71.00**
- VC-G2030U** Y/C cable (7p male—4p S-type) (3m) **68.00**
- VC-G8030U** Extension remote cable for RM-G800U (3m) . . . **61.00**
- RM-G30** Handheld wired remote **56.00**
- VC-G50U** 4-pin to 4-pin Y/C cable (5m) **29.00**
- VC-G30U** 4-pin to 4-pin Y/C cable (3m) **26.00**



SR-S365U S-VHS Recorder

▪ Built-in RS-232C interface ▪ Hi-Fi audio recording level controls and indicators ▪ Jog/shuttle search ▪ Plugs into RM-G800U/G805U editing controllers ▪ Random assemble editing function ▪ Built-in CTL time code system ▪ Audio and self audio dubbing functions ▪ On-screen menu setup ▪ Flying erase head ▪ Headphone connector ▪ 2 channels Hi-Fi audio and 1 linear channel for monaural ▪ Hi-Fi audio record on/off **\$1445.00**

VES-38AB Editing System Package

Package includes: ▪ BR-S800U editing recorder ▪ 2 SR-S365U S-VHS recorders ▪ RM-G805U editing controller **\$7290.00**

VES-36AB Editing System Package

Package includes: ▪ 3 SR-S365U S-VHS recorders ▪ RM-G805U editing controller **\$5535.00**

VES-865TM Editing System Package

Package includes: ▪ 2 SR-S365U S-VHS recorders ▪ 1 RM-G800U editing recorder ▪ 2 TM-1315U 13" color video monitors . . . **\$3975.00**

VES-865 Editing System Package

Package includes: ▪ 2 SR-S365U S-VHS recorders ▪ 1 RM-G800U editing recorder **\$3335.00**

SR-3360U VHS Hi-Fi Stereo Recorder/Player

▪ Oval-cut DA-4 head system ▪ VHS digital live circuitry ▪ Dynamic double limiter prevents overmodulation and distortion ▪ Clear sync circuit ▪ Wideband luminance LPD and Chroma BPF ▪ Low noise preamp ▪ Active video calibration ▪ Super head cleaner ▪ Ultra spec drive ▪ Shuttle plus ▪ Continuous repeat playback ▪ Special effects playback with multispeed search and noiseless 5-speed slow motion ▪ Instant review function ▪ Index/skip search ▪ Multilingual on-screen menu system (English/Spanish/French) ▪ Auto daylight savings time **\$400.00**

SR-WSU W-VHS Videotape Recorder

▪ Utilizes a 1/2" component HDTV recording format ▪ Full HDTV compatibility with HD (High Definition) recording mode for 1125/60 and playback is complemented with extended NTSC SD (Standard Definition) component recording/playback ▪ VHS/S-VHS compatibility ▪ TCI (Time Compression Integration) compresses the Y/C signals along the time axis and records them separately ▪ 5-layer Sendust heads ▪ 3-hour HDTV, 9-hour SD recording time ▪ Digital TBC ▪ Hi-Fi audio ▪ Slow motion/repeat/variable speed playback ▪ Random assemble editing ▪ Preroll/insert editing **\$5495.00**

- HV-M260U** 26" HDTV monitor with audio **3595.00**
- WT-180HA*** 180-minute W-VHS tape **80.00**
- WT-120HA*** 120-minute W-VHS tape **65.00**

* Sold in cartons of 10 only

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



EDITING CONTROLLERS/ SPECIAL EFFECTS GENERATORS



RM-G870U A/B Roll Editing Controller

▪ Flexible 9-pin A/B roll editing controller ▪ Built-in edit memory, which can sort edit data for up to 128 events ▪ Comprehensive on-screen LED display ▪ Control panel/multifunction 10-key pad with cursor keys ▪ Independent jog/search dials ▪ VITC/LTC time code editing ▪ Dynamic motion control capabilities ▪ Audio monitor level control ▪ Audio split editing ▪ Variable preroll time ▪ RS-232C printer port ▪ RS-422 switcher control \$5180.00

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 jog/search dials ▪ 3 LED counters ▪ 2 GPI ports ▪ VTR cables (VC-G7050U 45-pin or serial) not included ▪ Selectable preroll ▪ Fully synchronized editing with capstan override. \$3670.00
 VC-G7050U 45p-45p VTR control cable 256.00
 VC-G9050U 9p-9p serial control cable for RM-G860U/G870U 176.00

RM-G820U Editing Controller

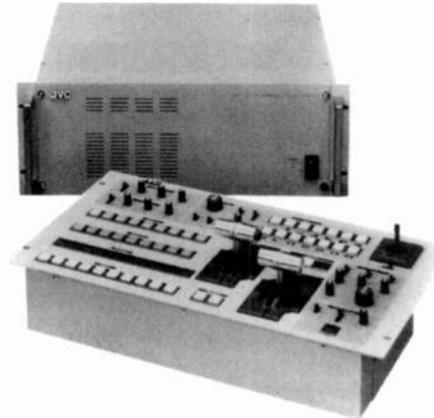
▪ High performance, RS-422A 2-machine editing controller ▪ Control of pre-read when used with BR-D85U for A/B style editing with only 2 VTRs ▪ Variable Motion Control (VMC) editing with 7-event motion memory ▪ Built-in 99-event memory with renumber and ripple functions ▪ Time code editing ▪ Two 8-digit time counters ▪ 2 jog/search dials with separate LED counter displays ▪ Audio split editing for independent specification of audio-in points ▪ 4 variable timing GPI ports for connection and control of audio mixers and special effects generators ▪ Multipurpose LCD display for comprehensive display of edit data and player/recorder operations ▪ Audio monitor level adjustment ▪ Preview and review functions ▪ Go-to function ▪ Edit point trim and cancel ▪ Error messages ▪ Variable preroll time selection from 1-59 seconds ▪ Capstan bump function to keep player and recorder in phase (selectable on the player or recorder) ▪ SYNC in terminal for accurate editing. \$2285.00
 SA-K80U 10-key unit for RM-G820U. 270.00

RM-G805U A/B Roll Editing Controller

▪ A/B roll editing with 2 feeders ▪ Compatible with the BR-S800/500 series and SR-S365U ▪ Integrated jog/search dial and integrated 8-digit display LED which displays time code ▪ 2 GPI ports for trigger control of SEG/DVE and audio mixer ▪ Audio/video split editing capability ▪ Compact, lightweight design ▪ 12-pin JVC bus interface ▪ VITC/LTC and CTL time code editing ▪ Last edit recall ▪ VTR synchronization/bump (BR-S500/800) \$1200.00

RM-G800U Editing Controller

▪ An alternative for videographers who do not require a full-featured A/B roll editing system but need more sophisticated capabilities than consumer-type systems can provide ▪ Easy to operate jog dial ▪ 8-digit LED counter indicates all edit data in either TC or CTL time code referenced editing ▪ Comprehensive professional editing functions including preview, review and go-to ▪ 2 GPI ports for control of external equipment ▪ Fast tape handling (100X search speed) ▪ Scene finder ▪ Frame grabber ▪ A/B roll ▪ Auto trim ▪ For use with BR-S500U, BR-S800U and SR-S365U \$445.00



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 input terminal ▪ RGB chromakey 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; 27.6 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) \$6370.00

KM-D600U 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 4:1:1 component process ▪ DOC and Advanced Sync for VTR ▪ Built-in full field color bar generator ▪ Auto and manual transition ▪ 9 wipe patterns (variable softness) ▪ Positioner wipe ▪ GPI control for connection with VTR controller ▪ Built-in RGB chromakey ▪ 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 7 1/8"H x 19"W x 13 3/8"D; control unit 3 1/2"H x 16 1/8"W x 12 1/4"D \$5965.00

KM-1200U Color Special Effects Generator

▪ 4 composite video input connectors ▪ Genlock input is useable as the 5th video input instead of having background color ▪ Auto take ▪ Color background generator ▪ DSK (downstream keyer) ▪ Chromakeyer ▪ 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 19"W x 4"D ▪ Weight: 9.3 lbs. \$2600.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





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
- Three 5000-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, blink for warning
- 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: 45dB (VHS)
- 240 lines VHS, 400 lines S-VHS horizontal resolution
- Requires optional remote control (RM-G77U or RM-G30U) \$5890.00

BR-7040UBAL VHS Hi-Fi Auto Loading Tri-Duplicator

- 3-in-1 design for 3-way savings (in space, energy 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
- 34-pin parallel (optional) in 8-out serial remote control connectors
- 3 large record indicators light during recording, blink for warning
- 3 tape run indicators
- Three 5000-hour meters
- Dolby B noise reduction for normal audio
- Audio input level meter with 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: 45dB
- 240 lines horizontal resolution
- Requires optional remote control (RM-G77U or RM-G30U) \$5712.00

BR-7030UB 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
- Three 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: 45dB (color)
- 240 lines horizontal resolution
- Dolby NR
- Serial control \$4662.00



BR-7020UP VHS Hi-Fi Duplicator

- 2-in-1 duplicator
- Professional Hi-Fi dubbing system
- Single cabinet contains 2 removable record/play units
- Reduced power consumption
- Lower cabling costs
- Auto loader (optional)
- Improved reliability and durability
- Multidisplay unit (optional)
- Easy serviceability
- 8-digit ID recording system
- Serial loopthrough control
- 34-pin parallel control connectors
- Playback capability for simple QC
- Includes the RM-G30U simple remote control unit \$3570.00
- SA-K723U Multidisplay unit 1054.00
- SA-L50U Auto loader 669.00
- SA-K721U QC out unit 79.00
- SA-K722U Test point unit 79.00
- SA-LH50U Extra cassette adaptor for auto loader 48.00

KY-F32U 1/2" 3-CCD Color Video Camera

- High sensitivity of f/9.5 at 2000 lux (NTSC)
- Minimum illuminance of 6 lux (NTSC)
- 750 lines horizontal resolution
- 1/2" 3-CCD with effective 380,000 (NTSC) picture elements
- 60dB S/N
- Standard bayonet 1/2" lens mount
- Menu-driven operation
- External remote control
- RGB, Y/C, composite and component outputs
- Wide auto white balance and peak value detection range
- Remote data memory function
- Negative/positive reversing function
- RS-232 interface option \$5000.00



KY-F55BU 1/2" 3-CCD Color Video Camera

- 3 1/2" IT CCDs with micro lenses
- Weights only 1.1 lbs.
- 750 lines horizontal resolution
- Accepts C-mount lens
- Full range of video outputs (RGB, Y/C, composite)
- 60dB S/N
- Extensive automatics including full-time auto white and auto level control
- SMPT E-type color bar generator
- Electronic shutter and variable scan
- Random trigger
- Slow motion
- White shading adjustable
- Frame integration mode
- Full remote control with optional RM-LP55U or computer control via RS-232C
- Ideal for computer imaging, teleconferencing, surveillance and research applications . . \$4140.00

TK-1070U 2/3" CCD Color Video Camera

- 768 x 492 pixels
- 480 TV lines horizontal resolution
- Various signal outputs (RGB, Y/C, composite video)
- Analog RGB 9-pin output
- Full genlock and HD/VD lock
- C-mount lens
- Auto/manual white balance
- Electronic shutter from 1/100 down to 1/10,000 sec.
- Gamma and aperture switches
- Auto/manual gain
- 47dB S/N \$1500.00

TK-C1380U 1/2" CCD Color Digital CCTV Camera

- 768 x 494 pixels
- Horizontal resolution of more than 470 TV lines
- Digital signal processor (DSP)
- Full genlock
- Contour correction
- ID capability
- AC/DC power supply
- Composite video and Y/C video outputs
- High sensitivity of 0.95 lux at f/1.2
- Wide range automatic electronic shutter system (1/60-1/100,000 sec.)
- 48dB S/N
- Variable electronic iris eliminates need for more costly automatic iris lens
- Menu-driven setup
- C/CS-mount lenses
- Digital back light compensation
- 3-D detect auto-tracking white balance adjustment \$1145.00

TK-1270U 1/2" CCD Color Video Camera

- 470 lines horizontal resolution
- 2 video outputs (RGB/composite video signals)
- 50dB S/N
- Through-the-lens auto tracking white balance
- 3 lux low light sensitivity
- 768 x 492 pixels
- 525 lines, 2:1 interlaced
- Changeable C/CS-mount lens allows selection from a wide range of lenses
- Ideal for computer imaging and microscope systems requiring precise image \$1100.00

TK-S241U 1/2" CCD B/W CCTV Camera

- High sensitivity 0.095 lux
- Horizontal dual-edge contour correction
- Accepts 24VAC or 12VDC
- Built-in genlock
- Suitable for indoor/outdoor applications using video iris with built-in EE amplifier or DC iris lens
- Automatic electronic shutter 1/60-1/100,000 sec.
- Built-in back light compensation
- C/CS-mount lens
- 512 x 492 pixels
- 380 TV lines horizontal resolution
- 50dB S/N ratio \$378.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



TM-1400SU 14" S-VHS Color Video Monitor

▪ Multiple input terminals include: 1) 7-pin Y/C 358 terminal, for S-VHS, bridged output possible; 2) composite video signal, bridged output possible; 3) 8-pin VTR terminal; 4) RCA terminal for audio signal (mono), bridged output possible ▪ More than 400 lines of horizontal resolution ▪ Pulse-cross circuit allows sync signal to be viewed ▪ Notch filter reduces horizontal noise and dot interface ▪ Horizontal AFC select switch (fast/normal) ▪ Underscan switch: wide scan/narrow scan **\$875.00**

TM-131SU 13" Color Video Monitor

▪ Y/C input connector for S-VHS signals ▪ For post-production and monitoring applications ▪ Horizontal resolution exceeding 400 TV lines (S-Video) ▪ Comb filter for sharpest pictures and minimum dot crawls ▪ Dual composite video (BNC) and audio (RCA) inputs ▪ 3 1/2" round speaker with 1.5W audio output **\$320.00**

TM-910SU 9" Color Video Monitor

▪ Multifformat compatibility accepting composite or Y/C signals from NTSC/PAL sources ▪ Compact design allows 2 TM-910SU monitors to be mounted in a standard EIA 19" rack using optional rackmount adaptor ▪ Accepts virtually any power source from 100-240VAC, 50/60Hz or 12VDC via an XLR-4 connector ▪ High quality comb filter ▪ Underscan, blue check, pulse-cross, color off ▪ 16:9 display capability ▪ Tally lamp ▪ Tally/remote connector ▪ 300 lines horizontal resolution ▪ Rugged metal cabinet **\$780.00**

TM-A9U 9" Color Video Monitor

▪ 9" full square CRT produces 300 lines horizontal resolution ▪ 0.5mm stripe pitch ▪ Comb filter ▪ 90° deflection angle ▪ Rackmountable ▪ Ideal for multiple professional applications ▪ Front panel controls ▪ Pushbutton on/off switch with LED indicator ▪ Built-in speaker ▪ Durable metal casing **\$529.00**



TM-550U 5.5" Color Video Monitor

▪ Accepts both NTSC and PAL signals ▪ External power from either an automatic universal power source or 12VDC ▪ 100-240VAC, 50/60Hz ▪ Integrated battery pack accepts NB-G1U and NP-1B type batteries ▪ Built-in battery recharge capability ▪ Battery save mode ▪ 3-H rackmountable ▪ Underscan ▪ Color off switches ▪ Headphone jack ▪ Built-in tilt-up stand **\$852.00**



BM-H1900SU 19" Color Video Monitor

▪ 750 lines horizontal resolution ▪ SMPTE-C phosphors ▪ Beam current feedback for high stability ▪ Selectable color temperatures (6500K, 9300K) ▪ Audio with front panel speaker ▪ Underscan, pulse-cross, blue check, etc. ▪ On-screen menu driven/memory of settings ▪ Composite, Y/C, component and RGB ▪ NTSC 3.58, PAL and NTSC 4.43 ▪ Universal power (100-240VAC, 50/60Hz) ▪ Wireless remote control option **\$2130.00**
RM-C550W Wireless remote control **170.00**



BM-H1300SU 13" Color Video Monitor

▪ 750 lines horizontal resolution ▪ Built-in CPU and CRT with SMPTE-C phosphors ▪ 0.28mm dot pitch ▪ Multifformat compatibility ▪ Beam current feedback system for long term stability ▪ 4:3 to 16:9 switchable ▪ On-screen menu operation ▪ NTSC/NTSC 4.43/PAL multisystem compatibility ▪ Universal power 100-240VAC, 50/60Hz ▪ Selectable color temperatures 9300K or 6500K ▪ Wireless remote control capability with ID system **\$1140.00**
RM-C550W Wireless remote control **170.00**

TM-2796SU 27" Color Monitor/Receiver

▪ Comb filter for improved picture quality ▪ Full-square CRT for high detail ▪ PLL synthesizer tuner with 180 channels ▪ Closed caption ▪ Audio/video input terminals ▪ S-Video input ▪ Picture-in-picture ▪ Wireless remote control. **\$695.00**

TM-2084SU 20" Color Monitor/Receiver

▪ Horizontal resolution of more than 450 lines ▪ 20" full square, super dark tinted CRT ▪ S-Video input ▪ A/V input with bridged output possible ▪ Closed caption decoder with text mode ▪ Acoustic reflecting speaker ▪ MTS stereo ▪ Matrix surround sound ▪ 3-pronged AC power cord ▪ 180-channel tuner **\$580.00**

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





LX-D500U True SVGA LCD Projector

▪ Ideal presentation tool, capable of connecting to virtually any laptop or desktop computer ▪ Suitable for screens measuring between 23"-300" diagonally at distances between 3.3'-33' ▪ Offers VGA, SVGA and XGA compatibility ▪ Accepts NTSC/PAL/SECAM via either composite or Y/C (S-Video) connectors ▪ Three 1.3" TFT panels with 800 x 600 pixels ▪ 450 ANSI lumens ▪ 16.7 million colors ▪ Ultra high uniformity of picture brightness across the screen (85%) ▪ Special effects include: freeze, strobe, preview and zoom ▪ Transitions include: slide wipes, corner wipes and window wipes ▪ 2 computer inputs allow you to connect and switch between a Windows® and Macintosh® computer ▪ Screen menus in 7 languages (English/French/German/Italian/Spanish/Portuguese/Japanese) ▪ Projected image can be flipped upside down (to allow mounting on ceiling) or from left to right (to allow rear projection) ▪ Color temperature control ▪ Lamp usage monitor ▪ 150W metal-halide lamp with 2000 hour life ▪ Lamp "sleep" function ▪ Automatic voltage detection ▪ Stereo speakers are built-in (2W + 2W) ▪ 100-120VAC, 200-240VAC, 50/60Hz ▪ 240W power consumption ▪ Lightweight and portable (14.3 lbs.) ▪ Wireless mouse control \$8950.00
CB-D500 Hard carrying case 399.00

LX-D300U LCD Projector

▪ Powerful and compact video/data projector ▪ Lightweight and portable (19.9 lbs.), with a miniaturized optical system, built-in handle and streamlined design ▪ Brightness 3X stronger than a slide projector ▪ 200:1 contrast ratio ▪ 250 ANSI lumens with 70% uniformity ▪ Digital 3-D keystone correction by Digital Pixel Compression (DPC), ±30° ▪ Illuminated remote control offers pushbutton control of features such as keystone, input select, zoom, focus, volume and more ▪ Rear screen projection capability ▪ Built-in line doubler ▪ 2,000 hour DC powered metal-halide lamp ▪ Automatic "sleep" function on lamp ▪ Multilanguage on-screen menu ▪ Built-in speaker ▪ VGA, S-VHS, Macintosh, Y/C, S-Video and HDTV inputs ▪ NTSC/PAL/SECAM compatible \$4995.00
SF-L060FG 60" polarized fixed projection screen 2050.00
SF-L060SG 60" polarized roll-up projection screen 1885.00
EF-S060FG Stand for SF-L060FG 1135.00
GL-ML314TG 1.4X tele conversion lens 1080.00
EF-S060SG Stand for SF-L060SG 570.00
PK-L3025G 2000 hour replacement lamp 500.00
CB-D300 Hard carrying case 399.00
IT-60 60" diagonal screen with 2.8X gain (with stand/case) 378.00
SB-D300 Soft carrying case 200.00

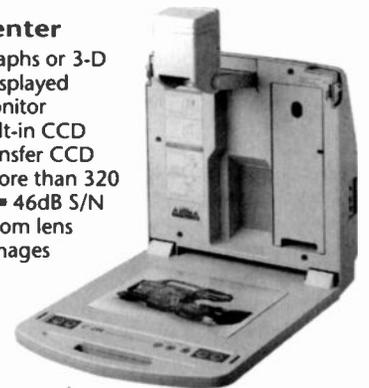
AV-P700U Video Presenter

▪ High resolution color camera with over 450 lines horizontal resolution (Y signal center) ▪ Easy operation controls ▪ 46dB S/N ratio ▪ 11X power zoom with auto-focus camera ▪ Dual control panels ▪ 1/2" interline transfer CCD ▪ 393mm x 295mm shooting area ▪ Auto focus ▪ 3-mode selectable auto white balance (full auto/1-push set/manual) ▪ Large back light with adjustable side lamps ▪ Genlock capability to meet teleconferencing requirements ▪ Built-in 35mm slide and book holders ▪ Remote control from PC via RS-232C interface ▪ Negative/positive image function ▪ Monochrome/color selector ▪ Mixing microphone jack with volume control and stereo audio output ▪ Dual switchable A/V inputs ▪ Can be used alone or synchronized with other video equipment for special effects ▪ Folds for storage ▪ Easy to set-up ▪ 100-120VAC, 50/60Hz ▪ 28W power consumption ▪ 17.9 lbs. \$3500.00



AV-P20U Video Presenter

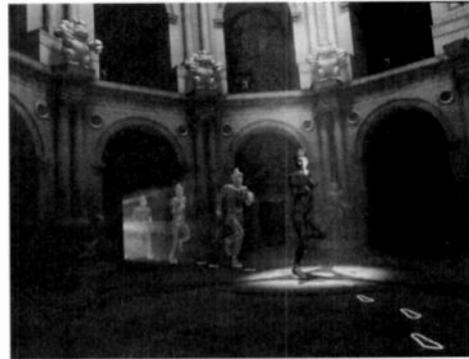
▪ Allows documents, photographs or 3-D objects to be captured and displayed simultaneously on a video monitor ▪ Compact and portable ▪ Built-in CCD color camera ▪ 1/2" interline transfer CCD ▪ 250,000 effective pixels ▪ More than 320 TV lines horizontal resolution ▪ 46dB S/N ▪ Automatic 6:1 motorized zoom lens focus ▪ Auto iris ▪ Transmits images to 8m using an optional infrared transmitter and an infrared receiver ▪ f/1.8 lens ▪ 296 x 222mm (11 1/8" x 8 3/4") shooting area ▪ Internal synchronizing system ▪ 1/60, 1/100 second automatic electronic shutter speed ▪ Full auto/manual set white balance ▪ Output signal: NTSC compatible: 1.0V p-p, 75 ohm composite/S-Video ▪ 120VAC, 50/60Hz ▪ 6W maximum power consumption ▪ 19 1/8"H x 14 3/8"W x 20 1/4"D ▪ 9.7 lbs. \$1995.00



GV-PT2 PC/Video Printer

▪ Multimedia printer makes high quality photos from computer and video sources ▪ Built-in video capture capability and field/frame memory ▪ High quality dye sublimation printing that makes 4 1/2" x 3 3/4" paper prints with photo-realistic quality ▪ Print area 4 1/2" x 3 3/4" ▪ Unique capability of performing a video capture and then transferring the images to a computer ▪ 16.77 million colors ▪ JIIP (Joint Level Interface Protocol) and bidirectional Centronics interfaces (requires parallel printer cable) ▪ Ready-made titles and trimming templates ▪ Windows driver software included . . . \$899.00
PV-50SFAUP 50-sheet paper and ribbon pack 40.00
PV-25SFAUP 25-sheet sticker paper and ribbon pack 40.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



3D Studio MAX™ Animation System v. 1.2

- 32-bit Windows NT® application for 3D modeling, rendering and animation
- Full workstation-class performance and functionality for the desktop
- Architecture features: true Windows NT design, object oriented, everything is animatable/editable/extensible
- Interaction capabilities: unified user environment; fast, interactive, texture-shaded viewports; modeless; adaptive degradation; view options; undo and redo; film quality rotoscoping; time
- Rendering qualities: film-quality rendering; multithreading; analytical antialiasing; volumetric lighting; atmospheres; environmental shaders; various effects/options; network rendering
- Modeling features: geometric classes; parametric 3D/2D primitives; loft and boolean objects; space warps; particle systems; object modifiers; displacement; polygonal/spline/patch modeling; transforms; coordinate systems; viewport alignment or custom construction grids; selection methods
- Animation functions: TrackView (for modeless time/channel control); controllers; expressions; inverse kinematics
- Light types include ambient, omni, free spot, target spot and directional
- Spotlights with animated control of color, multiplier, cone shape, penumbra size, distance attenuation, target, shadow-casting parameters and projected material maps
- Targeted and free cameras
- Features materials editor, various material possibilities, bitmap options and mapping
- Post production features: video post and various effects/options/channels/formats

System Requirements:

- Pentium® or Pentium™ Pro at 90MHz
- Windows NT Workstation 3.51 or higher
- 32M bytes of RAM
- 100M bytes HD Swap Space
- Graphics card supporting 800 x 600 x 256 colors under Windows NT
- CD-ROM drive \$3495.00

3D Studio VIZ™

- Based on the open, object-oriented 3D Studio technology
- Fast, flexible production renderer
- Photographic background imagery
- Automated perspective matching
- Integrated keyframe animation
- Subtle visual effects
- Powerful materials editor
- Map scaler
- Lighting tools
- Real time interactive renderer and graphical interface
- Modeless operation for ease-of-use and speed
- Native AutoCAD file support
- .DWG and .DXF™ import/export capabilities
- Interactive sectioning tool
- Consistent, parameterized objects
- Editable modifier stacks
- Instance and reference objects
- 3D object snaps
- 2D editing commands
- Non-destructive booleans and lofts
- Customizable undo/redo
- Drag-and-drop system
- Special plug-ins for architects and interior designers
- Sunlight system

System Requirements:

- Pentium or Pentium Pro at 90MHz
- Windows NT Workstation 3.51 or higher
- 32M bytes of RAM
- 100M bytes HD Swap Space
- Graphics card supporting 800 x 600 x 256 colors under Windows NT
- CD-ROM drive \$1995.00

Character Studio Character Animation Software

- Provides the ability to create and animate lifelike 3D characters on a PC platform
- Designed to work with 3D Studio MAX
- Integrates 2 breakthrough components: BIPED® and Physique™
- BIPED
- A footstep-driven 3D keyframe animation
- Physically based interpolation
- Motion mapping
- Foot-to-ground collision response
- Motion splicing
- Advanced inverse kinematics
- Physique
- Detailed muscle deformations
- Precise skin behavior
- Realistic tendon behavior
- Vertex level control
- Multipedal character development

Character Studio \$995.00

Radioray™ Lighting Effects Software

- Plug-in application for 3D Studio MAX and 3D Studio VIZ
- Increases the realism of renderings by calculating the effect of light in a scene more accurately than the built-in 3D Studio platform renderer
- Uses radiosity for simulating actual lighting effects
- Uses raytracing for creating accurate reflections and refractions
- Can combine radiosity, non-radiosity and 3D Studio lighting effects in a single rendering pass
- Accepts industry standard goniometric data
- Outputs quantified illumination results for surfaces to better inform design processes
- Includes the Kinetix Sunlight System plug-in
- Enables you to check the effects of changes to shapes, materials, or lighting fixtures
- Shortens design cycle time and reduces the need for outside consultants

System Requirements:

- Windows NT 3.51, 4.0 or Windows 95
- 3D Studio MAX 1.2 or 3D Studio VIZ 1.x (will not work with 3D Studio MAX Apprentice)
- Pentium 90 or better (Pentium Pro recommended)
- 64M bytes RAM (128M bytes recommended) \$495.00

Hyperwire™ Internet Software

- Visual, object-oriented programming tool
- Designed for corporate intranet and interactive graphics content creators
- Builds 2D and 3D interactive Web content, Java™ applets, and connected CD-ROM titles
- WYSIWYG interface
- Build VRML worlds by integrating 3D worlds created with 3D Studio MAX and other VRML-compliant tools with 2D controls, images and animation
- Connect to AutoCAD® engineering drawings
- Integrate different image types—text and audio—as well as animate images for dynamic, interactive content
- Interactive programming and debugging

System Requirements:

- Pentium operating at 90MHz or better
- Microsoft Windows 95 with 32M bytes of RAM
- Windows NT 3.51 or 4.x with 40M bytes of RAM
- Netscape Navigator™ 3.x or later
- Microsoft Internet Explorer™ 3.x or later
- 110M bytes disk space for installation
- Graphics card supporting 800 x 600 x 256 colors
- Windows compliant pointing device
- CD-ROM drive
- Sound card and speakers recommended
- Third party plug-in support for Microsoft J++ and Symantec Cafe Java Compilers \$249.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

STUDIO40-ND Microfont™ High Resolution Character Generator

- Y/C† and NTSC genlocking keyer
 - Built-in dual function fader
 - Switcher enables user to select between 2 sources
 - 7 proportionally spaced fonts
 - Foreign character set
 - Line-by-line, word-by-word or character-by-character selection of 32 colors with black or white edges
 - 32 color backgrounds, stripes and underlines
 - Preview mixer
 - 9-speed roll and crawl functions
 - Automated program memory control
 - Full bandwidth signal processing for Y/C inputs and outputs
 - Industry-standard Y/C DIN connectors
 - Complete unit with 64-page nonvolatile memory
 - Operating instructions printed on desktop case
- †Compatible with S-VHS and Hi8 equipment



K40-ND Microfont Character Generator

- 64-page internal memory
- 8 fonts: 20- and 32-line Helvetica
- 256 characters
- Complete foreign language set in large size
- Double-sized font expander key
- Y/C and NTSC or PAL operation (specify)
- Internal sync generator
- Separate black and white preview output with status line
- Striping on each display line, plus 1 at top of page
- 32-color palette
- Roll, crawl and title modes
- Italics by line
- Computer interface
- Nonvolatile memory
- All control functions are generated by the keyboard

K20-ND High Resolution 8-Color Titler

- Built-in NTSC/Y/C genlocking keyer
- 64 pages of nonvolatile memory
- Line-by-line character color and transparent or solid color backgrounds
- Unit includes 4-speed roll and memory-expanding title functions
- 2 upper-case fonts and 1 lower-case font
- Easy operating instructions printed on compact desktop case

RS16x16 High Band Routing Switcher

- 16 audio/video inputs to 16 audio/video outputs
 - Breakaway stereo audio
 - Up to 200MHz
 - +16dBm audio headroom
 - Battery backed
 - Stores/recalls 16 patterns
 - Manual and RS-232 control
 - Vertical interval
- | | | |
|--|-------|-----------|
| RS16x16HB RGB With balanced stereo audio | ..... | \$9995.00 |
| RS16x16HB RGB/VO Video only | ..... | 7995.00 |
| RS16x16HB With balanced stereo audio | ..... | 6995.00 |
| RS16x16HB VO Video only | ..... | 5795.00 |
| Redundant power supply | ..... | 190.00 |

RS16x16/16x8 3-Channel Matrix Routing Switchers

- 16 video inputs to 16 video outputs (16 x 16 switcher); 16 video inputs to 8 video outputs (16 x 8 switcher)
 - Breakaway stereo audio
 - Battery backed
 - Flat to 10MHz
 - Store/recall up to 16 patterns
 - Manual and RS-232 control manual/automatic timed surveillance
 - Accepts and routes almost any 1V video input
- | | | |
|---|-------|-----------|
| RS16x16RGB B Balanced audio | ..... | \$7395.00 |
| RS16x16 Y/C B Y/C, balanced stereo audio | ..... | 6995.00 |
| RS16x16RGB Unbalanced stereo audio | ..... | 6795.00 |
| RS16x16 Y/C Y/C, stereo unbalanced audio | ..... | 5995.00 |
| RS16x16RGB V Video only | ..... | 5995.00 |
| RS16x16BAL Composite video, bal. stereo audio | ..... | 4295.00 |
| RS16x16 NTSC/PAL video, stereo audio | ..... | 3395.00 |
| RS16x16 Y/C V Y/C, video only | ..... | 3395.00 |
| RS16x16VO NTSC/PAL video only | ..... | 2595.00 |
| RS16x8BAL NTSC/PAL video, bal. stereo audio | ..... | 3395.00 |
| RS16x8 NTSC/PAL video, stereo audio | ..... | 2695.00 |
| RS16x8VO NTSC/PAL video only | ..... | 2095.00 |

RS8x8 3-Channel Matrix Routing Switchers

- Composite video and balanced stereo audio
 - 8 video inputs to 8 video outputs
 - Breakaway stereo audio
 - Battery backed
 - Flat to 10MHz
 - Stores/recalls up to 8 patterns
 - Manual and RS-232 control
 - Y/C version available for S-VHS, Hi8
 - Accepts and routes almost any 1V video input
- | | | |
|--|-------|-----------|
| RS8x8BAL NTSC/PAL video, balanced stereo audio | ..... | \$1995.00 |
| RS8x8 Y/CBAL Y/C, balanced stereo audio | ..... | 1995.00 |
| RS8x8 NTSC/PAL video, stereo audio | ..... | 1495.00 |
| RS8x8 Y/CBAL V Y/C, video only | ..... | 1495.00 |
| RS8x8VO NTSC/PAL video only | ..... | 1095.00 |

RS4x4 3-Channel Matrix Routing Switcher

- Accepts and routes, on the vertical interval, most 1V NTSC/PAL or Y/C video inputs
 - Accepts and routes mono or stereo, unbalanced audio up to 2V p-p and balanced audio from 0 to +4dBm
 - Video and audio inputs can be routed independently
 - Front panel pushbuttons with LEDs that indicate current routed crosspoints
 - RS-232 interface
 - Battery backed memory stores up to 4 preset patterns
 - Internal timer allows timed sequence of patterns
 - Flat to 10MHz
- | | | |
|--|-------|----------|
| RS4x4 Y/CBAL Y/C, balanced stereo audio | ..... | \$895.00 |
| RS4x4BAL NTSC/PAL video, balanced stereo audio | ..... | 795.00 |
| RS4x4 Y/C Y/C, unbalanced stereo audio | ..... | 795.00 |
| RS4x4 NTSC/PAL video, stereo audio | ..... | 695.00 |
| RS4x4 Y/C V Y/C, video only | ..... | 695.00 |
| RS4x4VO NTSC/PAL video only version | ..... | 595.00 |

RS12x2 3-Channel Matrix Routing Switcher

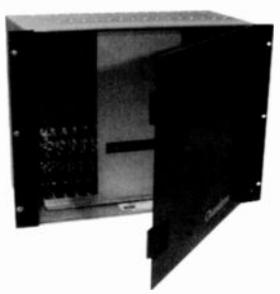
- 12 video inputs to 2 video outputs
 - Breakaway stereo audio
 - Flat to 10MHz
 - Manual and RS-232 control
 - Ideal for studio feed control, switcher input control and manual/automatic timed surveillance
 - Accepts and routes almost any 1V video input
- | | | |
|-------------------------------------|-------|----------|
| RS12x2 NTSC/PAL video, stereo audio | ..... | \$895.00 |
| RS12x2VO NTSC/PAL video only | ..... | 695.00 |

RS16/8 Remote Control Units

- Full-matrix or single output control
 - RS-232 control
 - Cascadable
 - Breakaway stereo audio
 - Housed in 1RU chassis
- | | | |
|-----------------|-------|----------|
| RS16x16/RS 16x1 | ..... | \$650.00 |
| RS8x8/RS8x1 | ..... | 550.00 |
| Infrared Remote | ..... | 390.00 |

Chameleon 64™ Modular Audio/Video Routing Switchers

- Expandable up to a full 64 x 64 matrix in a single 8U rack frame
 - Each card provides the desired number of inputs (up to 64) and 8 outputs and has a unique address and CPU
 - Stereo/mono, balanced/unbalanced audio-follows-video, or audio may be routed independently
 - NTSC/PAL video
 - Crosspoint matrix controlled by a compact RS-232 protocol computer, optional front panel controller, and/or optional remote controller
- Rackmount Frame Required for all card configurations. Includes power supply
- | | | |
|---|-------|-----------|
| Keypad Remote Controller Optional handheld keypad operates via RS-232 | ..... | \$1000.00 |
| Front Panel Controller Optional factory-installed keypad | ..... | 600.00 |
|  | ..... | 500.00 |
- Call for specific cards and configurations and options.



ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



Kodak Digital Science™ DCS 460/EOS•DCS 1 Professional Cameras



DCS 460



EOS•DCS 1

- 6 million pixel resolution ▪ Fully portable ▪ 18M byte image file
- Traditional SLR operation ▪ DCS 460 uses Nikon N90S camera body, accepts all F-mount lenses ▪ EOS•DCS 1 uses Canon EOS-1n body and accepts EF mount lenses ▪ Monochrome and extended infrared versions available ▪ Telephone quality voice recording via internal microphone ▪ Supports hot shoe flash or other external flash
- SCSI interface with host ▪ ISO equivalent rating of 80
- 12 bits/color ▪ Image storage on removable card or RAM card
- 18.4 x 27.6mm imager magnifies focal length only 1.3X

836 6718	DCS 460	\$27,995.00
829 1213	EOS•DCS 1C (color camera)	27,995.00
892 0201	Removable media and lens	850.00
865 6019	Removable media	600.00

- 3 selectable compression levels: 7 pictures/M byte (lossless), 11 pictures/M byte (lossey) or 22 pictures/M byte (lossey) ▪ Auto focusing with multibeam or single-beam active infrared
 - Real-image optical viewfinder ▪ Built-in flash with 3 modes
 - Automatic exposure with ± 1 stop exposure compensation to override ▪ ISO equivalent: 84 ▪ Aperture range: f/2.5 to f/24 ▪ Shutter speed $\frac{1}{6}$ to $\frac{1}{6000}$ second ▪ 10-second self-timer ▪ Standard threaded tripod mount ▪ 4 "AA" batteries (lithium included) ▪ RS-232 serial connector ▪ IBM PC or compatible computer with 80386 or higher CPU and 6M bytes available RAM, Windows 3.1 or later and MS-DOS 3.3 or later; Apple Macintosh II computer or higher with 6M bytes available RAM, operating software 7.0.1 or later
- 855 1632 \$899.00

Kodak Digital Science DC25 Digital Camera

- Captures color pictures for viewing and editing ▪ Can be downloaded to show pictures on-screen ▪ Focus-free lens 0.5m to infinity ▪ $\frac{1}{6}$ to $\frac{1}{6000}$ per second shutter speed ▪ Built-in automatic sensor flash ▪ Two 3V lithium batteries
- 493 x 373 image resolution ▪ 24-bit pictures ▪ Built-in LCD color display ▪ 1.6" color viewfinder ▪ On-board memory
- ASA/ISO rating equivalent: 800/1600 ▪ 47mm lens focal length
- LED panel indicators: power ON; battery level; processing image; memory indicator ▪ Automatic exposure ▪ 10-second self-timer
- Serial cable interface ▪ System requirements: v3.1 or later (Windows 95 ready), 486/33MHz microprocessor (Windows); 7.1 or higher, 1 of either Power PC, Centris, Quadra, Performa or system with 68020 or higher processor (Macintosh); 6M bytes+ RAM ▪ 30M bytes hard disk space; CD-ROM drive and available serial port; color display (800 x 600 24-bit recommended)



Package Contents: ▪ DC25 digital camera ▪ User's guide ▪ Software Quick Start Guide ▪ Two 3V lithium batteries ▪ 2 serial cables (1 for Macintosh, 1 for PC) ▪ CD containing PhotoEnhancer, TWAIN acquire module for Windows, Plug-in module compatible with Adobe Photoshop for Macintosh and Kai's Power Goo ▪ Floppies containing Kodak Picture Easy Software (1 for Macintosh and 1 for PC) ▪ Carry strap ▪ Warranty registration card ▪ Extended warranty offer

▪ 106-6703 Kodak Memory Card (2M bytes for DC25) ▪ 147-9906 Picture Card with Adaptor (2M bytes for DC25) \$499.00

Kodak Digital Science DC20 Camera

- Connects to a computer ▪ Instant capture and downloading ▪ 493 x 373 pixel resolution (high) ▪ 24-bit, millions of colors ▪ 1M byte internal storage ▪ Storage capacity of up to 16 images ▪ Focus-free lens ▪ 47mm focal length ▪ 0.5m to infinity focus distance ▪ ISO 800/1600 sensitivity ▪ Automatic exposure ▪ LED panel indicators
- $\frac{1}{6}$ to $\frac{1}{6000}$ second shutter speed ▪ Aperture range of f/4 to f/11
- Serial cable interface ▪ Windows system requirements: MS-DOS version 3.1 or later (Windows 95 ready), personal computer with 386, 33MHz minimum microprocessor, 6M bytes of extended memory, CD-ROM drive and available serial port ▪ Macintosh system requirements: 7.1 or later; 8M bytes more of RAM; one of the either PowerPC, Centris, Quadris, Performa or other system with a 68020 processor; CD-ROM drive and available serial port

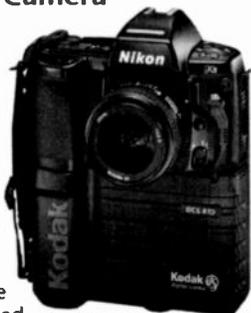
Package Contents: ▪ Kodak Digital Science DC20 camera ▪ 2 cables (1 for Macintosh, 1 for PC) ▪ 3V lithium battery ▪ DC20 camera user's guide ▪ PhotoEnhancer Getting Started Guide ▪ MetaTools Quick Reference Guide ▪ Quick Start Guide and registration card ▪ CD in sleeve ▪ PhotoEnhancer Special Fun Edition ▪ Slides and Sound from InMedia Presentations ▪ TWAIN acquire module for Windows ▪ Adobe PhotoShop-compatible plug-in module for Macintosh ▪ Kai's Power Goo

DC20 Flash Kit \$299.00

DC20 Flash Kit 49.95

DCS 410 Professional Digital Camera

- Capture high resolution digital images
- View, store, analyze, manipulate and produce prepress materials ▪ Indicator shows battery charge level and image storage remaining ▪ 1.5K x 1K resolution (1.5 mega pixels) ▪ Color (12 bits per RGB channel) ▪ Nikon N90S body accepts all F-mount lenses ▪ Built-in microphone ▪ Equivalent ISO to 100
- Removable hard drive or RAM card (PCMCIA-ATA Type III) ▪ Up to 500 images per battery charge, 2-hour charge time ▪ Lens and image storage not included



860 8184	DCS 410 (color camera)	\$7,995.00
	Lens/Media	850.00
	Lens	550.00

Kodak Digital Science DC50 Zoom Camera

- Uses PCMCIA-ATA cards for easy storage, transfer and download of pictures to a computer
- Square-pixel sensor ▪ 3X zoom lens (37mm to 111mm) with close-up capability ▪ Focus as close as 19" ▪ Applications include overheads, web pages, publications, presentations, etc.
- Outputs color images with an ink jet printer ▪ PhotoEnhancer software included to crop, color correct and enhance pictures
- Cable and software provided for Macintosh and Windows™ (works with Windows 95™)
- Resolution: 756 x 504 pixels ▪ Color: 24-bit, millions of colors ▪ Storage: 1M byte internal nonvolatile flash EPROM or PCMCIA-ATA removable storage card: Type I and II (fully compatible)



ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





**LV 5100D Component Digital
Waveform Monitor**

- 4:2:2 ▪ Operates in 525/60 and 625/50 systems ▪ Handles 2 serial component digital inputs, and a 3-channel analog component input for use in mixed digital/analog component facilities ▪ Error Detection and Handling (EDH) system based on SMPTE RP-165
- Provides a full range of waveform monitor functions including overlay, parade and timing displays, component vector and line-select operations ▪ Picture display of G or Y signals ▪ X-Y stereo monitoring ▪ Analog outputs in GBR or Y/Pb/Pr form are decoded from serial inputs ▪ 2 serial/passive inputs ▪ Active output of either feed for retransmission purposes ▪ Cursors enable time and level measurements ▪ Preset/recall operations store up to 10 set-ups
- Fits a standard half-rack adaptor ▪ Universal power supply accepts 90-250VAC, 48-440Hz

LV 5100D \$6495.00

**5870/5872A 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 1-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 ▪ Integrates waveform monitor with vectorscope in 1 body ▪ 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 (only available for horizontal time limit display) ▪ Built-in SCH phase numerical measuring function for video editing ▪ Full line selector function is installed for reading the field and line number on the CRT ▪ 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 \$5595.00
5872A NTSC without SCH 4395.00



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 \$1595.00

**5860C Waveform
Monitor**

- Economical half-rack waveform monitor
- Internal graticule and a 7kV (16kV "H" model) accelerating potential for bright, easy to read displays ▪ Total RGB and YRGB (optional) capability is available and horizontal sweep speeds of 2H(2 lines), 1µ/div (expanded 2 lines), 2V (2 fields) and 2V Mag (expanded 2 fields) are standard ▪ Offers all these features in addition to allowing the vertical interval test and reference signals to be displayed by a front panel line selector ▪ Blanking output to blank the companion vectorscope during the active portion of the video signal ▪ Can be mounted side by side with the 5850C Vectorscope ▪ Available in a PAL/SECAM version

5860C NTSC \$1845.00



5836A Surround-Sound Monitor

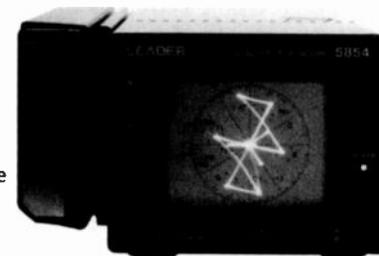
- Surround-sound imaging Lissajous phase/amplitude ▪ Digital inputs for AES/EBU formats ▪ Left, center, right surround or left, center, right, left-surround, right-surround ▪ Level readouts in Lissajous mode ▪ Balanced and unbalanced analog inputs ▪ 5 channels ▪ Automatic spot killer ▪ Remote control ▪ Fits standard half-rack adaptor

5836A \$5995.00

**5854 EFP/ENG
Vectorscope**

- Same size as the 5864A Waveform Monitor and the LCG-413 Pattern Generator, so it can share various attachments
- Displays the chrominance component (amplitude and phase) on the CRT
- 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 ▪ 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

5854 \$1695.00



5212 NTSC/PAL Vectorscope

- 3-channel operation plus external reference ▪ X-Y display for stereo monitoring ▪ Auto burst zeroing for selected reference ▪ CRT readout of DG and DP measurements ▪ Panel setting memory, recall and remote control ▪ Menu selections for less frequent operations
- Phase accuracy within 1° ▪ DC power operation

5212 \$3845.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





190 Series UHF Wireless Systems

- Brings the exclusive UNICHANNEL® narrow band design to UHF wireless microphone systems
- Responds to a need created by congestion in the VHF band
- System is designed to utilize the additional spectrum available in the UHF band
- The additional spectrum in the UHF band permits more systems to be operated than in the VHF spectrum
- Dual band companding for distortion-free CD-quality audio
- Most advanced helical resonator design available
- Narrow band design of UR190 receiver further reduces chance of interference
- UR190 receiver combines exceptional RF performance with superior audio quality in a compact design that fits almost anywhere
- Available with UM190 lavalier style transmitter or UH190 plug-on style transmitter



UH190

UR190/UM190 With lavalier style transmitter \$2300.00
 UR190/UH190 With plug-on style transmitter 2300.00

DCS™ Digital Code Systems

- Unique technological advancement offers a solution to interference problems
- Eliminates unwanted pops and cracks out of the system
- 6561 different codes available
- Transmitters are in a machined aluminum housing
- 4 receivers can be rackmounted in a single rack space
- Available with standard or diversity receiver
- Lavalier systems come with lapel mic
- Ideally suited to church and school applications



H175DC

H175DC/DR175 Diversity receiver/plug-on transmitter . . . \$1470.00
 M175DC/DR175 Lavalier diversity 1370.00
 H175DC/R175 Standard receiver/plug-on transmitter . . . 1070.00
 M175DC/R175 Lavalier standard 970.00

175 Series VHF Transmitters and Receivers

- Combines the ruggedness of machined aluminum with advanced surface mount technology to provide an outstanding value for corporate and industrial video applications
- The CR175 receiver can be operated from an internal 9V battery, external 12VDC power or from 110VAC power via the supplied adaptor



M175/M175LS

- Transmitters are available in 2 styles, the M175 and M175LS, with the M175LS offering a mute switch
- 175 Series transmitters and receivers can be used with any Lectrosonics 185 or 187 transmitters/receivers
- A stationary and portable system all in one

H175DC/CR175 Camera mount receiver with plug-on transmitter \$1260.00
 M175LS/CR175 Camera mount receiver with lavalier with mute 1140.00
 M175/CR175 Camera mount receiver with lavalier transmitter 1120.00

UMC195 UHF 4-Channel Rackmount

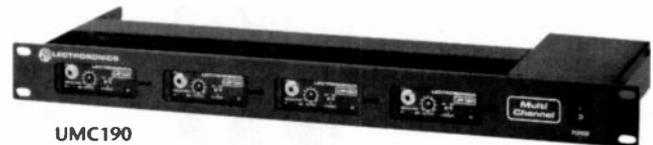
- Allows mounting 4 UCR195D or UCR195 receivers into a single rack space
- Includes power and radio signal distribution module with front end filtering to reduce interference and simplify installation
- Rugged machined aluminum construction
- 20MHz passband
- Does not include wireless systems

UMC195D For four UCR195D receivers, diversity . . . \$1250.00
 UMC195 For four UCR195 receivers, nondiversity 815.00
 RMP-195 Rackmount only without distribution . . . 145.00

VHF 4-Channel Rackmount

- Allows mounting 4 DR175 or R175 receivers into a single rack space
- Includes power and radio signal distribution module with front end filtering to reduce interference and simplify installation
- Rugged machined aluminum construction
- 4MHz passband
- Does not include wireless systems

SDM4D For 4 DR175 receivers, diversity \$1085.00
 RDM4 For 4 R175 receivers, nondiversity 815.00
 RMP195 Rackmount only without distribution . . . 145.00



UMC190

UHF 4-Channel Rackmount

- Allows mounting 4 UCR190 receivers into a single rack space
- Includes power and radio signal distribution module with front end filtering to reduce interference and simplify installation
- Rugged machined aluminum construction
- 20MHz passband
- Does not include wireless systems

UMC190 For 4 UCR195/UR195 receivers, nondiversity \$815.00
 RMP190 Rackmount only without distribution . . . 145.00

Yagi UHF Antenna

- Rugged machined aluminum
- For increased range with UHF wireless microphone systems
- 3-element design
- Directional pickup pattern
- BNC connector included
- U-bolt mount for attachment to a pole
- Use with RG8 or RG8 micro cable

AY3U-550 Yagi antenna, center frequency at 550MHz \$78.50
 AY3U-650 Yagi antenna, center frequency at 650MHz 78.50

Ground Plane UHF Antenna

- Compact spider style design broken down for easy transport
- Machined aluminum with "rubber duck" style central element
- Omnidirectional pickup
- BNC connector
- Mounting hole in central bracket

AGPU Ground plane UHF antenna, 470-800MHz \$32.50

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





Long Ranger III Portable P.A. Systems

- High output portable P.A. system
- Built-in wireless microphone, convenient second wireless channel, rechargeable power supply and high audio output set this system apart
- Several different styles of transmitters are available; choose the one best-suited to your application
- Available with lapel microphone or headset

Long Ranger III Systems

- With T187-87 Pro Series handheld transmitter\$2320.00
- With H187 Pro Series plug-on transmitter1620.00
- With M187 Pro Series transmitter1595.00
- With M175LS transmitter with mic mute switch1395.00
- With M175 aluminum transmitter\$1375.00



Second Channel Systems

- With T187-87 Pro Series handheld transmitter\$1620.00
- With H187 Pro Series plug-on transmitter920.00
- With M187 Pro Series transmitter895.00
- With M175LS transmitter with mic mute switch\$695.00
- With M175 aluminum transmitter675.00



Note: Prices shown are with lapel mic; add \$40.00 for headset mic.



FM-AV4 Portable Wireless Sound Systems

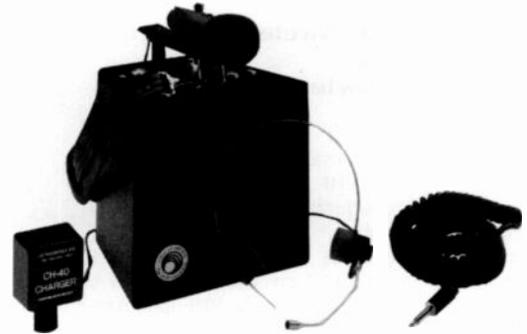
- 9WRMS system with built-in speakers
- Makes an ideal meeting room amplifier for audiences up to 350
- In larger rooms, a balanced XLR output permits connection into the house P.A. system for use as a wireless microphone system
- Available with a variety of different transmitters, a lavalier microphone, built-in rechargeable batteries and charger
- All systems are supplied with a padded carrying case with shoulder strap

FM-AV4 Systems

- With T187-87 Pro Series handheld with SM87\$2275.00
- With H187 Pro Series plug-on transmitter1575.00
- With M187 Pro Series aluminum transmitter1550.00
- With M175LS transmitter with mic mute switch1350.00
- With M175 aluminum transmitter1330.00

Accessories

- SS-5 Tripod stand\$130.00
- CC-975 System carrying case50.00



VP18R Portable P.A. System

- Superior reliability
- For closely gathered groups of up to 350
- Natural tone quality and wide coverage
- Full-range speaker element provides a wide frequency response for a full, natural sound
- All controls, indicators and connecting jacks are located on the top panel for convenience
- Runs off rechargeable batteries (included)

- VP18R With headset mic\$556.00
- VP18R With handheld mic485.00



Maxi Mouse Portable Rechargeable Speaker/Amplifier

- High output speaker/amplifier
- Designed with a special signal processor, it puts out as much sound and plays as loud as amplifiers with much higher power ratings
- 2:1 dynamic compressor in the main amplifier boosts the average SPL output at high levels, greatly increasing the perceived sound level
- Pre-emphasis before the master volume control and complimentary de-emphasis after the master control gives a "warm" tube sound to the "overdriven" signals
- 2 independent inputs, each with its own volume and tone control, allow using 2 mics or 2 instruments, or mixing 1 mic and 1 instrument
- A line output allows running an external speaker or patching the Maxi Mouse into another amplifier or mixing console

Maxi Mouse\$495.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





EVENT CONTROLLERS

Common Features

- 3-function, standard event format ■ Each event capable of performing a VCR function, video/audio and switch delay (preroll)
- Random day selection and event order entry ■ Multiple, simultaneous event occurrences ■ Nonvolatile, battery protected clock, setup and event data ■ Automatic diagnostics: self-test of all memories at power-up, on-screen error type and location reporting, power cycle counter ■ Bright, easy-to-read LCDs ■ Direct access to all set-up and control features on the front panel ■ Easy to understand "menu tree" to guide the user through the system control functions ■ Standard RS-232 communication port for direct PC connection or remote modem operation ■ DOS and Windows® Event manager software applications included: Event Manager (DOS version) and WinEM-LT are powerful tools for editing, printing, storage and retrieval of event listings right from your PC (event schedules can be uploaded, downloaded locally or transferred from a remote location via modem) ■ Individual or group machine control ■ 4-function machine control: play, rewind, record stop ■ Optional VCR interfaces available for most industrial and broadcast VCRs

TS-16 Event Controller/Switcher

Includes common features plus: ■ Touch-screen front panel user-interface ■ 1000 programmable event database ■ Control for 16 VCRs ■ Internal 16 x 4 true matrix video and stereo audio router ■ Vertical interval switching ■ Video detection with selectable fallback ■ Printer output for event listing and logging \$5995.00



PRO-16 Event Controller/Switcher

Includes common features plus: ■ 80-character back lit display ■ 1000 programmable event database ■ Control for 16 VCRs ■ Internal 16 x 4 true matrix video and stereo audio router ■ Vertical interval video switching ■ Video detection with selectable fallback ■ Printer output for event listing and logging \$4995.00



TCD-1000 Event Controller

Includes common features plus: ■ 80-character back lit display ■ 1000 programmable event database ■ Control for 64 VCRs ■ Control for external video/audio routing switcher (99 x 64 maximum matrix, optional interface required) ■ Printer output for event listing and logging \$3495.00

PRO-8 Event Controller/Switcher

Includes common features plus: ■ 80-character back lit display ■ 1000 programmable event database ■ Control for 16 VCRs ■ Internal 8 x 3 true matrix video and stereo audio router ■ Vertical interval video switching ■ Video detection with selectable fallback ■ Printer output for event listing and logging \$2295.00

MINI-T-PRO Event Controller/Switcher

Includes common features plus: ■ 40-character back lit LCD display ■ 500 programmable event database ■ Control for 16 VCRs ■ Internal 8 x 1 video and audio switcher with video detection \$995.00

REQUEST-XC On-Demand/Remote Videotape Playback Controller

- For on-demand classroom videotape playback ■ Provides the power to initiate a program playback simply by picking up a telephone and dialing the system ■ Uses high quality, digitized, human speech ■ Guides users through the program step-by-step ■ Will automatically control all VCR switching functions once a selection has been made ■ Affordable media retrieval ■ On-demand broadcast control from classroom ■ Request any of 15 videotape programs via telephone ■ Automatic machine control switching ■ Optional PRO-BUS interfaces available for most industrial broadcast VCRs \$6495.00

C-VOICE Telephone Remote Control

- Telephone remote control option for TCD-1000 event controllers ■ Multilevel, user programmable password protection ■ Automatic non-response time-out and disconnect ■ Natural, easy to understand voice prompts ■ Stand-alone telephone remote control for up to 64 VCRs and external video/audio switching matrix \$1195.00



PRO-VOICE Telephone Remote Control

- Control telephone remote control option for TS-16, PRO-16 and PRO-8 event controllers ■ Multilevel, user-programmable password protection ■ Automatic non-response time-out and disconnect ■ Natural, easy to understand voice prompts \$1195.00

WinEM Event Manager Software Option

- Software option for TS-16, PRO-16, PRO-8, MINI-T-PRO and TCD-1000 event controllers ■ Windows event scheduling software features videotape resource library, user-defined playlist editor and automatic event generator ■ Powerful editing features ■ Database file formats \$499.00

VVD-1 Valid Video Detector/Switcher

- 2 x 1 video/audio switcher ■ Automatic fallback to input 2 upon loss of video on input 1 ■ BNC video input/output connectors ■ RCA audio input/output connectors ■ Automatic video termination \$395.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





VIA32 Series Routing Switchers

Serial Digital Routing Switchers

▪ Modular architecture supports any size router from 4x4 to 32x32 in steps of 4 ▪ Field installable I/O modules ▪ Supports any combination of 143Mb/s, 177Mb/s, 270Mb/s and 360Mb/s signals ▪ Supports both coax and fiber serial transmission formats ▪ Allows routing between coax and fiber I/O in same frame, routing and interfacing in one operation ▪ ECL version available for Telco applications ▪ Compact 2RU frame ▪ Optional redundant power supply ▪ LED warning and operating indicators ▪ Easily combined with other Leitch routers to create multilevel systems ▪ Compatible with existing Leitch router control systems and control panels ▪ Wide range of control options including programmable control panels and Windows® based software control

VIA-32x32S	32x32 Serial Video Router	\$16,610.00
VIA-32x16S	32x16 Serial Video Router	15,210.00
VIA-16x32S	16x32 Serial Video Router	12,630.00
VIA-16x16S	16x16 Serial Video Router	11,230.00

Above systems include 2RU frame, 32x32 crosspoint electronics, 1 power supply and specified number of Serial Coax I/O modules

AES/EBU Digital Audio Routing Switchers

▪ 32x16 and 32x32 models ▪ 32x16 field upgradeable to 32x32 ▪ Expansion to 32x48 and 32x64 with additional frame and input distribution ▪ Available in balanced and coax versions ▪ Compact 2RU frame ▪ Asynchronous routing ▪ Redundant power supply option ▪ LED warning and operating indicators ▪ Easily combined with other Leitch routers to create multilevel systems ▪ RS-232/RS-422 serial control port ▪ Compatible with existing Leitch router control system and control panels ▪ Wide range of control options including programmable control panels and Windows based software control

VIA-32x32AES-C	32x32 Digital Audio Routing Switcher (75 ohm coaxial). Includes 2RU frame and 1 power supply	\$6,495.00
VIA-32x32AES-B	32x32 Digital Audio Routing Switcher (110 ohm balanced). Includes 2RU frame and 1 power supply	6,495.00
VIA-32x16AES-C	32x16 Digital Audio Routing Switcher (75 ohm coaxial). Includes 2RU frame and 1 power supply	4,995.00
VIA-32x16AES-B	32x16 Digital Audio Routing Switcher (110 ohm balanced). Includes 2RU frame and 1 power supply	4,995.00
VIA-AES-EX-C	Digital Audio Expansion Module (75 ohm coaxial). Expands existing 32x16 to 32x32	2,000.00
VIA-AES-EX-B	Digital Audio Expansion Module (110 ohm balanced). Expands existing 32x16 to 32x32	2,000.00
VIA-PS-V	Extra Digital Audio Power Supply	500.00

DIGIBUS®

DEC-3610N Digital Video Decoders

▪ Decodes composite analog signals into 4:2:2 digital video ▪ Output (rear) modules interface with local requirements ▪ 13.5MHz



frequency ▪ 1 output module ▪ Advanced digital adaptive comb filter option ▪ 3 vertical signal operation modes ▪ 10-bit processing ▪ Houses multiple units in 1 frame ▪ UCP-3600 Universal Control Panel controls DigiBus functions ▪ Frame and audio synchronization and multiplexing option

DEC-3610AN-AC	NTSC to Component Analog Adaptive CF	\$8,685.00
DEC-3610N-AC	NTSC to Component Analog	7,485.00
DEC-3610AN-AS	NTSC to Serial 4:2:2 Adaptive CF	6,485.00
DEC-3610N-AS	NTSC to Serial 4:2:2	5,285.00

ADC-3620N/DAC-3620N NTSC-to-Composite/Composite-to-NTSC Digital Converters

▪ Complete hot-switching frame synchronizer ▪ Interface NTSC television signals with the composite digital world ▪ 14.3MHz frequency ▪ Outputs may be parallel or serial ▪ Either converter may share the DigiBus frame with other functional groups ▪ UCP-3600 Universal Control Panel controls all DigiBus functions ▪ Optional audio synchronization and multiplexing ▪ 10-bit processing

ADC-3620N-AS	NTSC to Serial Composite	\$2,790.00
ADC-3620N-AP	NTSC to Parallel Composite	2,590.00
DAC-3620N-SA	Serial Composite to NTSC	1,890.00
DAC-3620N-PA	Parallel composite to NTSC	1,690.00

Digital Glue™

A:D/D:A Converters and Synchronizers (using CDC-3501 frames)

CES-3501FS	Serial 4:2:2 to Composite Analog Auto Timing Encoder with Full Frame Buffer	\$5,750.00
3501FS	Serial to Serial 4:2:2 Frame Synchronizer	2,995.00
3511AD	10-bit Component Analog Video to Serial 4:2:2 Converter	2,495.00
3501LS	Serial to Serial 4:2:2 Auto Timing Line Synchronizer	2,495.00

Digital Distribution Amplifiers (for FR-6800 and MIX-7001 frames)

ASM-6800	4-Channel Embedded Audio Monitoring	\$1,595.00
EDH-6800	Error Detection and Handling Serial	1,195.00
VSM-6801	Serial 4:2:2 Video Monitoring	995.00
VSM-6802	Serial 4fsc Video Monitoring	895.00
VSE-6800	Serial Equalizing/Relocking	335.00
VSD-6801	Serial	325.00



ASR 16x16

Digital Routers

VSR-16x16	Serial Video Router	\$5,250.00
VSR-16x2	Serial Video Router	3,395.00
VSR-16x1	Serial Video Router	2,395.00
ASR-16x16	AES/EBU Router Module	1,595.00
VSR-4041MB	Serial Video Router	1,495.00
ASR-16x1	AES/EBU Router Module	995.00

Digital Test Generators (for FR-6800 and MIX-7001 frames)

VTG-6800A	4:2:2 Serial Test Generator Module with Embedded Audio	\$2,250.00
VTG-6800	4:2:2 Serial Test Generator Module	1,795.00
VES-6800	4:2:2 PROM-Slide® Logo Generator	1,195.00
SAI-6800	Safe Area Generator/Inserter	1,195.00

Serial/Parallel Converters (for MIX-7001 frames)

VSP-7000-14	525 Serial to Parallel Video Converter	\$895.00
VSP-7001	Serial to Parallel Converter	795.00
VPS-7000-14	525 Parallel to Serial Converter	795.00
VPS-7001	Parallel to Serial Converter	695.00

Mounting Frames

FR-6802	Digital DA (to 10 modules)	\$995.00
CDC-3501	3500 Series	795.00
FR-6801	Digital DA (to 4 modules)	695.00
FR-X+1RU	Frame and AC Power Supply	595.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



DTD Series Digital Time/Date Displays

▪ Microprocessor controlled ▪ Accepts standard serial time code in SMPTE or EBU format ▪ No input selection or switching needed for either type of code ▪ Decoded signal drives a 6-digit, 7-segment real time display ▪ 24-hour or 12-hour format with AM/PM indication can be selected ▪ Time displays available in rackmount, console mount or desktop versions ▪ Readout digits 0.8"H ▪ Time display units compatible with user-defined time offset when driven from CSD-5300N Clock System Driver



- DTD-5203-G Dual time/date display (green LEDs) . . . \$1890.00
- DTD-5203-R Dual time/date display1840.00
- DTD-5225-G Time/date display (green LEDs)1350.00
- DTD-5225-R Time/date display1300.00
- DTD-5202-G Time/date display with DQC output (green LEDs)1350.00
- DTD-5202-R Time/date display with DQC output1300.00
- DTD-5201-G Time/date display with parallel BCD output (green LEDs)1045.00
- DTD-5201-R Time/date display with parallel BCD output995.00
- DTD-5200-G Time/date display (green LEDs)970.00
- DTD-5200-R Time/date display920.00
- DTD-5210-G Time/date display, desk mount (green LEDs) . . .970.00
- DTD-5210-R Time/date display, desk mount920.00

SPG-1312N/SPG-1313N Master Sync Pulse Generators

▪ 1RU design with phaseable outputs of any optional modules including color black ▪ Phaseable outputs of RS-170A zero SCH color black ▪ Outputs of sync, blanking, H and V drive, burst flag, color frame indent and subcarrier ▪ Instant on crystal oscillator

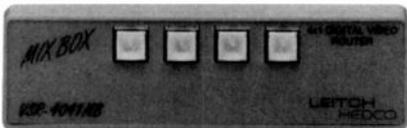
- SPG-1312N NTSC/D2 \$3460.00
- SPG-2612N As above, in 2RU space for options3615.00
- SPG-1313N With genlock NTSC/D24495.00
- SPG-2613N As above, in 2RU space for options4795.00

Mix Boxes

The MIX BOX is a compact unit that houses a wide variety of distribution amplifiers, sync and test generators, routers, and other special function modules. Each unit has its own power supply, and is ideal for field applications, lab benches, or other instances where a complete frame of products is unnecessary or too costly. A 1RU rackmount tray capable of holding 3 MIX BOXes is available.

Distribution Amplifiers

- VEH-680 100MHz video distribution amp (FR-680MB) \$355.00
- VEA-681 Video equalizing amplifier with clamping (FR-680MB)245.00



Routers

- VSR-4041MB Serial video 4x1 router (includes MIX BOX chassis with LC) \$1495.00
- VSR-4041MB-1 Serial video 4x1 router (includes MIX BOX chassis)1495.00
- VSM-4044MB Video 4x4 router with LCP, 100MHz, terminating inputs (1 output per destination)875.00

- VSM-4044MB-1 Video 4x4 router with blank front panel, 100MHz, terminating outputs (1 output per destination) \$875.00
- ASM-4044MB Audio 4x4 stereo router with LCP balanced in/out745.00
- ASM-4044MB-1 Audio 4x4 stereo router with blank front panel, balanced in/out745.00

Sync and Test

- SPG-1680N Sync pulse generator (FR-680MB) \$1395.00
- SPG-1681N Sync pulse generator (FR-680MB)1395.00
- 2602TG-XO 12-bit test generator (FR-7000MB)1025.00
- 1302BB-XO Test, tone and source indent (FR-7000MB) . .1150.00

Digital MIX BOXes

- VTG-6800-A Serial test generator with audio (FR-7000MB) \$2250.00
- VTG-6800 Series test generator (FR-7000MB)1795.00
- VSR-4041MB 4x1 serial video router with frame1495.00
- VSR-4041MB-1 4x1 serial router, no control panel1495.00

800 Series Audio DA Mounting Frames

▪ 4 modules in 1RU frame ▪ 12 modules in 2RU frames ▪ Screw-clamp terminals ▪ Cast or flat front panel ▪ Accepts any type of the 800 Series audio distribution amplifiers in any slot ▪ Modular concept facilitates system design ▪ Isolation between modules in mounting frame is better than 100dB over entire audio frequency spectrum

- FR-880MB Mix box chassis and audio chassis for one 880 series audio DA \$195.00
- FR-882 Audio with 882PS power supply990.00
- FR-883 Audio (1RU)595.00
- FR-884 Audio with mating audio connectors and 884PS power750.00
- ATG-880-66 Audio tone generator195.00
- AMD-880 Mono audio DA170.00
- AMD-880-600 600 ohm mono audio DA170.00
- ASD-880 Stereo DA205.00
- ASD-880-600 600 ohm stereo audio DA205.00
- ARG-880 Audio remote gain DA315.00
- APD-880-0 Audio programmable DA250.00
- APD-800-0-600 600 ohm audio programmable DA250.00
- 880RP Remote control panel for ARG-880495.00
- 882PS FR-882 frame power supply395.00
- 884PS FR-884/883 frames power supply395.00

600 Series Video DA Mounting Frames

▪ Four 8-out video DAs in 1RU ▪ Ten 8-out video DAs in 2RU ▪ Sixteen 4-out video DAs in 2RU ▪ Casting or flat front panel ▪ Accepts any type of 680 Series video distribution amplifiers in any slot ▪ Outputs provided with BNC connectors, simplifying solutions to signal distribution and processing such as clamping and equalization, clipping and delay

- FR-681AV Audio/video (1RU) \$595.00
- FR-682AV Audio/video (2RU)785.00
- FR-640 Video (2RU)795.00
- UDA-680 Video DA110.00
- VDA-681 Video/subcarrier DA160.00
- VDA-683 Video/subcarrier DA160.00
- VEA-681 Video equalizing amplifier with clamping . . .245.00
- VEA-682 Video equalizing amplifier with submodule and clamping285.00
- PDA-680 Pulse DA215.00
- VCA-680 Video clamping/clipping amplifier255.00
- SVD-680 Switchable video delay amplifier445.00
- VEH-680 100MHz video DA355.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





Xplus Series Routing Systems*

■ Analog or digital video and audio ■ Built-in serial control port ■ Flexible power supply configuration ■ Powerful alarm capability ■ A modular system featuring generic 1RU and 2RU mounting frames into which a wide range of modules can be installed

Model	16X Routing Systems	Optional # of DTB-25	Price
X+16x16V3A2	16x16 RGB (or YUV) and stereo audio	8	\$14,365.00
X+16x16V3A	16x16 RGB (or YUV) and mono audio	4	12,770.00
X+16x16V3	16x16 RGB (or YUV)	--	10,975.00
X+16x16V2A2	16x16 Y/C (or video and key) and stereo audio	8	10,970.00
X+16x16SAES2	16x16 Serial digital video and AES/EBU (4 channel)	8	9,235.00
X+16x16SA2	16x16 Serial digital and stereo audio	8	9,235.00
X+16x2V3A2	16x2 RGB (or YUV) and stereo audio	4	9,020.00
X+16x2V3A	16x2 RGB (or YUV) and mono audio	5	7,970.00
X+16x16SA	16x16 Serial digital and mono audio	4	7,640.00
X+16x16SAES	16x16 Serial digital video and AES/EBU	4	7,640.00
X+16x2V3	16x2 RGB (or YUV)	--	7,320.00
X+16x16V2	16x16 Y/C (or video and key)	--	7,185.00
X+16x16VA2	16x16 Video and stereo audio	8	7,180.00
X+16x16AES4	16x16 4-channel AES/EBU digital audio router	16	7,175.00
X+16x2V2A2	16x2 Y/C (or video and key) and stereo audio	5	6,500.00
X+16x2SA2	16x2 Serial digital and stereo audio	5	5,890.00
X+16x16S	16x16 Serial digital video	--	5,845.00
X+16x16VA	16x16 Video and mono audio	4	5,585.00
X+16x16AES3	16x16 3-channel AES/EBU digital audio router	12	5,580.00
X+16x2V2	16x2 Y/C (or video and key)	--	4,860.00
X+16x2SA	16x2 Serial digital and mono audio	5	4,840.00
X+16x2VA2	16x2 Video and stereo audio	5	4,655.00
X+16x1SAES	16x1 Serial digital and AES/EBU	3	4,185.00
X+16x2S	16x2 Serial digital video	--	3,990.00
X+16x1SA2	16x1 Serial digital and stereo audio	5	3,840.00
X+16x16V	16x16 Video	--	3,790.00
X+16x16AES2	16x16 Dual AES/EBU digital audio router	8	3,785.00
X+16x16A2	16x16 Stereo audio	8	3,785.00
X+16x1V3A2	16x1 RGB (or YUV) and stereo audio	5	3,395.00
X+16x1VA6	16x1 Video and 6-channel audio	15	3,395.00
X+16x1A8	16x1 8-channel audio only	20	3,395.00
X+16x1V2A4	16x1S-VHS (Y/C), 4-channel audio	10	3,395.00
X+16x1V3P	16x1 RGB/S video and sync video only	--	3,395.00
X+16x2VA	16x2 Video and mono audio	5	3,300.00
X+16x1S	16x1 Serial digital	--	2,990.00
X+16x1VLYA4	16x1 Video and audio 4-channel, loopthrough inputs	10	2,890.00
X+16x1V3	16x1 RGB (or YUV)	--	2,745.00
X+16x1VA4	16x1 Video and 4-channel audio	10	2,745.00
X+16x1V2A2	16x1 Y/C (or video and key) and stereo audio	5	2,745.00
X+16x1A6	16x1 6-channel audio only	15	2,745.00
X+16x2V	16x2 Video	--	2,400.00
X+16x1V2LT	16x1 S-VHS (Y/C), video only, loopthrough inputs	--	2,385.00
X+16x1VLTA2	16x1 Video and stereo dual audio, loopthrough inputs	5	2,240.00
X+16x2A2	16x2 Stereo audio	5	2,295.00
X+16x16AES	16x16 AES/EBU	4	2,190.00
X+16x16A	16x16 Mono audio	4	2,190.00
X+16x1V2	16x1 Y/C (or video and key)	--	1,895.00

X+16x1VA2	16x1 Video and stereo audio	5	\$1,895.00
X+16x1A4	16x1 4-channel audio only	10	1,895.00
X+16x1AES	16x1 AES/EBU	3	1,590.00
X+16x2A	16x2 Mono audio	5	1,495.00
X+16x1VLT	16x1 Video only, loopthrough inputs	--	1,390.00
X+16x1V	16x1 Video	--	1,245.00
X+16x1A2	16x1 Stereo audio	5	1,245.00

Model	32X Routing Systems	Optional # of DTB-25	Price
X+32x1V3A2	32x1 RGB (or YUV) and stereo audio	10	\$8,645.00
X+32x1SAES	32x1 Serial digital video and AES/EBU	6	8,230.00
X+32x1V3A	32x1 RGB (or YUV) and mono audio	5	7,795.00
X+32x1SA2	32x1 Serial digital video and stereo audio	10	7,740.00
X+32x1SA	32x1 Serial digital video and mono audio	5	7,090.00
X+32x1V2A2	32x1 Y/C (or video and key) and stereo audio	10	6,945.00
X+32x1V3	32x1 RGB (or YUV)	--	5,950.00
X+32x1S	32x1 Serial digital video	--	5,585.00
X+32x1A4	32x1 4-channel audio only	--	4,195.00
X+32x1VA2	32x1 Video and stereo audio	10	3,995.00
X+32x1V2	32x1 Y/C (or video and key)	--	3,795.00
X+32x1VA	32x1 Video and mono audio	5	3,145.00
X+32x1VLT	32x1 Video only loopthrough inputs	--	2,585.00
X+32x1AES	32x1 AES/EBU	6	2,585.00
X+32x1A2	32x1 Stereo audio	10	2,295.00
X+32x1V	32x1 Video	--	2,095.00
X+32x1A	32x1 Mono audio	5	1,445.00

Model	Special Applications	Price
VSR-32X1CS-2AC	32x1 clean switch digital video router with dual power supplies (includes 1RU frame, power supply, power cord and instruction manual)	\$9,445.00
VSR-32X1CS-2RU	32x1 clean switch digital video router (includes 2RU frame, power supply, power cord and instruction manual)	9,095.00
ESR-16X16-2AC	16x16 ECL data router, includes 2RU mounting frame, 2 power supplies and power cords (accommodates only a single ESR-16x16 module)	6,545.00
ESR-16X16-1RU	16x16 EXL data router, includes 1RU mounting frame, 1 power supply and power cord (for non-broadcast standard data)	5,995.00
VSR-16X1CS-2AC	16x1 clean switch digital video router with dual power supplies (includes 2RU frame, power supply, power cord and instruction manual)	5,900.00
VSR-16X1CS-1RU	16x1 clean switch digital video router (includes 1RU frame, power supply, power cord and instruction manual)	5,350.00
HD-16X16D	16x16 serial data router (specify RS-232 or RS-422 routing and port) includes 2RU frame ("D" connectors) power supply, power cord and instruction manual	3,595.00
HD16-2X1A2	16 stereo audio 2x1 expansion frame (input expansion frame)	2,200.00
HD16-1X2V	16DAs in 1RU frame. 1 input, 2 outputs each. Includes power cord and manual. May be used to expand routers	1,500.00
HD16-2X1A	16 monaural audio 2x1 expansion frame (input expansion frame)	1,500.00
HD16-2X1V	16 video 2x1 expansion frame	1,500.00
LCP-16X16D-2RU	16x16 local control panel (for HD-16x16D), illuminated pushbuttons	450.00
VSMX-1+	Internal expansion module for 32x1 to 4096x1 analog video	200.00
ASMX-1+	Internal expansion module for 32x1 to 4096x1 analog audio	200.00

*Xplus Series Routing Systems are available in the sizes listed plus: 2x, 4x4, 4x1, 8x8, 12x1, 16x8, 32x2, 48x1, 64x1, 128x1 and 256x1.

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

SWITCHERS/ GENERATORS/ AMPLIFIERS



LEI LINK ELECTRONICS, INC.



VSW-826

800 Series Vertical Interval Video Switchers

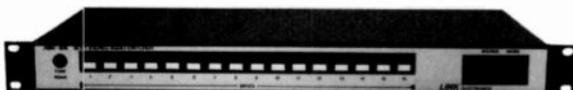
▪ Wide bandwidth vertical interval switcher ▪ High impedance looping inputs and dual outputs allow the user to efficiently and economically route or delegate multiple video signals ▪ LED digital readout of audio and video channel selected ▪ Audio and video breakaway ▪ RS-232 provided through a D-Sub connector ▪ Remote control is provided through a RJ-11 connector

VSW-828	16x2 video switcher, with buttons	\$1095.00
VSW-826	16x1 video switcher, with buttons	995.00
VSW-822	8x2 video switcher, with buttons	995.00
VSW-824	8x1 S-Video switcher, with buttons	985.00
VSW-827	16x1 video switcher, no buttons	950.00
VSW-823	8x2 video switcher, no buttons	950.00
VSW-825	8x1 S-Video switcher, no buttons	940.00
VSW-821	8x1 video switcher, with button	895.00

AVS-816 Video Switcher With Audio Follow

▪ RS-232/RS-422 ▪ 16 video inputs ▪ 16 audio inputs ▪ Vertical interval ▪ 2 video outputs ▪ Digital or analog video/audio ▪ Controls up to 32 switchers ▪ Analog monitor of digital audio input ▪ GPI control ▪ Wide bandwidth ▪ Digital switching ▪ 1 stereo audio output ▪ Audio and video breakaway ▪ Computer software provided ▪ Analog monitor of digital video input

AVS-816	16x1 switcher, must choose options	\$ 945.00
Option A	Video analog switching, 16x1	225.00
Option B	Audio analog switching, 16x1	500.00
Option C	Video digital switching, 16x1	1695.00
Option D	Audio digital switching, 16x1, must choose rear cell E or F	475.00
Option E	Audio digital rear cell, screw terminal	150.00
Option F	Audio digital rear cell, BNC	95.00
Option G	GPI option	95.00



ASW-826

ASW-800 Series Audio Switchers

▪ High impedance balanced input circuits reduce loading effects and noise on incoming signals ▪ Low output impedance of 66n provides a maximum level of +24dBu ▪ Input/output connections are printed circuit spring terminal blocks which provide reliable clamping action for secure and reliable operation due to a force amplifying hinge motion ▪ 9-pin female D connector provides serial interface to computer or modem for RS-232 control ▪ 7-segment LED readout shows the source audio number selected ▪ Each switcher can operate as a stand-alone unit or interfaced with additional switchers as multiple source routers

ASW-822	8x2 stereo audio switcher, with buttons	\$895.00
ASW-824	8x1 four channel audio switcher, with buttons	895.00
ASW-826	16x1 stereo audio switcher with buttons	895.00

700 SERIES EQUIPMENT

IEC-708 Vertical Interval Video Switcher

▪ 8 end terminating inputs and dual outputs ▪ Wide bandwidth ▪ Digital switching ▪ Lighted pushbutton switches for video selection . . . \$475.00

IEC-722/721 Master Blackburst Generator

▪ 6 blackburst outputs for system distribution ▪ Factory adjusted to RS-170A standards ▪ 1kHz tone

IEC-722	Genlockable	\$945.00
IEC-721	Non-genlock	475.00

IEC-712 Master Blackburst Generator

▪ 6 blackburst outputs for system distribution ▪ PAL and NTSC television systems supported
 ▪ ± 5 ppm stability ▪ Pedestal on/off
 ▪ 1kHz and 400Hz tone ▪ Modulated ramp on/off ▪ 2 optional crystals available for 1ppm and 0.5ppm operation \$690.00
 712OP2 0.5ppm oscillator for IEC-712 395.00
 712OP1 1ppm oscillator for IEC-712 275.00



IEC-715 Video Presence Detector

▪ Monitors primary video input signal and automatically switches to an auxiliary video input with loss of primary video signal ▪ Captive screw terminal sub-module is provided for audio-follow-video capability for mono or stereo audio switching ▪ 3-terminal screw block provides dry contacts for normally open (N.O.) and normally closed (N.C.) to control peripheral gear ▪ Immune to noise ▪ Switches audio and video . . \$780.00

IEC-754 Variable Delay Video Amplifier

▪ 4 outputs ▪ Delay trim adjustment ▪ 475nS delay, standard ▪ 32MHz bandwidth ▪ Optional delay up to 975nS ▪ Cable equalization 1000' ▪ Differential loopthrough input \$925.00

IEC-752 Video Distribution Amplifier

▪ Six outputs ▪ Feedback clamp ▪ 25MHz bandwidth ▪ Delay adjustment ▪ 2000' cable equalization ▪ Automatic DC offset ▪ Differential input \$425.00

IEC-770 Stereo Monitor Amplifier

▪ 5W per channel ▪ Dual headphone jacks ▪ Mono/stereo operation ▪ Peak level LEDs ▪ RFI protected ▪ Short circuit current limit . . . \$395.00

IEC-740 Audio Distribution Amplifier

▪ 1 input, 8 outputs ▪ Select dual 1x4 ▪ Balanced input ▪ Stereo operation ▪ Mount 3 in 1RU frame ▪ Board power supply draws only 4W ▪ Master gain control on front panel sets the audio gain to ± 16 dB \$375.00

IEC-750 Video Distribution Amplifiers

▪ 1 input, 8 outputs ▪ Select dual 1x4 ▪ Differential input ▪ Use as Y/C distribution amplifier ▪ Mount 3 in 1RU frame ▪ 2 gain controls on the front panel adjust the video level to ± 3 dB for each set of 4 outputs. \$375.00

IEC-751 Y/C Video Distribution Amplifier

▪ 1 input, 4 output ▪ Differential input ▪ Uses 4-pin DIN connector ▪ Input is terminated internally into 75 ohms ▪ 2 gain controls on the front panel adjust the video level to ± 3 dB for the Y signal and the C signal \$375.00

IEC-786 2-Field Closed Caption Decoder

▪ Capable of processing and displaying all standard line 21 closed caption format transmissions ▪ Field 1 and 2 ▪ Supports 9 standard data channels ▪ Captions and text ▪ Baseband video input/output ▪ Differential input \$600.00

IEC-785 Closed Caption Decoder

▪ Capable of processing and displaying all standard line 21 closed caption format transmissions ▪ C-1 and C-2 captions ▪ T-1 and T-2 text ▪ Differential input ▪ High impedance baseband input ▪ Key signal ▪ RGB outputs ▪ Sync output \$575.00

IEC-787 VBI Insertion

▪ Video inserter that provides an economical way to recover signals in the vertical blanking interval that may be lost during video processing
 ▪ Lines 10-21 ▪ Recover lost captions. \$825.00

IEC-773 NTSC to Y/C Decoder Comb Filter

▪ 4-pin DIN output ▪ Y/C on BNC output ▪ Differential input ▪ Propagation delay 325nS \$550.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





STUDIO PROMPTERS FOR PORTABLE CAMERA WITH ENG LENS

T-2014CCD/T-2012CCD/T-2011CCD Prompters*

- Feature active TFT flat-panel monitor with standard VGA, composite and S-Video inputs
 - Complete with standard trapezoidal rigid hood/mirror, easy-mount sliding balance plate and camera riser
- | | | |
|-----------|-------------------------|-----------|
| T-2014CCD | 13.8" display, 12 lbs.. | \$8050.00 |
| T-2012CCD | 12.1" display, 12 lbs.. | 6500.00 |
| T-2011CCD | 10.4" display, 12 lbs.. | 5400.00 |

A-2015CCD/A-2012CCD Prompters*

- Feature CRT black-and-white composite monitor
 - Standard trapezoidal rigid hood/mirror, easy-mount sliding balance plate, camera riser and counterweight
- | | | |
|-----------|---|-----------|
| A-2015CCD | 15" display, 57 lbs. with 20 lb. counterweight, 110VAC standard, 12VDC optional | \$2775.00 |
| A-2012CCD | 12" display, 42 lbs. with 10 lb. counterweight, 110VAC-12VDC standard | 2675.00 |

*Note: To order Studio Prompters for full-sized cameras with box-type studio lens drop the "CCD" suffix from the model number and substitute "FSW" for wide-angle trapezoidal rigid hood/mirror (example: A-2015FSW). Hardware complement includes universal 32" x 7" offset plate. Add \$100.00 to prices quoted above.

PORTABLE PROMPTERS

T-2014P/T-2012P/T-2011P Vu-Lite Prompters

- Feature active TFT flat-panel display with standard VGA, composite and S-Video inputs
 - Fold-down mirror/soft hood assembly for easy transport
 - Includes special sliding plate mount for quick setup and balancing
 - 100-250VAC, 60/50Hz standard power supply
 - 12VDC converter with XLR connector optionally available
- | | | |
|---------|------------------------|-----------|
| T-2014P | 13.8" display, 10 lbs. | \$7750.00 |
| T-2012P | 12.1" display, 10 lbs. | 6200.00 |
| T-2011P | 10.4" display, 10 lbs. | 5100.00 |



A-2012P/A-2009 Prompters

- Feature CRT black-and-white composite monitor
 - Fold-down mirror/soft hood assembly for easy transport
 - Include special sliding plate mount for quick setup and balancing
 - 110VAC-12VDC standard
- | | | |
|---------|--|-----------|
| A-2012P | 12" display, 37 lbs. with 10 lb. counterweight and riser | \$2575.00 |
| A-2009 | 9" display, 17 lbs. | 2195.00 |

SPECIALTY PROMPTERS

A-2015SA/A-2012SA Stand-Alone, Through-the-Lens CRT Monitor Prompter

- Complete with standard trapezoidal rigid hood/mirror mounted on adjustable roll-around dolly with 4" lockable casters
 - Recommended when camera mounting equipment has insufficient capacity to support prompters
- | | | |
|----------|-------------|-----------|
| A-2015SA | 15" display | \$3350.00 |
| A-2012SA | 12" display | 3250.00 |

A-2014CS/A-2015CS Executive Podium Prompter

- Feature composite black-and-white or color monitor
 - 10" X 12" mirror
 - Adjustable mirror stand with custom clip
 - Attractive wooden monitor surround
- | | | |
|----------|------------------------------|-----------|
| A-2014CS | 14" display, color | \$2195.00 |
| A-2015CS | 15" display, black-and-white | 1995.00 |

PROMPTER SOFTWARE SYSTEMS FOR IBM COMPATIBLES

DOS Software

A-6000/8 VGA Desktop Software System

- For simultaneous edit and prompt
- Includes external composite video converter with loopthrough for full-sized VGA computer monitor and separate MDA computer card
- In addition to installed VGA card, requires TTL monochrome computer monitor. . . \$1995.00



A-6000/6 VGA Laptop/Desktop Software System

- Provides separate edit and prompt functions
 - Includes external composite video converter with loopthrough for full-sized VGA computer monitor. . . \$1895.00
- A-6000/1 Software Only
- For customer supplied hardware configuration 1295.00

Windows™ Software

A-6WIN/6A Windows System

- Consists of A-6000WIN software, VGA composite video converter and single-user keytag
 - Requires Pentium processor, 64-bit Windows Graphics Accelerator, Windows word processor and 2-button mouse
 - Scripts are prepared using any Windows word processor
 - Assign resident attributes and simply click on the A-6000WIN from the installed printer list
- | | | |
|-----------|---------------------------------------|-----------|
| A-6WIN/6A | | \$1695.00 |
| A-6000WIN | Windows Based Prompting Software Only | 1200.00 |

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

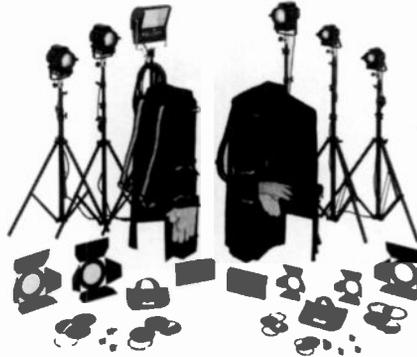




LTM CORPORATION OF AMERICA

Pepper Series— Miniature Tungsten Lighting

- Compact, lightweight design location lighting
- Sturdy cast-aluminum construction
- Full range of accessories, designed for fast and easy attachment and adjustment



Individual Pepper Heads

PH-151H	Pepper 500/1000W fresnel light with 5" lens	\$504.00
PH-494D	Pepper 250W light gun	390.00
PH-154H	Pepper 650W fresnel light with 4 3/4" lens	385.00
PH-495H	Pepper 650W floodlight	299.00
PH-154E	Pepper 420W fresnel light with 3 3/4" lens	294.00
PH-165F	Pepper 300W fresnel light with 3 3/4" lens	285.00
PH-412	Pepper 400W soft light	281.00
PH-154C	Pepper 200W fresnel light with 3 3/4" lens	275.00
PH-154B	Pepper 100W fresnel light with 1 3/4" lens	223.00

Pepper 100W Fresnel Accessories

PA-9005	Focal spot	\$171.00
PA-A240	4-piece snoot set	86.00
PA-A225	4-leaf barndoor	69.00
PA-A237	Hinged gel frame	21.00
PA-9120	Focal spot retainer ring, 100	20.00
PA-A245	Full single scrim	12.00
PA-A244	Full double scrim	12.00
PA-A270	Half single scrim	12.00
PA-A269	Half double scrim	12.00
PA-900825	Filter pak	3.50

Pepper 200W, Pepper 300W, Pepper 420W Fresnel Accessories

PA-9005	Focal spot	\$171.00
PA-A232	4-piece snoot set	89.00
PA-A395	4-leaf barndoor	79.00
PA-A238	Hinged gel frame	25.00
PA-9125	Focal spot retainer ring, 300/420	20.00
PA-A247	Full single scrim	12.00
PA-A246	Full double scrim	12.00
PA-A249	Half single scrim	12.00
PA-A248	Half double scrim	12.00
PA-900835	Filter pak	4.50

Pepper 250W Light Gun Accessories

HA-7004FC	Battery belt, 30V 7AH	\$1687.00
HA-918015	Battery belt fast charger	680.00
HA-A271	4-leaf barndoor	103.00
HA-A843	Hinged gel frame	39.00
HA-2209101	Full single scrim	21.00
HA-2209102	Full double scrim	21.00
HA-2209103	Half single scrim	21.00
HA-2209104	Half double scrim	21.00

Pepper 400W Soft Accessories

PA-50412	Egg crate	\$63.00
PA-30412	Gel frame	19.00

Pepper 650W Fresnel Accessories

PA-A231	4-piece snoot set	\$113.00
PA-A227	4-leaf barndoor	84.00
PA-A239	Hinged gel frame	34.00
PA-A251	Full single scrim	12.00
PA-A250	Full double scrim	12.00
PA-A253	Half single scrim	12.00
PA-A252	Half double scrim	12.00
PA-900845	Filter pak	5.50

Pepper 500/1kW Fresnel Accessories

HA-A80	4-leaf barndoor	\$91.00
PA-A348	Large snoot #4	68.00

PA-A347	Medium snoot #3	\$ 67.00
HA-A563	Gel frame	57.00
	3-piece snoot set	176.00
PA-A346	Small snoot #2	41.00
HA-445312	Full double scrim	10.50
HA-445313	Half double scrim	10.50
HA-445310	Full single scrim	9.50
HA-445311	Half single scrim	9.50

Pepper Pak Cases

PA-900895	Hard case, full spectrum with wheels	\$676.00
PA-900885	Hard case, Gold	567.00
PA-900905	Molded case (Cyan, Green, Red, Bronze, Silver, Platinum)	560.00
PA-900880	Hard case, cyan/green—large	485.00
PA-900875	Hard case, Cyan/Green—small	450.00
PA-900890	Hard case, red	409.00
PA-900897	Soft canvas case	347.00
PA-900898	Back pak canvas case	340.00

Pepper Pak Location Lighting Kits

PK-Full—Full Spectrum Pepper Pak

Includes: 1 each Pepper 100W, 300W, 420W, 400W and 650W fresnel lights with assorted accessories, lamps, grip equipment, stands, case and more \$3821.00

PK-Gold—Gold Pepper Pak

Includes: 3 Pepper 500/1kW fresnel lights with assorted accessories, lamps, stands and more 2799.00

PK-Green—Green Pepper Pak

Includes: 4 Pepper 420W fresnel lights with assorted accessories, lamps, stands, case and more 2651.00

PK-Cyan—Cyan Pepper Pak

Includes: 2 each Pepper 100W and 420W fresnel lights with assorted accessories, lamps, stands, case and more 2599.00

PK-Red—Red Pepper Pak

Includes: 3 Pepper 650W fresnel lights with assorted accessories, lamps, stands, case and more 2534.00

PK-Platinum—Platinum Pepper Pak

Includes: 1 each Pepper 100W, 300W and 420W fresnel lights and Pepper 400W soft light with assorted accessories, lamps, stands, case and more 2437.00

PK-Silver—Silver Pepper Pak

Includes: 3 Pepper 650W floodlights with assorted accessories, lamps, stands, case and more 2149.00

PK-Bronze—Bronze Pepper Pak

Includes: 1 each Pepper 100W and 300W fresnel lights and 1 Pepper 650W floodlight with assorted accessories, stands, case and more 2080.00

PK-Yellow—Yellow Pepper Pak

Includes: 2 Pepper 300W and one 400W fresnel lights with assorted accessories, lamps, stands, case and more 1832.00

PK-Blue—Blue Pepper Pak

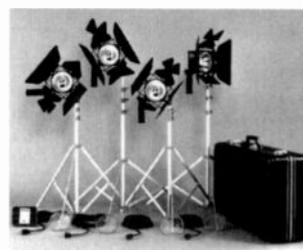
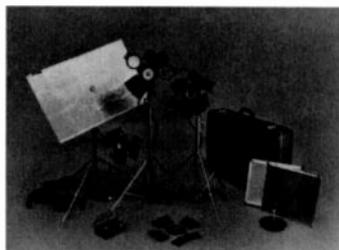
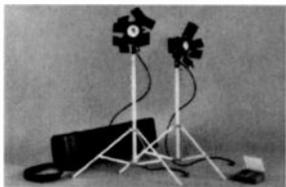
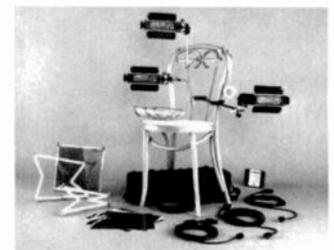
Includes: 2 Pepper 100W and one 300W fresnel lights with assorted accessories, lamps, stands, case and more 1792.00

Universal Pepper Accessories

PA-901180	Pepper Pot: 6-channel dimmer	\$1840.00
PA-901175	Pepper Pot: 3-channel dimmer	652.00
PA-901170	Pepper Pot: 1-channel dimmer	292.00
PA-B387490	Light/heavy Pepper stand	204.00
PA-B389787	Light/medium Pepper stand	108.00
PA-B389788	Medium Pepper stand	106.00
PA-A68	6" C-clamp with two 3/8" pins	85.00
PA-A67	3" C-clamp	49.00
PA-A254	3" baby plate	48.00
PA-B429587	Gaffer grip with 3/8" pins	44.00
PA-901040	Gold/silver reflector pak	22.00
PA-429678	Scissor clamp	16.00
PA-901030	Pepper scrim bag	14.00
PA-901050	Leather gloves	12.50
PA-901060	Globe table	5.35
PA-901045	Velcro cable tie	3.20
PA-901055	3-prong plug adaptor	1.50

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





ViP Kits

Tota/Omni Kits

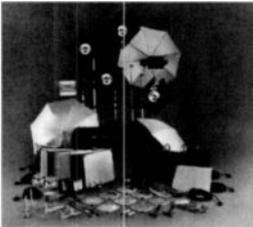
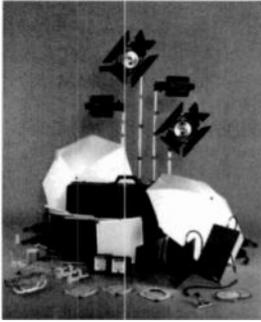
NAME *All Lights & Kits (except for i-light) are sold without lamps		Easy V	Pro-visions	All Pro	Jet Set	Intro-kit	Far & Wide	Sophisti-kit	Tube Kit	Little-t-Kit	Trans-kit	T4	Action
Kit Code		V1-90	P1-92	P1-93	VP-97	VP-98	VP-95	VP-96	T1-90	T1-91	T1-92	T1-94	01-92
Lights In Kits	Pro (focusing)		2	3	1	2	2	2					
	V (broad)	2			2	1	2	3					
	Tota (broad)								2	3	3	4	
	Omni (focusing)												3
	DP (focusing)												
	Lowel-light (broad or spot)												
	Softlight 2 (super-soft)												
Light-Array (super-soft)													
Option	Super spot +												
	Soft	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	
Reflector	Vari-flector												
Number of Accessories in Kits*	ViP Stand	2	2	3	3	3	4	5					
	Omni Stand								2		3	4	3
	KS Stand												
	Grand Stand												
	Light control	4	3	12	5	6	20	16	4	5	4	20	4
Mounting			2	2	1	4	4		4		4		
Weight	Pounds	13	15	28	17	17	34	37	18	15	28	36.5	31
	Kilos	5.9	6.8	12.7	7.7	7.7	15.4	16.8	8.2	6.8	12.7	16.6	14.1
Price	US\$	\$595	\$625	\$1250	\$895	\$910	\$1550	\$1750	\$675	\$725	\$1025	\$1695	\$1250

✓ Kit has 1 or more umbrellas and/or gel frames with diffusion which lock into lights and produce soft-light quality.

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



KIT COMPARISON CHART



Tota/Omni Kits *continued*

DP Kits

Softlight 2 Kits

Special Kits

Omni 3	Omni 4	Basically 3	Elemental	Ambi	Solo	DP & T	DP 3	DP Remote	DP 4	Close Quarters	Light Soft	Standard Soft	Triple Soft	Full Array	Veriflector	Surmountable
01-93	01-95	TO-97	TO-98	TO-95	TO-96	DT-98	D2-93	D2-96	D2-94	D2-97	S2-91	S2-92	S2-93	A1-90	V445C	CM-90
		2	1	2	2	1										
3	4	1	2	2	4											
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											1	1	3			
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✓		✓	✓	✓	✓	✓		+		+						
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3	4	3	3	4	5	1										
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															1	
13	5	6	8	23	39	7	4	19	5	14	2	2	4			17
3				4	9	4		1		1				3	4	21
35	42	28	29	42	63	45	45	53	54	57	24	29	43	38	25	27
15.9	19.1	12.7	13.2	19.1	28.6	20.4	20.4	24	24.5	25.9	10.9	13.2	19.5	17.2	11.3	12.2
\$1450	\$1585	\$1065	\$1165	\$1850	\$2850	\$1575	\$1575	\$2050	\$1975	\$2225	\$775	\$895	\$1675	\$1395	\$675	\$950

♣ Kit has super-spot reflector to convert light to high intensity unit. • Plus protective screens and stands. **KSA stand.

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



TV Wall Mounts

Model	Tilt	Weight Load (lbs.)	Platform Width x Depth	Price
Locking—Double Stud Installation				
DSWP6111	7°	120	25" x 18½"	\$200.06
DSWP6104	7°	120	25" x 14"	192.70
DSWP6109	7°	120	20" x 18½"	190.15
DSWP6105	7°	120	18" x 18½"	187.69
DSWP6103	7°	120	22" x 14"	187.69
DS3504	0°	120	25" x 14"	187.56
DS3515	0°	120	15" x 15"	186.91
DSWP6115	7°	120	15" x 15"	186.91
DSWP6120	7°	120	20" x 9"	183.75
DSWP6112	7°	120	12" x 11"	183.75
DSWP6110	7°	120	10" x 12"	183.75
DSWP6108	7°	120	14" x 11"	183.75
DSWP6107	7°	120	17" x 12"	183.75
DSWP6102	7°	120	23" x 11"	183.75
DSWP6101	7°	120	15" x 12"	183.75
DSWP6100	7°	120	19" x 12"	183.75
DS3505	0°	120	18" x 18½"	182.30
DS3503	0°	120	22" x 14"	182.30
DS3520	0°	120	20" x 9"	179.14
DS3512	0°	120	12" x 11"	179.14
DS3510	0°	120	10" x 12"	179.14
DS3508	0°	120	14" x 11"	179.14
DS3507	0°	120	17" x 12"	179.14
DS3502	0°	120	23" x 11"	179.14
DS3501	0°	120	15" x 12"	179.14
DS3500	0°	120	19" x 12"	179.14

Locking—Single Stud Installation

SSWP6115	12½°	75	15" x 15"	\$115.14
SSWP6103	12½°	75	22" x 14"	115.14
SSWP6120	12½°	75	20" x 9"	111.99
SSWP6112	12½°	75	12" x 11"	111.99
SSWP6110	12½°	75	10" x 12"	111.99
SSWP6108	12½°	75	14" x 11"	111.99
SSWP6107	12½°	75	17" x 12"	111.99
SSWP6102	12½°	75	23" x 11"	111.99
SSWP6101	12½°	75	15" x 12"	111.99
SSWP6100	12½°	75	19" x 12"	111.99
SS3515	0°	75	15" x 15"	67.73
SS3503	0°	75	22" x 14"	67.73
SS351210	0°	75	10" x 12"	64.57
SS3510	0°	75	10" x 12"	64.57
SS3520	0°	75	20" x 9"	64.57
SS3508	0°	75	14" x 11"	64.57
SS3507	0°	75	17" x 12"	64.57
SS3502	0°	75	23" x 11"	64.57
SS3501	0°	75	15" x 12"	64.57
SS3500	0°	75	19" x 12"	64.57

Semi-locking—Single Stud Installation

1721S	12½°	75	21" x 12"	\$74.32
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Adjustable Nonlocking Platforms

DSCM233L**†	0-25°	120	23-33" x 13"	\$267.76
DSCM2333**	0-25°	120	23-33" x 13"	258.09
DSCM203L**†	0-25°	120	20-30" x 13"	256.10
DSCM2030**	0-25°	120	20-30" x 13"	246.43
SSCM2030**	0-25°	75	20-30" x 13"	215.17
DSWP2333	7°	120	23-33" x 13"	202.42
DSWP2030	7°	120	20-30" x 13"	190.10
SSCM1420**	0-25°	75	14-20" x 11"	186.16
DSWP1420	7°	120	14-20" x 13"	182.49



Model	Tilt	Weight Load (lbs.)	Platform Width x Depth	Price
SSWP2030*	12½°	75	20-30" x 13"	\$117.50
SSWP1420	12½°	75	14-20" x 11"	111.04
SSWP1014	12½°	75	10-14" x 11"	111.04

Fixed Nonlocking

1721N	12½°	75	22" x 12"	\$71.54
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*Swivel becomes limited by depth of TV and widths over 26".

**Yoke type mounts.

† 21½" side arms allow more clearance for taller sets.

TV Ceiling Mounts

Model	Tilt	Weight Load (lbs.)	Platform Width x Depth	Price
Adjustable Tilt Nonlocking Platforms				
ACM3045L††	0-20°	120	30-45" x 15½"	\$252.35
ACM3045	0-20°	120	30-45" x 15½"	233.95
ACM233L††	0-20°	120	23-33" x 13"	212.06
ACM2333	0-25°	120	23-33" x 13"	202.42
ACM203L††	0-20°	120	20-30" x 13"	199.74
ACM2030	0-25°	120	20-30" x 13"	190.10
ACM1420	0-25°	120	14-20" x 11"	178.69
ACM3045F	Ceiling flange for ACM3045/3045L			39.85

†† Long side arms allow more clearance for taller sets

Nonlocking Platforms

CTL2030	12½°	100	20-30" x 13"	\$126.51
CTL1420	12½°	100	14-20" x 11"	119.61
CTL1014	12½°	100	10-14" x 11"	119.61
CTL1721N	12½°	100	21" x 12"	101.08

Locking Platforms

CTL6104	12½°	100	25" x 14"	\$132.81
CTL6105	12½°	100	18" x 18½"	129.93
CTL6103	12½°	100	22" x 14"	129.93
CTL6102	12½°	100	23" x 11"	118.44
CTL6101	12½°	100	15" x 12"	118.44
CTL6100	12½°	100	19" x 12"	118.44

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



SR SERIES PRODUCTS

SR32•4 Audio Mixer

▪ Designed to make serious impact on the 4-bus mixer market ▪ 32 channels, 28 mic/line and 2 stereo line inputs ▪ True 4 x 2 x 1 bus with mutes and AFL/PFLs solo ▪ 60mm faders ▪ UnityPlus gain structure ▪ 4 submix buses ▪ Very low impedance (VLZ) circuitry for low noise. **\$2299.00**

SR24•4 Audio Mixer

▪ 24-channel version of the SR series ▪ 24 channels, 20 mic/line and 2 stereo inputs ▪ True 4 x 2 x 1 bus with mutes and AFL/PFLs solo ▪ 60mm faders ▪ UnityPlus gain structure ▪ 4 submix buses ▪ Very low impedance (VLZ) circuitry for low noise **\$1599.00**



MicroSeries MS1202-VLZ 12 x 2 Mic/Line Mixer

▪ Very low impedance circuitry (VLZ) design ▪ 60dB gain, low cut filter on channels 1-4 ▪ 3-band EQ on all channels (1.2kHz, 2.5kHz, 80Hz) ▪ Mute/Alt 3-4 function routes signals to an alternate stereo output ▪ Balanced inputs/outputs everywhere (except RCAs, phones and channel inserts) ▪ PFL solo on every channel ▪ Balanced XLR main outs with switchable 30dB pad ▪ Control room/phones source allows more combinations of signals, which can also be re-routed back to main mix **\$429.00**

RM1202-VLZ Rackmount brackets convert the MS1202-VLZ into an 8 rack space configuration **12.00**

COMPACT PRODUCTS

CR1604-VLZ

16-Channel, 4-Bus x 2 Mic/Line Mixer

▪ 16 low noise/high headroom 60dB mic preamps with phantom power ▪ True 4-bus layout ▪ 3-band EQ with sweepable mids ▪ Low cut filter on every channel ▪ VLZ architecture ▪ Control room/phones section for extra monitoring flexibility ▪ Multiway physical configuration ▪ Channel inserts on all channels plus direct outs on 1-8 ▪ Tape interface for easy mixdown ▪ -20/solo and OL/mute LEDs ▪ Balanced inputs/outputs (except RCAs, phones and channel inserts) **\$1199.00**

RP1604-VLZ Rotopod accessory bracket and rack rail set for the CR1604-VLZ. Allows the CR1604-VLZ input/output pod to be used in either table top or rackmount positions **25.00**



LM-3204 32 x 2 Stereo Line Mixer With 2 Mic Inputs

▪ 5 rack space design ▪ 32 balanced/unbalanced line inputs (16 stereo channels) ▪ 4 auxiliary sends/channels ▪ 4 stereo/8 mono auxiliary returns ▪ Control room level and output functions ▪ Sealed potentiometers ▪ Rugged steel construction ▪ Built-in power supply. **\$999.00**

LM-3204E 16 Stereo Channel Line Mixer Expander

▪ Adds 16 stereo channel strips to the LM-3204 ▪ 4 extra auxiliary returns are included ▪ Connects to the LM-3204 via a proprietary ribbon cable **\$899.00**

Compact Product Accessories

MixerMixer Combines up to 12 outputs from any 3 mixers. **\$229.00**

Remote Fader 100mm remote fader with 6' cord. Allows main outputs from all mixers combined via MixerMixer to be governed by a single fader. Each combined mixer's main outs become submasters. **75.00**

Cord Pack All the cables needed to connect up to 3 mixers with 1 MixerMixer, includes a total of 39 3' cables (36 mono, 3 stereo) **69.00**

MicroSeries MS1402-VLZ 14 x 2 Mic/Line Mixer

▪ 14-channel compact mixer with faders ▪ 6 low noise/high headroom 60dB mic preamps with phantom power ▪ 6 balanced/unbalanced mono line inputs ▪ 8 stereo inputs ▪ 3-band EQ ▪ 60mm faders on all channels ▪ PFL/AFL on every channel (globally switchable) ▪ Low cut filter (channels 1-6) ▪ Balanced XLR main outputs ▪ Very low impedance (VLZ) architecture ▪ EFX to monitor switch ▪ Balanced inputs and outputs (except RCAs, phones and channel inserts) **\$599.00**

RM1402-VLZ Rackmount brackets convert the MS1402-VLZ into a 9 rack space configuration **12.00**

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



Authorware® 4 Interactive Studio™ for Windows/Macintosh®

Authorware 4 Interactive Studio is the leading tool for web-based multimedia and learning. It allows for the creation of web-based courseware, realistic product simulations with voice-overs, CD-based catalogs that update pricing online, educational web sites, database-connected kiosks and hypermedia reference titles. It features major advancements in ease of use, tools integration, productivity, extensibility, intranet delivery and database connectivity. It has a full suite of integrated tools which includes: Authorware 4, Director® 6, Backstage™ Internet Studio 2: Enterprise Edition (for Windows), SoundEdit™ 16 v. 2.2 or Sound Forge XP, Solis Pathway MV (Windows) and xRes™ 3.

Authorware 4 ■ Create multimedia learning applications for the web ■ Visual authoring makes it simple to create interactive courses ■ True cross-platform development ■ Data tracking ■ Extensive text handling ■ Database connectivity content management ■ Multiplatform delivery (including immediate playback over the web with streaming Shockwave and powerful extensibility through ActiveX controls and Xtras™)

Director 6 ■ Create internet and hybrid CD+internet applications with new drag-and-drop behaviors ■ Live web authoring ■ Streaming Shockwave ■ Plays files back without waiting for media to download ■ Reaches Windows and Mac users worldwide

Backstage 2 Internet Studio™ ■ Power your web site with database connectivity ■ Combines WYSIWYG authoring with 16 dynamic server-side objects

Macromedia xRes 3 ■ Create and prepare images for your web site using embedded URLs, transparent GIF and progressive JPEG ■ Drag-and-drop between leading graphics tools including FreeHand and Photoshop ■ Customize photos with high-res performance ■ Publish high-resolution images on the web using Shockwave

SoundEdit 16 v. 2.2 for the Macintosh ■ Multitrack CD-quality sound for multimedia and digital video productions ■ 16-bit, 44kHz sound editor ■ Adjustable input levels ■ Apply effects ■ Batch process files ■ Synchronized sound to QuickTime movies

Sonic Foundry's Sound Forge XP ■ 16-bit sound editor for Windows ■ Record, edit, mix and manipulate audio files for use in multimedia productions ■ Features include: time compression, pencil editing, pitch bend, 16- to 8-bit dithering, sampling rate conversions and a variety of sound effects and audio processors

Solis Pathway MV ■ Customizable, centralized control for the delivery and administration of computer and web-based Authorware courses

Authorware 4 Interactive Studio \$2999.00



Director 6 Multimedia Studio™ for Windows/Macintosh

Create interactive multimedia for CD-ROM and the web with Director Multimedia Studio. It combines multimedia production tools with advanced web authoring and playback capabilities. It allows the user to integrate and synchronize multimedia, including text, graphics, animation, digital video and sound, with any popular media creation tool. Add interactivity with drag-and-drop behaviors. It features Director 6, Macromedia xRes 3, Extreme 3-D version 2, SoundEdit 16 v. 2.2 or Sound Forge XP (Windows).

Director 6 ■ Create internet and hybrid CD+internet applications ■ Live web authoring ■ Streaming Shockwave ■ Plays files back without waiting for media to download ■ Reaches Windows and Mac users worldwide

Extreme 3-D 2 ■ Everything you need to go from modeling and animation to final rendering and the web ■ Create organic 3-D models, dynamic 3-D animations and 3-D graphics for print, multimedia and the web ■ Advanced features include: metaforms, particles and visible spotlights

Macromedia xRes 3 ■ Create and prepare images for your web site using embedded URLs, transparent GIF and progressive JPEG ■ Drag-and-drop between leading graphics tools including FreeHand and Photoshop ■ Customize photos with high-res performance ■ Publish high-resolution images on the web using Shockwave

SoundEdit 16 v. 2.2 for the Macintosh ■ Multitrack CD-quality sound for multimedia and digital video productions ■ 16-bit, 44kHz sound editor ■ Adjustable input levels ■ Apply effects ■ Batch process files ■ Synchronized sound to QuickTime movies

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Director 6 Multimedia Studio \$999.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



TEST EQUIPMENT/ VIDEO GRAPHICS ENCODING



MAGNI®

WVM-720™ Automated Video Signal Monitor

- Full-function, multistandard, multiformat, rasterizing waveform monitor and vectorscope with auto measure and remote operation capabilities
- Includes auto measure screens for both studio and transmission applications, stereo audio amplitude and phase display, waveform storage, overlay and PictureGuard™ display
- 864MHz equivalent sampling rate yielding high resolution, flat frequency response for video waveform and measurement applications
- Works with all major analog video formats: NTSC, PAL, component analog video or S-Video
- Stereo audio level and phase display for complete studio monitoring
- Accepts concurrent inputs for composite and component video
- Signal monitoring to preset limits and tolerances, with out-of-limit alarms
- Monitor signals with a PC, prints signal parameters and waveforms for analysis and troubleshooting of remote facilities and for ATE applications
- Record signal measurement parameters for proof of performance
- Windows® based Logbook II™ software for remote control and monitoring



WVM-720 \$5,495.00

WVM-710A™ Automated Video Signal Monitor

- Physically and operationally similar to WVM-720
- Offers complete composite and limited component signal monitoring for studio and routing applications
- Offers 2 composite auto measurement sets for broadcast/cable distribution and routing, stereo audio level and phase display for complete studio monitoring
- 6 custom measurement setups
- Stores 6 waveforms
- Printout capability

WVM-710A \$4,495.00

WVM-LBII Windows based Logbook II software for remote control and monitoring 295.00

AVM 510 Automated Video Signal Monitor

- The latest in Magni's family of multistandard, multiformat rasterizing waveform/vector monitoring systems
- Specifically designed for "Live" video signals with or without VITS
- Provides all the key information for applications in post production, duplication, cart machines, video servers and manufacturing
- Will serve as the analog platform for optional digital processors for both Serial D1 and D2 outputs
- Provides vital digital information including eye pattern, jitter and EDH
- Fully operable from a PC and compatible with Logbook II software for remote monitoring
- Proof of performance features include time code and "real time" stamps when errors occur
- Results can be stored to a file or printed to a report for remote control and monitoring

AVM 510 \$3,995.00

WVM-LBII Windows based Logbook II software 295.00



Magni Monitor—Compact Monitoring System

- Base unit: 3 monitoring inputs
- Remote unit: menus and straightforward controls for streamlined operation
- Waveform monitor and vectorscope
- NTSC, PAL, component
- Automatic standard detection feature
- View waveforms on standard picture monitors, eliminates specialized CRTs
- Adjustable waveform/graticule colors
- Adjustable intensity
- SC/H phase and color frame

limit warnings (vectorscope mode) • Component amplitude/timing warnings (waveform monitor mode)

MM-400 Combination waveform/vector with built-in S-Video, front panel controls and 2 S-Video loophrough inputs \$1,995.00

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 signal sets for all formats
- Creator software offers user-designed custom signals and transfer of signals to a memory card through a user-friendly program
- Straightforward 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 patterns, blackburst and pulse outputs

SC-P Basic PAL/NTSC, 625/525 component configuration \$ 6,950.00

SC Deluxe SC-P with BB, SD and Z options installed 12,065.00

SC Standard SC-P with BB, SD options installed 10,220.00

VGA Producer 16 Character Generator

- High performance genlock overlay ISA card
- VGA to Video conversion
- For PC platform
- Comes packaged with Inscribe CG software
- Simultaneous outputs of noninterlaced VGA and flicker stabilized, interlaced video with graphics overlay
- Video outputs support 16-bit color resolutions in 640 x 480 NTSC and 800 x 600 PAL modes
- Features for studio integration include horizontal timing and subcarrier phase adjustment



VGAP-16P-CG For PAL. Includes VGAP-16P, VGAP-FX, Inscribe CG IN70M \$2,365.00

VGAP-16N-CG For NTSC. Includes VGAP-16N, VGAP-FX, Inscribe CG IN70M 2,265.00

VGA-16P Producer 16 PAL version 1,495.00

VGAP-16N Producer 16 NTSC version 1,395.00

VGAP-CPNT Multiformat component and RGB output option 395.00

VGAP-FX F/X controller with key, fade, cut and mix . . 175.00

TSG-700 Series Test Signal Generators

- 12 precision test signals for television studio applications
- Full genlock capability
- Includes stereo audio test tone outputs
- Supports both composite and Y/C formats

TSG-700 NTSC and Y/C generator \$1,995.00

Magnicoder™ Computer Graphics to Video Converter

- External box converts 24-bit graphics to video output
- Freeze frame feature holds last computer screen at video output
- Outputs both composite and S-Video formats
- Compatible with both PC and Macintosh platforms

CTV1-N NTSC Version \$695.00

CTV1-P PAL Version 695.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





CDR620/615 Compact Disc Recorders

Common Features

- Sample rate converter and DAT start ID/CD track converter
- Balanced +4/-10dBu selectable analog input ▪ High oversampling 1-bit A/D (64X) and D/A (128X) converters ▪ IEC-958-II digital I/O
- Subcode sensing or adjustable level sensing for automatic track incrementing (also supports manual track incrementing) ▪ 9-pin parallel (GPI) interface for external automation



CDR620

CDR620 Includes common features, plus: ▪ +4dBu balanced analog output ▪ SCSI-II interface for PC connection and for use as a CD-ROM recorder ▪ AES/EBU digital I/O ▪ ISRC and UPC/EAN encoder/decoder and index record and play capability ▪ Defeatable copy prohibit and emphasis ▪ 34-key wired remote control (RC620) **\$3600.00**

CDR615 Includes common features, plus: ▪ RCA analog out ▪ Features capable with optional remote: ISRC and UPC/EAN encoder/decoder and index recording and playing ▪ Defeatable copy prohibit and emphasis **\$2600.00**

RC620 Wired remote. **300.00**

PMD350 Compact Disc Player/Cassette Deck

- Combination CD player/cassette deck in one 3U rackmounted chassis
- Marantz RC5 remote I/O ▪ AMX and Crestron controllable ▪ CD cue-to-music ▪ Mix output ▪ Digital output for the CD player ▪ Headphone monitoring capability ▪ Mic inputs ▪ CD track programming **\$749.00**

PMD320/321 Compact Disc Player

Common Features

- ±1.2% pitch/speed control (adjustable in 0.1% increments) ▪ CAL key for quick speed calibration ▪ Fader start trigger input ▪ Optional wired or infrared remote ▪ 2U rackmount chassis ▪ Marantz RC5 remote I/O ▪ AMX and Crestron controllable

PMD320 **\$429.00**

PMD321 Includes common features plus: ▪ +4dBu balanced XLR outputs ▪ Cue-to-music **\$29.00**

PMD370 5-Disc Carousel CD Changer

- Full random play ▪ Single or multiple track repeat ▪ Direct index access (via remote) ▪ Audible cue and review ▪ Automatic music search (intro search) ▪ Full-featured IR remote control ▪ Marantz RC5 remote I/O ▪ AMX and Crestron controllable ▪ 3U rackmount chassis **\$399.00**

PMD510 Independent Dual Well Cassette Deck

- Separate inputs and outputs for each well ▪ Continuous and relay play capability ▪ Optically sensing auto reverse between sides of each well and between wells
- Dolby™ B/C/HX Pro ▪ Digital real time counters with memory rewind ▪ Optional wired or infrared remote
- Marantz RC5 remote I/O ▪ AMX and Crestron controllable **\$829.00**



PMD500 Rackmountable Dual Well Cassette Deck

- Both wells record serially or simultaneously ▪ Continuous and relay play
- Optically sensing quick auto reverse ▪ Automatic tape bias selection
- Dolby B/C/HX Pro ▪ 3 automatic search modes ▪ 2-head design
- Marantz RC5 remote I/O ▪ AMX and Crestron controllable **\$639.00**

PMD502 Pitch Control Cassette Deck

- Optically sensing quick auto reverse ▪ 2 heads ▪ 3U rackmountable
- Dolby B/C/HX Pro ▪ Headphone jack with level control ▪ Solenoid (logic) control ▪ Defeatable automatic level control (ALC) ▪ Dual front panel mic inputs ▪ Marantz RC5 remote I/O ▪ AMX and Crestron controllable **\$499.00**

PMD501 Single Well Cassette Deck

- 7-segment LED peak meters ▪ Optically sensing quick auto reverse
- 2 heads ▪ 3U rackmountable ▪ Dolby B noise reduction ▪ Headphone jack with level control ▪ Solenoid (logic) control ▪ Marantz RC5 remote I/O ▪ AMX and Crestron controllable **\$329.00**

PMD430 Portable Stereo Cassette Recorder/Player

- Dolby B noise reduction ▪ dbx® noise reduction ▪ 3-head design ▪ Bias fine adjustment ▪ 3-position tape selector (metal, CrO₂, normal)
- 4-way power supply: 120VAC to 4.5VDC, 3 "D" cells, optional rechargeable RB430 battery pack and car adaptor ▪ Headphone output jack ▪ 3-position microphone attenuator (0dB, -15dB, -30dB) . . . **\$649.00**

PMD200 Series Portable Cassette Recorder/Players

Common Features

- 2-speed (1½ and ¾ ips) ▪ VU level indication ▪ 3-position microphone attenuation (0dB, -10dB, -20dB) ▪ Playback pitch/speed control
- Automatic or manual record level ▪ Built-in electret condenser microphone ▪ Audible cue and review ▪ Tone control ▪ Line input/output jacks

PMD222 Includes common features, plus: ▪ 3-head design ▪ Balanced input and XLR connector ▪ Modular telephone jack ▪ ½-speed recording and playback ▪ AC adaptor/battery charger ▪ Auto replay ▪ Replay memory ▪ Built-in limiter **\$479.00**

PMD221 Includes common features, plus: ▪ 3-head design ▪ Memory rewind and replay ▪ Modular telephone jack ▪ Telephone pickup jack ▪ Full auto shut-off ▪ Switchable limiter ▪ Built-in monitor speaker ▪ 3-position tape selector. **449.00**

PMD201 Same as PMD221, except: ▪ 2-head design **379.00**

Superscope VPS200 Video Presentation System

- Lightweight, stand-alone camera ▪ Projects a variety of multimedia in either color or black-and-white
- ½" CCD technology accommodates 3-D objects, film negatives, slides, photos, transparencies and printed images or documents ▪ S-Video and composite video outputs allow the VPS200 to be used in conjunction with a variety of standard projection systems including TV monitors, LCD panels and video projectors ▪ Can also be used as a direct input to VCRs and PCs ▪ 2X zoom, focus and brightness control ▪ 410,000 pixels ▪ 400 lines horizontal resolution **\$799.00**



Superscope PAC Series of Portable Sound Systems

Common Features

- Integrated amplifier and microphone control unit ▪ 2-speaker operation
- Automatic Gain Control (AGC) ▪ Includes the SPK300, a highly efficient 2-way loudspeaker system designed for voice reproduction and easy connection to the PAC amplifier for portable applications ▪ SPK300 includes a 6" woofer, 3" tweeter and is designed with video shielding for applications incorporating TVs or monitors

PAC390 Includes common features plus: ▪ 2 built-in UHF true diversity wireless microphone receivers with selectable channels ▪ ¼" wired microphone input with level control ▪ Price includes customer's choice of 2 of the 3 wireless microphone systems ▪ Call for details **\$1999.00**

PAC360 Includes common features plus: ▪ 1 built-in UHF true diversity wireless microphone receiver with selectable channels ▪ ¼" and XLR wired microphone inputs with level control ▪ Price includes customer's choice of 1 of the 3 wireless microphone systems ▪ Call for details **\$1499.00**

PAC330 Includes common features plus: ▪ Can add wireless capability by connecting to a stand-alone wireless microphone system ▪ ¼" and XLR wired microphone inputs with level control **\$799.00**

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



DESKTOP VIDEO PRODUCTION SYSTEM



DigiSuite®

Matrox® DigiSuite is a high-powered, open architecture digital media boardset for quality uncompressed video, graphics processing and audio-for-video production under Windows™ NT. It can be used as a nonlinear audio/video editing system, visual effects compositor, 3-D animation recorder, character generator and digital still store with software from several application providers.

Some features of the DigiSuite include: uncompressed ITU-R 601, D1 video quality; A/B roll editing with 32-bit graphics, 2-D and 3-D DVE, 8-track audio mixing and advanced keying simultaneously; infinite-layer hardware-assisted audio/video compositing engine; and open architecture based on Windows NT, ActiveMovie, Movie-2 bus and PCI-bus.

Video/Graphics

- Ultra high-speed 32-bit RGB-Alpha frame buffer for CG, graphics, 3-D animation and 2-D paint
- True D1 quality 10-bit YUV 4:2:2:4 digital video processing
- Analog component (Y/R-Y/B-Y), Y/C composite video I/O
- Optional Miranda DigiLinx serial digital (SDI) I/O
- ITU-R 601 resolution 720 x 486 NTSC, 720 x 576 PAL
- All digital video decoding and encoding with 2x oversampling
- Advanced analog and digital filtering prevent "ringing" on the video signal
- 2 advanced luma/chromakeyers with anti-aliased edges, chroma suppression and shadow preservation
- Alpha keying with gain and clip adjustments and anti-aliasing
- 5 simultaneous real time 2-D DVE processors with 1/4 sub-pixel move and scale precision: 2 for video, 1 for graphics, 1 for graphics alpha key, 1 used as infinite window TBC with full proc amp controls
- Optional Pinnacle Genie real time 3-D DVE adaptor
- 2 wipe/tile generators featuring anti-aliased edges and soft borders
- Blackburst genlock input
- Independent preview and program video outputs
- Linear key output
- Full and half-blending key modes
- Optional Matrox DigiConnect™/Video breakout box

Video Codecs

- 2 independent motion-JPEG codec modules
- Mathematically lossless mode provides uncompressed video quality
- Baseline mode provides software adjustable data rates from preview quality
- ITU-R 601 NTSC and PAL resolution at 60/50 fields per sec.
- Data format is ISO 1091B-1 and Microsoft JPEG DIB compliant

Media Storage

- Storage is perceived as a "common pool" and recognized by the Windows NT file system (NTFS)
- Unified storage architecture eliminates the need to move shots from 1 disk to another in order to perform transitions
- All digital media is immediately available to all applications without file format conversion or transfers
- On-board ultra-wide SCSI controller frees the full bandwidth of the host computer's PCI bus
- Support for up to 15 differential or nondifferential SCSI storage devices attached to the onboard controller

Audio

- 32-bit DSP for 8-track real time audio mixing and processing
- Audio clock genlocked to video reference ensures synchronization in accordance with SMPTE-272M and AES11-1991
- 4 balanced/unbalanced analog inputs and outputs
- 4 AES/EBU S/PDIF digital audio inputs and outputs (requires DigiConnect/Audio)
- Independent stereo monitor output
- 44.1 and 48kHz sampling at 16 bits
- Optional Matrox DigiConnect/Audio breakout box

DMX/DMT/KIT/N Matrox DigiSuite boardset (NTSC DigiMix and DigiMotion) for use with nonlinear editing, compositing and 3-D animation software. Includes DigiConnect/Audio and Video breakout boxes. \$9995.00

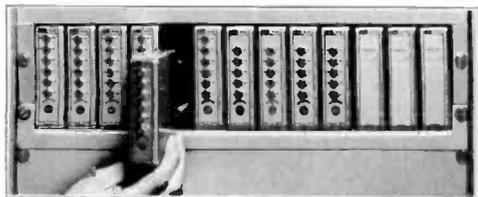
DMX/KIT/N Matrox DigiMix Kit (NTSC) for use with Image North Technologies Inscribe CG Supreme character generator and VideoCarte digital store software. Includes cable. 4220.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





VIDEO DELAY SYSTEMS/ DIGITAL VIDEO INTERFACES



VIDEO DELAY BOXES (VARIABLE), NV SERIES

▪ Impedance: 75 ohms ▪ Frequency Response: ± 0.05 dB up to 5.5MHz (0.1dB p-p) ▪ Return Loss: 27dB ▪ Temperature Range: 0-70°C ▪ Maximum Input Voltage: 2VDC ▪ Performance of box and 19" rack unit is a function of the delay line combinations

Small metal boxes with BNC connectors provide infinitely variable video delay either with switches (type 180 or 360) or taps (type 097) over a range of 10-665ns. A ± 1 ns trim achieves precise timing at installation and compensates for temperature and aging variations during subsequent maintenance. The prefix "NV" identifies boxes which can be used as stand-alone units or mounted on a 19" rack panel (Type 5), which accommodates 15 separate boxes.

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 NTSC, PAL, SECAM TV systems, including variations.

Passive Delay Boxes

Rackmounted—Panel 5 holds 15NV units. Comes with Lucite cover \$100.00

Boxes with Switches and \pm Vernier

Part Number	Delay Range	Price
NV180	10-170ns	\$336.00
NV360	10-330ns	417.00
NV455	310-480ns	417.00

NV455 Boxed Video Delay Unit

▪ Designed for the Video Toaster® ▪ 310-480ns ▪ Switchable to within 2ns ▪ Vernier on delay adjusts to ± 1 ns ▪ 75 ohm ▪ < 2.0dB insertion loss ▪ Mountable in Type 5 rack frame \$417.00

2500 SERIES DELAY DISTRIBUTION AMPS

▪ Best performance of delay DAs on the market

2503 Delay Line/Video DA Card

▪ Provides a 1 x 2 delay line and a 1 x 5 video DA on the same card ▪ Delays available in any amount from 10-2,000ns ▪ Loophthrough and up to 7 outputs available ▪ Delay switches, gain control and cable EQ of 150' are variable from the front panel ▪ Occupies 1 slot in the 25RFA 3RU rack frame POR*

2054 Delay Line/Cable EQ Card

▪ Provides delay from 10-1,000ns ▪ Cable EQ up to 1300' available in 150' blocks ▪ Front panel selection of delay and equalizer block are via toggle switches ▪ Loophthrough and up to 6 outputs available ▪ Occupies 1 slot in the 25RFA 3RU rack frame POR*

2550 One and Two Line Delay

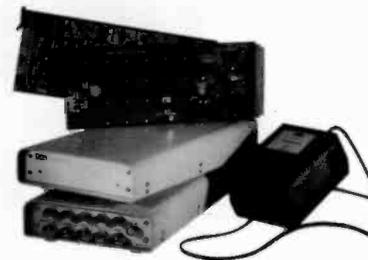
▪ Provides variable delays from 2 μ s to over 100 μ s ▪ Front panel selection of delay in 1ns steps with fine trim gives total flexibility ▪ Loophthrough and 2 outputs are provided ▪ Occupies 2 slots in 25RFA 3RU rack frame POR*

25RFA Rack Frame

▪ 3RU high sub-rack for use in standard 19" cabinets ▪ Contains 12 slots to accommodate any combination of 2500 cards including the 2501A power supply ▪ Each card screws into the frame ▪ 8 points of contact reduce modes of vibration—important when mounted in an OB/mobile truck POR*

3000 SERIES DIGITAL VIDEO INTERFACE AND DISTRIBUTION SYSTEM

▪ Based upon an extended Eurocard format ▪ High packing density ▪ Range includes 10-bit A to D and D to A converters plus serial digital distribution amps both reclocking and non-reclocking ▪ Serial digital to fiber optics links ▪ Processing using quality 10-bit converters and full specification CCIR-601 filtering ensures optimum broadcast performing ▪ Serializers/deserializers to component and composite standards included ▪ 6 cards contained or housed in 1RU sub-rack frame, designed to meet latest EMC directives ▪ Available as individual stand-alone boxes



ADC-3011 10-Bit YUV to SDV

▪ Converts analog YUV component signal to serial digital component video (270Mbps) ▪ Full specification CCIR-601 filtering ensures maximum broadcast performance POR*

DAC-3021 10-Bit SDV to YUV/RGB

▪ Converts serial digital signals into YUV or RGB component analog video outputs ▪ Full CCIR-601 specifications POR*

DAC-3023 NTSC/PAL Encoder

▪ Converts serial digital signals into NTSC composite signals for use with analog input monitors ▪ 5 outputs POR*

CDD-3101 NTSC/PAL Decoder

▪ Composite analog NTSC/PAL signals are decoded to provide 4:2:2 serial video data streams ▪ A single card offers broadcast quality 3-line adaptive comb filter decoding with 10-bit processing .. POR*

Processing Cards

SER-3031	Parallel to serial converter	POR*
DES-3041	Serial to parallel converter	POR*
SDA-3051	Digital distribution amplifier—non-reclocking, 4 outputs	POR*
SDA-3052	Digital distribution amplifier—reclocking, 4 outputs	POR*
SDA-3054	Digital distribution amplifier—reclocking, 8 outputs	POR*

RF-3000 1RU Rack Frame

▪ Holds six 3000 series cards and power supply ▪ With 2 racks power supplies are redundant ▪ Signal processing cards are linked to rear panel via appropriate rear connector PCB which holds appropriate configuration of BNC or 25-way D-connector ▪ Compatible with the latest European EMC directives ▪ Finger contacts ensure isolation and radiation protection ▪ Supplied with I/O and PSU cards fitted ▪ Available as stand-alone boxes POR*

RF-3004 SDV to Fiber-Optic TX/RX Rack Frame

▪ Serial digital signals can be transmitted and received via fiber optic cable ▪ Any combination of up to 18 transmit or receive modules can be accommodated in the 1RU rack or add-on modules as growth occurs ▪ TX or RX modules can be supplied as individual stand-alone boxes POR*

* Price On Request

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





Comet/CG® 3.5 Professional Character Generation Software

- For Power Macintosh ■ A comprehensive solution for creating and displaying top-quality, anti-aliased fonts and graphics in professional video and broadcast environments ■ Object oriented ■ Sophisticated text capabilities ■ Easy-to-use interface ■ Not hardware specific ■ Can add character generation capabilities to a digital editing system by creating PICT files with alpha channel or can be used independently with an A/V compatible Macintosh ■ Use as a dedicated character generator by adding a keyer card ■ Supports NTSC, PAL, component and composite cards ■ Can match any aspect ratio up to HDTV ■ Provides hardware dissolves, rolls and crawls on supported video cards ■ External triggering available ■ Extends capabilities to include object caching, embossed text and texture mapped graphics ■ Full support for AppleEvents ■ Can maximize text and graphics effects with the use of the Comet/CG Animation Module

Text Features

- Support for any TrueType™ or PostScript® font without modification
- Support for most WorldScripts, including double byte scripts
- Scan line leading control
- Individual character kerning with overlap
- Less than 10ns effective resolution with aspect conversion
- Auto-scaling or user scaling in 10ths of a percent
- Mapping of gradients or any Macintosh PICT graphic to text
- Includes popular mapping textures like wood, chrome and marble
- Edge control including width, color, transparency and softness
- Full control over edges to create neon and glowing text
- Extruded or drop shadows with softness, scale, degree and transparency
- Dual column credits with center, right and left justification with tab stops
- Text keyword search on all open documents

Graphics and Objects Features

- Import Macintosh PICTs
- Automatic drop shadows with softness and transparency
- Vertical and horizontal scaling in 10ths of a percent
- Controllable rise-time edge filter for alpha key and/or color fill channels
- 3 object types for graphics, rules and bars, and text
- Shadows with controllable offset, degree, softness and transparency
- Backgrounds with automatic color or alpha ramps with feathered edges
- Unlimited objects per page
- Positioning control with mouse or keyboard
- Group and lock objects for easy positioning and alignment
- Use transparency with unlimited overlap for compositing
- Full alignment controls for positioning objects to page or other objects
- Skewing of bars and rules to match the slant of the type
- Straight alpha for keying with chunky matte fill
- Key to color for additive or luminance keying
- Aspect ratio preservation for non-square pixels such as 601

Document and Page Features

- Multiple open documents
- Copy/paste between pages and documents
- Thousands of video pages per document for logical job grouping
- Thumbnail palette for instant page recognition and access
- Virtual canvas of one gigapixel per video page for easy rolls and crawls
- Safe title and action areas
- Automatic PAL and NTSC color legalization
- Alpha, solid, gradient, PICT graphic or captured image backgrounds
- 16 modifiable color palettes
- Select color in RGB or HSB models
- Document page adjustable grid lines for easy positioning
- Import PICT or text files
- Merge databases for automatic CG page creation

System Requirements

- Native code for both 68000 Macintosh and RISC Power Macintosh
- Minimum 16M bytes system memory (32M bytes or more recommended)
- Power Macintosh recommended
- 200M bytes hard disk drive
- System software 7.5 or derivative
- TrueType or PostScript fonts
- Minimum 14" preview monitor (32-bit color, 16" recommended)

Comet/CG 3.5 \$995.00

Comet/CG Animation Module

- Adds animation and dynamic special effects to text and graphics
- Advanced effects capabilities, including multilayer compositing for independent control of individual objects and animation over key frames
- Motion subpixel positioning down to 1/65,535 of a pixel
- Supports NTSC and PAL frame rates
- Text and graphics can be output in most resolutions, including HDTV and beyond
- Key frames can be added, inserted, deleted or repositioned within an interactive graphical interface
- Creative options with innovative ways to manipulate text and graphics, such as changing character kerning or independent horizontal and vertical scaling over time
- Quick motion visualizer with transparency and clipping
- Zoom in and out on full resolution objects during interactive placement
- See all layers' relationships or just the current selected layer
- Add, delete or reposition key frames visually with just a click
- Change key frame locations and time interactively
- Automatically interpolated new key frame between established key frames

Evolving Attributes for Objects

- Zoom from .01X to 100X levels in 1/100 of 1% accuracy
- Separate horizontal and vertical scaling in .01% accuracy
- Transparency (opacity) in 1% increments
- Shadow color, transparency, offset position and softness
- Background color, gradient and transparency cycling
- Text border outline color, transparency width and softness
- Transform text outer glows from minimal to widespread
- Inter-character spacing (kerning) in .2% accuracy
- Shadow H and V scaling independent of foreground text

Output

- Output in most resolutions including HDTV and beyond
- Positioning to 1/65,535 (0.000015) of a pixel
- 64X oversampling
- Splined or linear motion paths along key frames
- High quality anti-aliasing with adjustable rise-time filter
- 256 anti-aliasing transparency levels for highest resolution
- NTSC and PAL supported frame rates and color legalization
- Composite motion object gradients, color or PICT file
- Create compositions and overlaps without restrictions
- Full alpha channel keying; color or black additive keying
- Hardware manufacturer CODEC support for compression
- Window dub time code
- Interlaced or noninterlaced frames
- Alpha masking for soft screen boundaries

Comet/CG Animation Module \$ 495.00

Comet/CG 3.5 bundled with
Comet/CG Animation Module 1295.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





Media 100[®] xs Digital Video System

- Real time effects performance
- Vincent™ 601 digital video engine enables user to finish programs online at 2:1 compression (300K bytes/frame NTSC, 360K bytes/frame PAL)
- Real time feature set
- Integrated character generator, CGStudio™
- Real time editing and playback
- Real time transition effects (21)
- Real time, full-frame static text and alpha-channel keying
- Real time ColorFX™ and preview MotionFX™
- Real time audio mixing on 8 tracks with real time crossfades
- Assemble edit and insert edit to tape
- WipeDesigner™ custom effect generator
- Real time preview of bluescreen compositing with Ultimatte for Macintosh plug-in (not included)
- QuickTime* codec for drag-and-drop of Media 100 files to other QuickTime applications
- Imports/exports standard CMX 3400, CMX 3600, and Grass Valley Group Edit Decision Lists (EDLs)
- Imports Sound Designer II, multichannel, 44.1kHz, 16-bit sample files
- Imports PICT files
- Imports QuickTime files, including alpha-channel support
- Imports/exports QuickTime audio files
- Imports logs using PowerLog™ format
- Imports/exports AIFF
- Exports QuickTime and PICT formats
- Imports multiple PICTs into one clip
- Future upgrade option to Theo™ architecture
- Integrated key-framable motion path
- Consult with your authorized MEDIA 100 reseller to obtain minimum computer system requirements

Media 100 xs \$21,995.00

Media 100 xe Digital Video System

- 6 tracks of real time audio drive on-the-fly creativity
- Real time static titling and keying graphics with alpha-channel
- 3:1 compression (200K bytes/frame NTSC, 240K bytes/frame PAL)
- Import/export industry standard EDL
- Assembles EDLs into Media 100 programs automatically
- Retains all cuts, transitions and motion effects
- Compatible with most offline systems
- Digitize and finish resulting program online
- Vincent 601
- Real time preview dissolve, ColorFX and preview MotionFX
- Real time audio crossfades
- Combines off-the-shelf peripherals with the latest software
- 3-D digital video effects available with Gaudi™
- S-Video, composite and Y, R-Y, B-Y component video input/output
- Real time waveform monitor/vectorscope
- Batch digitizing
- Insert/assemble edit
- Junction box
- WipeDesigner custom effect generator
- View or record 32-bit animations out to videotape in real time
- Genlockable output with horizontal and subcarrier phase adjustments
- Redigitize feature conserves hard disk space
- QuickTime codec for drag-and-drop of Media 100 media files to other QuickTime applications
- Imports/exports standard CMX 3400, CMX 3600, and Grass Valley Group EDLs
- Imports Sound Designer II, multichannel,

- 44.1kHz, 16-bit sample files
- Imports PICT files
- Imports QuickTime files, including alpha-channel support
- Imports/exports QuickTime audio files
- Imports logs using PowerLog format
- Imports/exports AIFF
- Exports QuickTime and PICT formats
- Imports multiple PICTs into one clip
- Consult with your authorized MEDIA 100 reseller to obtain minimum computer system requirements

Media 100 xe \$14,995.00

Media 100 lx Component Digital Video System

- Real time ColorFX and preview MotionFX
- Real time waveform monitor/vectorscope adjusts incoming video quality
- 4:1 compression (150K bytes/frame NTSC, 180K bytes/frame PAL)
- Composite, S-Video and Y, R-Y and B-Y video input/output
- Full set of program-authoring tools
- 4-track digital audio with real time, single-track audio crossfades
- Pure audio fidelity (44.1kHz and 48kHz)
- Combines off-the-shelf peripherals with the latest software
- 3-D digital video effects available with Gaudi
- Real time editing and playback, batch digitize and PowerLog capabilities
- Real time preview of dissolve effect
- Automatic node placements for quick audio editing
- Vincent 601 digital video engine
- Junction box
- QuickTime compatibility with alpha-channel support
- Integrated character generator
- WipeDesigner custom effect generator
- View or record 32-bit animations out to videotape in real time
- Redigitize feature conserves hard disk space
- Genlockable output with horizontal and subcarrier phase adjustments
- Variable clip compression within a single program
- 44.1kHz and 48kHz sampling rates
- Balanced input/output with noise-immune XLR connectors
- Display audio waveforms and scan audio
- Simultaneous video and Macintosh RGB displays
- Dual subsampler in Trim Mode
- Direct control of clips, editing, and effect creation in program timeline includes Auto Insert for inserting and overlaying clips
- Over 50 transition effects
- Consult with your authorized MEDIA 100 reseller to obtain minimum computer system requirements

Media 100 lx \$9,995.00

Media 100 le Real Time Digital Video System

- Real time editing, playback, ColorFX, and preview MotionFX
- Real time preview dissolve
- 24 accelerated effects, genlock support and integrated character generator
- Built-in QuickTime codec provides transparent interoperability with any QuickTime application
- 4:1 compression (150K bytes/frame NTSC, 180K bytes/frame PAL)
- Full set of program authoring tools
- Intuitive user interface
- Nonlinear system
- Automatic node replacements for quick audio editing
- Compatible with Power Macintosh and off-the-shelf peripherals
- 3-D digital video effects available with Gaudi
- Vincent 601 digital video engine
- All images processed in video's native YUV colorspace
- 4:2:2 digital component sampling throughout
- No loss of image quality due to RGB transcoding
- Onboard Surfaceware™ integrates and optimizes software applications
- S-Video and composite input/output
- 4 tracks of digital audio with single-track audio crossfades
- Flexible bin management tools
- WipeDesigner custom effect generator
- View or record 32-bit animations out to video tape in real time
- 44.1kHz and 48kHz audio sampling rates
- 11.025kHz and 22.05kHz audio sampling rates for multimedia applications
- Direct import from CD
- Audio node editing in timeline
- Control audio input/output levels
- Control volume or pan between channels by clip or track
- Display audio waveforms and scan audio
- Stereo adjustment of audio tracks
- Online video and Macintosh RGB display at all times
- Direct control of clips, editing and effect creation in program timeline
- Dual subsampler in Trim Mode
- Bin management tools
- Controls for VTRs
- Consult with your authorized MEDIA 100 reseller to obtain minimum computer system requirements

Media 100 le \$5,995.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





Media 100® qx QuickTime Video System

■ High performance digital video system that lets users of QuickTime® applications create professional, broadcast quality video programs ■ Combines 250K bytes/frame (NTSC) image quality with Adobe Premiere® ■ Works with any QuickTime application, including Adobe After Effects™, Specular Infini-D™, Strata™ StudioPro and Macromedia Director™ ■ Drag-and-drop media files between applications with no quality loss ■ Complete interoperability with all Media 100 systems ■ Compatible with Power Macintosh® and off-the-shelf peripherals ■ Component video version available ■ Software-only upgrade options ■ Vincent™ 601 digital video engine delivers broadcast-quality video ■ All images processed in video's native YUV colorspace ■ 4:2:2 digital component sampling throughput ■ No loss of image quality due to RGB transcoding and interpolation ■ NTSC: SMPTE 170M compliant, meets FCC broadcast requirements ■ PAL: ITU Report 624 compliant (formerly CCIR 624) ■ Onboard Surfaceware™ integrates and optimizes software applications ■ Component version adds Y, R-Y, and B-Y video input and output ■ Nonlinear system for quick editing and on-the-fly changes ■ Wide variety of transition effects ■ Accelerated rendering of 23 effects ■ Single PCI board, in-house testing and integrated software for reliability and quality ■ 2.4:1 picture compression ■ Composite and S-Video input and output ■ Real time playback of 8 tracks of audio ■ 60 fields per second capture and playback ■ Genlock output ■ VTR control ■ Consult with your authorized MEDIA 100 reseller to obtain minimum computer system requirements

- Media 100 qx \$3995.00
- Media 100 qx with Component \$795.00

HDRfx™ Option for Online Real Time Effects Processing

■ Based on the new HDRfx Card which is the first implementation of Media 100's Theo™ Superprocessor architecture ■ HDRfx card offers 4:2:2 digital component effects processing engine ■ HDRfx technology offers real time effects processing at 18+ Mbps (NTSC and PAL) total throughput ■ High-data-rate, real time mixing of 2 streams of video (NTSC 300K bytes/frame, PAL 360K bytes/frame) and a layer of uncompressed static graphics (alpha-channel key) ■ 21 real time transition effects at broadcast quality (2:1 JPEG compression) ■ User-selectable display—NTSC 720 x 486, 640 x 480, PAL 720 x 576, 768 x 576 ■ 21 real time wipes and dissolves ■ Uncompressed text and graphics ■ Real time, full-frame transitions and image processing ■ Conforms to CCIR-601 (ITU-R BT.601) specifications for colorspace, signal processing and display resolution ■ Minimum system

requirements include: Media 100 xs (Vincent 601 required); Power Macintosh 9500 or 9600; 80M bytes min., 96M bytes recommended; 17" or larger display monitor; 24-bit PCI graphics card; SCSI disk drives/disk array with 4Mbps minimum sustained data rate (24Mbps recommended) and 1G byte storage; Apple system 7•5•5 or higher; QuickTime 2.5; Video I/O device; NTSC or PAL video monitor; amplified speakers

HDRfx Option \$7995.00

Gaudi™ DVE Platform for Advanced Digital Effects

■ Easy-to-use platform for creating digital video effects within Media 100 ■ Plug-and-play software for seamless use with Media 100 ■ YUV colorspace 4:2:2 digital component signal processing throughput ■ 12 icon-based controls, including: size, axis, perspective, move camera, skew, key, crop, border, move scene, shape, rotate and "Hilight" ■ Create custom effects like waves and ripples ■ Saves templates for future use ■ Works with NTSC and PAL ■ Minimum system requirements include: Media 100 (any model except Media 100 qx or Media 100 qx with Component); Power Macintosh 9500; 64M bytes RAM; 15", 17" or larger display monitor; 24-bit PCI graphics card; SCSI disk drives/disk array with 4Mbps minimum sustained data rate and 1G byte storage; Apple system 7•5•5 or higher; QuickTime 2.5; single VTR for playing video into and recording video from Media 100; NTSC or PAL video monitor; and amplified speakers

Gaudi \$6995.00

Platinum™ Support Services

■ Protects your investment by safeguarding your hardware, by keeping you up-to-date with the most recent software revisions, and by providing you with one-stop support for answers to your questions ■ Platinum Plus* offers unlimited calls, automatic software updates, free loaner systems, extended warranty coverage and a free subscription to the quarterly newsletter ■ Platinum One-Stop™ offers unlimited calls, rapid response, quick single-source solutions, choice of round-the-clock or business-day support and help with system integration and modification ■ Platinum Software Update helps you to stay up to date with functionality and performance enhancements ■ Receive free software updates automatically ■ Get online documentation for updates at no cost

Platinum Support Services Call For Pricing

*Platinum Plus bundle not available to Media 100 qx customers, however; most services can be purchased separately.

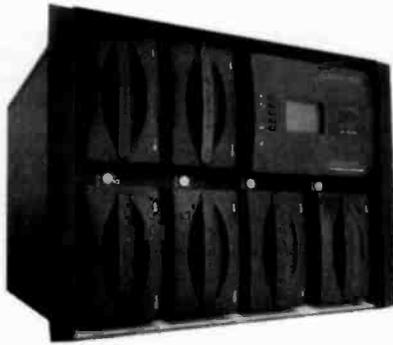
ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





MX/500™ RAID Systems

- Fault-tolerant digital media storage system for applications like broadcast to air, workgroup digital video, video-on-demand and publishing
- Fast/Wide SCSI-2 interface provides data throughput rates of up to 100Mbps with up to 345G bytes on a single SCSI ID utilizing its unique master/slave architecture
- Support for RAID levels 0, 3 and 5
- Pushbutton graphical LCD display for on-the-fly configuration and monitoring
- Active backplane design
- Hot-swappable and fully shock- and static-protected drive modules for data integrity



MX/500 Rackmount \$11,950.00
XS/500 Slave Unit 5,950.00

MR/MK™ RAID Systems

- Fault-tolerant RAID disk arrays for data-intensive applications like broadcast video, post-production, prepress and organization-wide networking
- Combine a Fast/Wide SCSI-2 interface with hardware-based RAID controller to deliver sustained data throughput rates of up to 17Mbps
- 11G byte to 91G byte capacities
- Support for RAID levels 0, 3 and 5
- Individual drive and door locks
- Remote pager notification
- Hot-swappable redundant power supplies and fans
- Hot-swappable and fully shock- and static-protected drive modules for data integrity

MR/10 Tower \$10,950.00
MK/5 Rackmount 9,450.00
MR/5 Tower 8,450.00

EV-1000™ RAID Systems

- High-performance, massively scalable, fault-tolerant, hardware-based RAID storage system designed for data intensive digital media applications including broadcast, post-production and prepress
- Available with either an Ultra SCSI (up to 80Mbps data throughput) or Fibre Channel (up to 200Mbps data throughput) to host interface and supports RAID levels 0, 1, 0+1, 3 and 5
- Redundant dual active/active or active/passive RAID controllers
- Support for both 9G byte and 23G byte hot-swappable drive modules
- Global hot spares
- Battery-backed-mirrored cache
- Includes a dedicated monitoring console with TCP/IP Ethernet support POR*

Note: Call for pricing and configuration options.



Aria™ Fibre Channel Storage Solution

- Fibre channel (FC-AL) disk array optimized to meet requirements of digital media applications such as animation, digital video, post-production and prepress
- Interface provides up to 200Mbps full duplex point-to-point throughput allowing support of multiple streams of uncompressed, full-frame video
- 72G byte capacity per enclosure
- Optional built-in hub
- Loop resiliency circuits (LRC) for on-the-fly hot-swappable drives
- Dual arbitrated loop support for full redundancy
- Low electrical noise backplane
- Software-based RAID support
- 10,000 meter maximum cable distance



Aria Tower \$4,499.00

Enterprise™ Ultra E-8 Modular Storage System

- Fault-tolerant, 8-bay Ultra SCSI disk array for digital media environments
- Provides data throughput rates of up to 80Mbps when striping data across its twin Ultra Wide SCSI buses (RAID 0)
- Accommodates any combination of 2G byte, 4G byte, 9G byte and 23G byte 3.5" or 5.25" removable hard drive modules as well as DLT and DAT tape modules for integrated backup
- Capacity of up to 92G bytes per enclosure
- Choice of software-based (levels 0 and 1) or hardware-based (levels 0, 1, 0+1, 3 and 5) RAID support

Ultra E-8 Rackmount \$2,549.00
Ultra E-8 Tower 2,449.00

Enterprise Ultra E-2 Modular Storage System

- 2-bay disk array that provides high-power desktop storage for prepress and other digital media applications
- Single Ultra Wide SCSI bus provides data throughput rates of up to 40Mbps and can be configured with the MegaDrive RAID Toolkit to support RAID levels 0 (data striping) and 1 (data mirroring)
- Can be populated with two 2G byte, 4G byte or 9G byte 3.5", or one 23G byte 5.25" hot-swappable drive module as well as DLT and DAT back-up modules
- Intelligent active SCSI bus termination

Ultra E-2 \$599.00
*Price On Request

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





DATADOCK™ DATA STORAGE SYSTEMS

Common Features

- Flexible, scalable data storage and transport system built around a variety of sharable, removable hard drive, drive array, DAT, Magneto Optical, CD-R, AIT and JAZ™ modules
- DataDock 7000 Systems are available with RAID (Redundant Array of Independent Drives) controller and ICU
- Hard drive module capacity up to 9G bytes
- Seamlessly moves drives between Windows/Windows NT, Mac OS and UNIX
- Array dual drive module capacity up to 18G bytes
- Fast and Fast/Wide Ultra SCSI support
- 5.25" or 3.5" docking system
- Full support for Windows 95 and Windows NT
- Integrated project labeling system
- Drives are automatically locked into place during operation
- Mac OS drives are automatically mounted on the desktop upon insertion
- Dismounting of Mac OS drives requires a simple drag to the trash
- Available with NuBus, EISA, ISA or PCI Fast/Wide Ultra SCSI accelerator cards
- Up to 28M bytes/sec. sustained data transfer rate
- Monitored temperature control system with variable-speed fan and audible alarm
- Solid-state power switching
- Available in desktop (black or platinum) and rackmount (black only) configurations; specify (B) at end of model number for black
- Cross platform capable for use with PC and Macintosh systems



DataDock 7000 Configurations

Include common features plus: ■ Available as a full-featured RAID system ■ Utilize standard 3.5" DataDock 350™ modules ■ 7 available drive slots per DataDock 7000 ■ Multiple units can be chained to achieve 1.5 terabytes ■ Triple redundant fans and power supplies ■ Able to utilize a multitude of storage devices

DD7000RAID	7-bay single-ended tower with RAID controller, ICU and modem.	\$6499.00
DD7000RAIDD	7-bay differential tower with 7 RAID controller, ICU and modem.	6499.00
DD7000D	7-bay differential DataDock style tower.	4275.00
DD7000	7-bay DataDock-style tower without modules.	3645.00

DataDock 350 Configurations

Include common features plus: ■ Mac and PC (DataDock Express is available for Mac only) ■ Smaller size ■ Accommodate standard 3.5"

DataDock 350 modules ■ Available in rackmount or desktop configurations

DataDock 350—3.5" Narrow SCSI	
DDRACK3B	6-bay rackmount with 3 DataDocks, Ultra SCSI system interface \$2299.00
DD	2-bay desktop DataDock 350, Ultra SCSI system interface 735.00
DataDock 350—3.5" Ultra/Wide SCSI	
DDW	2-bay desktop DataDock, Ultra/Wide SCSI interface \$880.00
DataDock Express—3.5" Narrow SCSI (Single Bay)	
DDEXP	1-bay desktop DataDock Express, Ultra SCSI system interface \$189.00

DataDock 350 Modules

3.5" Ultra/Wide Drive Array Modules	
DDM8220UA	8G byte, 10,000 RPM module. \$5435.00
DDM18200UA	18G byte module 5299.00
DDM8200UA	8G byte module 3340.00
DDM4200UA	4G byte module 2570.00
3.5" DAT, Iomega JAZ, AIT and Optical Modules	
DDM50AIT	Up to 50G byte AIT module. \$5170.00
DDM24000DAT	Up to 24G byte DAT module. 1935.00
DDM16000DAT	5 to 8G byte DAT module 1470.00
DDM640MO	640M byte optical module 780.00
DDM1000JAZ	1G byte JAZ module 580.00
3.5" Ultra/Wide SCSI Drive Modules	
DDM9110UW	9G byte, 10,000 RPM module. \$4375.00
DDM4110UW	4G byte, 10,000 RPM module. 2715.00
DDM9100UW	9G byte module 2650.00
DDM4100UW	4G byte module 1525.00
DDM2100UW	2G byte module 1390.00
3.5" Ultra SCSI Hard Drive Modules	
DDM9100U	9G byte module \$2585.00
DDM4100U	4G byte module 1390.00
DDM2100U	2G byte module 1190.00

DataDock 525 Configurations

Include common features plus: ■ Mac and PC ■ Wide-bodied design ■ Accommodate standard 5.25" DataDock 525 modules which house many of the removable drive configurations such as CD-R and the 4.6G byte capacity MO ■ Can accommodate all DataDock 3.5" modules when equipped with the DDU 350/525 adaptor

DataDock 525—5.25" Ultra/Wide SCSI	
DDW525	2-bay, desktop DataDock 525, Ultra/Wide SCSI system interface. \$919.00
DDU	3.5" to 5.25" module adaptor for DDW525. 111.00
DataDock 525—5.25" Narrow SCSI	
DD525	2-bay, desktop DataDock 525, Ultra SCSI system interface \$785.00
DDU	3.5" to 5.25" module adaptor for DD525. 111.00

DataDock 525 Modules

5.25" Ultra SCSI DataDock 525 Modules	
DDM2600MO	2.6G byte optical module \$2280.00
DDMAPEX	4.6G byte optical module 2155.00
DDMCDR4	4X CD recorder module 1345.00

Other configurations and arrays available. Please call for more information. Please specify for Mac OS or PC when ordering.

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





MicroLink III 18/23GHz Broadcast Quality Video Microwave System

- High performance, high quality design ▪ Broadcast quality 525/625-line video with up to 4 plug-in audio subcarriers
- Extensive diagnostic features for simple maintenance and serviceability ▪ Modular design employs slide-in modules with easy access via hinged front panel ▪ Field tunable across RF sub-bands ▪ 2', 4' or 6' antennas, single or dual polarization
- Simplex, full duplex, multiplex and hot-standby configurations ▪ AC or DC power ▪ Synthesized transmitter/receiver; microwave sources and field tunable across 18GHz or 23GHz sub-bands ▪ Offers users a solution to heavy congestion, interference and minimum path requirements ▪ Variety of configurations ▪ Up to 4 internal, high quality audio channels can be carried above the video ▪ Full range of antennas (including radomes) with single or dual polarized feeds meet FCC Category A requirements
- Operates in 17.71-18.13GHz, 19.27-19.69GHz and 21.225-23.575GHz frequency bands ▪ Extensive diagnostic features
- Module and system levels provide diagnostic information for systematic troubleshooting ▪ Utilizes high performance baseband modules found in the FLR series of long-haul microwave radios ▪ Highly maintainable RF unit employs the use of plug-in modules with a removable cover for easy access to all modules ▪ High power output and high frequency stability ▪ Transmitters feature a high-stability RF source phase-locked to a stable crystal reference with frequency stability of $\pm 0.003\%$, along with a built-in RF monitor test point
- Receiver features an advanced dual-conversion superheterodyne design that incorporates a high first IF for superior image rejection
- Field tunability reduces system sparing requirements and enables rapid servicing and maintenance



Specifications

GENERAL

Video: 525 or 625 line
18GHz Band: 17.71-18.13GHz and 19.27-19.69GHz
23GHz Band: 21.225-23.575GHz
 (Entire Parts 21 and 94 bands)

Audio Capacity: Up to 4 audio subcarriers
Video Input/Output: 75 ohm coax, BNC connector
Audio Input/Output: 600 ohm plug-in connector
Modulation: FM
Video S/N Ratio: 67dB min.
FM Deviation: ± 4 MHz
Configurations: Simplex, duplex, multiplex or hot-standby
Primary Power: 115/220VAC (50 to 60Hz)
Optional: 24 or 48VDC
Power Consumption, Tx or Rx: 80W, typical

VIDEO PERFORMANCE

All measurements are at -40dBm RCL. Measurements are made in accordance with EIA RS-250C or CCIR specifications, unless otherwise noted.

S/N Ratio (weighted): 67dB min.
Signal-to-Hum (p-p/RMS): 62dB min.
Frequency Response
10kHz-4.5MHz (525-line): ± 0.25 dB
10kHz-5.0MHz (625-line): ± 0.25 dB
5MHz to 8MHz
(Baseband Output): ± 0.50 dB
Differential Phase: 0.5° max.

Differential Gain: 2% max.
Video Input/Output: 1V p-p, 75 ohms unbalanced

AUDIO PERFORMANCE
S/N Ratio: 70dB typical
Audio Response: 40Hz to 12kHz, ± 1.0 dB
 12kHz to 15kHz, ± 1.5 dB
 0.5% max. at 1kHz
Harmonic Distortion: 0 to +9dBm, 600 ohms balanced
Audio Input/Output: Factory set to +8dBm in/out

TRANSMITTER

Power Output (without branching)
Typical: 100mW (+20dBm)
Minimum: 66mW (+18dBm)
Frequency Stability: $\pm 0.003\%$

RECEIVER

Type: Dual conversion, superheterodyne
Threshold: -75dBm min.; -77dBm typical
 (37dB weighted S/N)
 11dB typical
Noise Figure: 11dB typical
Intermediate Frequencies: 612MHz and 70MHz

INTERCONNECTION

Power Cable: AWG #18
IF or Baseband: RG-6/U
Lengths: 50', 100', 250' standard kits (up to 1000' upon request—cable equalizer/clamper available for longer runs)

ALARMS AND STATUS INDICATORS

Tx/Rx Summary Alarms: Form C
System Indicators
Tx Meter: Tx RF Monitor, +15V, -15V, RF Unit
Tx LEDs: Primary Power, Summary, Carrier Alarm
Rx Meter: Rx Carrier Level, +15V, -15V, RF Unit
Rx LEDs: Primary Power, Summary, RCL
Test Points/Internal Indicators: AGC Voltage, Subcarrier Alarms

ANTENNA OPTIONS (Category A)

Polarization: Single or dual available
Interface: WR-42
Size: 2' 4' 6'
18GHz, Gain: 39dBi 45dBi 49dBi
Beamwidth: 1.8" 0.9" 0.7"
23GHz, Gain: 40dBi 46dBi 50dBi
Beamwidth: 1.5" 0.7" 0.5"

OPERATING ENVIRONMENT

RF Unit, Temperature: -30° to +55°C w/rel. humidity up to 100%
Baseband Unit, Temperature: +10° to +40°C w/rel. humidity up to 95%

PHYSICAL

RF Unit (size/weight): 13.75"H x 12"W x 8.5"D/approx. 15 lbs.
Baseband Unit (size/weight): 5.25"H x 12"W x 8.5"D/approx. 20 lbs.
Contains up to: 2 Tx's, 2 Rx's, or 1 Tx/Rx
Mounting (RF Unit): Mounts to 3.5" to 4.5" diameter pole

FCC DATA

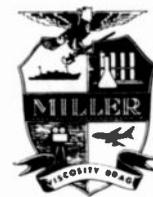
18GHz, Rule Parts: 21, 74, 78, 94
FCC ID Number: FC35DZMRCML2
Emission Designator,
Video Only: 20MOF8F
Video + Audio: 20MOF8W
23GHz, Rule Parts: 21, 94
FCC ID Number: FC35DZMRL23
Emission Designator,
Video Only: 25MOF8F
Video + Audio: 25MOF8W
Digital + Analog: 25MOF9W

Call For Pricing

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



FLUID HEADS/ CAMERA SUPPORT EQUIPMENT



MILLER

Pan-and-Tilt Fluid Heads With Counterbalancing

The following heads feature ball leveling as standard. Use Miller Cat. 360 (100mm) or Cat. 361 (75mm) flat base adaptor for mounting on column lift elevator or flat base tripods. Use Cat. 362 (150mm) to adapt Miller 80 (Cat. 150) to Mitchell flat base.

Cat. No	Name	Tripod Bowl Size	Weight (lbs.)	Capacity (lbs.)	Price
150	Miller 80	150mm	12	80	\$6175.00
160	Miller 50 II	100mm	8	50	3280.00
155	Miller 30 II	100mm	8	30	3050.00
145	Miller 25	100mm	7½	25	2505.00
105	Miller 20 II	75mm	4¼	22	1305.00
358	Eyepiece leveler mount for Miller 80 (for motion picture applications)				235.00

Sliding, quick-release platform standard on Miller 20 II, 25, 30 II, 50 II and 80.



Complete Camera Support Systems

All Miller complete camera support systems include fluid head, pan handle, tripod, spreader, spike feet and rubber foot pads. Systems 40 (except ENG), V.G. 50 and 80 include 2 telescopic pan handles. All systems (except System Jr. and System 15) feature claw ball leveling. System Jr. and System 15 feature column lift elevation. All Miller complete camera support systems (except System Jr. and System 15) are available with a choice of on-ground or above-ground spreader. When ordering, please specify your selection by referencing the correct order code.

Order Codes:

System Name	Tripod Type	w/On-Ground Spreader	w/Above-Ground Spreader	System Wt. (lbs.)	Price
Systems with Miller 80 Fluid Head —For EFP configured cameras with studio viewfinder and prompter or large lens up to 66 lbs.					
System 80	w/Maxi aluminum tripod 290	n/a	355	27½	\$7700.00
System 80 Studio	w/Maxi aluminum tripod 315 and dolly 365	n/a	548	41¼	8525.00
Systems with Miller 50 Fluid Head —For lightweight EFP configured cameras with small studio viewfinder and lightweight prompter or heavier ENG configured broadcast cameras up to 50 lbs. (System 40 and System 40-CF supplied with 2 pan handles. System 40 ENG and System 40 ENG-CF supplied with single handle.)					
System 40	w/Single-stage aluminum tripod 621	350	542	15½	4695.00
System 40-CF	w/Single-stage carbon fiber tripod 626	349	543	14¼	5295.00
System 40 ENG	w/2-Stage aluminum tripod 641	353	544	16	4750.00
System 40 ENG-CF	w/2-Stage carbon fiber tripod 645	354	545	14¼	5370.00
Systems with Miller 30 Fluid Head —For broadcast ENG configured cameras with docked recorders up to 30 lbs.					
System 30	w/Single-stage aluminum tripod 621	344	535	15½	4270.00
System 30-CF	w/Single-stage carbon fiber tripod 626	343	536	14¼	4870.00
System 30 ENG	w/2-Stage aluminum tripod 641	345	537	16	4520.00
System 30 ENG-CF	w/2-Stage carbon fiber tripod 645	346	538	14¼	5140.00
Systems with Miller 25 Fluid Head —For broadcast ENG configured camcorder cameras up to 25 lbs.					
System 25	w/Lightweight aluminum tripod 611	500	526	13	3495.00
System 25-CF	w/Lightweight carbon fiber tripod 616	501	527	12¼	4125.00
System 25 ENG	w/2-Stage carbon fiber tripod 641	502	528	15½	3975.00
System 25 ENG-CF	w/2-Stage carbon fiber tripod 645	503	529	14	4595.00
Systems with Miller 20 Fluid Head —For lightweight ENG configured industrial cameras up to 22 lbs.					
System 20	w/Lightweight aluminum tripod 601	338	520	10¼	2295.00
System 20-CF	w/Lightweight carbon fiber tripod 606	340	521	9¾	2925.00
System 20 ENG	w/2-Stage aluminum tripod 649	339	522	12¼	2775.00
System 20 ENG-CF	w/2-Stage carbon fiber tripod 653	337	523	11¼	3395.00
The Miller System 15 —Designed specifically for event videography with lightweight Hi8 or S-VHS camcorders up to 15 lbs. (Supplied with column lift elevation tripod.)					
System 15	w/System 15 lightweight aluminum tripod	n/a	509	9¾	1185.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





MILLER



CAMERA SUPPORT EQUIPMENT



Pro-Jib

The Pro-Jib is a versatile camera mount, designed to add the dimensions of tracking and elevation control to the normal range of movements afforded by your fluid head. It is, without a doubt, one of the most creative tools you can add to your shooting arsenal.

Weighing 25 lbs. and folding to fit an available soft, reinforced shoulder bag, the Pro-Jib is equally at home traveling to a location shoot as it is in the studio. Pro-Jib uses standard barbell weights (not included) plus a unique sliding tailshaft for precise camera counterbalance.

711 Pro-Jib Specifications

- 51" length of arm to fulcrum point
- 65" vertical travel range
- 50 lbs. load capacity (including fluid head)
- Weighs 25 lbs.
- 100mm ball base fluid head mount surface
- Friction type positive pan-and-tilt jib locks
- High-grade alloy and stainless steel components

Pro-Jib and Accessories

711	Pro-Jib	\$3395.00
721	Pro-Jib Studio System—Studio flexibility package includes: 711 Miller Pro-Jib, 712 Pro-Jib reinforced carry bag, 316 Studio Maxi Tripod with above ground spreader, 365 medium-duty dolly, 160 Miller 50 Series II fluid head with dual telescopic handles.	9385.00
720	Pro-Jib Field System—Complete, on the go location package includes: 711 Miller Pro-Jib, 712 Pro-Jib reinforced carry bag, 289 Maxi Tripod with above ground spreader, 375 rubber feet (set of 3), 145 Miller 25 fluid head with single pan handle.	7755.00
289	100mm maxi tripod (100 lbs. capacity) with spreader	1295.00
715	Pro-Jib "underslung" complete kit	1175.00
712	Padded, reinforced carrying bag	395.00
375	Rubber feet (set of 3) for tripod	165.00



Lightweight Pedestal Support Systems

Lightweight, economical, studio support systems for corporate, industrial and educational applications. Geared, spring counterbalanced column provides nearly effortless lifting of camera systems up to 100 lbs. Individually locking wheels roll smoothly, lock securely. Flat top plate adapts pedestal to most pan/tilt fluid and nonfluid heads. Weighing 45 lbs., this pedestal is one of the most portable available.

700 Pedestal Specifications

- Load capacity of 100 lbs.
- Minimum height of 32"
- Maximum height of 47½"
- Weighs 45 lbs.
- 1½" center post diameter
- 4" column diameter
- 40" base spread
- Wheel diameter of 4"
- Baked black enamel finish

Pedestal Systems and Accessories

Each system includes dual telescopic handles and flat base adaptor if required.

700	Pedestal only with flat top plate	\$1150.00
704	With 160 Miller 50 Series II, 50 lbs.	4775.00
703	With 155 Miller 30 Series II, 30 lbs.	4545.00
702	With 118 VG-50, 50 lbs.	3790.00
701	With 106 light professional fluid head, 30 lbs.	3065.00

Miller Highjack

Miller Highjack adapts to all Miller 100mm ball level tripods without modification and 100mm ball level fluid heads (Miller 25, 30 and 50, Series I and II). Adds 4" minimum, 17" maximum to operating height

665	\$475.00
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ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





MINERVA PUBLISHER DESKTOP MPEG

The Minerva Publisher is a desktop MPEG1 and MPEG2 digital video publishing system. Minerva Publisher integrates unmatched ease of use, image quality, and productivity into a high performance, yet cost-efficient MPEG encoding system. Minerva Publisher comes standard with award-winning Minerva Studio control software, allowing complete command over the entire compression process.

Simply plug in audio/video equipment, start up Minerva Studio control software, and it is ready to begin encoding. Minerva Publisher is designed to be as easy to use as possible, with a wide variety of tried and true project presets. For the dedicated video professional, Minerva Publisher combines outstanding video quality with rich and powerful encoding optimization and process controls.



Minerva Publisher is scalable. Both hardware and software are designed to allow additional features and functionality. For example, adding video preprocessing just requires inserting the optional board. Users can purchase the Minerva Publisher in MPEG1 only or MPEG1 & 2 configurations. As users upgrade, they retain all features and functionality of the previous configuration. New software functionality can be added easily with Minerva Studio's plug-in architecture. Simply drag the new module into the plug-ins folder.

The Minerva Publisher is also available in the Minerva Publisher-DVD configuration. The Minerva Publisher-DVD augments the MPEG2 configuration with the addition of real time, single-pass variable bitrate (VBR) encoding and linear PCM audio capture for DVD publishing applications.

Versatile Video and Audio Encoder

▪ System is available in MPEG1 and MPEG2 configurations ▪ Various options are available for specific industry applications, including: DVD publishing, Video CD 2.0 authoring, and video distribution and collaboration

Video Image Quality

▪ Leverages the advanced compression technologies developed in the high-end Compressionist® product line used by leading post-production facilities and telecommunications companies

Minerva Studio™ Control Software

▪ Provides both nonvideo professionals and accomplished video pros with easy-to-use tools to create high-quality MPEG video ▪ Highly intuitive software includes many preset configurations ▪ A full set of tools in a familiar, time code based environment

Expansion

▪ The scalable system design allows users to effortlessly add new features and functionality ranging from video preprocessing to MPEG2 and variable bitrate encoding while protecting the original investment

Plug and Play

▪ Back panel allows users to easily and directly connect to existing audio/video equipment for a quicker production start ▪ Designed with a variety of input and output connections

Support

▪ Minerva Authorized Value Added Reseller is fully trained to support the Minerva Publisher

Key Features:

▪ Project window hierarchically displays all the tape start/stop segments comprising the project ▪ Integrated video playback gives real time preview of encoded video ▪ Playback video and audio separately or together, with normal play, frame advance and loopback controls ▪ VTR control window features a simple VCR-like interface, high-speed time code and status displays along with shuttle and jog controls ▪ Drag and drop time code operation supports time code drag and drop between VTR control window, project window and time code calculator ▪ Features one click cueing to any time code

Specifications

MPEG1 Configuration

Standards compliance: ISO 11172 (MPEG1)

Input: Video: Composite, S-Video, component YUV
Audio: Digital AES/EBU, balanced analog (XLR)
Formats: NTSC/PAL

Output: Video: Composite, S-Video, component RGBSync
Audio: Digital S/PDIF, unbalanced analog (XLR)

Compressed Bitrates: Real time encoding and multiplexing from 600Kbps to 4.5Mbps

Video Resolutions: 352 x 240 x 30 (NTSC Video)
352 x 240 x 24 (NTSC Film)
320 x 240 x 30 (NTSC Video/Square)
320 x 240 x 24 (NTSC Film/Square)
352 x 288 x 25 (PAL)

Audio Sampling Rates: 32kHz, 44.1kHz, 48kHz

Inverse Telecine: Automatic inverse telecine detection and extraction

MPEG2 Configuration

Includes all specifications of MPEG1 configuration above, plus:

Standards Compliance: ISO 13818 (MPEG2)

Compressed Bitrates: Real time encoding up to 15Mbps

Video Resolutions: 352 x 480 x 24/30 (4:3 NTSC Video)
704 x 480 x 24/30 (4:3/16:9 NTSC Video)
720 x 480 x 24/30 (4:3/16:9 NTSC Video)
720 x 576 x 25 (4:3/16:9 PAL Video)
352 x 576 x 25 (4:3/16:9 PAL Video)

Options

▪ Video preprocessing with video source filtering, noise reduction and de-interlacing ▪ Video CD 2.0 Authoring Software includes: complete software kit for authoring, assembling, and mastering Video CD 2.0 titles on the Apple Macintosh ▪ Minerva VideoShare Software includes: software license for video capture from CreativePartner™ software by Emotion, Inc. ▪ Minerva Server Streams provides MPEG fast-forward and reverse streams for video servers

Required Host

Minimum configuration: Apple Power Macintosh 7500, 7600, 8500, or 8600, 24+M byte RAM, 256K cache, 2+G byte A/V certified hard disk

Minerva Publisher-DVD	\$31,995.00
MPEG1 & 2 Configuration	29,995.00
MPEG1 Configuration	12,495.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



MegaView™ Pro 42 Auto Scanning Color Monitor

- 42" (40" diagonal viewable image) monitor ▪ High resolution, large-screen, auto scanning multimedia monitor ▪ High contrast, wide aperture CRT with Dynamic Beam Forming ▪ 1280 x 1024 noninterlaced maximum addressable resolution
- Compatible with Apple® Macintosh® II, LC, Centris and Quadra (832 x 624); IBM® and VESA VGA, S-VGA and XGA-2 and many UNIX® graphics standards
- Compatible with S-VHS, 16:9 Aspect HDTV, NTSC, M-NTSC, PAL and SECAM video formats
- Microprocessor based 15.75/20 to 64kHz auto scan range ▪ Inputs for analog RGB, S-VHS, composite video and stereo audio sources
- Video image quality enhanced by switchable AFC, notch filter and noise reduction circuitry ▪ Integrated shielded speakers ▪ Wireless, multifunction remote control ▪ On-screen display of all set-up functions ▪ Shown here with optional base



AM4201R (SP) \$13,000.00

MegaView Pro 37 Auto Scanning Color Monitor

- 37" (35" diagonal viewable image) monitor ▪ Microprocessor based auto scanning ▪ Auto scan range from 15-85kHz ▪ Compatible with systems up to 1280 x 1024, noninterlaced maximum addressable resolution ▪ Upconverts standard NTSC, PAL, SECAM or S-VHS video up to 31.5kHz ▪ Dynamic Beam Forming circuit ▪ Precision inline gun design ▪ Stripe pitch 0.85mm center/1.1mm corner ▪ Worldwide power compatibility ▪ Wireless remote control included ▪ High contrast CRT ▪ For CAD/CAM/CAE applications ▪ Compatible with most PC, PC/2 and Macintosh II graphic cards as well as UNIX based workstations

XC3730C \$10,250.00

MegaView 37 PLUS Auto Scanning Color Monitor

- 37" (35.0" diagonal viewable image) monitor ▪ High contrast, flat square CRT for enhanced viewing ▪ Multiple inputs for analog RGB, video, S-VHS and audio
- Dynamic Beam Forming for improved image definition at screen edges ▪ Front panel control as well as standard wireless, multifunction remote control with on-screen display ▪ 1024 x 768 maximum resolution ▪ 2 side-facing amplified speakers and external speaker outputs
- IBM VGA, SVGA, Apple Macintosh LC and II (640 x 480) ▪ Auto scan range horizontal 15-61kHz, vertical 40-120Hz

XC3717C \$6,999.00



MegaView 33 Auto Scanning Color Monitor

- 33" (31.2" diagonal viewable image) monitor ▪ Microprocessor based auto scanning ▪ Auto scan range horizontal 15-38kHz, vertical 40-120Hz ▪ 800 x 600/60Hz noninterlaced maximum addressable resolution ▪ High contrast CRT ▪ Dynamic Beam Forming circuit
- World regulatory standards ▪ World power compatibility ▪ Wireless remote control included ▪ Compatible with IBM CGA, EGA, VGA and Macintosh II

XC3315C (B) \$4,999.00



MegaView 29 Auto Scanning Color Monitor

- 29" (27" diagonal viewable image) monitor ▪ Frequency scanning automatically senses and locks onto horizontal scanning from 15.6-39kHz and vertical scanning from 45-90Hz
- Designed specifically for computer graphics, video and imaging applications
- Compatible with IBM PC, PGA, VGA, EGA, CGA and Macintosh II graphics standards ▪ Wide range of input signals: NTSC/PAL/SECAM, 2 composite video; S-Video terminal (separate Y/C); 2 RGB analog; digital RGB; 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 ▪ 640 x 480 maximum addressable resolution, RGB ▪ 600 lines horizontal resolution, video ▪ Invar shadow mask and Dynamic Beam Forming circuit ▪ Microprocessor control system provides automatic vertical raster height adjustment ▪ High-fidelity stereo audio outputs

AM2752A \$2,799.00



PrecisePoint™ Analog Capacitive Touchscreen Color Monitors

- 15", 17" and 20" (13.8", 15.7" and 19.7" diagonal viewable image) touchscreens ▪ Ultra fine 0.26mm (17") and 0.28mm (15" and 21") dot pitch CRT ▪ On-screen controls for simple, intuitive installation for Windows and DOS ▪ 1024 x 1024 touch points ▪ 8 to 15 millisecond response time ▪ Solid-state sensor ▪ All-glass overcoat that resists scratches, water, grease and dirt ▪ Optical bonding provides shatterproof and reduced light refraction

9105 21" Precise Point \$2,999.00
8705 17" PrecisePoint. 2,000.00
5800 15" PrecisePoint. 1,500.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



Diamond Pro 91TXM Color Monitor

▪ DIAMONDTRON CRT combines the best of all monitor designs and provides the sharpest and brightest CRT technology available ▪ Digital chassis gives enhanced adjustment capabilities in a more compact enclosure ▪ 2 free software kits (via coupon) provide monitor controls via keyboard and mouse—color matching made easy ▪ Tubular steel “pipeframe” provides improved beam handling for the sharpest image ▪ On-screen controls allow end-user full control of the image ▪ 1600 x 1200 at 75Hz maximum addressable resolution format for rock-solid, easy to view images ▪ DDC 1 and 2B compliance, TCO, MPR-II, Energy Star: meets the strictest international standards ▪ Universal Apple adaptor included for multiplatform compatibility ▪ Improved Dynamic Beam Forming (DBF) electron gun for sharply fine-tuned screen focus from center to edge ▪ Corporate Partners Program: 48-hour warranty exchange program
TFW9105SKTK \$1649.00



Diamond Scan 20M/20LP Color Monitors

Common Features
▪ 20" (18.6" diagonal viewable image) monitor ▪ Microprocessor based auto scanning ▪ 0.31 mm dot pitch ▪ Tinted, diamond matte anti-glare coating CRT ▪ Up to 800 x 600 noninterlaced maximum addressable resolution; up to 1024 x 768 interlaced ▪ Auto scan range horizontal 15-38kHz, vertical 45-90Hz ▪ Integrated tilt/swivel base ▪ Easy to use, icon-based front panel display setup controls ▪ FA-5 VGA compatible signal cable ▪ Low magnetic emission ▪ Available in a metal cabinet for rackmounting

Diamond Scan 20M
Includes common features plus: ▪ Optical quality, high contrast, anti-static/anti-glare CRT ▪ Provides a large, bright, true color display over a wide range of frequencies: VGA™, SVGA, XGA™, 8514/A™, Macintosh™ LC and Macintosh II
HC3925KTK \$1299.00

Diamond Scan 20LP
Includes common features plus:
▪ Utilizes long-persistence phosphors to eliminate any trace of flicker in interlaced images
▪ Use with Truevision TARGA®, ATViSta® and NuViSta® boards
▪ Provides flicker-free image for XGA and 8514/A, 1024 x 768 interlaced modes and noninterlaced SVGA cards
▪ Applications include color desktop publishing, image processing and 640 x 480/1024 x 768 interlaced resolution
CAD/CAM/CAE
HC3925L9ETK \$1299.00



Diamond Pro 87TXM Color Monitor

▪ DIAMONDTRON CRT combines the best of all monitor designs and provides the sharpest and brightest CRT technology available ▪ Digital chassis gives enhanced adjustment capabilities in a more compact enclosure ▪ DiamondMatch Color Calibrator Software Kit (via coupon in box) allows easy setup functions via a graphical user interface ▪ 1600 x 1200 at 66Hz maximum addressable resolution format for rock-solid, easy to view images ▪ DDC 1 and 2B compliance, ready for Windows 95 plug-and-play ▪ Universal Apple adaptor included and multiplatform compatibility ▪ Dynamic Beam Forming (DBF) electron gun: screen focus is fine-tuned from the center to edge ▪ TCO, MPR-II Energy Star: meets the strictest international standards ▪ Corporate partners program: 48-hour warranty exchange program
TFM8705SKHK \$829.00



Diamond Scan 15VX Color Monitor

▪ 15" (13.8" diagonal viewable image) flat square monitor with Invar mask ▪ Ultra fine 0.28mm dot pitch CRT ▪ Optical quality, anti-reflective, anti-static CRT coating ▪ Compact cabinet design
▪ 1280 x 1024 at 60Hz or 1024 x 768 at 75Hz maximum addressable resolution ▪ On-screen display controls ▪ DDC 1 and 2B compliance ▪ Ready for Windows™ 95 plug-and-play ▪ Compatible with IBM to Apple Macintosh graphics standards ▪ Diamond Match color calibration system
▪ CE approved
SD5804C \$410.00



Diamond Pro 67TXV Color Monitor

▪ DIAMONDTRON CRT combines the best of all monitor designs and provides the sharpest and brightest CRT technology available ▪ Digital chassis gives enhanced adjustment capabilities in a more compact enclosure ▪ DiamondMatch Color Software Kit (via coupon in box) allows easy setup functions via a graphical user interface ▪ 1280 x 1024 at 64Hz maximum addressable resolution format for rock-solid, easy to view images ▪ DDC 1 and 2B compliance for Windows 95 plug-and-play ▪ Universal Apple adaptor included and multiplatform compatibility ▪ Dynamic Beam Forming (DBF) electron gun: screen focus is fine-tuned from center to edge ▪ TCO, MPR-II Energy Star: meets the strictest international standards
TFV6705SKHKW \$749.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



40" Stereo Monitor/Receivers

- Common Features**
- Black Diamond gray finish
 - 2 language ViewPoint® on-screen menu system
 - A/V memory
 - Lock the TV by time/channel
 - 1-week/1-event program timer
 - Extended data services
 - Closed captioning when muting
 - Rename the input
 - Multibrand remote with VCR/cable/DSS® control
 - Remote picture/audio adjustments
 - Audio/DVD control
 - Black-tint, black-matrix CRT
 - Digital dynamic comb filter
 - 700 horizontal lines resolution
 - Velocity scan modulation
 - Dynamic black level expansion
 - Peak white ACL
 - 181-channel FS tuning
 - MTS/SAP reception
 - QuickView™ memory
 - SuperQuickView™ memory
 - 2 full-range, front-firing speakers
 - Surround Sound
 - 5W + 5W power
 - 2 rear stereo audio inputs
 - 1 variable audio output



CS-40509

- CS-40509** Includes common features, plus:
- CORIAN® top finish
 - 2-tuner advanced PIP
 - TV Guide Plus+®
 - Active A/V network
 - Home Theater mode
 - Illuminated remote control
 - Level sound
 - 2 antenna (RF) inputs
 - Front panel input with S-Video
 - 2 rear video inputs with 2 S-Video inputs
 - Tuner/monitor output
 - Cable loop out
 - 1 fixed audio output
 - IR blaster port
 - Active A/V network jack
- \$2999.00
- CS-40309** Includes common features, plus:
- Advanced PIP
 - 1 antenna (RF) input
 - 2 rear video inputs with 1 S-Video input
- 2599.00

36"/35" Stereo Monitor/Receivers

- Common Features**
- A/V memory
 - 1-week/1-event program timer
 - Extended data services
 - Closed captioning when muting
 - Remote picture/audio adjustments
 - Rename the input
 - Black-matrix CRT
 - 700 horizontal lines resolution
 - Velocity scan modulation
 - Dynamic black level expansion
 - Peak white ACL
 - 181-channel FS tuning
 - MTS/SAP reception
 - QuickView memory
 - SuperQuickView memory
 - 2 full-range, front-firing speakers
 - Surround Sound
 - 5W + 5W power
 - 1 variable audio output
- CS-36509** Includes common features, plus:
- 36" screen
 - Black Diamond gray cabinet
 - 2 language ViewPoint on-screen menu system
 - Lock the TV by time/channel
 - Multibrand remote with VCR/cable/DSS control
 - Audio/DVD control
 - Digital dynamic comb filter
 - 2-tuner advanced PIP
 - TV Guide Plus+
 - Active A/V network
 - Home Theater mode
 - Illuminated remote control
 - Level sound
 - 2 antenna (RF) inputs
 - Front panel input with S-Video
 - 2 rear video inputs with 2 S-Video inputs
 - 2 rear audio inputs
 - Tuner/monitor output
 - Cable loop out
 - 1 fixed audio output
 - IR blaster port
 - Active A/V network jack
- \$1699.00
- CS-36309** Includes common features, plus:
- 36" screen
 - Black Diamond gray cabinet
 - 2 language ViewPoint on-screen menu system
 - Lock the TV by time/channel
 - Multibrand remote with VCR/cable/DSS control
 - Audio/DVD control
 - Digital dynamic comb filter
 - Advanced PIP
 - 1 antenna (RF) input
 - 2 rear video inputs with 1 S-Video input
 - 2 rear audio inputs
- 1399.00
- CK-36310** Same as CS-36309, except:
- Genuine oak veneer console with VCR storage and glass door
- 1999.00
- CS-35207** Includes common features, plus:
- 35" screen
 - Black Diamond gray finish
 - Multibrand remote with VCR/cable box control
 - Comb filter
 - Gamma compensation
 - Parental lock
 - Bass/treble tone control
 - On-screen picture/audio adjustments
 - Stereo audio input
 - Video input with S-Video
- 1199.00

32" Stereo Monitor/Receivers

- Common Features**
- 2 language ViewPoint on-screen menu system
 - A/V memory
 - Lock the TV by time/channel
 - 1-week/1-event program timer
 - Extended data services
 - Closed captioning when muting
 - Rename the input
 - Multibrand remote with VCR/cable/DSS control
 - Remote picture/audio adjustments
 - Audio/DVD control
 - Black-tint, black-matrix CRT
 - Digital dynamic comb filter
 - Velocity scan modulation
 - Dynamic black level expansion
 - Peak white ACL
 - 181-channel FS tuning
 - MTS/SAP reception
 - QuickView memory
 - SuperQuickView memory
 - 2 full-range, front-firing speakers
 - Surround Sound
 - 2 rear stereo audio inputs
- CS-32509** Includes common features, plus:
- Black Diamond gray cabinet
 - 2-tuner advanced PIP
 - TV Guide Plus+
 - Active A/V network
 - Home Theater mode
 - Illuminated remote control
 - 700 lines horizontal resolution
 - Level sound
 - 2 antenna (RF) inputs
 - Front panel input with S-Video
 - 2 rear video inputs with 2 S-Video inputs
 - Tuner/monitor output
 - Cable loop out
 - Fixed and variable audio output
 - IR blaster port
 - Active A/V network jack
- \$1099.00
- CS-32309** Includes same features, plus:
- Black Diamond gray cabinet
 - Advanced PIP
 - 700 lines horizontal resolution
 - 1 antenna (RF) input
 - 2 rear video inputs with 1 S-Video input
 - 1 variable audio output
- 999.00
- CK-32310** Same as CS-32309, except:
- Genuine oak veneer console with VCR storage and glass door
 - 600 lines horizontal resolution
- 1499.00
- CS-32207** Includes common features, plus:
- Black Diamond gray cabinet
 - 3-language ViewPoint on-screen menu system
 - Stereo audio input
 - Video input with S-Video
 - Variable stereo audio output
- 899.00



CK-32310

27" Stereo Monitor/Receivers

- Common Features**
- Closed captioning when muting
 - Black-tint, black-matrix CRT
 - Comb filter
 - 450 lines horizontal resolution
 - 181-channel FS tuning
 - MTS/SAP reception
 - QuickView memory
 - SuperQuickView memory
 - 2 front-firing speakers
 - 1 antenna (RF) input
 - 1 rear stereo audio input
 - Variable audio output
- CK-27306** Includes common features, plus:
- Oak vinyl finish with VCR storage and glass door
 - Picture-in-picture with TV still
 - On-screen menu system
 - On-screen picture/audio adjustments
 - A/V memory by input
 - Power restore
 - Rename the input
 - Lock the TV
 - Extended data services
 - Multibrand remote with VCR/cable control
 - Remote picture/audio adjustments
 - Velocity Scan Modulation
 - Dynamic black level expansion
 - 1 rear video input with S-Video input
 - Monitor output
- \$899.00
- CS-27209** Includes common features, plus:
- Black Diamond gray cabinet
 - 2-language menu system
 - On-screen picture adjustments
 - Color temperature control
 - Program timer
 - Multibrand remote with VCR/cable control
 - Remote picture adjustments
 - Audio control
 - DVD control
 - 1 rear video input
- 499.00
- CS-27309** Same as CS-27209, except:
- Picture-in-picture with moveable, still and exchange
 - Multibrand remote with VCR/cable/DSS control
 - 1 rear video input with S-Video
- 599.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



**CentraVision™ Fibre Channel (FC)
Network Solutions**

▪ Fibre Channel network and storage system that provides large storage potential and fast transport speed needed for working with digital video ▪ Includes compressed and uncompressed video disk recorders, Fibre Channel disk array storage, RAID controllers, host adaptors and hubs, media management and distributed lock management, cross platform support software, file conversion drivers and software, Fibre Channel cables (copper and optical) and near line storage (tape backup) ▪ Designed and optimized for broadcast and post-production applications ▪ Access files on the Fibre Channel network at speeds up to 100M bytes/sec. (200M bytes/sec. full duplex) ▪ Storage capacity can be expanded from 36G bytes to more than 1 Terabyte (TB) in a central disk storage system ▪ Mac, SGI and other PC compatible workstations can run on the same network ▪ A single FC hub allows connection of 9 devices on the FC network ▪ Cascade hubs to build a network with up to 126 devices ▪ Dual redundant, 300W, auto-ranging power with separate power switches ▪ Each disk array unit may be daisy-chained to extend the Fibre Channel Arbitrated Loop Network (FC-AL) to 16 units with 125 disk drives without use of CentraVision FC Hub ▪ Both 5V and 12VDC power to each disk drive are individually fused ▪ All units available as either 19" 5U rack unit or tower systems ▪ Systems include: 4 cooling fans inside the chassis; 8 individually fused and key-locked drive bays; 9G bytes hot-swappable FC drive modules; and 2 x 5 meter copper cable connectors



Fibre Channel Disk Array Chassis

CNV-7072-T/R 72G byte disk array, tower (T) or rack (R) . . \$41,950.00
CNV-7036-T/R 36G byte disk array, tower (T) or rack (R) . . . 23,750.00

Hub

CNV-HUB-109 9-port Fibre Channel hub \$4,200.00

Host Adaptor, Cables and Software

CNV-MAC Mac/Media-100 host adaptor, S/W \$6,670.00

Drive Module

FCDM-SGT9B 9G byte Fibre Channel drive module \$4,750.00

Stampede™ Removable Disk Array Systems

▪ Mass storage removable disk drive systems designed for media environments where performance and security are prime issues
▪ Ultra/Wide SCSI disk drive ready ▪ Impedance matched backplane
▪ Up to 8 hot-swappable drive modules in the same chassis ▪ Allows for combinations of 3.5" and 5.25" drive modules ▪ Accepts DLT for archiving and tape backup ▪ Supports JBOD or RAID configuration
▪ RAID option with levels 0, 1, 3, 5, 0+1, JBOD spanning ▪ Automatic rebuild function for fault-tolerant RAID arrays ▪ Dual load-sharing hot-swappable power supplies (auto ranging) and cooling fans
▪ Thermal shutdown protection circuitry for each drive bay ▪ Visual and audible fault indication for power, fan and thermal shutdown of a drive
▪ Power, activity and fault indicators on each drive module ▪ Drive interface connectors certified to 20,000 cycles

Stampede 2- or 4-Bay Desktop Mini Array Configuration

SMA-4 4-bay desktop, split backplane, 2+2 chassis . . \$930.00
SMA-2 2-bay desktop chassis 605.00

Drive Modules—Single-Ended

SRMM-DLT 40G byte Quantum DLT, SCSI-2 \$6,000.00
SSDM-23-SUW 23.4G byte Elite, ultra/wide 4,315.00
SSDM-91-SUW 9.1G byte Barracuda, ultra/wide 2,345.00
SSDM-42-SUW 4.2G byte Barracuda, ultra/wide 1,315.00

Drive Modules—Differential

SSDM-23-SUWD 23.4G byte Elite, ultra/wide \$4,385.00
SSDM-91-SUWD 9.1G byte Barracuda, ultra/wide 2,415.00
SSDM-42-SUWD 4.2G byte Barracuda, ultra/wide 1,385.00

2- or 4-Bay Desktop Bundles for Macintosh PCI

SMA-2-RS 2-bay, ATTO ExpressPCI Pro, CharisMac Anubis RAID software, 68-pin high density SCSI cable, external terminator, single-ended \$1,595.00

SMA-2-RD Same as SMA-2-RS, except: ▪ differential . . . 1,900.00

SMA-4-RD Same as SMA-2-RD, except: ▪ 4-bay 2,175.00

Stampede Ultra Array—8-Bay Rackmount Array Configuration

SVRM-8 Chassis \$2,070.00
SVRM-8-SP2 Split backplane—4+4 2,395.00
SVRM-8-SP4 Split backplane—2+2+2+2 2,415.00
SVRM-8-R16/D 16M byte cache, single-ended or differential . . 7,285.00
SVRM-8-R32/D 32M byte cache, single-ended or differential . . 7,715.00
SVRM-8-R64/D 64M byte cache, single-ended or differential . . 8,055.00

RCM Controller Module

▪ RAID Controller Module (RCM) ▪ Unique hub design allows connection to multiple hosts and disk subsystems ▪ Supports redundant host and multiple host configurations ▪ Support for RAID levels 0, 1, 3, 5 and 0+1 permits the selection of the fault tolerance and performance levels that best meet system requirements ▪ Multilevel RAID support allows a single host to be configured with multiple arrays ▪ Support for up to 35 SCSI target devices ▪ Support for ultra/wide SCSI ▪ Up to 128M byte read-ahead/write-back or write-thru cache with support for EDO RAM
▪ Differential and single-ended SCSI, target or host support ▪ RS-232 interface allows remote configuration and monitoring via terminal or modem

RCM-2XD-64-G/C 3 single-ended ultra/wide SCSI channels, 64M bytes cache, 2 differential ultra/wide SCSI channels, gray (G) or champagne (C) \$6,700.00

RCM-3XS-64-G/C 6 single-ended ultra/wide SCSI channels, 64M bytes cache, gray (G) or champagne (C) 6,300.00

RCM-3SE-16-G/C 3 single-ended ultra/wide SCSI channels, 16M bytes cache, gray (G) or champagne (C) 4,000.00

Chaparral Robotic Tape Library Systems

▪ Archival and backup applications for massive data storage and fast transfer and access rates ▪ Automated data storage up to 134.4TB
▪ Advanced DLT™ 4000/7000 and 3590 compatible drive technology
▪ Automated cartridge handling mechanism ▪ Supported by many HSM and backup/restore software manufacturers

RSP-2150i-8XR 8M bytes cache and bail mount, single-ended, rackmount \$23,100.00

RSP-2150i-8YR 8M bytes cache and bail mount, differential, rackmount 23,100.00

RSP-2150i-8YT 8M bytes cache and bail mount, differential, tabletop 23,100.00

RSP-2150i-8XT 8M bytes cache and bail mount, single-ended, tabletop 23,100.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





WIRELESS MICROPHONE SYSTEMS



401 VHF Wireless Systems

▪ 401 dual antenna receiver is a sleek, single rack space component containing 4 independent receivers operating on 4 different frequencies in the VHF high band ▪ All 4 channels feature specialized companding circuitry for clean, natural sound indistinguishable from hard wire systems ▪ Delivers a full 120dB dynamic range

401 HT-10	VHF system with 4 HT-10 handheld transmitters	\$1669.95
401 LT/HT	VHF system with combination of 2 LTs and 2 HTs	1549.95
401 LT-10	VHF system with 4 LT body pack transmitters with microphones	1539.95



101XL/201XL VHF Wireless Receivers

▪ Rugged, compact, ultraportable design ▪ Single overlay front panel with recessed power and signal LED indicators and membrane power ON/OFF switch ▪ Fold-down retractable antenna ▪ Adjustable audio output and mute ▪ Externally powered by AC/DC power adaptor provided ▪ Rackmountable with optional single rack space mounting plate ▪ 201XL has 2 complete front ends for True Diversity reception assuring dropout-free performance

Each System Includes Receiver and Transmitter Described Below

201XL HM-20AKG	SX-20 body pack transmitter with mini XLR and AKG C-410 head mic (for 201 receiver)	\$794.95
201XL HM-20ATM	SX-20 body pack transmitter with mini XLR Audio-Technica ATM 73 head mic (for 201 receiver)	699.95
101XL HM-20AKG	SX-20 body pack transmitter with mini XLR and AKG C-410 head mic (for 101 receiver)	662.95
201XL HT-10/58	With handheld microphone transmitter (Shure SM-58 element)	649.95

201XL HT-10/NDYM	With handheld microphone transmitter (E-V 257 element)	\$574.95
101XL HM-20ATM	SX-20 body pack transmitter with mini XLR and Audio-Technica ATM 73 head mic (for 101 receiver)	567.95
201XL SX	With body pack lavalier transmitter (mini XLR connector)	549.95
201XL HT-10	With handheld microphone transmitter	549.95
201XL LT-10	With body pack lavalier transmitter with mic	527.95
101XL HT-10/58	With handheld microphone transmitter (Shure SM-58 element)	519.95
101XL HT-10/NDYM	With handheld microphone transmitter (E-V 257 element)	443.95
101XL HT-10	With handheld microphone transmitter	417.95
101XL SX	With body pack lavalier transmitter (mini XLR connector)	406.95
101XL LT-10	With body pack lavalier transmitter with mic	384.95



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 ▪ 250' range ▪ 151 wireless body pack transmitter clips on belt where it can't be seen ▪ Attached lavalier microphone positioned near speaker's mouth on a tie, coat, shirt, etc. ▪ Transmitter powered by a 9V battery ▪ 151 VR wireless receiver Powered by a 9V battery in a convenient "pop-in" battery compartment ▪ LED lights indicate low battery and received signal ▪ Controls include output level and mute adjusts as well as transmitter and audio on/off ▪ Audio output and headset connectors are 3.5mm mini plugs ▪ Attached soft wire antenna extends from the top of the receiver

151 VR/HT	VHF system with handheld microphone	\$274.95
151 VR/LT	VHF system with lavalier microphone	219.95

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



VIDEO PRODUCTS/ SLIDE PROJECTOR



NAVITAR®

VideoMate™ Slide-To-Video Systems

■ Can present 35mm slides on any TV monitor or video projector
 ■ Can be controlled by AMX/Crestron room control systems for use in auditoriums, board rooms, training, distance learning, teleconferencing, etc. ■ Kodak projector based, very simple to operate, and easy to control

VideoMate 5000

■ Highest resolution unit ■ Kodak Ektagraphic based system with 3-CCD, 570-line HyperHAD™ resolution ■ True RGB/S output as well as composite video and Y/C ■ Manual zoom lets you zoom in for increased magnification ■ Controllable by contact closure
 ■ Pushbutton on-screen menu controls for functions such as color temperature, AGC, white balance, etc. ■ Unit is designed for high-end applications, such as medical, where you need maximum resolution feeding into your expensive video projector ■ Provides better resolution and color reproduction because red, green and blue information is output separately to the red, green and blue CRTs (or LCDs) of your video projector. \$7,995.00

VideoMate 2150MZ

■ Kodak Ektapro based system offers 460-line HyperHAD resolution with RS-232 control of projector, camera and lens functions as well as random access ■ Y/C and composite video outputs ■ Motorized zoom lens lets you view horizontal and vertical slides as well as zoom in for increased magnification ■ A computer software package for control from a PC computer is available ■ Ideal for use in a sophisticated board room control system ■ Fully controllable by RS-232 ■ You can randomly program your slide sequence to go from slide 1 to slide 10 and have different zoom position (magnification) and brightness presets for each slide. \$4,745.00

VideoMate 2200MZ

■ Kodak Ektagraphic based system offers 470-line HyperHAD resolution with Y/C, composite video and RGB/S outputs ■ Motorized zoom lens lets you view horizontal and vertical slides as well as zoom in for increased magnification
 ■ Ideal for most standard slide-to-video applications ■ Controllable by contact closure \$3,705.00
 Replacement lamp 28.00



ScanMate Document-To-Video System

■ Allows the display of documents and pictures on a TV monitor or video projector with greater ease and clarity than ever before
 ■ Higher resolution, magnification without image distortion
 ■ Easy electronic scrolling of a full 8½" x 11" document ■ Better black-and-white contrast and more vibrant color reproduction \$4,850.00

MicroMate™

Video Microscopes

■ Allows you to clearly view objects on a TV monitor or video projector that are too small for a typical copystand-to-video unit to see ■ Simple and easy to operate compared to a typical microscope ■ Ideal for presentation use, distance learning and teleconferencing ■ Designed for viewing



objects from 23mm down to 70 microns ■ Built-in high resolution color CCD camera, fiber optic illumination system, stand, stage and precision optics ■ Magnification range is 14X-371X in macro mode or 70X-4377X in micro mode using a 13" monitor ■ Continuous zoom lens

MicroMate 650BX

■ Biological version with binocular eyepiece ■ Ideal for telemedicine and distance learning applications ■ Accepts standard biological microscope objectives ■ Can also be used in macro mode to view gross items like bugs and circuit boards ■ 470-line resolution, fine focus, XY stage with condensed back light, 3X zoom and true color reproduction \$12,900.00

MicroMate 650

■ 470-line resolution, XY stage, fine focus ■ Can view microscopic specimens as well as gross items like bugs and circuit boards \$8,997.00
 Spare lamp 24.00

FX Single Slide Projector With Dissolve

■ A standard Kodak Ektagraphic III AMT slide projector, plus a fade/dissolve mechanism, auto focus ■ Replaces the standard Kodak lamp module with a Navitar BrightLight lamp module, so your slides will look 50% brighter on screen than with other projectors
 ■ Adjust the fade/dissolve rate to match the mood or pace of your presentation by simply moving the dissolve control dial ■ Change the length of time from full brightness to black (fadeout) and back up to full brightness (and a new slide) anywhere from 1 to 10 seconds ■ Built-in automatic timer that can advance your slides at intervals from 1 to 10 seconds \$1,565.00

BrightLight® Brightness Booster Modules

■ A complete optical system ■ Designed to increase the brightness and whiteness (color temperature) of a slide on the screen 40-70%, while maintaining a stable film gate temperature ■ To add the BrightLight to your current Kodak Ektapro or Kodak Ektagraphic III slide projector, simply remove your old lamp module and plug in BrightLight ■ Can use any slide mount—cardboard, plastic or glass—without worry about slide burnout

Ektapro-SJF Lamp Module (For Speaker Support Applications)

■ Available for the Kodak Ektapro projector ■ Designed for maximum light output and slide safety ■ Dual lamp module includes high brightness EXW-300W, 82V lamps, 40% brighter than standard lamps ■ Fits Kodak Ektapro \$599.00

Super-SJF Lamp Module (For Speaker Support Applications)

■ Designed for enhanced brightness in speaker support applications where a single slide will be shown for several minutes ■ Replaces model EXW-SJF ■ Significantly increased color temperature (whiteness) of the images so that slides appear brighter than before
 ■ Improves black-and-white contrast so that text and graphic slides appear easier to read ■ Includes high brightness EXW-300W, 82V lamp ■ 50% brighter than original module ■ Fits Kodak Ektagraphic \$466.00

EXW-J Lamp Module (For Multi-Image Presentations)

■ Designed to provide maximum slide brightness and contrast for front or rear screen projection ■ Especially helpful when your projection distance or image size is too great for your current projector to handle ■ Module includes high brightness EXW-300W, 82V lamp, 70% brighter than standard ■ Fits Kodak Ektagraphic \$450.00

BL-82 Replacement Bulb

■ High brightness 300W EXW lamp (82V) ■ 15-hour life ■ Custom designed for BrightLight EXW-J, Super-SJF and Ektapro-SJF modules as well as the FX Projector \$26.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





MultiSync® GT1200R/1200 Graphics Theater LCD Projectors

- Delivers bright, sharp, focused images for applications requiring the display of high-resolution images
 - Easy to use with on-screen menus and remote control
 - Compatible with virtually any computer or video source as well as most workstations including Sun®, SGI® and HP® models
 - Also supports video and S-Video sources including VCRs, laserdisc players, live video cameras and video standards including NTSC, PAL and SECAM
 - Supports resolutions up to 1280 x 1024
 - Audio capability built-in
- GT1200R**
 Includes common features plus:
 ▪ Rear projections LCD projector equipped with a short throw, fixed focus lens
 ▪ Allows user to project image from behind a transparent screen
 \$60,000.00
- GT1200**
 Includes common features plus:
 ▪ Front projection model featuring power zoom and focus lens
 ▪ Can be ceiling-mounted or used from a tabletop or cart.
 \$55,000.00



MultiSync DR67/SR67/GR67/XR67 Rear Screen Projection Systems

- Common Features**
- 67" high contrast, high resolution screen
 - Screen eliminates secondary image ghosting and is fully color corrected to eliminate color shift
 - Wide horizontal and vertical scan viewing angle enables accurate viewing from a variety of positions
 - Includes a comprehensive setup remote and a smaller user remote
 - On-screen menus and an online help feature
 - Displays a wide variety of sources including PC and Macintosh computers
 - Displays video images from sources such as VCRs, laserdisc players or video cameras
 - Compatible with video standards including NTSC, NTSC 4.43, PAL, SECAM and S-Video
 - Includes IR repeater, 16-meter remote control cable, AC line cable and operator's manual
 - Sliding rails enable the back of the unit to be compressed for ease of transport
- GR67**
 Includes common features, plus:
 ▪ Supports a range of RGB resolutions from 640 x 480 to 2500 x 2000
 ▪ Displays workstation and Hi-Res special purpose computer sources
 ▪ 15-135kHz horizontal scan frequency
 ▪ 40-160Hz vertical scan frequency
 ▪ 120MHz bandwidth
 ▪ 1500 TV lines (monochrome)/1350 lines at corner video resolution
 \$29,995.00
- SR67**
 Includes common features, plus:
 ▪ Supports RGB resolution of 1600 x 1200
 ▪ 15-110kHz horizontal scan frequency
 ▪ 40-160kHz vertical scan frequency
 ▪ 120mHz (-3dB) bandwidth
 ▪ 1500 TV lines (monochrome), 1350 lines at corner video resolution
 \$26,995.00
- DR67**
 Includes common features, plus:
 ▪ Supports RGB resolution of 1280 x 1024
 ▪ 15-75kHz horizontal scan frequency
 ▪ 40-160Hz vertical scan frequency
 ▪ 110mHz (-3dB) bandwidth
 ▪ 1500 TV lines (monochrome), 1350 lines at corner video resolution
 \$22,995.00
- XR67**
 Includes common features, plus:
 ▪ Displays laptops
 ▪ Supports RGB resolutions from 640 x 480 to 1280 x 1024
 ▪ 15-69kHz horizontal scan frequency
 ▪ 38-160Hz vertical scan frequency
 \$19,995.00

MultiSync MT1000/810 LCD Projectors

- Common Features**
- Delivers exceptionally bright, evenly illuminated images
 - Four on-screen controls allow adjustment of virtually every projector function quickly and easily
 - Compatible with VCRs, laserdisc players and other composite and S-Video sources
 - Horizontal resolution of 550 lines NTSC and 350 lines PAL/SECAM/NTSC
 - Provides powerful, self-contained display images and has integrated audio capabilities
 - Features the

MultiCable® connection system for instant connection to both PC and Macintosh sources

- Provides loophrough capability to enable the display of the computer's image on an external monitor in addition to the projector itself
- Comprehensive remote



MT1000

- MT1000**
 Includes common features, plus:
 ▪ XGA (1024 x 768) projector for display of high resolution images
 ▪ Workstation compatible
- Designed for high tech sales, marketing, training and higher education professionals and designers
 \$11,995.00
- MT810**
 Includes common features plus:
 ▪ Ideal for the display of high resolution images
 - Designed to handle the most demanding needs of high tech sales, marketing, training, higher education and design professionals
 - Workstation compatible
 - Supports PC resolutions from 640 x 480 to 1024 x 768 and Macintosh resolutions up from 640 x 480 to 832 x 624
 \$9,999.00

MultiSync 6PG XTRA Projection System

- 15-69kHz horizontal scan and 38-160Hz vertical scan
- 1280 x 1024 RGB/1200 TV lines video resolution
- Digital wave convergence circuitry
- AccuBeam™ focus technology
- 1000 lumens peak light output
- Capable of reproducing and projecting very high resolution images on screens ranging from 60" to 300" diagonally
- On-screen menus and help screens
- Includes "Copy Function" feature and ACAT video port
- Optional PC control software package
 \$11,495.00

AccuPoint™ Convergence Option

- Designed for ultrahigh computer resolution accuracy
- Provides over 99.8% convergence accuracy over 150 screen zones
- Plug-in board for rapid field installation
 \$3,495.00

MultiSync 135LC/110LC/XG75A CRT Projection Systems

- Common Features**
- AccuBeam dynamic astigmatism adjustment
 - AccuFocus™ lens system
 - AccuPoint digital wave convergence technology
 - AccuZone™ convergence technology
 - Closed caption technology
 - Image shift phosphor-saving technology
 - White uniformity correction
 - Remote controlled orientation
 - Contrast modulation
 - Supports CGA, EGA, VGA, SVGA, 1024 x 768, 1280 x 1024, 1600 x 1780 and 2000 x 2000 as well as all high resolution Macintosh modes
 - Compatible with a variety of video inputs including NTSC, HDTV, PAL, SECAM and S-Video sources
 - Quick and easy connection via the comprehensive input panel, which accepts numerous video and RGB inputs
 - Vertical scan frequency of 40-160Hz
 - Video resolution: 1500 TV lines at center and 1350 TV lines at corner (HDTV)
 - Includes 16-meter remote control cable, AC line cable, user's manual and installation manual
- XG135LC**
 Includes common features, plus:
 ▪ 15-135kHz horizontal scan frequency
 ▪ 150MHz (-3dB) video bandwidth
 ▪ HD18 liquid coupled lens
 ▪ 240 ANSI lumens, 1200 peak lumens light output
 \$23,995.00
- XG110LC**
 Includes common features, plus:
 ▪ 15-110kHz horizontal scan frequency
 ▪ 120MHz (-3dB) video bandwidth
 ▪ HD18 liquid coupled lens
 ▪ 240 ANSI lumens, 1200 peak lumens light output
 \$20,995.00
- XG75A**
 Includes common features, plus:
 ▪ 15-75kHz horizontal scan frequency
 ▪ 110MHz (-3dB) video bandwidth
 ▪ HD144 lens
 ▪ 230 ANSI lumen, 1100 peak lumens light output
 \$14,500.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

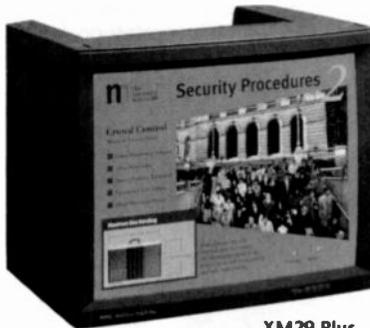




MultiSync® XM/XP Plus Series Multimedia Presentation Monitors

Common Features

▪ Compatible with IBM® PC and Macintosh® computers, and composite and S-Video video sources ▪ Supports horizontal scan rates of up to 95kHz ▪ Auto scanning multiple frequency capability with microprocessor based memory automatically detects and locks onto inputs from NTSC video to computer graphics signals as high as 1600 x 1200 ▪ Up to 10 user-definable memory



XM29 Plus

locations memorize screen settings ▪ Comprehensive input panels ▪ MultiCable® connection system ▪ High bandwidth ▪ Improved dynamic focus ▪ Flat square technology CRTs ▪ Microfilter technology ▪ S-Video resolution: 600 horizontal lines ▪ Composite video resolution: 500 horizontal lines ▪ Wireless infrared remote control

XP37 Plus Includes common features, plus: ▪ 37" diagonal, 35" viewable image size ▪ 0.85mm center dot pitch ▪ Horizontal scan frequency is 15.75, 31-95kHz (auto) ▪ Computer signal compatibility: 640 x 480 VGA, 800 x 600 SVGA, 1024 x 768, 1280 x 1024, 1600 x 1200; Macintosh: 640 x 480, 832 x 624, 1024 x 768, 1152 x 870 \$10,250.00

XM37 Plus Includes common features, plus: ▪ 37" diagonal, 35" viewable image size ▪ 0.85mm center dot pitch ▪ Horizontal scan frequency is 15.75, 31-64kHz (auto) ▪ Computer signal compatibility: 640 x 480 VGA, 800 x 600 SVGA, 1024 x 768, 1280 x 1024; Macintosh: 640 x 480, 832 x 624, 1024 x 768 \$7,195.00

XP29 Plus Includes common features, plus: ▪ 29" diagonal, 27" viewable image size ▪ 0.60mm center dot pitch ▪ Horizontal scan frequency is 15.75, 31-95kHz (auto) ▪ Computer signal compatibility: 640 x 480 VGA, 800 x 600 SVGA, 1024 x 768, 1280 x 1024, 1600 x 1200; Macintosh: 640 x 480, 832 x 624, 1024 x 768, 1152 x 870 \$5,195.00

XM29 Plus Includes common features, plus: ▪ 29" diagonal, 27" viewable image size ▪ 0.60mm center dot pitch ▪ Horizontal scan frequency is 15.75, 31-64kHz (auto) ▪ Computer signal compatibility: 640 x 480 VGA, 800 x 600 SVGA, 1024 x 768, 1280 x 1024; Macintosh: 640 x 480, 832 x 624, 1024 x 768 \$3,295.00

MultiSync LCD2000/400 True Color Monitors

Common Features

▪ True color active matrix thin-film transistor (TFT) liquid crystal displays provide superior display performance and a reduced footprint ▪ Ideal for environments with space and weight constraints ▪ Capable of displaying 16.7 million colors in a continuous spectrum ▪ Display a continuous gray scale ▪ XtraView™ technology allows 160° viewing area ▪ Wide range of compatibility with existing graphics cards ▪ Can be used with a wide variety of systems such as PC computers, Macintosh and Power Macintosh computers, Sun® workstations, Silicon Graphics® workstations and x-terminals



LCD400

LCD2000 Includes common features plus: ▪ 20.1" active matrix TFT LCD ▪ 1280 x 1024 resolution ▪ 0.31mm fine dot pitch \$6,399.00

LCD400 Includes common features plus: ▪ 14.1" active matrix TFT LCD ▪ 0.28mm dot pitch ▪ 1024 x 768 resolution \$2,325.00

MultiSync E1100/E700/E500 21" Color Monitor

Common Features

▪ CromoClear™ CRT (E700/500) ▪ Dot trio CRT ▪ On-Screen Manager™ (OSM) controls put image adjustments on command ▪ AccuColor® control system ▪ Microsoft® plug-and-play compatibility streamlines setup and improves performance ▪ Energy Star and NUTEK compliant to save energy costs ▪ ErgoDesign® enhancements increase comfort, productivity and ease of use ▪ 90° deflection ▪ OptiClear screen surface

E1100 Includes common features, plus: 21" (19.8" viewable image size) flat square technology high contrast CRT ▪ 1730mm radius ▪ 0.28mm dot pitch \$1,449.00

E700 Includes common features, plus: ▪ 17" CromoClear CRT (15.6" viewable image size) ▪ 1210mm radius ▪ 0.25mm mask pitch \$699.00

E500 Includes common features, plus: ▪ 15" CromoClear CRT (13.8" viewable size) ▪ 1080mm radius ▪ 0.25mm mask pitch \$399.00

MultiSync P750 17"/P1150 21" Color Monitors

Common Features

▪ OptiClear screen ▪ Supports resolutions up to 1600 x 1200, noninterlaced ▪ AccuColor control system ▪ Plug and play compatibility ▪ Dual inputs ▪ OSM controls ▪ Moiré canceler ▪ Brightness, contrast, size and position adjustments ▪ IPM system ▪ Compatible with PC computers and offers instant connection to Macintosh via the MultiCable connection system included ▪ ErgoDesign

P1150 Includes common features plus: ▪ Ideal for users working in CAD/CAM, professional desktop publishing, graphic design, pre-press and imaging as well as corporate users who demand superior performance ▪ Aperture Grille CRT ▪ GlobalSync ▪ Convergence control \$1,359.00

P750 Includes common features plus: ▪ Ideal for users who rely on accurate image quality for graphic design, desktop publishing, document imaging and CAD/CAM applications ▪ CromoClear CRT \$764.00

MultiSync IDC-3000A Converter

▪ Dramatically improves the quality of all NTSC video ▪ Laserdisc, VTR, live camera and off air sources ▪ Converts 15.75kHz-30Hz interlaced video signal to digitized 31.50kHz-60Hz noninterlaced RGB signal ▪ 5 composite and 2 combination S-Video inputs ▪ 1 VGA signal pass-through ▪ Motion Y/C adaptive separation ▪ Motion line adaptive interpolation ▪ Rackmount kit, infrared handheld remote and 12' RGB/HV cable included \$3,995.00

MultiSync ISS-6020 Video/RGB Switcher

▪ Combination video/RGB switcher and high bandpass RGB distribution amplifier with 11 module slots ▪ Up to 10 input modules may be installed ▪ Up to 4 RGB or video output modules may be installed ▪ Can be daisy-chained for up to 100 inputs ▪ Minimum of 100MHz bandpass provides virtually transparent signal reproduction ▪ Rackmount kit and 1 RGB output module (6010OUTRGB) included \$2,250.00

Switcher Options

- 6010HD High definition input module \$2,495.00
- 6010OUTRGB RGB output module \$385.00
- 6010VGA VGA/XGA-2 input module \$385.00
- 6010OUTVID Video output module \$345.00
- 6010QUAD-2 Quad video decoder board (QUAD-VDB) \$325.00
- 6010VID Video input module \$245.00
- 6010RGB RGB input module \$245.00
- CTL6010 50' projector control cable \$245.00
- RC6020 User handheld remote control \$95.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



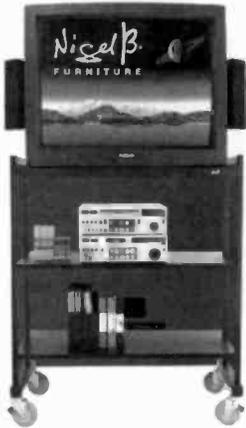
Senior Workstation. Tall series monitor extension unit with extra 63" shelf, speaker brackets with Omnimount, elevated shelf unit, 7RU elevated chassis unit.



If you are in TV, radio, music or post-production traditional or nonlinear editing, our 40-page catalog shows many different ideas for the audio, video or graphics professional.



Premier Series Senior Workstation. Wood-edged top with recessed and angled monitor platform, articulated keyboard/mouse shelf, center section monitor bridge, telephone platform.



Tall Super Jumbo Cart with Mitsubishi 42" Megaview Monitor. Each shelf can hold a maximum weight of 350 lbs. (Mitsubishi 42" monitor weighs 287 lbs.)

Large lockable wheels make moving the cart a breeze.



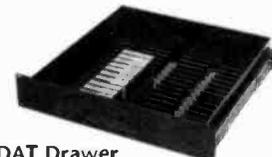
We use only high-grade steel, welded and reinforced at key points—steel with a thickness you will not find in office furniture, and often thicker than that used in automobiles.



Two sizes of fixed shelves.



CD Drawer



DAT Drawer



CPU Platform becomes an integral part of any desk or workstation.



Mobile Monitor Stands. Carry up to 27" monitors and extend from 26" to 50".

Nonlinear Editing Furniture for The AVID Media 100, Fast, Lightworks, Postbox, Sony.
You name it, we have a solution.



18" Writing Shelf



Double Desk with 63" wide Tall Series Mount. Extension fitted with (2) shelves, speaker brackets with Omnimount, variable height workchair.

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



AUDIO/VIDEO PROCESSING



NOVABLOX™ MODULAR VIDEO SIGNAL PROCESSING SYSTEM

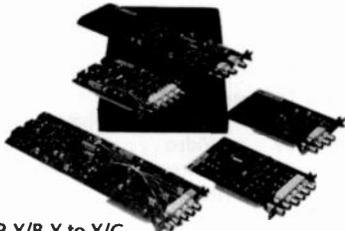
The NovaBlox Video Processing System is comprised of individual function modules called NovaCards™ which are designed on PC compatible circuit boards. These modular cards act as bridges between the various components of a video and audio system. Many NovaCards feature serial data interfaces for remote control capability. NovaBlox applications include production, post production, EFP, satellite, microwave, desktop video, computer graphics, computer frame grabber, video still store, duplication, video presentation, imaging and CCTV systems. NovaBlox allows maximum flexibility when configuring the various NovaCard modules required for an integrated video system. Alterations to the system are accommodated by changing the mix of NovaCard modules.

NovaCard Function Modules

The following NovaCards are circuit cards that plug into a computer ISA bus or NovaChassis™, and do not include chassis or power supply.

NovaLox™ Sync and Blackburst Generator With Genlock (card only)

LoxXT-P	Genlock for V-SW, S-SW and MXT/A-P	.....\$700.00
LoxXT	Genlock for V-SW, S-SW and MXT/A	.....700.00
Lox	Genlock for NC-1, V-SW, S-SW and Mate/A	.....600.00



NovaCoder™ Series Encoders, Decoders and Transcoders (cards only)

NC-1	Ncoder-1: RGB or Y/R-Y/B-Y to Y/C and composite	.....\$1000.00
NC-2*	Ncoder-2: Y/C to composite (4 outputs)	.....300.00
YC-MAX	Nova Y/C-MAX: Image Enhancer and Y/C decoder	.....1000.00
YC*	Nova Y/C: Composite to Y/C decoder (2 outputs)	.....600.00
DC-1	Dcoder-1: Composite or Y/C to Y/C, Y/R-Y/B-Y and RGB	.....1000.00
DC-2	Dcoder-2: Composite or Y/C to Y/C and Y/R-Y/B-Y	.....800.00
XC-1*	Xcoder-1: Y/R-Y/B-Y to RGB transcoder	.....600.00
XC-2*	Xcoder-2: RGB to Y/R-Y/B-Y transcoder	.....600.00
XC-3*	Xcoder-3: Y/C and dub bidirectional transcoder	.....600.00

Dub and Y/C Adaptor Cables (for DC-1, DC-2 and XC-3)		
4M-7M	4-pin to 7-pin male, 10'	.....\$40.00
4M-7F	4-pin to 7-pin female, 10'	.....40.00

NovaDA™ Series Distribution Amplifiers (cards only)

A-DA*	1 x 5 stereo audio DA	.....\$300.00
S-DA*	1 x 5 Y/C DA	.....225.00
V-DA*	1 x 5 composite video DA	.....175.00

A-DA Breakout Cables (required)

DB25-12XM	XLR male connectors, balanced	.....\$150.00
DB25-12XF	XLR female connectors, balanced	.....150.00
DB25-10P	Phono jack connectors, unbalanced	.....80.00
Breakout Adaptor Board—DB25 to screw terminal		.....50.00

RGB or YUV Distribution Amplifier Packages

4-DA	1 x 5 RGB/S DA in C-6 rackmount chassis	.....\$1000.00
3-DA	1 x 5 RGB/YUV DA in C-6 rackmount chassis	.....850.00

NovaSwitch™ Series Routing Switchers (cards only, switch assembly required)

■ Binary coded interface included ■ Optional serial interface for Trol/computer ■ Switch assembly required for manual operation

S-SW*	4 x 1 Y/C switcher\$300.00
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A-SW*	4 x 1 stereo audio follow/breakaway\$300.00
V-SW*	4 x 1 composite video switcher250.00

A-SW Breakout Cables (required)

DB25-10XM	XLR male connectors, balanced	.....\$140.00
DB25-10XF	XLR female connectors, balanced	.....140.00
DB25-10P	Phono jack connectors, unbalanced	.....75.00
Breakout Adaptor Board—DB25 to screw terminal		.....50.00

Switch Series Options

SW4-R	Remote switch unit with 25' cable	.....\$200.00
SW4-P	Panel mounted switch assembly	.....50.00
SI-1	Serial interface with software	.....50.00

RGB or YUV Routing Switcher Packages

4-SW	4 x 1 RGB/S switcher in C-6 chassis with SW4-P	.....\$1300.00
3-SW	4 x 1 RGB/YUV switcher in C-6 chassis with SW4-P	.....1100.00

NovaSync™ Broadcast Frame Synchronizer

- Modular frame sync, 8-bit, 4xfsc ■ Video AGC with full proc amp
- 4-field option for accurate picture position ■ Freeze option for still picture and hot switch ■ Up to 15 channels in 1 chassis ■ Computer plug-in compatibility ■ RS-232 serial interface, 10 sets of memories
- Serial interface with DOS and Windows software with all versions

Plug-in Card Version (for computer ISA bus or NovaChassis)

Sync3	Frame sync card	.....\$1200.00
FS-F	Freeze/hot switch option and 4-field memory	.....250.00
FS-4	4-field memory option	.....150.00

Single Channel Sync3 Versions

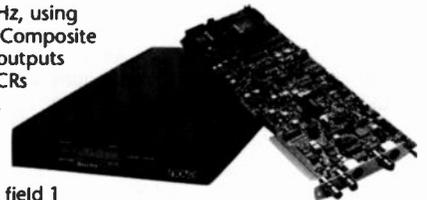
S1RT2	Sync3 in C-4 rackmount chassis and T2-P Trol/2	.....\$2000.00
S1T	Sync3 in C-2B tabletop chassis and T-P Trol	.....1720.00

2-, 3- and 4-Channel Sync3 Versions

S4T2	4-channel Sync3 in C-4 and T2-P	.....\$5600.00
S3T2	3-channel Sync3 in C-4 and T2-P	.....4400.00
S2T2	2-channel Sync3 in C-4 and T2-P	.....3200.00

NovaMate™ Y/C TBC/Frame Sync

- Full bandwidth TBC, to 6MHz, using adaptive digital comb filter ■ Composite and Y/C (S-VHS, Hi8) inputs/outputs
- Frame synchronization of VCRs and remote sources ■ Genlock with system phasing or stand-alone operation ■ 4xfsc component sampling, 8-bit Y/C encoding ■ Freeze frame, field 1 and 2 ■ Serial control of operating parameters ■ DOS, Windows and Amiga software included



Plug-in Card Versions for Computer (ISA bus) or NovaChassis

Mate	TBC card plus genlock card (1st channel)	.....\$1400.00
Mate/A	TBC card (for additional channels only)	.....1200.00

Single Channel Stand-Alone Versions (tabletop or rackmount)

M1RT2	M1R with T2-P control unit	.....\$2200.00
M1RT	M1R with T-P control unit	.....2050.00
M1T	M1 with T-P control unit	.....1920.00
M1R	Mate in C-4 rackmount chassis	.....1800.00
M1	Mate in C-2B tabletop chassis	.....1670.00

Dual Channel Stand-Alone Versions in C-4 Rackmount Chassis

M2T2	M2 with T2-P control unit	.....\$3400.00
M2T	M2 with T-P control unit	.....3250.00
M2	2-channel TBC (Mate, Mate/A, C-4)	.....3000.00

3-Channel Stand-Alone Versions in C-4 Rackmount Chassis

M3T2	M3 with T2-P control unit	.....\$4600.00
M3T	M3 with T-P control unit	.....4450.00
M3	3-channel TBC (Mate, 2 Mate/A, C-4)	.....4200.00

*Indicates a short card for all NovaChassis including C-2A and C-6

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

**NOVABLOX™ SYSTEM (cont'd) NovaMate™ XT
Component Transcoding TBC/Frame
Synchronizer**

• Y/R-Y/B-Y, Y/C and composite inputs and outputs • RGB and U-Dub in and out options • 6MHz bandwidth • 3-line adaptive digital comb filter • Full-frame 4:2:2 component synchronizer with freeze and strobe • Up to 14 channels in 1 chassis • Computer plug-in compatibility • RS-232 serial interface, 10 sets of memories • NTSC, PAL and PAL-M versions



Plug-in Card Versions for Computer (ISA bus) or NovaChassis™

MXT TBC card plus genlock card (1st channel) \$1850.00
MXT/A TBC card (for additional channels only) 1450.00

Single Channel Stand-Alone Versions (tabletop or rackmount)

MXT1RT2 MXT1R with T2-P control unit \$2650.00
MXT1RT MXT1R with T-P control unit 2500.00
MXT1T MXT1 with T-P control unit 2370.00
MXT1R MXT1 in C-4 rackmount chassis 2250.00
MXT1 MXT1 in C-2B tabletop chassis 2120.00

Dual Channel Stand-Alone Versions in C-4 Rackmount Chassis

MXT2T2 MXT2 with T2-P control unit \$4100.00
MXT2T MXT2 with T-P control unit 3950.00
MXT2 2-channel TBC (MXT, MXT/A, C-4) 3700.00

3-Channel Stand-Alone Versions in C-4 Rackmount Chassis

MXT3T2 MXT3 with T2-P control unit \$5550.00
MXT3T MXT3 with T-P control unit 5400.00
MXT3 3-channel TBC (MXT, 2 MXT/A, C-4) 5150.00

MateXT Options

Rem/Loc Remote/Local control via RS-232 \$100.00
Bypass* Operate/Bypass control board. Can be used with MateXT, Mate or any other composite device 100.00
6P-3B Component input/output adaptor cable, 6-pin to 3-BNC, 10' 50.00

NovaChassis With Integral Power Supply

C-15B 15-slot, 5 1/2" H rackmount, 200W \$1300.00
C-15A 15-slot, 5 1/2" H rackmount, 115W 1000.00
C-4 4-slot, 1 1/2" H rackmount 400.00
C-6 6-slot, 1 1/2" H rackmount, short cards only 350.00
C-2B 2-slot tabletop, all cards 270.00
C-1D NovaScan™ single channel chassis 200.00
C-2C NovaMNR™ single channel chassis with front panel control 200.00
C-2A 2-slot tabletop, short cards only 150.00
C-2AS 2-slot tabletop for SW-4P, short cards only 150.00
NFRS Rack slides for C-4 and C-15 chassis 75.00
EX Extender card for C-15 chassis/computer bus 50.00

NovaTrol™ Serial Control Units

T-P Trol LCD control unit, front panel mount (except C-2A) \$250.00
T-R T-P in tabletop remote control unit with 25' cable 400.00
T-RM T-P in rackmount remote control with 25' cable 400.00
TrolPlus Enhanced T-P control unit for front panel mounting (except C-2A) 325.00
TrolPlus-R TrolPlus in tabletop remote control unit with 25' cable 475.00
TrolPlus-RM TrolPlus in rackmount remote control unit with 25' cable 475.00
T2-P4 Trol/2 enhanced control unit, panel mount for C-4 chassis 400.00
T2-P15 Trol/2 enhanced control unit panel mount for C-15 chassis 400.00
T2-R Trol/2 tabletop remote control unit with 25' cable 550.00
T2-RM Trol/2 rackmount remote control with 25' cable 550.00

NovaRouter™ Matrix Routing Switcher System

• 8 x 8, 16 x 16 and 32 x 32 matrices
• Stereo audio, composite video, Y/C video, component video (Beta or MII), RGB, RGBS and VGA routing • Up to 5 levels of switching • Audio-follow-video and breakaway • Serial control via computer software or optional XY control units • Computer VGA monitor display with mouse control • User-defined labels for sources and destinations provide positive identification of matrix status • Store system configurations in memories • Control multiple locations from 1 computer • Pushbutton XY control options, front panel mount or remote control units • Video, audio and audio-follow-video switching functions controlled by source select and destination select switches • Broadcast quality audio and video processing and microprocessor control • Audio and video modules provide easy system upgrade



8 x 8 Matrices

NR-8Y Y/C \$2990.00
NR-8AB Stereo Audio-balanced 1990.00
NR-8V Video 1590.00
NR-8A Stereo Audio-unbalanced 1490.00

16 x 16 Matrices

NR-16AB Stereo Audio-balanced \$3890.00
NR-16V Video 3790.00
NR-16A Stereo Audio-unbalanced 2590.00

32 x 32 Matrices

NR-32V Video \$8790.00
NR-32AB Stereo Audio-balanced 8190.00
NR-DB25† Optional breakout adapter for balanced audio 50.00

XY Controls (front panel [P] and remote [R] versions)

XY-32R 32 x 32 \$1100.00
XY-32P 32 x 32 990.00
XY-16R 16 x 16 650.00
XY-16P 16 x 16 550.00
XY-8R 8 x 8 400.00
XY-8P 8 x 8 300.00

NOVA Stand-Alone Time Base Correctors

• 1 rack unit TBCs • Full proc amp controls with presets
810 710S with Freeze \$3490.00
710S Heterodyne TBC, plus VTR-SC, Y/C input, DOC 2890.00
RS Rack Slides 75.00

NovaASD™ Analog to Serial Digital Converters

• Incorporate the latest digital video processing techniques for high-speed analog to digital signal conversion • Ideal for interfacing analog signals with digital video formats
ASD-1 Analog component to serial digital (D1) converter \$1,500.00
ASD-2 Analog composite and Y/C to serial digital (D1) converter 1,200.00
ASD-3 Analog composite to serial digital (D2/D3) converter (NTSC only) 1,200.00

*Indicates a short card for all NovaChassis including C-2A and C-6.

†Stereo audio balanced AB versions feature DB25 connectors for each channel of 8 inputs or outputs. NR-DB25 adaptors have Euro style screw-down terminals.

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

CAMERA SUPPORT SYSTEMS



O'Connor
PROFESSIONAL CAMERA SUPPORT SYSTEMS

HEADS

NOTE: Each of these heads requires at least 1 platform, 1 base and 1 or more handles listed below to operate properly.

Model 2575B Fluid Head

Balances 85 lb. cameras with 8"H center of weight. Tilt range $\pm 90^\circ$.

2575-203 Head only \$8310.00



2575B with base

Model 2575BV (Video) Fluid Head

Modified pan fluid section accommodates operators who require a lighter pan drag. Examples: Studio pedestals and field sports.

2575-173 Head only \$8310.00

Model 1030Z (Dutch) Fluid Head

Balances 30 lb. cameras with 6"H center of weight. Tilt range $\pm 90^\circ$.

Note: This head requires at least 1 platform and 1 or more handles to operate properly. Mounting base to O'Connor 2575B platform is included.

1030-903 Head only \$3880.00

Model 1030S (Studio) Fluid Head

Balances 43 lb. cameras with 6"H center of weight. Tilt range $\pm 60^\circ$.

1030-303 Head only \$3665.00

Model 1030B Fluid Head

Balances 30 lb. cameras with 6"H center of weight. Tilt range $\pm 90^\circ$.

1030-203 Head only \$3430.00



1030B with base

Model 515S (Studio) Fluid Head

Balances 24 lb. cameras with 5"H center of weight. Tilt range $\pm 60^\circ$.

515-303 Head only \$1725.00



515 with base

Model 515 Fluid Head

Balances 20 lb. cameras with 5"H center of weight. Tilt range $\pm 90^\circ$.

515-003 Head only \$1395.00

PLATFORMS

- 2575-120 European style 120mm camera mounting plate (for 2575B/2575BV/1030Z) \$1050.00
- 1030-255 Large European quick-release with camera mounting plate and screws (for 1030) 625.00
- 2575-110 Panavision dovetail style mounting plate (for 2575B/2575BV/1030Z) 535.00
- 08346 Mini European quick-release with camera mounting plate and screws (for 1030) 535.00
- 08345 Mini European quick-release with camera mounting plate and screws (for 515) 510.00
- 08283 O'Connor style camera mounting plate (for 2575B/2575BV/1030Z) 380.00
- 1030-158 O'Connor quick-release with camera mounting plate and screws (for 1030) 360.00
- 515-058 O'Connor quick-release with camera mounting plate and screws (for 515) 350.00

BASES

- 08349 Sachtler/Vinten no tie-down required (for 515/1030/2575) \$700.00
- 08278 150mm ball base (for 515/1030/2575) 320.00
- 08279 150mm tie-down only (for 515/1030/2575) ... 90.00
- 08323 O'Connor eyepiece leveler bracket (for 2575B/2575BV) 320.00
- 08359 O'Connor eyepiece leveler bracket (for 1030B/S/Z) 320.00
- 08308 O'Connor assistant's front box mount (for 1030/2575) 270.00
- 08281 Mitchell base (for 515/1030/2575) 280.00
- 08402 Mitchell tie-down only (for 515/1030/2575) ... 80.00
- 08373 100mm ball base (for 30/50) 160.00
- 08365 100mm ball base (for 515/1030B/S) 140.00
- 08395 100mm tie-down only (for 515/1030B/S/30/50) .. 80.00
- 1030-133 Claw ball base (for 515/1030B/S) 160.00
- 08070 Claw ball base tie-down only (for 515/1030B/S) 80.00
- 1030-135 Flat base no tie-down required (for 515/1030B/S) 140.00
- 08388 Randall handle extension 375.00
- 08389 Straight base handle for 2575 fluid head 160.00
- 08390 Straight base handle for 515/1030 fluid heads . 160.00
- 08391 Straight base handle for Sachtler heads 160.00

CASES

Molded Systems/Tripod and Other Cases

- 08297 ATA type, foam fitted for 2575 head and accessories, twist lock \$610.00
- 08297-A Same as 08297 with flip lock 610.00
- 08170 Molded case for model 155B regular tripod ... 450.00
- 08169 Molded case for model 155B baby tripod 380.00
- 08143 Molded case for system 515/1030 and 35/55D tripods 380.00
- 08362 Molded case for system 515/1030 systems with 25L tripod 370.00
- 08144 Molded case for model 55D baby tripod 360.00
- 08230 Soft carrying case for system 515/1030. Made of 1000 denier Cordura with foam padding, inside pockets, 1½" handles and shoulder strap (4½" x 9½" x 9½"). This case will fit into the molded case 08143 180.00
- 08363 Soft carrying case for system 515/1030 systems with 25L tripod 160.00



Soft Carrying Case

HANDLES

Models 1030/515

- 1030-152 Handle extension 10", ¾" dia. \$160.00
- 1030-246 30cm, 18mm dia., 30° bend 160.00
- 2575-135 Handle extension 28cm, 21mm dia. 160.00
- 1030-088 19", ¾" dia., 34° bend 125.00
- 1030-145 14½", ¾" dia., 34° bend 105.00

Model 2575B, 2575BV, 1030Z

- 2575-144 Handle for large microforce and video lens controls \$210.00
- 2575-105 Handle extension 12", 1" dia. 200.00
- 2575-137 30cm, 18mm dia., 30° bend 180.00
- 2575-107 30"-16½", 1" dia., 30° bend 170.00
- 2575-035 45"-16½", 1" dia., 45° bend 170.00
- 2575-135 Handle extension 28cm, 21mm dia. 160.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

REFERENCE
CATALOG
97-98



TRIPODS

Model 35LC

Carbon fiber quick-release tripod with 100mm ball top casting, built-in tie down, carbon fiber air assist column, mid-leg rigid spreader and spike guards, weight 13 lbs., load capacity 60 lbs. For 515/1030 heads.

35LC-060 \$2155.00

Model 155B

Aluminum regular tripod with lever lock legs, 150mm ball or Mitchell top casting, off-ground spreader and spike guards, weight 23.7 lbs., load capacity 200 lbs. For 515/1030/2575 heads.

- 155B-067 With Mitchell top casting \$1940.00
- 155B-064 With 150mm top casting 1940.00
- 155B-069 Baby (26.5"-38") w/o spreader w/Mitchell top casting 1660.00
- 155B-066 Baby (26.5"-38") w/o spreader w/150mm top casting 1660.00



2575 Fluid Head on a 155B Tripod

Model 25L

Lightweight carbon fiber, 2-stage tripod, with horizontal lever locks for quick, safe and secure leg adjustments and 100mm ball top casting, mid-leg spreader and spike guards, weight 6.5 lbs., load capacity 60 lbs. This tripod adjusts to a maximum of 66"H and a minimum of 15"H; collapsed 28"H, 7"W.

25L-103 \$1830.00



35L

Model 35L

Quick-release tripod with 100mm ball top casting, 2-position spreader, load capacity 60 lbs. and weight 7 lbs. (est.). The tripod is made of carbon fiber and lightweight aluminum and adjusts to a maximum of 60"H and a minimum of 24"H. For 515/1030 heads.

- 35L-003 \$1505.00
- 35L-054 Baby (11"-25"H) w/spreader . . 1270.00

Model 55D

Aluminum regular tripod with lever lock legs, 100mm ball top casting, off-ground spreader and spike guards, weight 13.4 lbs., load capacity 100 lbs. For 515/1030 heads.

- 55D-055 \$1270.00
- 55D-057 Baby (17"-22") w/o spreader. 1105.00



515 Fluid Head on a 55D Tripod

Model 35B

Quick-release tripod with 100mm ball top casting, mid-leg rigid spreader and spike guards, weight 9.5 lbs., load capacity 60 lbs. For 515/1030 heads.

35B-075 \$1185.00

TRIPOD DOLLIES

53C/53B

53C-051 Studio tripod dolly, 43" dia. spread, 6" wheels . . \$1795.00

53B-042 Transport tripod dolly with 43" dia. spread and 4" wheels. 945.00

HI-HATS

- 145B-002 150mm ball hi-hat (6"H) \$270.00
- 145B-006 Mitchell hi-hat (6"H) 270.00
- 45A-002 100mm ball hi-hat (5 1/2"H) 195.00

ACCESSORIES

- 54A-003 Spreader, internally adjustable, for 55D tripod . . \$265.00
- 33D-063 Spreader, internally adjustable, for 25L tripod. . 220.00
- 33C-055 Spreader, internally adjustable, for 35L tripod. . 215.00
- 08095 Standard handle for Model 100/150 heads (15" x 3/4") 210.00
- 33B-KIT 35B rigid spreader conversion kit (converts 35A to 35B). 205.00
- 33A-003 Rigid spreader, internally adjustable for 35 series 160.00
- 08094 Standard handle for Model 30/50 heads (15" x 1/2") 135.00
- 08321 Adaptor (to use O'Connor front box mount on Sachtler head) 135.00
- 08237 Retractable spike guards for 35/55/155 series (set of 3). 40.00
- 08236 Retractable spike guards for 35/55/155 series ea./13.50
- 08120 Spreader lock pins for 54A-003 ea./6.50
- 09112 Spreader lock pins for 33A-003 ea./6.50
- 08119 Spare stainless steel spike and nut, for 35/55/155 series 6.00
- 35L-032 Rubber foot for 35L tripod 2.70

Lever Leg Lock Upgrade Kit (Set of 3)

- 155-KIT For model 155 tripods \$310.00
- 55-KIT For model 55 tripods 275.00

ADAPTORS

- 51-007 1 3/4" column to 100mm ball, with tie down . . \$490.00
- 51-007-B 1 3/4" column to 100mm ball, with tie down . . . 490.00
- 51-007-C 2" column to 100mm ball, with tie down 490.00
- 08360 Mitchell to 150mm ball 320.00
- 08377 Mitchell tie down with thread to receive 150mm tie down 95.00
- 08279 150mm tie down 90.00

Camera Mounting Plates With Screws

- (1 each 3/8"-16 and 1/2"-20 screws provided, except #08107 and #08285)
- 08107 Side mounting type for Models 100/100-HD/150 (two 3/8" x 16 screws). \$190.00
 - 08285 120mm European replacement plate (two 3/8"-16 screws) 150.00
 - 08305 1/4" Riser, O'Connor type for Models 515/1030/50 135.00
 - 08351 Mini-European type 110.00
 - 08219 O'Connor type for Models 515/1030/50 (2 3/8" x 5/8") 85.00
 - 08065 Lisand type for Models 30/50 (2" x 4") 80.00
 - 08274 3/8" x 16 European screw 13.00
 - 08330 1/4" x 20 European screw 13.00
 - 08106 3/8" x 16 screw 7.50
 - 00841 1/4" x 20 screw 7.50

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





MPEG Video Bay

MPEG Lab™ Suite MPEG-1 Encoder

- MPEG Lab Suite is the professional choice for creating MPEG-1 digital video in real time
- Real time MPEG video/audio compression
- Compression rates up to 500K bytes
- MPEG and video-CD output formats
- Frame accurate VTR control
- Linear batch encoding
- MPEG cut and paste editing
- Advanced video prefiltering
- Professional video input formats
- Automatic scene change detection
- User friendly interface and on-line help
- Ideal for developers creating content for multimedia applications, games, point-of-information, reference libraries and more
- Digital filtering ensures a clean video image prior to encoding
- Encoding status indicators
- Complete VTR control
- Advanced MPEG player
- Video jukebox
- Audio input calibration controls audio clipping
- MPEG file demultiplexer
- Video adjustment controls
- MPEG Frame Grabber
- MPEG parameter control

Specifications

System Requirements

Computer: 486/66 PC/AT or Pentium with 2 available EISA or ISA bus slots

Interface: RS-232 port; 2.6V p-p 20Hz-20kHz response

Video Capture Performance

Format: MPEG-1

Image Size: NTSC (352 x 240); PAL (352 x 288)

Frame Rate: NTSC (29.97fps); NTSC film (24fps) with inverse 3:2 pulldown support; PAL (25fps) up to 500Kbps

Audio Capture Performance

Data Format: MPEG layer II

Modes: Mono, stereo, dual mono, intensity stereo, Digital AES/EBU (optional)

Sampling

Frequency: 32kHz, 44.1kHz, 48kHz with mono, stereo, dual mono and intensity stereo modes

Data Rate: Up to 256Kbps

Audio Performance

Frequency

Response: 20Hz-20kHz, 0.1-3dB

Sampling Rate: 32kHz, 44.1kHz, 48kHz

S/N Ratio: 65dB

Audio Input

Connector: 3mm stereo audio

Gain Control: -0.2-23.5dB at 1.5dB/step

Audio Output

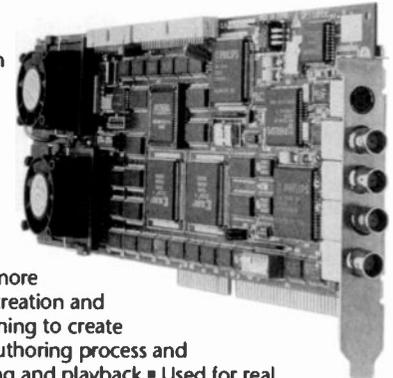
Connector: 3mm stereo audio

Attenuation: -94.7-0.2dB at 1.5dB/step

MPEG Lab Suite \$9995.00

MPEG VideoPro™ MPEG-1 Encoder

- MPEG VideoPro (MVP) is an all-in-one MPEG authoring station that gives you the power to create full-screen, 30 frames per second, VHS quality MPEG digital video
- Creates corporate presentations, training applications, kiosk content, digital video databases and more
- High quality, digital video creation and playback package has everything to create multimedia titles from the authoring process and encoding to CD-ROM burning and playback
- Used for real time MPEG-1 encoding
- Component and S-Video inputs
- Batch file processing
- Frame accurate VTR control
- Encoding control panel
- Jog shuttle wheel
- Easy to use toggle switches
- Video/audio calibration control lets you adjust video input signals with settings to control hue, saturation, contrast and brightness
- Includes professional BetaCam analog component inputs
- Supports composite and S-Video inputs
- MPEG-1 editing software (optional)
- Video-CD and MPEG formats
- PCMotion MPEG-1 playback board included



Specifications

System Requirements

Computer: 486/66 PC/AT or Pentium with 2 available EISA or ISA bus slots

Interface: RS-232 port; 2.6V p-p, 20Hz-20kHz response

Video Capture Performance

Format: MPEG-1

Image Size: NTSC (352 x 240); PAL (352 x 288)

Frame Rate: NTSC (29.97fps); NTSC film (24fps) with inverse 3:2 pulldown support; PAL (25fps) up to 500Kbps

Audio Capture Performance

Data Format: MPEG layer II

Modes: Mono, stereo, dual mono, intensity stereo

Sampling

Frequency: 32kHz, 44.1kHz, 48kHz with mono, stereo, dual mono and intensity stereo modes

Data Rate: 128K bytes up to 256Kbps

Audio Performance

Frequency

Response: 20Hz-20kHz, 0.1-3dB

Sampling Rate: 32kHz, 44.1kHz, 48kHz

S/N Ratio: @1kHz < 0.1%

Audio Input

Connector: 3mm stereo audio

Input

Impedance: 10K ohms

Gain Control: -0.2-23.5dB at 1.5dB/step up to 24dB

Audio Output

Connector: 3mm stereo audio

Attenuation: -94.7-0.2dB at 1.5dB/step

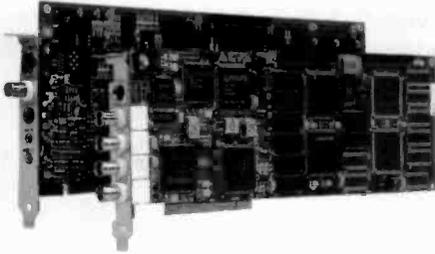
MPEG VideoPro TBA*

* To Be Announced

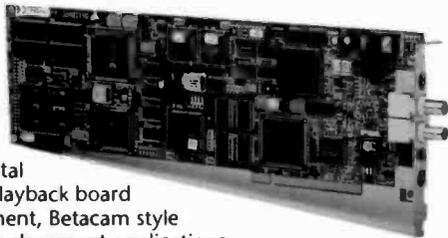
ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.


MPEG Super Suite™ MPEG-1 Encoder

- Windows™ 95/NT real time MPEG encoder
- Features professional video and audio inputs, enhanced video prefiltering, VTR device control, batch encoding capabilities and an advanced user interface that offers complete control over the encoding process
- 2-board encoding system includes a PCI video encoder and an ISA audio encoder
- Produces MPEG-1 SIF streams at up to 5M bits/s and encodes QSIF resolutions from as low as 120K bits/s for intranet and internet publishing
- Comes with Vitec Editor and 32-bit MPEG Composer
- Optional MPEG-2 full D-1 capability
- Digital filtering and on-the-fly parameter adjustment
- Includes MPEG Organizer™
- Encoding control panel
- Optional software developer kit
- Digital serial component (BNC), analog component (BNC), S-Video (Mini-DIN), composite (BNC) video inputs
- System requirements include: Pentium PC with 1 full size PCI slot and 1 full size ISA slot, 16M bytes RAM, Windows 95/NT environment, fast SCSI controller, SCSI-2 hard disk (2G bytes recommended), 7200 rpm, VGA adaptor with 1M byte RAM, CD-ROM drive, and 300W power supply


\$10,995.00
VideoQuest™ and VideoPlex™ MPEG-2 Decoders

- Playback of MPEG-2 streams at up to 15M bytes per second
- Replaces laserdiscs and linear tapes like S-VHS and betacam with high quality digital video
- VideoQuest playback board offers analog component, Betacam style output for Betacam replacement applications
- VideoPlex features genlock input with video passthrough for ad insertion and professional video applications
- VideoQuest and VideoPlex support Windows 95 and Windows NT and come in single slot layouts with composite (BNC), S-Video (Mini-DIN), RGB component (VideoQuest) and analog component (VideoQuest) output connectors
- Decode MPEG streams to NTSC-M, NTSC 4.43, PAL-M and PAL B/G output formats with balanced/unbalanced stereo audio
- Includes the CineTools™ Software Development Kit featuring: seamless back-to-back play, random access, multiboard playback, still image display and support for playback of all forms of MPEG-1 and MPEG-2 streams and standard video playback functions like play, pause, rewind and fast forward
- On-screen display
- NTSC/PAL video I/O formats
- Power consumption: +5VDC, +12VDC 0.5A
- VideoQuest Composite, S-Video, analog component (Betacam) and RGB out **\$1,995.00**
- VideoPlex Composite (BNC) and S-Video (Mini-DIN) out **1,495.00**


VideoPlex
MPEG ShowSite™ MPEG-1 Encoder

- Real time MPEG-1 encoder for creating quality video for the internet or intranet
- Digital prefiltering
- Calibration adjustments on the fly
- Enhanced low frame rate playback
- Pause/resume encoding
- GOP control
- Compresses video at ratios of up to 3000:1
- Includes Duplexx's NET TOOB™ software decoder, Microsoft's Active Movie and VITEC MULTIMEDIA'S Video Clip

- MPEG editor
- NTSC/PAL, composite (BNC), S-Video (Mini-DIN) video inputs
- System requirements include: Pentium 90MHz, hard disk with 1G byte free space, 3.5" disk drive, 16M bytes RAM, Windows 95 or Windows Workstation NT 4.0, 1 full size PCI slot, VGA adaptor with 1M byte RAM, CD-ROM drive, 200W power supply, and Sound Blaster 16-bit compatible speakers . . . **\$1,395.00**

MPEG Forge™/MPEG Fusion™ MPEG-2 Encoders
Common Features

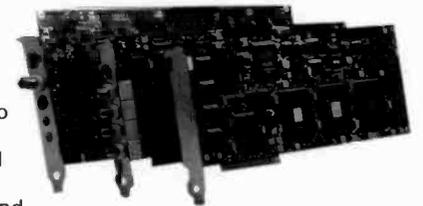
- On-the-fly parameter adjustments offer real time previews of work to the MPEG stream before it's encoded
- Transparent and hands-on interface control ensures an easy migration for new users
- MPEG Organizer™ puts your encoded files into grouped databases that include previews and file specifications like size, bit rate, and movie length
- MPEG Organizer also serves as the batch mode processor for MPEG Forge
- Each separate file can be entirely different: MPEG-2 or MPEG-1, video only or audio only, system files or transport streams
- Batch mode supports EDL imports from numerous nonlinear editors for more efficient encoding
- Accepts a wide variety of professional quality inputs including digital component (D1) video and digital audio
- Analog component, S-Video and composite inputs are also supported to ensure a smooth integration into any production environment
- Professional properties panel displays all the parameters available to the user for full management of the encoding process
- Encoding control panel puts the user within reach of all the tools needed to create professional quality MPEG-2 streams
- Novice or professional modes available
- Features digital prefiltering, serial D-1 input and advanced batch mode operations

Software Features

- Windows 95 (32-bit)
- Real time MPEG-2 encoding up to 15M bits/s (MPEG Fusion)
- On-the-fly encoding with real time preview effects and decode-while-encode
- Multiplexer supports: MPEG-2 program simple stream (1 audio + 1 video), MPEG-2 transport simple stream, MPEG-1 system multiple stream, CD-i and MPEG-1 video CD files
- MPEG Organizer
- Professional and novice user modes
- Automatic scene change detection and manual I-frame insertion capabilities
- Adaptive field/frame processing
- Full support for constant bit-rate encoding

MPEG Forge

- Includes common features plus:
- Delivers both MPEG-2 Half D-1 and MPEG-1 in an easy to use, real time encoding system
- MPEG-2 Full D-1 option
- With the future-ready engine behind the MPEG Forge it allows for advanced options like the MPEG Fusion, which transforms the MPEG Forge into an MPEG-2 Full D-1 encoding system
- MPEG Forge has the strength to encode MPEG streams ranging from 0.8-10M bits/s . . . **TBA***


MPEG Fusion

- Includes common features plus:
- Expands the MPEG Forge to provide Full D-1 AFF encoding
- Offers high end digital video professionals outstanding quality MPEG-2 streams for intensive applications like satellite transmission, cable TV and intense post production work
- Delivers both MPEG-2 Full D-1 and MPEG-2 Half D-1 power in an easy to use encoding system
- Provides users with the power to deliver streams up to 15M bits/s . . . **TBA***

*To Be Announced

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





**AQ-235W/AQ-23W Studio/EFP 4:3/16:9
Switchable Digital Processing Camera Systems**

▪ 3 1/2" M-FIT CCDs = 520,000 pixels = 2000 lux with f/8 sensitivity
 ▪ Minimum illumination: 7 lux at f/1.4, +18dB = 62dB S/N ratio
 ▪ Over 700 lines horizontal resolution = 10-bit A/D conversion or 16-bit digital signal processing
 ▪ Digital circuitry features include: 2-D low pass filter; dynamic detail; flesh detail; thin detail; variable detail; dark detail; chroma detail; digital gamma allows the gamma to be adjusted between 0.35 and 0.55 in steps of 0.01; auto knee; digital shading and adjustable camera settings
 ▪ Electronic shutter speeds of 1/100, 1/125, 1/250, 1/500, 1/1000 and 1/2000 sec.
 ▪ Variable control between 1/60 and 1/228 sec.
 ▪ Optical axis function allows connection of high magnification lenses
 ▪ Programmable gamma law
 ▪ Variable color masking
 ▪ 4,320 zone automatic black and white shading

AQ-235W/AQ-23W SYSTEM COMPONENTS

AQ-235W Full Size Studio Camera Head

▪ Accepts standard 3/8" studio camera lenses
 ▪ Can stand alone with local power and control or with remote control and either local or remote power
 ▪ Local operational control and setup capability
 ▪ Offers utility AC power output in the remote mode
 ▪ Works with AQ-VF71 7" black-and-white viewfinder
 ▪ Provides variable, independent viewfinder detail plus programmable box and cross generator \$84,000.00



AQ-23WU Fiber Cable Camera Head

▪ Accepts standard 3/8" ENG or studio camera lenses
 ▪ Used as stand-alone with local power and control or with remote control and either local or remote power
 ▪ Local operational control and setup capability
 ▪ Works with AQ-VF16 (1.5") or AQ-VF51 (5") black-and-white viewfinders . . . \$66,200.00



AQ-23WM Multicore Cable Camera Head

▪ Accepts standard 3/8" ENG or studio camera lenses
 ▪ Can be used stand-alone with local power and control or with remote control and power over either local or remote power
 ▪ Gives local operational control and setup capability
 ▪ Works with AQ-VF16 (1.5") or AQ-VF51 (5") black-and-white viewfinders . . . \$52,800.00

AQ-BS210 Base Station

▪ Acts as the interface to the system
 ▪ Provides 3 NTSC outputs, 3 sets of component outputs, 2 PXM outputs, 2 WFM outputs and 2 audio outputs
 ▪ Permits tally and intercom interface
 ▪ Accepts reference input, 2 return video inputs and teleprompter input
 ▪ Composite and component serial digital outputs are optional \$29,000.00

AQ-RC50 Multicore Base Station

▪ For use with the AQ-23WU = 1/2 rack width unit is the system interface and control unit for the AQ-23WU
 ▪ NTSC, RGB or Y, R-Y, B-Y component and monitor outputs are provided
 ▪ Permits tally and intercom interface
 ▪ Accepts reference input, 1 return video input and teleprompter input
 ▪ Requires an optional AQ-MA50 rack-mount adaptor \$9,400.00

AQ-VF71 7" High Resolution Black-and-White Viewfinder

▪ For use with the AQ-235W only
 ▪ Rotates and tilts for easy operation
 ▪ Includes red "on air" tally and green "stand by" tally
 ▪ Displays 2, level indicating zebra patterns for confidence plus operator generated box and cross patterns as framing aids
 ▪ Independent video detail and peaking controls \$8,800.00

AQ-VF51 5" Viewfinder

▪ For AQ-23W only
 ▪ Requires SHLQVF513W adaptor . . . \$6,200.00

AQ-VF16 1.5" Viewfinder

▪ For AQ-23W only \$2,200.00

AQ-RC210 Remote Control Panel

▪ Permits full operational and setup control
 ▪ Uses removable IC memory card to store 16 scene files \$6,100.00

AQ-CA4100 100m Multicore Cable

▪ Available in custom lengths \$2,500.00

AQ-FC100/M 100m Fiber/Copper Cable

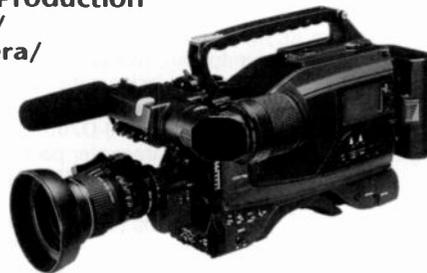
▪ Available in custom lengths \$2,190.00

AQ-RC50 Rack-mount Adaptor

▪ Holds 2 AQ-RC50 multicore cable base stations \$550.00

AJ-D300 D3 1/2" Production Camera 1-Piece/ All Digital Camera/ Recorder

▪ Three 3/8" frame interline transfer CCD image sensors for minimal vertical smear
 ▪ 400,000 pixels = 750 TV lines of resolution
 ▪ 2000 lux at f/8.0 sensitivity
 ▪ 2 lux minimum illumination (30dB, f/1.4)
 ▪ 62dB S/N ratio
 ▪ Variable speed electronic shutter (1/100, 1/125, 1/250, 1/500, 1/1000, 1/2000 sec.)
 ▪ Synchron scan shutter 1/60-2/420 sec.
 ▪ Low power consumption (28W)
 ▪ Full color/confidence playback
 ▪ 10-bit digital processing camera
 ▪ Digital camera setup
 ▪ Drop-in cassette insertion
 ▪ 1.5" electric viewfinder
 ▪ 48 minutes of digital recording
 ▪ Automatic backspace edit
 ▪ Built-in time code generator/reader
 ▪ Self diagnostics function
 ▪ Detachable eyepiece
 ▪ Variable enhancement frequency, 2.86-7.16MHz
 ▪ High chroma aperture correction
 ▪ Auto white balance
 ▪ Phantom power supply (48VDC)
 ▪ Standard accessories include: microphone and microphone holder, shoulder strap, rain cover, 1.5" viewfinder, tripod adaptor and Anton/Bauer gold mount plate \$59,000.00



ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





DVCPRO

DVCPRO Features

- Utilizes ultracompact 1/4" cassettes
- Compresses digital component video signals to 1/4 their original size
- Allows superior digital quality
- Each frame is individually compressed; therefore, editing is more precise
- 10 tracks are used for each frame and a track pitch of 18 microns
- Sub-code area is used to record TC/UB, which can be read during high-speed fast forward and rewind
- Insert data recorded onto the ITI area minimizes editing error and pilot signals are written onto each track
- DVCPRO mechanism is 1/4 the size of conventional VTR units
- Low tape tension resulting with minimal dropout and extended tape and head durability
- Better than CD quality audio
- High multigenerational performance
- Error correction/concealment
- System expandability

AJ-D700 1/2" 3CCD DVCPRO 1-Piece Camera/Recorder

- Lightweight: 13 lbs. including lens, 1.5" viewfinder, cassette and battery pack
- Superb picture quality: 410,000 pixel FIT CCDs
- Viewfinder features 600 lines (monochrome) horizontal resolution
- 63 minutes of recording time with AJ-P63M
- 20W power consumption
- 28.6MHz digital signal processing
- 62dB video S/N
- Component digital 1/4 compression format
- 10 bits A/D
- 2 channel PCM audio
- Highly resistant to dropout and offers a dramatic advantage in reliability
- Full-color picture playback
- Set up by memory card
- 30-250Hz variable synchro scan shutter
- Records analog composite line feed
- Built-in SMPTE time code generator
- 1/50, 1/100, 1/225, 1/250, 1/500, 1/1000, 1/2000 sec. shutter speed
- 1/50 to 1/250 sec. (variable) synchro scan
- Sensitivity: 2000 lux with f/8.0, 89.9% reflection
- 2 lux minimum illumination: f/1.4, ±30dB gain
- AJ-YA700 26-pin VTR terminal, optional
- Inputs: BNC video in; BNC genlock in; XLR (CH1/2); Mic in selectable
- Line in selectable
- Outputs: BNC monitor out; XLR (CH1/2/MIX), audio multiconnector; stereo mini jack earphone
- 6-pin camera remote



- AJ-D700E PAL version of AJ-D700 \$16,900.00
- AJ-D700LH18B DVCPRO camcorder package including:
 - AJ-D700
 - S18X6.7BRM4 18X Fujinon lens
 - SHAN-TM700 tripod adaptor
 - SHAN-B700 hard case
 - AJ-MH700 microphone holder
 - ABP800 Anton/Bauer package (2 digital Trimpac batteries and charger) 25,885.00
- AJ-D700LH18 DVCPRO camcorder package including:
 - AJ-D700
 - S18X6.7BRM4 18X Fujinon lens
 - SHAN-TM700 tripod adaptor
 - SHAN-B700 hard case
 - AJ-MH700 microphone holder 24,520.00
- AJ-D700LH14 DVCPRO camcorder package including:
 - AJ-D700
 - S14X7.5BRM4 14X Fujinon lens
 - SHAN-TM700 tripod adaptor
 - SHAN-B700 hard case
 - AJ-MH700 microphone holder 20,145.00

Accessories

- S18X6.7BERM4 Fujinon 18X zoom lens with 2X extender. \$10,700.00
- S18X6.7BRM4 Fujinon 18X zoom lens. 6,200.00
- AQ-VF51 5" high resolution viewfinder. 6,000.00
- S14X7.5BRM4 Fujinon 14X zoom lens. 1,825.00
- AQ-EC1 Remote control box. 1,700.00
- AG-B425 Battery charger (for AU-BP402, AU-BP220). 1,130.00
- AJ-MC700 Microphone kit. 920.00
- AU-B402H Battery holder. 630.00
- SHAN-B700 Hard shell case. 625.00
- AJ-YA700 26-pin connector. 540.00
- SHAN-TM700 Tripod adaptor. 460.00
- AU-BP402 Battery pack (4 hour). 365.00
- AJ-MH700 Microphone holder. 260.00
- SHAN-RC700 Rain cover. 215.00
- SHAN-C12TCA T/C in/out cable stereo audio out. 100.00
- SHL-QVF5D700 Mounting bracket for AQ-VF51 and AJ-D700. 100.00
- BN-064HSR 64K SRAM card. 90.00

Anton/Bauer Accessories

- ABP800 Battery/charger kit (2 ABDT14 batteries; 1 ABC800 charger) \$1,365.00
- ABDP14 Digital Pro-Pac 14.4V, 60W 595.00
- ABC800 "Lifesaver" battery charger 595.00
- ABP14 Pro-Pac 14.4V, 60W 525.00
- ABDT14 Digital Trim-Pac 14.4V, 40W 385.00
- ABT14 Trim-Pac 14.4V, 40W 295.00
- ABUL2S Ultralight 2" 25W camera light 195.00



AJ-D750 DVCPRO Studio Component Digital VTR

- 123-minute recording capacity using the AJ-P123L DVCPRO large cassette
- Also accepts 63 minute (maximum) recorded ENG cassettes from the AJ-D700
- Plays back DV tapes using optional AJ-CS750 cassette adaptor
- High quality component digital pictures and 2-channel PCM sound
- Time code recording/playback
- Standard interfaces: Y/C input/output; Analog component/composite inputs and outputs; RS-422A (9-pin), RS-232C (25-pin) and parallel control terminal (25-pin); 2-channel digital audio inputs and outputs (AES-EBU standard); Time code input and output
- 4:2:2 component serial digital (SMPTE 259M) input and output, optional
- Plug-in IEEE 1394 (Firewire) interface, optional
- Digital slow-motion playback (0-±1/4x normal speed)
- On-screen setup display DV playback capability (with adaptor)
- Maximum 50x normal speed search
- Maximum 100x normal speed FF and REW
- Encoder remote with AU-ER65B, optional
- Compact 4RU size
- Fits in 19" rack using optional RAK-750 rack-mount system
- Installs easily in the studio and OB van
- Frame accurate/insert/assemble/split editing
- 2 hours of component digital recording .. \$17,500.00
- AJ-D750E PAL version of AJ-D750 20,000.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





DVCPRO

**AJ-D640 DVCPRO Recorder/Player/Edit Source
AJ-D650 DVCPRO Studio Editing VCR**

Common Features

- 123-minute recording capacity using the AJ-P123L DVCPRO large cassette tape ▪ Also accepts 63-minute (maximum) recorded ENG cassettes from the AJ-D700 ▪ Plays back DV tapes using the optional AJ-CS750 cassette adaptor ▪ High quality component digital pictures and 2-channel PCM sound ▪ Time code recording/playback ▪ Standard interfaces: analog/component/composite and Y/C inputs/outputs; RS-422A (9-pin), RS-232C (25-pin) and parallel control terminal (25-pin); 2-channel digital audio inputs/outputs (AES-EBU optional); Time code input/output ▪ 4:2:2 component serial digital (SMPTE 259M) input/output (optional) ▪ Digital slow motion playback (0 to +½X normal speed) ▪ On-screen setup display ▪ Maximum 50X normal speed search ▪ Maximum 100X normal speed FF and rewind ▪ Encoder remote control with AU-ER65B optional ▪ Compact 4U size ▪ Fits in 19" rack using optional AJ-MA34H and RSK-DVC slides ▪ Installs easily in the studio and OB van
- AJ-D640** Includes common features **\$8495.00**
AJ-D650 Includes common features, plus:
 ▪ Assemble and insert editing **9995.00**



AJ-D650

AJ-D640/D650 Accessories

- AJ-YA750** Serial digital interface board **\$2590.00**
- AU-ER65B** Encoder remote control unit **1065.00**
- AJ-YA655** AES-EBU digital audio interface board **510.00**
- RAK-750** Rack-mount system **180.00**
- AJ-CS750** DV cassette playback adaptor **40.00**

AJ-D200 ½" 3CCD DVCPRO Camera/Recorder

- Full size design ▪ ½" 3 IT CCDs
- Component digital video quality ▪ 48kHz PCM 2-channel digital audio recording ▪ Digital signal processing ▪ Built-in color bars ▪ Optional digital interface
- Detachable ½" bayonet lens
- Auto tracking white balance
- White balance presets ▪ Time code in/out ▪ 500 lines horizontal resolution ▪ 400 lines vertical resolution ▪ 60dB S/N ratio ▪ 2000 lux sensitivity with f/5.6 ▪ 5 lux minimum illumination at f/1.6, +12dB gain ▪ Uses DVCPRO large cassettes ▪ High-speed shutter 1/100-1/6000 sec. (NTSC); 1/20-1/6000 sec. (PAL) ▪ 123-minute recording capability ▪ Unit weighs only 13 lbs. in full operating mode ▪ 15W or less power consumption when recording ▪ Built-in time code generator (works in REC RUN mode only) ▪ Video (BNC) and S-Video (4P) outputs ▪ 2-channel line/microphone input (XLR) ▪ 12VDC power requirement **\$5995.00**



- AJ-D200XL** DVCPRO camcorder package including:
 ▪ **AJ-D200** ▪ **T14X5.5BRM4** Fujinon 14X lens ▪ **SHAN-TM700** tripod adaptor ▪ **SHAN-B200** thermodyne shipping case ▪ **CCS-200** soft carrying case ▪ **ABP800** Anton/Bauer battery package (includes 2 ABDT14 batteries/ABC800 charger) **\$9490.00**

- AJ-D200LC** DVCPRO camcorder package including:
 ▪ **AJ-D200** ▪ **T14X5.5BRM4** Fujinon 14X lens ▪ **SHAN-TM700** tripod adaptor ▪ **SHAN-B200** thermodyne shipping case **\$8005.00**
- AJ-D200LS** DVCPRO camcorder package including:
 ▪ **AJ-D200** ▪ **T14X5.5BRM4** Fujinon 14X lens ▪ **SHAN-TM700** tripod adaptor ▪ **CCS-200** soft carrying case **\$7575.00**
- AJ-D200L** DVCPRO camcorder package including:
 ▪ **AJ-D200** ▪ **T14X5.5BRM4** Fujinon 14X lens ▪ **SHAN-TM700** tripod adaptor **\$7455.00**

AJ-D200 Accessories

- T14X5.5BRM4** 14:1 Fujinon zoom lens **\$1000.00**
- AJ-B75** AC Adaptor. **750.00**
- SHAN-TM700** Tripod adaptor **460.00**
- SHAN-B200** Thermodyne shipping case **550.00**
- CCS-200** Soft carrying case **115.00**
- AG-MH800** Microphone holder. **165.00**
- WM-L30** Ramsa unidirectional microphone. **690.00**
- WV-MC35** Microphone **135.00**
- WV-VF65B** 5" studio viewfinder (WV-Q71 and AG-YA800 are needed) **1100.00**
- WV-Q71** Bracket for WV-VF65B **150.00**
- AG-YA800** Adaptor for WV-VF65B **300.00**
- SHAN-B220** Battery adaptor (for AU-BP220 and Sony NP1) **190.00**
- ABP800** Anton/Bauer battery package (includes 2 ABDT14 batteries/ABC800 charger) **1365.00**
- ABDT14** Anton/Bauer digital TrimPac battery **385.00**
- ABDP14** Anton/Bauer digital ProPac battery **595.00**
- ABC800** Anton/Bauer (Lifesaver) battery charger **595.00**
- AJ-LC200** ½" lens adaptor **TBA***

AJ-D230 DVCPRO Desktop Video Recorder/Player

- DVCPRO component digital quality ▪ Digital audio ▪ Accepts DVCPRO large and medium cassettes ▪ Plays back mini-DV tapes through AJ-CS750 adaptor, and can also play back mini-DV cassettes recorded on AG-EZ1U
- Analog input/output makes it easy to dub or view DVCPRO tapes, while RS-232C and optional digital interface (IEEE-1394) provide simple connection to a PC for nonlinear editing or to input moving pictures or multimedia production ▪ On-screen set up display ▪ 10X speed search ▪ Auto backspace editing (on/off) ▪ Built-in time code generator/reader (VITC/LTC) ▪ Video input signal stabilizer
- Independent adjustment of audio input levels (channel 1/2)
- 4-position audio output selector: channel 1/2/3/4 (for DV cassette playback)/CUE ▪ Compact dimensions: 132mm(H) x 210mm(W) x 385mm(D) ▪ 2 units can be placed side by side in a standard 19" rack ▪ 120VAC ±10% (NTSC); 220-240VAC ±10% (PAL) power requirements ▪ 45W power consumption ▪ Optional wired remote control (AG-A11) **\$4995.00**
- *To Be Announced



ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



DVCPRO



AJ-LT75 DVCPRO Laptop Editor

- Portable and lightweight laptop editor
- High picture quality DVCPRO format
- 2 independent DVCPRO digital VCRs for on-the-spot output/back-up function
- Offers full editing capability in the field with component digital video quality
- Complete video input/output
- 2-way DC/AC (optional AC adaptor) power supply
- Plays back mini DV cassettes using optional adaptor AJ-CS750
- 2 hours of component digital recording
- Performs assemble, insert, auto assembly, time code and audio split editing
- Maximum of 99 multi-event editing
- Independent audio level adjustment (record and playback)
- Search function shows pictures up to 60X normal speed, 23 variable speeds during playback
- All-in-one unit includes: 2 full-featured DVCPRO recorder/players, 2 color 6.5" LCD monitors, built-in stereo speakers and a complete cuts-only editor in a briefcase-sized package
- Mode setting via on-screen display
- Encoder control
- Each independent recorder/player can record up to 123 minutes with AJ-P123L cassette tape; maximum of 63 minutes with AJ-P63M cassette tape
- Both recorder/players in the system have industry-standard RS-422A (9-pin) remote control capability allowing the DVCPRO recorder/players to be used as playback decks in a 3-machine edit configuration—even inter-format configurations
- Capable of dual recording for backup
- 12VDC power requirement
- 75W power consumption
- Weighs approximately 20 lbs.

AJ-LT75\$29,995.00
 AJ-B75 AC adaptor for AJ-LT75 750.00



AG-EZ1U 3CCD DV Camera/Recorder

- Ideal for news gathering, multimedia and other professional applications
- Uses miniature cassettes
- Tapes recorded in the DV format can be played back by DVCPRO studio VTRs with optional AJ-CS750 adaptor
- Component digital video quality
- Three 1/3" IT CCDs
- 1/2-pitch pixel displacement system for superior resolution and high S/N ratio
- 500 lines of horizontal resolution
- 54dB S/N ratio
- Compact design
- Weighs under 3 lbs.
- Minimum illumination of 5 lux
- PCM audio (48kHz/16-bits and 32kHz/12-bits)
- Built-in stereo microphone and external mic input
- 1 hour maximum record time on a mini-DV cassette (30 minute tape also available)
- Built-in SMPTE time code generator
- 10X zoom lens with double-sided aspherical glass lens
- 20X digital zoom equipped with quick turbo-zoom function
- Digital signal processing camera
- 3-D noise reduction circuit
- Ring type manual focus
- ±6-step manual iris
- Auto iris
- Auto white balance and auto black balance
- 14-step electronic shutter up to 1/1000 seconds
- 4-step (+3/+6/+9/+12dB) gain up
- 0.7" color viewfinder
- Y/C and composite outputs, stereo audio output
- 5-pin control
- Infrared control
- Digital photo shot mode (records a still frame while audio continues as normal)
- 16 x 9 wide aspect ratio recording capability

AG-EZ1U Package

Includes: ▪ Camcorder with fixed lens and color viewfinder

- Soft carrying case
- AC adaptor with 3-prong plug
- 1.25Ah battery
- Video connection cable (multipin to Y/C or composite)
- Filter kit
- Wide conversion lens
- Cleaning cassette
- Wireless remote controller

AG-EZ1U \$4,295.00

AG-EZ1U XL Package

Includes: ▪ AG-EZ1U camcorder

- SHAN-MC1 microphone
- AG-BP25 2.5Ah external battery
- CCH-EZ1 case
- DS81 shoulder brace

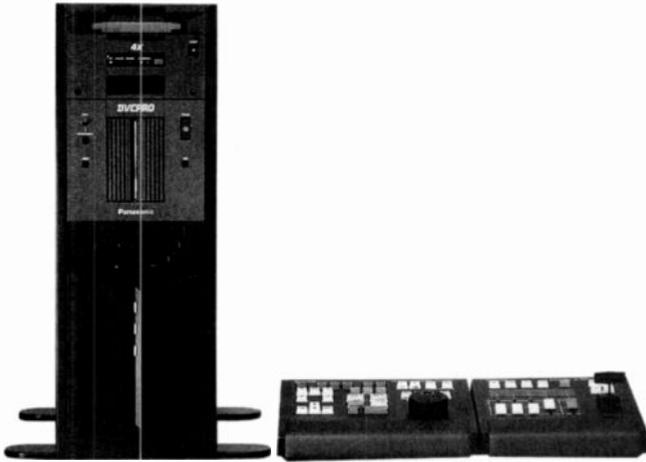
AG-EZ1U XL \$4,995.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





DVCPRO



**DVedit™ Nonlinear
Editing Kit for
Windows NT**

▪ All-digital DVCPRO-based nonlinear editing kit ▪ Kit features the DVCPRO version of the TARGA 2000 RTX video engine, Panasonic's POSTBOX editing software, Jog Pad edit controller and RS-422 VTR control card ▪ Editing features include: full drag-and-drop timeline editing, 4 channels of audio editing and a full-featured titling package supporting TrueType fonts ▪ Real time transitions such as wipes, fades and dissolves are supported ▪ After editing, finished sequences can be exported to AVI files, allowing producers to easily re-purpose and share media assets for CD-ROM authoring and multimedia production ▪ Interface options allow support of analog component I/O or SDI/AES-EBU ▪ Full VTR control is included using the RS-422 interface and will support a variety of manufacturers' protocols ▪ The Jog Pad controller provides video deck control without using the mouse or keyboard. \$30,000.00



NewsBYTE™ Nonlinear Editing System

▪ NewsBYTE is a fast transfer video editing workstation ▪ Features a built-in DVCPRO 4X recorder/player with T4™ disk transfers at 4X faster than normal speed for nonlinear editing ▪ The tower system incorporates editing software that simplifies and accelerates story editing in the news production studio ▪ DVCPRO digital video format records component digital signals for high-image quality and PCM digital audio for outstanding sound ▪ Uploading and downloading of video data at 4X speed significantly shortens system input and preparation work ▪ NewsBYTE's built-in hard disk can store approximately 70 minutes of images and sound ▪ With optional external SCSI arrays, total digital video storage is more than 2 hours ▪ Data is transferred to the hard-drive array at high speed in the compressed DVCPRO format ▪ System doesn't alter recorded data during the cuts-editing process—it changes the data loading sequence and position ▪ Data always remains in the compressed format, so the image quality remains high during post production ▪ Dual codec and built-in switcher provide a real time preview of special effects such as wipe and dissolve during effects editing ▪ Capable of playing back and storing variable-motion pictures, the system allows the use of slow-, quick- and reverse-motion video ▪ Processes 4 audio channels in real time and performs audio-split, V-fade and cross-fade editing ▪ Audio learn editing facilitates adjusting the sound level of each audio channel and storing timing and level settings in memory while playing back editing images ▪ Other editing functions include: overall sequence time stamp and picon-based clip labels, multi-sequence assembly and digital voice-over recording ▪ Automatic "consolidate" functions delete unnecessary disk data ▪ "Fragment collect" function compiles clips to create a single, large free-disk storage area ▪ Operates on Windows NT and assures responsive editing by using a mouse/keyboard or optional control pad for conventional VTR operations ▪ Standard analog inputs allow NewsBYTE to control and digitize from a variety of external analog and digital video recorders ▪ Analog composite and component I/O is standard ▪ Digital interfaces, including optional serial digital (SMPTE 259M-C) and optional CSDI compressed serial digital interface are capable of digital transfers at 1X and 4X (CSDI only) speeds, respectively ▪ RS-422 control allows the system to batch digitize multiple clips from VTRs ▪ Audio monitor outputs \$65,000.00

Smart-Cart Multicassette Library

▪ Smart-Cart mini cassette library shares the same advanced technology and sophisticated control system of the M.A.R.C. system ▪ Sophisticated, yet reliable robotics combined with high quality VTRs ensure efficient, cost effective automated transmission of programs, commercial and news material ▪ Available with S-VHS, MII, D-3, D-5 or DVCPRO VTRs from Panasonic ▪ Library bins are available in a variety of configurations, including a side by side configuration effectively doubling the library capacity ▪ D-3/D-5 medium and large cassettes can be introduced providing exceptionally long playing times ▪ Up to 138 hours (D-3 medium cassette) of programming may be stored on-line in the Smart-Cart library ▪ Smart-Cart is DOS Windows™ based for simple operation and requires easily available and well supported PC hardware ▪ Both single and multi-element cassettes may be used in the Smart-Cart library ▪ Advanced library management software enables an almost limitless number of program/commercial records to be stored, retrieved and edited ▪ Each library cassette is identified with a barcode and the robot is equipped with a laser barcode reader to identify the cassette and its location in the library ▪ All VTRs used in the Smart-Cart are standard studio models ▪ No modifications or adaptors are required ▪ VTRs can be removed from the rear of the Smart-Cart providing access without interrupting on-air operation ▪ A central sequence controller commands the VTRs, robotics, audio/video routing switcher and also interfaces with the console PC ▪ The console provides the user interface for all operations—on-air control, playlist preparation, database search, system diagnostics and configuration and also transfer of data with a host system ▪ Built-in resilience of the Smart-Cart ensures that the system is not dependent on the console PC for on-air operation ▪ 100-120VAC, 200-240VAC ±10%, 50/60Hz power requirements ▪ 350VA power consumption (without VTRs) ▪ Approximately 661.5 lbs. (without VTRs and cassettes) ▪ 80 1/8" H x 23 3/4" W x 48 3/4" D ▪ Less than 7 seconds access time. TBA*
* To Be Announced



ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



POSTBOX

WJ-MX1000 Nonlinear A/V Workstation

■ Not only an editor, but a complete post-production environment in one system ■ Offers excellent M-JPEG image quality and fast, versatile editing on a hard drive system ■ Features a complete character generator, paint system and A/V special effects ■ As easy to use as a Windows based computer ■ For easy operation, the POSTBOX is equipped with a MUI (Manual User Interface) which features a jog and shuttle wheel, fader T-bar and positioner joystick ■ Fader T-bar can be used to "learn" an operator's manual transitions

POSTBOX features real time 2-D (2-dimensional) and optional 3-D (3-dimensional) effects that rival any DVE on the market. Items such as page turn, perspective, flag effects, etc., provide you with all of the tools you expect and more. The Title Editor allows you to do scrolls and crawls all in real time. Any of the more than 42 TrueType™ fonts can be stretched, twisted and drop shadowed at the click of the pen. Panasonic chose a pen and tablet rather than a mouse to provide an artist with the same feel of other paint systems.

With 4 levels of video quality to choose from (Q6, Q8, Q11 and Q23), an appropriate image quality can be set for maximum storage. The number 6 in Q6 represents the number of minutes per gigabyte stored on the hard drive. Digital audio is stored uncompressed to preserve the original quality. There is component video output as well as Y/C and composite video output, thus providing for extensive system configuration.

Sequence Editor

Multiple tracks extend horizontally along the timeline axis, with variable scale units from 30 minutes to 56 frames for convenience. On the Video Track, you can drag clips from the bin windows and edit them along the timeline, in either Insert, Replace or Cover mode. Transition time can be set by dragging the bottom grip of a clip, and the duration can be adjusted by dragging the center grip.

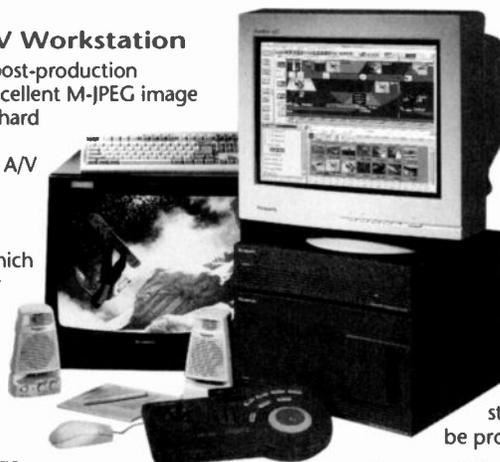
The Transition Track is used to specify a cut, mix, or wipe. Mix, wipes and DVE moves are selected in the Transition Panel, which offers a wide range of patterns and effects. Opening the Video Modify Panel allows the user to choose from digital effect processes such as mosaic, defocus, scramble, emboss, still/strobe, etc. Manual control of the fader T-bar on the Jog Pad can be memorized and retrieved in the Transition Learn Panel.

The Key Track offers key types such as picture-in-picture and others found in the Key Panel. Title clips from the bin windows are located on the Title Track. Titles can be faded in, faded out or manipulated in a variety of ways by the Title Editor.

Bin Manager

In the Bin Manager, clips are stored on the hard disk in multiple Bin windows. All clips in a Bin are stored with a name and identifier, such as TTL for title, V for video, etc. Each clip is stored with a P-Con (picture icon), which uses a frame of video from the clip to complete its identification.

Bin windows can be displayed in 3 modes: Icon Mode shows up to 16 P-Cons, Icon List Mode displays P-Con name and duration, and List Mode provides detailed data such as name, duration, scene, take, reel, date and comment.



Paint Editor

The Paint Editor features a wide variety of paint and image processing tools. As shown above, you can retouch and manipulate an original image. Retouch, add and subtract modes provide maximum flexibility in using all of the Paint Editor's tools. Pull-down menus give you access to such features as shaping, positive and negative filtering, posterizing and motion blur. Finished clips can be used on the Title Track or placed as a still frame on the Video Track in the Sequence Editor.

Title Editor

Choose from any of the 42 TrueType fonts (others can be added), to create titles and graphics and let your imagination take over. Titles can be rotated, stretched and skewed quickly and easily. Motions can be programmed by using the powerful Motion List Panel.

There are 10 preset motion types incorporated, and a user page for storing often used titles. Titles can be programmed to move in a variety of motions and speeds.

Complex motions are programmed in the Motion Editor. Motion columns are used to select the type and duration of the title's motion. Multiple motion columns can be used to select a series of rotations, zooms, fades, and other effects. The Title Editor also features a Color Palette with gradients, textures, patterns and a wide variety of color.

Roll Editor

Moving titles vertically is accomplished in the Roll Editor. Roll motion is selected in the Motion List Panel to designate desired speeds. Includes word processing functions such as underline, backboard, shadow, and color. The pull-down menu for editing includes: undo, cut, copy, paste, etc.

Crawl Editor

The Title Editor creates a crawl telop which moves in a horizontal direction. Text can be input directly or retrieved from the Text Bin or Title Editor. Location of the telop is selectable from the top, center, bottom or a user-defined position. A speed set lever is provided to control motion speed.

POSTBOX	.....	\$42,900.00
WJ-HD1D5	Hard drive array with over 1 hour of video storage (Q6) and over 2 hours of audio storage. SCSI switch included.	\$8,070.00
WJ-PB1001	3-D effects board	6,000.00
—	Gold Medal Technical Support Service	3,500.00
WJ-SU1000B	Version 3.0 software upgrade kit. Includes: layering, audio learn with rubberbands, preview in record to tape, external storage use (zipdrive, etc.), reversible keys and slip/slide function.	\$1,700.00
WJ-SU1000C	Version 3.5 software upgrade kit. Includes: import/export of all types of still files, layering in the CG and Paint, AV-HDD options, smoother jog/shuttle, single frame clips, new 3-D DVE moves, crop in 3-D DVE, Windows '95 compatible	\$1,700.00
E21PB	21" PanaSync/Pro SVGA monitor	1,500.00
WJ-MON2	Dual monitor ISA board	504.00
WJ-PB1002	Pentium upgrade kit. Includes: Bios ROM chip, socket and complete instructions. Customer needs to purchase Intel Pentium OverDrive processor 83MHz for upgrade kit to work	\$300.00
WJ-PB1003	Additional hardware for improved picture quality and audio functions	TBA*
WJ-CABK50	DLT back-up cable kit	\$185.00
	* To Be Announced	

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



WV-F260BH With **VHS** Dockable AG-7450A VCR

WV-F565 1/2" FIT 3-CCD Digital Signal Processing Color Video Camera

▪ High sensitivity CCDs ▪ 850 lines horizontal resolution ▪ Superb picture quality under a wide range of illumination ▪ Night eye mode automatically switches to 2-pixel readout and +36dB gain up ▪ High sensitivity CCD suppresses smear to low level (-125dB) ▪ 10-bit processing ▪ Digital noise reduction ▪ I-Vector noise suppression and flesh tone control ▪ Chroma/dark detail ▪ On-screen menu for simple setting of filed scene data using the side-pocket switch ▪ 6 types of safety zones and +6dB shutter inhibitor ▪ 5 scene file modes ▪ A/B user files—58 digital adjustments can be made ▪ Studio mode ▪ ENG mode ▪ Low light mode ▪ 2-D low pass filter ▪ Manual gain control: -6, 0, 6, 9, 12, 18, 24, 30, 36 ▪ Internal sync ▪ Built-in microphone (optional phantom powered shotgun) ▪ Minimum illumination: 1 lux; f/8 at 2000 lux ▪ S/N ratio: 65dB at 0dB gain ▪ Lens mount: bayonet mount ▪ Viewfinder: 1/2" or optional 5" version ▪ Standard configuration: camera head, shoulder pad

WV-F565H \$7100.00

WV-F565 SYSTEM ACCESSORY KITS

WV-S570 Studio Kit

▪ WV-RC700A Remote control unit with multiplex coaxial control system ▪ WV-VF65B 5" studio electronic viewfinder ▪ WV-AD500 Camera adaptor ▪ WV-Q70 Remote control unit bracket ▪ WV-Q71 5" electronic viewfinder bracket ▪ WV-QT700 Tripod adaptor
WV-S570 \$7410.00

WV-S550A ENG/EFP Kit

▪ WV-VF42 1.5" electronic viewfinder ▪ WV-QT700 Tripod adaptor ▪ WV-CC500A Carrying case ▪ WV-MH500 Mic holder
WV-S550A \$2120.00

For Dockable Packages, see page 303

WV-F260BH 1/2" FIT 3-CCD Color Video Camera

▪ 380,000 pixels each CCD ▪ 750 lines horizontal resolution ▪ 2000 lux, f/8 at 3200K sensitivity ▪ -6dB switch for settings of 0dB, +9dB and +18dB, plus combinations for -6dB, +3dB and +12dB gain control ▪ S/N ratio: 60dB ▪ Compatible with VHS, S-VHS, MII, Betacam and most VCRs ▪ Variable speed electronic shutter 1/60, 1/100, 1/250, 1/500, 1/1000 sec. ▪ Y/C separation output circuit ▪ SMPTE color bar generator with time/date display and camera identification display (provides ID for up to 4 separate cameras) ▪ VCR start switches ▪ Top, front and back tally lamps, bright light compression circuit ▪ High efficiency peltier element ▪ 2-setting white balance memory ▪ Adjustable shoulder pad position ▪ Auto black balance with auto pulse cancel ▪ Color matrix masking circuit ▪ Flare correction circuit ▪ Iris 1/2 open/close switch ▪ High band detail (high/low) ▪ Detail select (high/low/off) ▪ Bayonet mount for 1/2" pickup (optional 3/8" bayonet mount adaptor) ▪ High resolution (450 lines) 1.5" electronic viewfinder with character display and zebra level ▪ Audio input: -70dBm mic, 9-pin connector ▪ Audio output: -20dBm or -60dBm/unbalanced, switchable (32-pin VCR/RU connector) ▪ Readily becomes an exceptional studio camera, or remotely controlled stationary camera, via connection with the optional WV-RC36 or WV-RC37 camera control units ▪ Standard configuration: camera head

WV-F260BH \$4930.00

WV-F260BH SYSTEM ACCESSORY KITS

WV-S270 Studio Kit

▪ WV-AD250 Camera adaptor ▪ S12X7.5BRM 12X zoom lens ▪ WV-LK36 Lens control kit ▪ WV-VF65B 5" electronic viewfinder ▪ WV-RC36 Remote control unit ▪ WV-QT70 Tripod mounting adaptor ▪ 32A-25 Studio cable ▪ Extender board
WV-S270 \$9140.00

WV-S250 ENG/EFP Kit

▪ WV-AD250 Camera adaptor ▪ S12X7.5BRM 12X zoom lens ▪ WV-VF39 1.5" high resolution 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
WV-S250 \$5500.00

WV-S290 **VHS Dockable Kit (for WV-F260BH/AG-7450A)**

▪ WV-VF39 1.5" high resolution 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
WV-S290 \$4085.00

For Dockable Packages, see page 303

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



Lenses for 1/2" CCD Cameras

PH15X7BIRS	f/1.4 Canon servo zoom lens, 15:1, 7-105mm with 2X extender.	\$7130.00
S14X7.5BMD	f/1.4 Fujinon zoom lens, 14:1, 7.5-105mm for teleconferencing	3580.00
S14X7.5BRM4	f/1.4 Fujinon servo zoom lens, 14:1, 7-105mm	1825.00
S16X6.7BMD	f/1.4 Fujinon zoom lens, 16:1, 6.7-107.2mm for teleconferencing	4370.00
S16X6.7BERM	f/1.4 Fujinon servo zoom lens, 16:1, 6.7-107.2mm with 2X extender.	7370.00
S16X6.7BRM	f/1.4 Fujinon servo zoom lens, 16:1, 6.7-107.2mm	3440.00
YH13X7.5BKRS	f/1.4 Canon servo zoom lens, 13:1, 7.5-97mm	2230.00
YH17X7BKRS	f/1.4 Canon servo zoom lens, 17:1, 7-119mm	3440.00

Lens Accessories

WV-LK36	Lens remote control kit (use with S16X6.7BERM/S16X6.7BRM).	\$1605.00
FC-S10A	Lens rear control kit (use with S16X6.7BERM/S16X6.7BRM).	1720.00
SPB-2076V	Lens rear control kit (use with PH15X7BIRS/YH13X7.5BKRS/ YH17X7BKRS)	2440.00
RMD-II	Lens remote control (use with S14X7.5BMD/S16X6.7BMD)	1330.00
ECM-025F	25' lens control cable (use with RMD-II).	515.00
ECM-050F	50' lens control cable (use with RMD-II).	730.00
TCR-201F	Lens remote control (use with S14X7.5BMD).	1245.00
TCC-020M	20m lens control cable (use with TCR-201F)	900.00
TCC-050M	50m lens control cable (use with TCR-201F)	1925.00
WV-LC10	Lens conversion cable from 8-pin to 12-pin	135.00
WV-LC25	3/8" bayonet lens adaptor.	730.00

Accessories for WV-F565 1/2" CCD Camera

WJ-PC500	RS-232C/422 adaptor	\$1105.00
WMA-3	Wireless microphone adaptor (use with WX-RP700)	120.00
WM-L30	Ramsa microphone	690.00
WV-AD500	Camera adaptor	1370.00
WV-AD700AS	Camera adaptor (use with multiplex coaxial control system)	3790.00
WV-CA10B02	2m RGB cable (use with WV-CB700A)	190.00
WV-CA10B25	25m RGB cable (use with WV-CB700A)	180.00
WV-CA10B50	50m RGB cable (use with WV-CB700A)	255.00
WV-CA10T14	10-pin to 14-pin conversion cable	120.00
WV-CA26A14	26-pin to 14-pin VCR cable	270.00
WV-CA26A26	26-pin VCR cable	515.00
WV-CA26T32	26-pin to 32-pin conversion cable	230.00
WV-CA26U15	15m Studio cable.	685.00
WV-CA26U30	30m Studio cable.	910.00

WV-CA26U100	100m Studio cable.	\$2115.00
WV-CA32T26	32-pin to 26-pin conversion cable	230.00
WV-CB700A	Remote control box	1660.00
WV-CC500	Carrying case	750.00
WV-DKT700S	S-VHS docking accessory kit	610.00
WV-MH500	Microphone adaptor	185.00
WV-PS700	Power separator.	1485.00
WV-QT700	Tripod adaptor.	255.00
WV-Q70	Remote control unit bracket.	440.00
WV-RC550	Remote control unit	2100.00
WV-RC700A	Remote control unit with multiplex coaxial control system	6930.00
WV-VF42	1.5" electronic viewfinder.	1215.00

Accessories for WV-F260BH 1/2" CCD Camera

10H-30AS	10-pin extension cable (30').	\$ 135.00
10H-50AS	10-pin extension cable (50').	230.00
32A-25	25' remote control unit cable.	615.00
32A-50	50' remote control unit cable.	800.00
32A-100	100' remote control unit cable.	1150.00
PAN-7450	Battery adaptor	130.00
WMA-2	Wireless microphone adaptor for use with WX-RP700 800MHz ENG wireless microphone system.	120.00
WV-AD250	Camera adaptor.	1015.00
WV-CA14X30	14-pin extension cable, 30'	400.00
WV-CA32/10	32-pin camera to 10-pin VCR cable, 10'.	135.00
WV-CA32A/14	32-pin camera to 14-pin VCR cable (10') (for AG-7450A/S745, 3/4" VCR)	230.00
WV-CA32A/26	32-pin camera to 26-pin VCR cable	375.00
WV-CC71A	Carrying case	785.00
WV-DKT700M	Dockable kit for AG-7450A.	520.00
WV-MC35	Microphone	135.00
WV-QT70	Tripod mount adaptor	255.00
WV-RC36	Camera remote control unit. RGB sync output, maximum distance from RCU to camera is 300 meters.	2655.00
WV-RC37	Camera remote control unit. Does not offer RGB sync output, maximum distance from RCU to camera is 100 meters.	1330.00
WV-VF39	1.5" high resolution viewfinder	990.00

Accessories Common to WV-F565/F260BH 1/2" CCD Cameras

AD-VT17	PVV Series Betacam adaptor.	\$ 890.00
AG-B640	A/C adaptor and battery charger	680.00
AG-BP212	2.3AH battery (use with AG-B640).	88.00
AU-BP220V	2.2AH battery	245.00
AU-M402	Battery case for AU-BP402/AU-45H	610.00
WV-PS33	3.5AH battery (use with WV-PS34).	670.00
WV-PS34	AC adaptor/battery charger (use with WV-PS33/PS60)	730.00
WV-PS60	1.65AH battery (use with WV-PS34)	315.00
WV-Q71	5" Electronic viewfinder bracket	150.00
WV-VF65B	5" studio electronic viewfinder.	1100.00
WV-VT16A	Betacam docking adaptor	2120.00
WX-RP410	Wireless transmitter	1895.00
WX-RP700	Wireless receiver, 800MHz	2895.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



DOCKABLE CAMERA/ BATTERY PACKAGES



Panasonic
Broadcast & Digital Systems Company

DS-5650 Dockable Package



Camera Head
WV-F565H

WV-DKT700S
(for WV-F565H/
AG-7450A)

S-VHS
Dockable VCR
AG-7450A

WV-S550A ENG/EFP Kit
WV-VF42: 1.5" Electronic Viewfinder
WV-QT700: Tripod Adaptor
WV-CC500A: Carrying Case
WV-MH500: Microphone Holder

DM-5645 MII Dockable Package for the WV-F565 1/2" 3CCD DSP Color Video Camera

■ WV-F565H 3CCD camera head ■ WV-S550A ENG/EFP kit
■ AU-45H MII dockable recorder
DM-5645 \$19,370.00

DM-2645 MII Dockable Package for the WV-F260BH 1/2" 3CCD Color Video Camera

■ WV-F260BH 3CCD camera head ■ WV-MC35 Microphone
■ WV-QT70 Tripod adaptor ■ WV-VF39 1.5" High resolution
electronic viewfinder ■ AU-45H MII dockable recorder
DM-2645 \$15,120.00

DOCKABLE CAMERA PACKAGES

DS-5650 S-VHS Dockable Package for the WV-F565 1/2" 3CCD DSP Color Video Camera

■ WV-F565H 3CCD camera head ■ WV-S550A ENG/EFP kit
■ WV-DKT700S Docking kit ■ AG-7450A S-VHS Hi-Fi portable VCR
DS-5650 \$14,790.00

Anton/Bauer Battery Package for DS-2650B Dockable Package



3 Pro Pac 13 Batteries



Magnum Quad Charger
(PAN-7450 Adaptor Included)



Ultralight 2

DS-2650B Dockable Package



Camera Head
WV-F260BH

S-VHS
Dockable VCR
AG-7450A

WV-S290 Docking Kit
WV-VF39: 1.5" High Resolution
Electronic Viewfinder
S12x7.5BRM: 12X Zoom Lens
WV-MC35: Condenser Microphone
WV-QT70: Tripod Mounting Adaptor
WV-CC71A: Carrying Case
WV-DKT70M: S-VHS Docking Kit

ANTON/BAUER BATTERY PACKAGES

Battery Package for DM-2645 and DM-5645 Dockable Packages

Consists of: ■ 3 Digital Pro Pac batteries ■ 1 MP-4D charger
■ 1 Ultralight 2 short ■ 1 QR-AU45H adaptor
ABPKG3 \$4,355.00

Battery Package for DM-5645 and DS-5650 Dockable Packages

Consists of: ■ 3 Digital Pro Pac batteries ■ 1 Magnum Quad charger
■ 1 Ultralight 2 long ■ 1 AB-13Q adaptor
ABPKG2 \$3,505.00

DS-2650B S-VHS Dockable Package for the WV-F260BH 1/2" 3CCD Color Video Camera

■ WV-F260BH 3CCD camera head ■ WV-S290 Docking kit
■ AG-7450A S-VHS Hi-Fi portable VCR
DS-2650B \$11,700.00

Battery Package for DS-2650B Dockable Package

Consists of: ■ 3 Pro Pac 13 batteries ■ 1 Magnum Quad charger
■ 1 Ultralight 2 long ■ 1 PAN-7450 adaptor
ABPKG1 \$3,115.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





UPERCAM

AG-DP800H 1/2" FIT 3-CCD **S-VHS** Digital Signal Processing 1-Piece Camera/Recorder

- Incorporates new CCDs with improved 750 lines horizontal resolution
- Advanced digital signal processing
- 380,000 pixels each CCD ▪ f/1.4 prism system ▪ Exceeds 60dB video S/N ▪ Illumination required: 2000 lux at f/8.0
- Minimum illumination: 1.5 lux at f/1.4 with Super High Gain (+30dB)
- With synchro scan view, electronic shutter increments can be set variably from 1/61.95 sec. to 1/53.78 sec. ▪ Variable electronic shutter (1/100, 1/25, 1/50, 1/60, 1/100, 1/200, 1/400, 1/800)
- CC/ND filter (3200K, 5600K, 5600K + 1/2ND) ▪ 6 scene files with 2 user modes for your custom digital parameter settings ▪ Built-in speaker ▪ Recorder review lets you check last recorded section of tape to ensure error-free operation
- Rotary erase head ▪ Warning message indicator ▪ Power save function
- Built-in time code generator (VITC/LTC) ▪ Time/date generator (includes seconds) ▪ 1.5" B/W electronic viewfinder with 550 lines horizontal resolution ▪ Viewfinder is removable to simplify shooting at different angles ▪ Built-in phantom power source with power-off switch to prevent battery drain when not in use ▪ Super iris mode for back light compensation in addition to center/normal zone switchable auto iris control ▪ Auto white balance/auto black balance ▪ 2-way white balance memory ▪ 4-channel audio ▪ Component out capability from 26-pin connector ▪ Back-up VCR connector (26-pin) ▪ Shoulder strap included
- Power Source: 12VDC, +5V/1V ▪ Power Consumption: 20W with viewfinder (REC mode) ▪ Weight: Approx. 9.9 lbs. (camera/recorder and 1.5" viewfinder)



Specifications

VCR Section

SYSTEM
Recording System: VHS/S-VHS format, 4 rotary heads, helical scanning system

Tape Format: S-VHS/VHS tape

Tape Speed: 1 1/2 ips (33.35mm/s)

Recording Time: 120 min. (2 hrs.) with NV-T120

FF/REW Time: Less than 9 min. with NV-T120

VIDEO

Horizontal Resolution: S-VHS: More than 400 lines, VHS: 240 lines

S/N Ratio: S-VHS: More than 47dB, VHS: 46dB

AUDIO

Audio Frequency Response: 20Hz-20kHz (Hi-Fi audio), 50Hz-10kHz (normal)

S/N Ratio: More than 48dB (Dolby® NR on; normal)

Dynamic Range: More than 80dB (Hi-Fi audio)

VIDEO OUTPUT

S-Video Out (4P): Y: 1.0V p-p, 75 ohms, unbalanced
C: 0.286V p-p, 75 ohms, unbalanced (burst)

Video Out (BNC): 1.0V p-p, 75 ohms unbalanced

AUDIO INPUT

Audio In (XLR 3Px2): +4/0/-6/140/150/-60dBs, 3k ohms, balanced

AUDIO OUTPUT

Audio Out (Phono x2): -8dBV, low impedance, unbalanced

1/4" Headphone Jack: -60dBV to -20dBV, 8 ohms, unbalanced

Camera Section

Image Sensor: 3 Frame Interline Transfer 1/2" CCD image sensor

Pixel: 380,000 pixel

Pickup System: Prism system (f/1.4)

Illumination Required: 2000 lux at f/8.0

Min. Illumination: 1.5 lux at f/1.4 with Super High Gain (+30dB)

Electronic Shutter: 1/100, 1/25, 1/50, 1/60, 1/100, 1/200, 1/400, 1/800

Synchro Scan Shutter: 1/61.95-1/53.78

CC/ND: 3200K, 5600K, 5600K + 1/2ND

Lens Mount: Bayonet mount for 1/2" pickup device

S/N Ratio: 60dB

Horizontal Resolution: 750 lines (at center)

Registration: Less than 0.03% over entire screen (excluding lens)

Gain: 0, +9, +18, +24dB and Super High Gain (+30dB)

AG-DP800H \$6000.00

AG-DP800HXL Package with S14X7.5BRM4 lens, CCH800 hard-shell case, WV-QT700 tripod adaptor and ABP800 Anton/Bauer package 9865.00

AG-DP800HLS Package with S14X7.5BRM4 lens, CCS800 soft carrying case and WV-QT700 tripod adaptor 8170.00

Lenses

S16X6.7BRM f/1.4 Fujinon 16:1 zoom lens, 67-107.2mm. . . \$3440.00

YH17X7BKRS 17X Canon lens 3440.00

YH13X7.5BKRS 13X Canon f/1.4. 1470.00

S14X7.5BRM4 f/1.4 Fujinon 14:1 zoom lens, 7-105mm. 1825.00

Accessories

SPB-2076V Canon lens controller kit \$2440.00

FC-S10A Fujinon lens rear control kit 1720.00

WV-LK36 Fujinon lens rear controller kit 1605.00

AU-B110 AC adaptor 1325.00

AG-B425 Battery charger/discharger (for AU-BP402) . . . 1215.00

WV-VF65B 5" EVF 1100.00

WV-LC25 3/8" bayonet lens adaptor 730.00

WM-L30 Ramsa microphone 690.00

AG-B640 AC adaptor 680.00

AU-M402 Battery case 510.00

CCH800 Hard-shell carrying case 480.00

AU-BP402 4Ah Battery 365.00

AG-YA800P 5" EVF mounting adaptor 300.00

WV-QT700 Tripod adaptor 255.00

WV-CA26A/10 26-pin to 10-pin VCR cable 230.00

CA2626/15 26-26 pin VTR cable, 15' 223.00

CA2626/6 26-26 pin VTR cable, 6' 215.00

CA2614/15 26-14 pin VTR cable, 15' 188.00

CA2614/6 26-14 pin VTR cable, 6' 179.00

AG-MH800 Microphone holder 165.00

WV-Q71 Mounting bracket (WV-VF65C/B) 150.00

WV-LC10 Lens adaptor 8-pin to 12-pin. 135.00

WV-MC35 Microphone 135.00

CCS800 Soft carrying case 115.00

Anton/Bauer Accessories

ABP800 Package includes 2 digital Trimpac batteries, battery charger and mounting bracket \$1365.00

ABC800 Lifesaver battery charger 595.00

ABDP14 Digital Pro Pac 14.4V, 60W 595.00

ABP14 Pro-Pac 14.4V, 60W 525.00

ABDT14 Digital Trimpac 14.4V, 40W 385.00

ABT14 Trimpac 14.4V, 40W 295.00

ABUL2S Ultralight 2, 25W camera light 195.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



AG-456U 1/2" CCD SVHS Hi-Fi Camcorder

- 2-hour S-VHS camcorder ▪ 12VDC ▪ 400 lines horizontal resolution
- 12:1 2-speed power zoom lens with manual zoom lever ▪ Hi-Fi audio with stereo zoom mic ▪ Built-in VITC generator with reset
- Built-in monitor speaker ▪ Minimum illumination: 1 lux ▪ Variable high-speed shutter (1/60-1/6000 sec.) ▪ Full-range auto focus ▪ Auto tracing white balance system ▪ Program auto exposure ▪ Manual iris control ▪ Auto button for temporary auto focus in the manual mode
- Sensitivity switch (AGC +10dB, +20dB) ▪ Audio out select switch (Hi-Fi/normal/mix) ▪ Audio/video insert editing and audio dubbing capability ▪ Versatile editing facilities with variable terminals
- Audio/video fade in/out ▪ Digital functions: mix, tracer, still, strobe and wipe ▪ 4 rotary heads ▪ 1 track (normal) audio and 2-channel Hi-Fi audio ▪ 50-20,000Hz frequency response ▪ f/1.6 ▪ Focal length 5.7-67mm ▪ Auto/manual iris ▪ 0.7" electronic viewfinder ▪ Mic in
- Audio/video/S-VHS outputs ▪ Approximately 6.17 lbs.

Standard Accessories

- AC adaptor ▪ Battery pack ▪ System carrying case ▪ A/V cable
 - Headphone connector ▪ Shoulder strap ▪ S-Video cable ▪ DC cable
- AG-456U\$2500.00



AG-196U 1/2" CCD VHS Camcorder

- 2-hour VHS camcorder ▪ 1/2" CCD, 420,000 pixels ▪ 14:1 power zoom lens (2-speed) ▪ Minimum illumination: 0.7 lux ▪ Digital functions include: digital wipe, digital strobe, digital gain up, digital fade, digital zoom ▪ Audio/video fade-in/out ▪ VISS auto marking
- Record review ▪ Microphone terminal ▪ Program auto exposure (AE) ▪ Sports mode provides a high-speed shutter performance when recording a fast moving subject (shutter is automatically adjusted between 1/60 sec. and 1/600 sec. according to the brightness of the scene) ▪ Portrait mode—iris is automatically set to maximize aperture with a very small depth of field ▪ 4-digit counter/LAP time
- Auto tracking ▪ Interval recording ▪ Audio dubbing ▪ Insert editing

- 5-pin editing terminal ▪ Back light compensation ▪ Sensitivity selector ▪ Electronic viewfinder is adjustable for either left or right eye use ▪ Self-timer recording ▪ Digital auto white balance
- Intelligent auto iris ▪ f/1.4 ▪ 12VDC power source ▪ Focal length 3.9 ~ 54.6mm ▪ Approximately 5.9 lbs.

Standard Accessories

- AC adaptor ▪ Battery pack with charging connector ▪ System carrying case ▪ Shoulder strap ▪ DC cable ▪ AV cable
- AG-196U\$1595.00



AG-188U 1/2" CCD VHS Camcorder

- 2-hour VHS camcorder ▪ 12VDC ▪ 230 lines horizontal resolution
- 14:1 2-speed power zoom with macro capability ▪ 10W color enhancement light ▪ Minimum illumination: 1 lux ▪ High-speed manual shutter (8 steps between 1/60-1/10,000 sec.) ▪ Auto shutter adjusts from 1/60-1/250 sec ▪ f/1.6 ▪ Focal length 5.3-74.2mm ▪ Rotary erase head ▪ Full auto and auto tracing white balance ▪ 1/2" electronic viewfinder with status indicator ▪ 1-track audio ▪ Auto/manual/macro focus ▪ 100-8,000Hz frequency response ▪ External mic jack
- Auto date/time (hour/minutes/seconds) ▪ Automatically adjusts for daylight savings time ▪ 4 rotary heads ▪ Audio/video output
- Audio/video fade in/out (black) ▪ Tape/battery remaining indicators ▪ Record END search ▪ Mic with wind buffer switch
- Approximately 4.1 lbs.

Standard Accessories

- AC adaptor ▪ Battery pack ▪ System carrying case ▪ A/V cable
 - Color enhancement light ▪ Shoulder strap
- AG-188U\$845.00

Accessories

- LR-SPOT Surveillance lens, 5500mm, magnifies image 11X (AG-456U)..... \$1995.00
- VW-CG5 Character generator (AG-196U/456U)..... 395.00
- AG-B6H AC adaptor/battery charger (AG-196U/456U)..... 200.00
- AG-B21 AC adaptor/battery charger (AG-188U)..... 160.00
- LR-PIN Pinhole adaptor for LR-SPOT (AG-456U)..... 100.00
- AG-RF20 RF adaptor (AG-188U)..... 70.00
- AG-BP20 Battery pack (All models)..... 65.00
- VW-RF7 RF adaptor (AG-196U/456U)..... 65.00
- AG-CR20 Car battery cord (AG-188U)..... 50.00
- VW-ACM10P Car battery cord (AG-196U/456U)..... 50.00
- AG-C71AE S-Video (Y/C) cable (16.6') (AG-456U)..... 35.00
- VW-RM1E Pause remote controller (AG-196U/456U)..... 35.00
- AG-C70AE S-Video (Y/C) cable (10') (AG-456U)..... 25.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



WV-D5100HS 3/4" High Sensitivity CCD Color Video Camera

- Component video camera system ▪ 3 kit configurations
- Compatible with S-VHS VCRs
- 380,000 pixels
- 460 lines horizontal resolution
- Illumination required: 1400 lux at f/5.6
- Minimum object illumination: 0.35 fc (3.5 lux)
- S/N: 46dB
- 4 lenses available: WV-LZ14/8AF, 8X auto focus zoom lens lets you focus automatically for easy and accurate shooting, 3-step auto focus through the viewfinder permits precise focusing;
- WV-LZ14/12A, 12X power zoom lens operates smoothly in both wide-angle and telephoto modes; WV-LZ15/12, 12X auto iris designed for studio applications; WV-LZ14/15 for a higher multiplication ratio of 15X
- Optional 1.5X teleconverter can be used with WV-LZ14/8AF and WV-LA14/12A ▪ Auto tracing white balance system ▪ 2H enhancer with horizontal/vertical movement ▪ Up to 1/1000 sec. electronic shutter speed ▪ Interchangeable 35mm SLR and C-mount lenses with optional adaptor ▪ Auto preset function



WV-D5100HS	.....	\$2335.00
WV-S071	Studio kit	4880.00
WV-S061	EFP kit	1060.00
WV-S051	ENG kit	620.00
WV-LZ14/15	15X power zoom lens	1545.00
WV-LZ15/12	12X studio lens	1175.00
WV-LK11	Lens control kit (use with WV-LZ15/12)	1175.00
WV-LZ14/12A	12X power zoom lens	960.00
WV-LZ14/8AF	8X auto focus zoom lens	880.00
WV-LK10A	Lens filter kit (use with WV-LZ14/8AF)	215.00
WV-CL19	1.5X teleconversion lens	185.00

WV-E550 1/2" 3-CCD Multipurpose Digital Signal Processing Camera

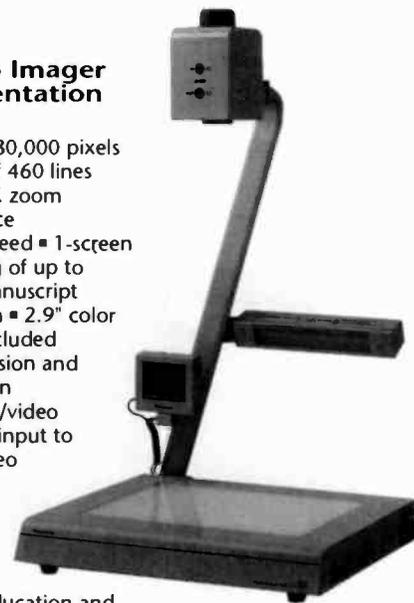
- 380,000 pixels ▪ 800 lines horizontal resolution ▪ S/N: 62dB ▪ 2000 lux sensitivity at f/8 ▪ Optional RS-232C control ▪ RGB, Y/C, component and composite outputs ▪ AGC or 0/9/18dB gain settings ▪ Auto tracing white balance and electronic light control ▪ Scene illumination is 0.7 fc (7 lux)
- Chroma/dark detail ▪ 2-D low pass filter reduces cross-color
- Highlight compression circuit for wide dynamic range: adjustable knee point allows fine step response ▪ Area selection is to designate which portions of the input image are to be detected for AGC/ELC/ALC ▪ Multiple external synchronization: VBS/blackburst/HD/VD ▪ Variable speed electronic shutter: 1/100, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10,000 sec. ▪ Synchro scan allows synchronization with computer CRT display ▪ Built-in time/date/camera ID generator and SMPTE color bar ▪ 4 modes for easy and quick set-up ▪ 20 scene file modes are available ▪ 5 scene file modes are available per mode, 2 user modes (A/B) and scene 1/2/3 files ▪ Less lens ▪ Lens mount: standard 1/2" bayonet mount



WV-E550 \$6300.00

WE-MV180 Video Imager Copy-Stand Presentation System

- 1/2" CCD camera with 380,000 pixels
- Horizontal resolution of 460 lines
- Full auto focus and 12X zoom
- Automatic white balance
- 1/100 flickerless shutter speed ▪ 1-screen frame memory ▪ Reading of up to 15.5"W x 11.6"D size manuscript
- Back light panel built-in ▪ 2.9" color LCD preview monitor included
- Negative/positive inversion and transparency presentation functions ▪ Built-in audio/video input selector for image input to personal computers (video imager, A/V1, A/V2)
- Camera head can be rotated freely through 90° either to the right or left ▪ Ideal for a wide variety of boardroom, education and teleconferencing applications



WE-MV180 \$3295.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





AJ-D580B D-5 1/2" Component Digital Studio VTR
AJ-HDP500 Digital HD VTR Processor

- Fully transparent (CCIR) 4:2:2 10-bit (13.5MHz) component recordings without compression ▪ Play time on 1/2" MP cassette/full 2 hours ▪ Selectable 13.5MHz or 18MHz video sampling rates ▪ 4 channels of 20-bit, 48kHz PCM audio ▪ Analog cue track ▪ Full LTC/VITC ▪ Full editing capabilities, insert, assemble and pre-read ▪ High-speed search 50X play speed ▪ Auto tracking range -1 to 2X ▪ Program play mode, 85-115% play speed in 0.1% increments ▪ 9-pin serial RS-422A control ▪ 25-pin RS-232C control ▪ 50-pin parallel control ▪ Remote video/audio level control ▪ 6RU in height

Options

- AJ-MK11 analog component video interface (input and output)
 - AJ-MK20 composite digital I/F; serial/parallel SMPTE 259/244 (output only) ▪ AJ-MK30 analog audio interface (input and output)
 - AJ-PB35H D-3 playback option ▪ AJ-MK40 analog composite input
- AJ-D580B \$72,000.00
AJ-HDP500 75,000.00

1/2" Digital HD Studio VTR System

The AJ-D580B/HDP500 digital VTR system compresses HD studio standard signals and allows recording with superior digital picture quality. The system makes HD broadcasting possible, yet takes up no more space than existing systems. The AJ-D580B/HDP500 uses convenient 1/2" cassette tapes that combine high cost-performance with easy handling and space-efficient storage.

Serial digital input and output make the AJ-D580B/HDP500 system both simple and safe. Simultaneous development of D/A and A/D converters, a serial/parallel converter and a digital distributor give this total system all the interfaces necessary for existing digital and analog equipment.

ACCESSORIES

AJ-HAD500 A/D Converter

The AJ-HAD500 converts HD studio standard analog signals into serial digital signals. It's equipped with a built-in 100% color bar generator for test use. Features 10-bit A/D 1035/1080 line select. . . \$27,500.00

AJ-HDA500 D/A Converter

The AJ-HDA500 converts HD studio standard digital signals into analog signals. Accepting both 10-bit serial digital input and 8-bit parallel digital input, it connects easily with a variety of equipment \$25,000.00

AJ-HSP500 S/P Converter

The IU-size AJ-HSP500 converts HD studio standard serial digital signals into parallel digital signals \$15,000.00

AJ-HDA300 D/A Converter

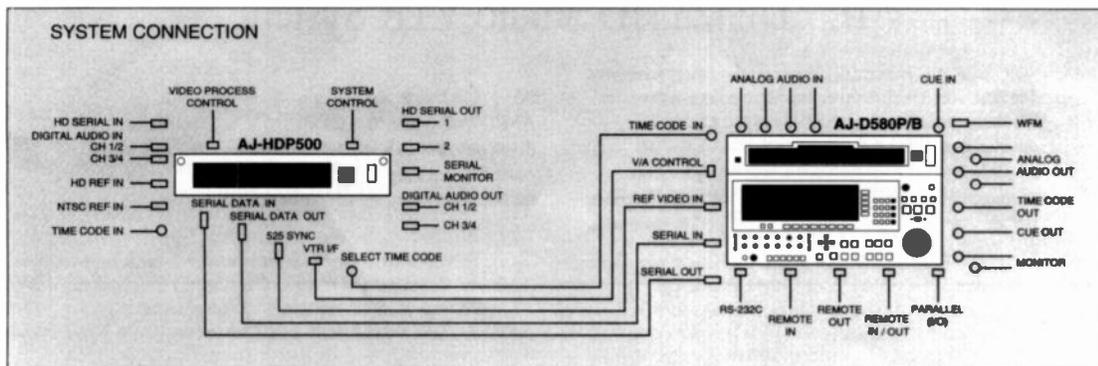
The AJ-HDA300 is a simple, compact D/A converter that features automatic 1035/1080 line selection according to the input signal. 8-bit D/A accepts serial digital input. \$14,000.00

AJ-SDA500 Digital Distributor

The AJ-SDA500 accepts either HD studio standard parallel signals or serial digital input signals, and distributes them into 6 serial digital signal outputs. This 1U-size unit also provides parallel/serial conversion \$18,000.00

AJ-D360 D-3 1/2" Digital Studio VTR

- Low profile, 4RU size
- 10-bit AD/DA converter, 8fsc oversampling
- Multigenerational recording ▪ Low power consumption (250W)
- Read-before-write editing ▪ Auto tracking ▪ Serial digital in/out
- Program play ▪ Confidence playback ▪ Complete editing functions
- 4-channel PCM audio editing ▪ IC card for user files ▪ Self diagnostic function ▪ Error indication and logger ▪ Auto RF and EQ adjustment ▪ Tracking optimization ▪ Long record and play time
- Direct access control panel ▪ (100X) normal speed search
- On-screen setup display ▪ Maximum 246 minute recording time on 1/2" cassette ▪ SMPTE timecode generator/reader record inhibit switch ▪ AES/EBU digital audio in/out terminals ▪ Analog in/out: composite video and analog audio ▪ 9-pin serial (RS-422A) terminal interfaces ▪ Includes AC power cord \$49,000.00



AJ-D580B/AJ-HDP500 System Configuration

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





AU-66H

AU-66H/65H MII ENHANCED HiSeries Studio Recorders

Common Features

- High quality 90-minute recording and playback
- Picture-in-picture
- 1-event assemble editing and a full range of insert editing operations for video, audio (CH1/CH2) and time code
- Offers preview, review, go to, trim and auto tag
- Audio split editing
- Variable memory editing
- >49dB S/N video (component Y); >56dB S/N audio
- Built-in digital 3-D type field 8-bit TBC featuring correction range of 1 field, 262.5H
- Digital freeze still
- Noiseless still
- 4-field sequence color framing
- 4-channel audio with independent level adjustment
- 4 VU meters
- Dolby C noise reduction
- Internal time code reader (VITC/LTC/UB)
- User bits can be retrieved independently from either VITC or LTC
- NTSC 16:9 wide aspect compatibility
- Y/C in/out connector
- RS-422A serial interface
- High-speed search/jog
- Provides up to 32X normal speed in forward and reverse
- On-screen setup menu with search dial for settings
- Built-in digital hour meter
- Improved superimpose capability
- Optional CCIR601 output (digital component video) capability, AU-MK26
- Tape speed override allows manual 15% playback speed adjustment in 1% steps
- Optional encoder remote control, AU-ER65B
- 8-digit FL display
- 19" rack-mount capability using AU-M60 adaptor (requires only 6 vertical rack units)

AU-66H MII ENHANCED HiSeries Studio Recorder With Auto Tracking (AT); Includes common features plus:
 Auto tracking and confidence playback (audio and video) . . . \$22,625.00

AU-65H MII ENHANCED HiSeries Studio Recorder; Includes common features. 18,125.00

AU-W35R/W32R/W33H POWER W Series MII Studio Recorder/Players

Common Features

- Full-component bandwidth recording/playback system for superb picture quality
- Full 90-minute record/playback with AU-M90L tape
- Built-in 3-D type digital TBC with full 1-field correction capability
- 4 audio channels: FM (CH3/CH4) and linear audio (CH1/CH2); with 4 input and 4 output jacks
- 2 bargraph type audio level meters
- Built-in Dolby C noise reduction circuitry for linear audio tracks
- Full 4-field color framing control
- Built-in SMPTE time code generator/reader (VITC/LTC/User Bits)
- Adjustment knobs for all TBC setups (also remoteable)
- Y/C (S1-Video) input/output connectors for S-VHS editing and dubbing
- On-screen menu setup for simplified parameter settings
- NTSC 16:9 wide aspect ratio compatibility
- Maximum search speed 32X, jog/shuttle capable when using an edit controller
- RS-422A 9-pin serial interface
- Digital field freeze picture output during stop mode produces noiseless stills
- Optional 4:2:2 output (digital component video) capability (with AU-MK26)
- Tape speed override (TSO); ±5% playback speed adjustment, 1% steps
- Standard 19" rack-mount—6RU with tiltable operation panel in addition to the AU-W33H only

- Noiseless pictures in still and slow motion with AT (auto tracking) (-1X to +2X normal speed, in 56 steps)
- Program play: noiseless playback speed adjustment (80%-120%), 0.1% steps

AU-W35R MII "Power" Series Component Studio Recorder/Editor with RGB inputs and outputs. \$13,000.00

AU-W32R MII "Power" Series Studio Player with RGB inputs and outputs 10,750.00

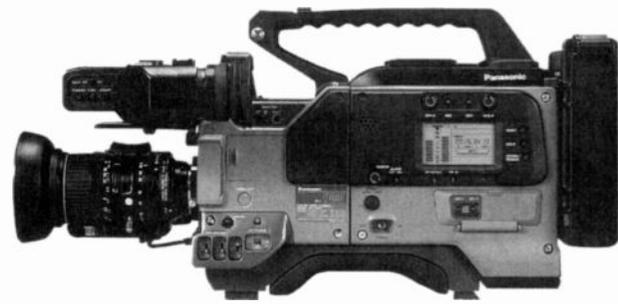
AU-W33H MII "Power" Series Studio Player with auto tracking 10,700.00

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 adaptor
- Playback heads for both audio and video, in addition to the recording head, to enable on-the-spot review of recording quality
- Automatic backspacing of 20 frames (approx. 0.7 sec.); 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 linear with Dolby C noise reduction, 2 FM multiplexed with the color signal
- Warning indicator lamp for head drum or capstan servo trouble, head clogging, tape slacking or jam, and excess humidity
- LED indicators
- Soft-touch buttons
- Phantom power (+48V) can be supplied to the audio input connectors for CH1/CH2



AU-410 \$10,840.00



AU-45H MII ENHANCED HiSeries Dockable Recorder/Player

- 68-pin connector allows direct docking with a variety of cameras (WV-F56S/F260BH, etc.)
- 4 audio channels: FM audio (CH3/CH4) and linear audio (CH1/CH2) with Dolby C noise reduction circuitry
- Built-in SMPTE time code generator (VITC/LTC/UB) with independent TC in/out terminals
- 2-year back-up battery for TC/CTL
- Record/review function for 1-touch recording check
- VTR operation buttons (FF/Rew/Play/Stop) located on the top panel
- On-screen setup menu with digital time meter
- Self-diagnosis function prevents errors prior to recording
- Tape and battery meter
- Accepts AU-BP402 or Anton/Bauer battery pack

AU-45H \$8,750.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



**SVHS /VHS HI-FI EDITING RECORDER/PLAYERS/
SVHS /VHS HI-FI SOURCE PLAYERS**

Common Features

Digital Signal Processing

Because most video signal processing takes place in the digital domain, precision and reliability are boosted for improved picture quality. Digital processing also helps maintain uniform picture quality during editing. Color blurring is virtually eliminated by the CAC (Chroma Aperture Compensation) circuit and expanded chroma bandwidth. Color uniformity is also assured, thanks to the Digital Field Forward APC circuit which raises chroma S/N.

- **Digital Noise Reduction (DNR)** processes Y and C signals separately to boost S/N ratio, thereby minimizing noise during playback
- **Digital Logical Comb Filter** uses an advanced 3-D system for complete Y/C separation. The result is reduced color and luminance blurring
- **Switching Noise Masking** effectively eliminates noise caused by head switching

Super-VHS and Amorphous Video Heads

To take full advantage of the high resolution and high S/N ratio of the S-VHS format, the AG-DS850H/DS840H/DS555/DS545 feature special amorphous video heads with higher magnetic coercivity than conventional ferrite heads. Improvement in color reproduction is particularly significant. Expanded color signal frequency response from the amorphous heads enhances picture quality by minimizing color blurring.

IQ (Intelligent Quest) Mechanism

The IQ Mechanism delivers precise, high-speed operation, plus the reliability that professionals demand. The dual-loading system achieves high-speed response while protecting tapes and heads from damage. Its tape transport mechanism uses 5 direct drive motors, including 2 reel drive motors, to attain high precision and response times. A reduced number of parts and simplified circuit wiring contribute to high reliability. Automatic head cleaning also reduces the need for constant maintenance and prevents head-clogging to assure high picture quality.

32X High-Speed Search

With a large capstan spindle (8.9mm in diameter), the AI Capstan Control System allows high-speed search at 32X normal speed. At the same time, it minimizes fluctuation in capstan rotational speed in order to control wow.

Jog/Shuttle Dial

During editing, the Jog/Shuttle feature helps you find exact edit points with the touch of a dial. Use the Shuttle at 32X normal high-speed search to find the scene you want, then Jog to pinpoint the desired field accurately.

- **Audio Split Editing** lets you set the edit in and edit out points separately from those for video
- **Insert Editing and Assemble Editing**

16:9 Wide Aspect Compatibility

Compatible with the NTSC 525 16:9 Wide Aspect System, AG-DS850H/DS840H/DS555/DS545 are fully equipped for the next generation of TVs.

Built-in Time Code Generator/Reader

An internal time code generator/reader allows LTC/VITC recording (AG-DS850H/DS555 only) and playback, making for precise time code editing. The AG-DS850H/DS840H permit accurate editing with VITC. In addition, 2 linear audio channels can be used.

Serial Interface (RS-422A)

The AG-DS850H/DS840H/DS555/DS545 come equipped with an RS-422A 9-pin serial interface, the standard control system for

professional broadcast components. This provides an easy way to expand your system via connection to MII and other serial control systems.

4-Channel Audio

For optimum audio performance, the AG-DS850H/DS840H/DS555/DS545 feature 2 Hi-Fi stereo audio channels with a dynamic range of 90dB as well as 2 linear audio channels with Dolby* NR. Each audio channel has its own input (AG-DS850H/DS555 only) and output with individual channel-level setting capability. Reliable XLR connectors are used as the audio input and output jacks to help assure high quality sound during editing.

*Dolby and the double-D symbol are registered trademarks of Dolby Laboratories Licensing Corporation

Compact Design and Low Power Consumption

The 3-rack units (5 $\frac{1}{2}$ "H) are compact for easy space-saving installation. They also boast low power consumption.

**AG-DS850H SVHS /
VHS Hi-Fi Editing
Recorder/Player
With Digital Slow**



**AG-DS840H SVHS /
VHS Hi-Fi Source
Player With Digital Slow**

Includes common features, plus: ■ Digital slow playback capability is selectable in 10 steps (- $\frac{1}{4}$, - $\frac{1}{2}$, - $\frac{3}{4}$, -1, 0, + $\frac{1}{4}$, + $\frac{1}{2}$, + $\frac{3}{4}$, +1, + $\frac{1}{2}$) ■ 3-D Digital Time Base Corrector (TBC) ■ Component output terminals ■ OSD menu setup ■ TBC remote control ■ 19" rack-mountable with optional adaptor (AG-M730E)

- AG-DS850H \$7330.00
- AG-DS840H Player version of AG-DS850H, plus: ■ When combined with the AG-DS850H, it permits accurate editing with VITC ■ 2 linear audio channels also can be used. \$750.00

**AG-DS555 SVHS /
VHS Hi-Fi Editing
Recorder/Player**



**AG-DS545 SVHS /
VHS Hi-Fi Source
Player**

Includes common features, plus: ■ Built-in TBC ■ OSD menu setup ■ TBC on/off switch ■ TBC remote control ■ Superior color phase performance through multiple generations ■ Increased chroma saturation with less fixed noise ■ Improved chroma edge performance ■ 19" rack-mountable with optional adaptor (AG-M730E)

- AG-DS555 \$4000.00
- AG-DS545 Player-only version of AG-DS555 3325.00

Accessories

- AG-A850 A/B roll, multi-event editing controller \$2500.00
- AG-A300 Slow-motion controller 1580.00
- AU-ER65B Encoder remote control unit 1065.00
- AG-A350 Single-event controller 1050.00
- AG-IA834 34-pin interface 650.00
- AG-M730E 19" rack-mount bracket 140.00
- AG-C71AE S-Video (Y/C) cable (16.6') 35.00
- AG-C70AE S-Video (Y/C) cable (10') 25.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





AG-7350 Series 2-Hour SVHS /VHS Hi-Fi Recorder/Player

- High performance digital servo circuitry
- Random auto repeat (zero stop/set rewind/repeat)
- 4-channel audio (2 Hi-Fi/2 linear channels) with Dolby NR
- Sub-loading system
- 5-digit real time counter with remaining-time indication
- 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/black-and-white
- 19" rack-mountable (with optional adaptor)
- 58µm wide laminated amorphous video heads
- 90dB dynamic range
- Jog/shuttle
- 17-step shuttle dial with variable speeds from 1/8 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 separation
- 6-hour playback capability (normal audio only)
- Wide 42µm heads for Hi-Fi audio (SP/2-hour mode)
- Optional LTC time code recording/playback using linear CH2 (with optional RS-232C serial interface board)
- Sensor recording
- On-screen menu display
- 48-hour memory back-up for counter
- Mode lock for front panel controls
- Self-illuminated switches
- 11-bit digital servo
- Motherboard construction \$4000.00
- AG-7350E PAL version 4400.00

AG-7150 2-Hour SVHS /VHS Hi-Fi Player

Player only version of AG-7350 \$3100.00



AG-7450A Dockable SVHS Hi-Fi Recorder/Player

- Improved preroll time (1.5 seconds)
- Directly dockable to the WV-F260BH camera
- Laminated amorphous video heads
- Hi-Fi audio with 80dB dynamic range
- Anti-rolling system
- Rotary erase heads
- XLR audio input connectors
- Optional time code reader/generator
- Optional VCR adaptor \$4300.00

For Dockable Packages, see page 303

AG-5700 SVHS / VHS Hi-Fi RS-232C Controlled Editing System

- Laminated amorphous video heads
- Digital tracking
- Cuts only insert/assemble editing with optional AG-A570 Edit Controller
- Built-in RS-232C interface for record, playback and editing control
- Separate Hi-Fi (CH1/CH2) audio recording level controls
- Sensor record keyed by presence of video input
- Quick play mechanism (1-second stop to play)
- Auto repeat
- Mono linear audio
- Y/C in/out, 4-pin
- Video in/out, BNC
- Compact, lightweight and professional design
- High-speed VISS (VHS Index Search System)
- Mode lock
- 2/6-hour record and playback \$2195.00
- AG-A11 Wired remote controller (16.7') 50.00
- AG-C71AE S-Video (Y/C) cable (16.6') 35.00
- AG-C70AE S-Video (Y/C) cable (10') 25.00



AG-A570 RS-232C Edit Controller for AG-5700

- Jog/shuttle dial
- 2 RS-232C 25-pin connectors to VCR
- 2 AG-5700 units connected by RS-232C terminals can be used as a player and a recorder
- Enables single-event editing using the control track signal; insert/assemble editing (video, audio, audio/video insert modes)
- Includes AC adaptor. \$850.00

AG-6850H VHS Hi-Fi Stereo Recording/ Playback Duplicator

- 2-hour only
- IQ tape transport mechanism, including 5 direct-drive motors and separates SS brushless motors for both the supply reel and takeup reel
- Lower cylinder designed for durability
- Low power consumption, 25W in record mode
- Loophrough remote control
- Auto changer connectable
- Serial remote recording for up to 500 units
- Optional AG-IA12 serial remote transmitter
- 34-pin remote control terminal can be used to connect the optional AG-A600E Remote Control Unit
- Video and audio throughout terminal
- Auto off/eject status and warning indicator
- Large recording indicator
- Tape running indicator
- VCR mode indicator
- Simple internal select system
- Test terminals and hour meter
- Optional audio level meter available
- Hi-Fi channels (CH1/CH2) deliver 90dB dynamic range, while the linear channels feature Dolby NR
- Input level controls are separate for Hi-Fi and normal channels (2 each), as are the rear panel audio input connectors \$1800.00
- AG-6850HE PAL version with round AC plug 2000.00



AG-6840H VHS Duplication Recorder

- Recording only version of AG-6850H
- AG-6840H \$1700.00
- AG-6840HE PAL version with round AC plug 1800.00

AG-5210 Multipurpose VHS Recorder/Player

- 2/4/6-hour (SP/LP/EP) recording/playback
- Hi-Fi recording (SP/EP)
- Durable lower cylinder
- Durable capstan shaft
- AGC on/off switch
- AG-IA12 serial remote control (optional)
- Auto head cleaning
- 4 heads
- Mode lock switch
- K Series chassis
- Manual eject operation in serial mode
- Hour meter
- Tab out record capability \$995.00
- AG-IA12 Serial remote control 245.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



**SVHS /VHS RECORDER/
PLAYERS/CONTROLLER/
LASERDISC PLAYER**



Panasonic
Broadcast & Digital Systems Company



**AG-1980 SVHS /VHS Hi-Fi
Editing Recorder/Player**

▪ Full-field TBC ▪ Independent linear audio in/out ▪ Digital noise reduction ▪ 3-D Y/C separation ▪ S-VHS with amorphous video heads
▪ Built-in digital time base corrector ▪ Hi-Fi stereo sound with Hi-Fi recording control ▪ Headphone monitor terminal with level volume control ▪ Frame by frame slow motion ▪ Mic input ▪ 5-pin editing terminal ▪ Insert/assemble editing with flying erase head ▪ Jog/shuttle dial ▪ Auto head cleaning/quick response mechanism ▪ Digital tracking ▪ 2-speed (SP/SLP) recording and 3-speed (SP/LP/SLP) playback ▪ Built-in MTS and SAP compatible ▪ 181-channel TV tuner—tape index/sound search system \$1799.00



AG-A96 Multi-Event Editing Controller

▪ Controls 2 AG-1980 S-VHS/VHS Hi-Fi editing recorder/players for automatic editing ▪ Direct tape search ▪ 8 programmable memory inset and outset points ▪ Assemble/insert/audio dub ▪ Built-in jog/shuttle search dial ▪ Preview and edit stop functions ▪ LCD multifunction display ▪ High-speed edit function \$565.00

**AG-700 Series DC Powered S-VHS/VHS
Recorder Players/Player Only**

Common Features

▪ Compact size ▪ 12VDC powered ▪ 4-heads ▪ Hi-Fi audio ▪ Industrial grade with BNC and RCA connectors ▪ Plays in vertical and horizontal positions ▪ Auto or manual tracking ▪ Bidirectional control via RJ-11 jack ▪ Recessed LED function button ▪ S-VHS/VHS playback compatible (SQPB) ▪ Auto repeat/rewind ▪ Optional AC adaptor ▪ Record in 2/6-hour with audio with T-120 cassette (8 hours with audio with T-160 cassette) ▪ Playback SP, LP, SLP speeds ▪ Top loading ▪ Weighs less than 5 lbs.

Note: This unit does not have a compartment for an internal battery. A power cable with a bare wire end is supplied with each unit allowing the end user to select the type of connector and power source to meet the requirements of their application.

The Panasonic AG-750/720/710 are three DC-operated industrial VCRs built with superior compactness. The highly reliable industrial mechanism is equally suited for horizontal and vertical operation, making them ideal for use in moving vehicles and other places with limited space. All models operate on DC power, and for applications with access to AC power, there is an optional AC adaptor.

AG-750 S-VHS/VHS Recorder/Player

Includes common features plus: ▪ S-VHS/VHS record capability
▪ Record speeds: 2/6 hours with audio with T-120 cassette (8 hours with T-160 cassette) ▪ Microphone jack ▪ Headphone output jack \$1550.00

**AG-720 VHS
Recorder/Player**

Includes common features plus:
▪ Record speeds: 2/6 hours with audio T-120 cassette (8 hours with T-160 cassette) ▪ Microphone input jack ▪ Headphone output jack. \$1150.00



AG-710 VHS Player

Includes common features plus: ▪ Player only version ▪ Headphone jacks \$925.00

AG-700 Series Accessories

- AG-B21 AC adaptor \$160.00
- AG-CR20 Car battery cord 50.00
- AG-A11 Remote control 50.00



AG-LD20 Multi Laserdisc Player

▪ Advanced digital time base corrector digitally compensates for uneven coloring, color shift, jitter and signal distortion caused by disc and rotational irregularities ▪ Digital servo system improves tracking ▪ Digital noise canceller eliminates noise in the recorded video signal ▪ Multistage noise shaping 1-bit DAC ▪ Digital noise generated during digital-to-analog (D/A) conversion is shifted up and out of the audible range and is made inaudible ▪ Clear visual scan with shuttle ▪ For easy fast forward and review, the AG-LD20 is equipped with a shuttle dial ▪ Compatible with 5 types of commercially available optical discs including laserdisc, compact disc and compact disc video without the need for an adaptor ▪ "Classroom Navigator" remote controller that has large, easy-to-see and operate buttons ▪ RS-232C interface ▪ Back panel function switch allows the user to easily set-up or change operating modes; set baud rates (1200/2400/4800/9600 bps); set bit lengths (7-bit ODD parity/8-bit no parity); set power-on start either on/off; set load-in start on/off; set side repeat on/off; set background color (black/blue) ▪ Video signal output is via BNC and RCA terminals ▪ Audio output is via RCA terminal or headphone jack \$699.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



**AG-2550 VHS Hi-Fi Recorder/Player
With Jog/Shuttle**

- Ferrite 4-head video system ▪ Auto head cleaning ▪ Hi-Fi VHS VCR that offers a high degree of versatility and ruggedness ▪ Incorporates an end-of-video auto repeat function made for kiosk applications
- Well-suited for demanding applications in markets such as education, business, duplication, home theater and sports/event analysis ▪ AI CVC (Crystal View Control) system ▪ MTS (Multichannel Television Sound) tuner ▪ Variable super fine slow ▪ 2-way cue and review ▪ S-VHS Quasi playback ▪ Industrial design ▪ Aluminum diecast chassis ▪ Metal cabinet ▪ Real time tape counter display ▪ Tape remaining indicator ▪ English/Spanish/French/Portuguese on-screen display ▪ Auto eject through IR ▪ Front A/V input jacks ▪ 3-prong UL/CSA approved AC plug ▪ 181-channel tuner ▪ 1-month/8-program calendar/timer ▪ Digital auto tracking/picture ▪ Manual tracking control ▪ Auto playback/rewind ▪ High-speed search ▪ 1-touch index search system (VISS) ▪ 1-touch recording ▪ Super jog and shuttle puts 19-step control over playback speed at your fingertips ▪ 120VAC ±10%, 50/60Hz ±10% power source ▪ 22W power consumption ▪ EIA standard NTSC color signal, 525 lines, 60 fields ▪ More than 43dB S/N ratio ▪ Wireless remote controller ▪ Coaxial cable ▪ AC power cord ▪ 2 "AA" batteries

AG-2550 \$495.00

AG-VC205 PanaBox Video Computer Interface. Allows you to link a VCR, video camera or a monitor to a computer equipped with a serial port. This enables the AG-VC205 to translate commands from application software into commands the video equipment can understand \$375.00



AG-1320 VHS Recorder/Player

- Super 4-head video system ▪ S-VHS Quasi playback ▪ Crystal View control system ▪ End-of-video auto repeat function for kiosk applications ▪ Industrial design ▪ Metal cabinet ▪ Real time tape counter ▪ Tape remaining indicator ▪ On-screen display (English/Spanish/French/Portuguese) ▪ Auto eject thru infrared remote ▪ 1-touch recording ▪ 3-prong UL/CSA approved AC plug ▪ 181-channel tuner ▪ 1-month/8-program calendar/timer ▪ Digital

- auto tracking/picture ▪ Zero search ▪ Auto playback/rewind ▪ High-speed search/fast forward/rewind ▪ VISS ▪ Auto tuning automatically configures for local cable or broadcast channel configuration ▪ Intro-jet scan allows for pre-recorded tapes to be rapidly previewed ▪ VCR automatically fast forwards to index marks ▪ 4-key program function

AG-1320 \$345.00

**AG-527C 27" Diagonal Color Hi-Fi
Monitor/Receiver/VHS Recorder/Player**

- Super 4-head HQ system ▪ Stereo TV/VCR Hi-Fi MTS ▪ Bass/treble audio control ▪ 4-event timer record/playback ▪ 181-channel tuner with tuner block-out capability ▪ Front panel features lock-out capability ▪ Front panel A/V input jacks ▪ Earphone jack on front panel ▪ Auto play with repeat function ▪ Auto clock set ▪ 1-minute skip ▪ OSD programming ▪ On-timer ▪ Digital auto tracking ▪ Rapid tune ▪ Record time counter (real time) ▪ Special effects playback ▪ Field-still ▪ Field-still advance ▪ Double fine slow ▪ Zero search ▪ UL 3-pin AC cord

AG-527C \$895.00

**AG-520C 20" Diagonal Color
Monitor/Receiver/VHS Recorder/Player**

Includes same features as AG-527C, except: ▪ 20" ▪ Does not include bass/treble audio control or stereo TV/VCR Hi-Fi MTS

AG-520C \$595.00



**AG-513C 13" Diagonal Color
Monitor/Receiver/VHS Recorder/Player**

Includes same features as AG-520C, except: ▪ 13" ▪ Includes molded plastic hand slot

AG-513C \$495.00

PC-513C Soft carrying case 100.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





WJ-MX50 Professional Digital A/V Mixer

- 2-channel digital frame synchronization permits special effects in each of the A/B program buses ▪ 4 sources can be switched and any 2 of them routed to the program buses ▪ A/B program buses can be monitored at the A/B program outputs while the mixed picture is monitored at the preview output ▪ The master recording output can be selected at the effect switch in the program-out section
- Compatible with a wide variety of video editing devices ▪ GPI input ▪ RS-232C connection ▪ RS-422 connection ▪ Digital special effects: 62-step strobe, still, frame, mosaic, negative, paint (posterization), mono, multi (1/4, 1/2 or 3/4 screen), trail and A/V synchro (any combination of 6 of the digital visual effects can be programmed to trigger with selected levels of the accompanying audio) ▪ 287 wipe patterns ▪ Wipe/mix section ▪ Fade-in/fade-out
- Downstream key ▪ Automatic programmable effects ▪ Color correction ▪ Audio mixing capability

WJ-MX50\$5000.00



WJ-MX20 Digital A/V Mixer

- 2-channel digital field synchronization ▪ Special effects in each of the A/B program buses ▪ 4 video inputs mixable with either composite or S-Video sources ▪ BNC video connectors ▪ Over 190 wipe effects ▪ Digital effects include picture-in-picture, strobe, multistrobe, mosaic, scramble, posterize, positive/negative, mono and NAM ▪ Downstream key with 8-color matte generator ▪ Color correction ▪ Audio mixing with audio-follow-video or breakaway capability ▪ External remote control via RS-422 or GPI ▪ On-screen display for ease of operation ▪ 298 digital wipe patterns ▪ 460 TV lines horizontal resolution ▪ 50dB S/N ratio ▪ Programmable effects with memory ▪ Compatible with the WJ-KB50/KB30 character generators

WJ-MX20\$1795.00

WJ-KB50 Character Generator

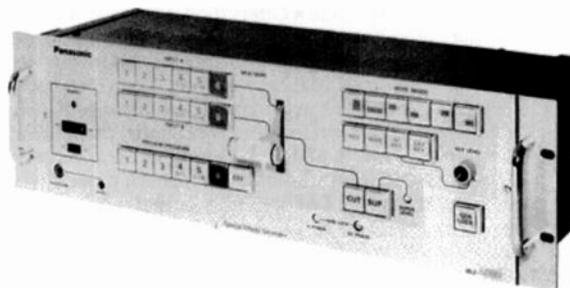
- Designed to operate with the WJ-MX50/MX20 digital A/V mixers ▪ Character size: 4 levels (horizontal) x 4 levels (vertical), adjustment on an individual line is available ▪ 5 language modes: English/German/French/Spanish/Italian ▪ Scrolling: P1-P10, up/down/to right/to left ▪ Crawl mode (single-line scrolling); upper/lower, from right to left ▪ Fonts: Gothic/Roman normal/Roman italic ▪ Wipe/window wipe functions
- Date/time/stopwatch functions

WJ-KB50\$695.00

WJ-KB30 Character Generator

- Designed for WJ-MX50/MX20 digital A/V mixers ▪ 256 characters in 5 different languages ▪ 5 fonts and QWERTY style keyboard
- 8 colors addressable by line ▪ 10 pages of titles with scroll, wipe, roll and crawl effects ▪ Time, date and stopwatch functions ▪ 20-day condenser battery back-up

WJ-KB30\$425.00



WJ-4600C Color Special Effects Generator

- DC operation for EFP use ▪ Vertical interval switching of 6 program inputs ▪ Fades, dissolves and 6 wipe patterns ▪ Super, external key (monochrome); internal key ▪ Built-in EIA RS-170A sync generator (HD, VD, sync, BL, BFP, SC and blackburst outputs) plus genlock capability ▪ Genlock circuitry for nonsynchronous video signal mixing ▪ Subcarrier phase and horizontal phase adjustments for genlock ▪ Blackburst (program output only) 3 outputs ▪ Can mix composite and noncomposite video inputs ▪ Effect, preview and 2 program outputs ▪ "Cut" pushbutton transfers program and preview buses ▪ 2-step illuminated, nonlocking pushbuttons: lit dimly when pressed to indicate selected preview inputs; lit brightly when pressed to indicate selected program inputs ▪ Illuminated lock-release buttons light-up when pressed to show function selected ▪ Supplies intercom power to 6 cameras and level adjustable ▪ Supplies tally light on/off switching to all 8 inputs
- BNC connectors ▪ Audio amplifier for intercom with level control
- Rack-mountable ▪ AC or 12VDC

WJ-4600C\$3820.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





AT-H1906DP 19" Diagonal Digital Signal Color Video Monitor (Preliminary)

- Designed as a master monitor for quality evaluation at television stations or production facilities
- Features complete digital signal processing for both composite analog and digital signals to maintain high-quality images
- Completes the digital signal path for both production and post production applications
- 2 serial digital inputs for added flexibility
- Center/area marker is used as a framing indicator
- Variety of flexible remote operational controls provide horizontal delay, vertical delay, 16:9 aspect ratio switching, spill screen capability, and matrix function that permits evaluation of color imagery as displayed on different phosphors
- Black-and-white tracking and low cross-color noise
- Offers digital luminance/chrominance separation via a 5-line digital comb filter to reduce dot crawl on edge transitions
- Digital chrominance signal processing ensures the highest stability
- Capable of 4 direct digital interfaces: serial composite and component and parallel composite and component
- Pulse-cross function for displaying horizontal and vertical blanking—even from digital signal sources
- Serial interface features an error detection and handling (EDH) check function
- 0.28mm CRT dot pitch
- 900 TV lines of horizontal resolution
- Micro-processed system control for on-screen display of setup data
- Optional infrared wireless/wired remote control unit, PAL decoder, and auto setup kit to adjust color temperature automatically are available \$14,000.00



BT-M1950Y 19" Diagonal High-Grade Color Video Monitor

- SMPTE Type C phosphor monitor
- 0.40mm dot pitch
- 750 lines horizontal resolution
- Multistandard (PAL, NTSC 3.58 or NTSC 4.43)
- Switchable from the 4:3 aspect ratio to 16:9 aspect ratio
- 4 video inputs/outputs include composite video, Y/C, analog RGB and Y, R-Y, B-Y components
- On-screen menu allows broad range of adjustments from the front panel: volume, phase, chroma, brightness, contrast, underscan, pulse-cross, color off, memory mode, input selections, exit sync, degauss, power and blue check for display of a monochrome blue picture
- Advanced auto white balance stabilizer maintains stable color reproduction over long-term use
- Color temperature is selectable between 9300°K and 6500°K
- Built-in speaker
- Optional rack-mount (TY-K1950)
- Control lock
- Tally lamp (selectable on/off)
- Filter selection (comb, notch, both)
- Internal/external sync
- 3 audio lines (RCA x 2) with 1 bridge connected input \$2,585.00



BT-H1390Y 13" Diagonal High-Grade Color Video Monitor

- SMPTE Type C phosphor monitor
- 0.28mm dot pitch
- 750 lines horizontal resolution
- Line 1/2 in/out
- S-Video in/out
- RGB/Component in/out
- External sync in/out
- RS-232C
- NTSC/PAL
- Underscan
- Pulse-cross
- Blue only
- 16:9 or 4:3 aspect ratio
- User memory
- Color temperature is selectable between 9300°K and 6500°K
- SDI interface option \$1,549.00

BT-S1360Y 13" Diagonal Color Video Monitor

- 420 lines horizontal resolution
- Auto white balance
- Blue signal only, underscan, pulse-cross and comb filter switches
- AFC select
- 1.5W speaker
- Rack-mountable with optional bracket, BA-131
- Line 1 or S-Video, Line 2 or VTR inputs \$1,330.00

BT-S1370Y 13" Diagonal Multistandard Color Video Monitor

- Multistandard compatibility (NTSC, PAL, SECAM, M-NTSC)
- Auto white balance
- Blue signal only
- Selectable Line 1 (BNC/S-Video)/Line 2 (BNC/VTR)
- 420 lines horizontal resolution
- Rack-mountable with optional bracket, BA-131
- Headphone jack \$1,115.00



BT-S900Y 9" Diagonal AC/DC Portable Color Video Monitor

- AC/DC operation with optional AG-BP212 (2 batteries required)
- Blue signal only, underscan, pulse-cross and comb filter
- Line/S-Video in/out
- 1.0W speaker
- 300 lines horizontal resolution
- Built-in battery charger
- Rack-mountable with optional bracket, BA-90A \$1,185.00



BT-S901Y 9" Diagonal High-Grade Color Video Monitor

- 300 lines horizontal resolution
- S-VHS compatible
- Compact metal cabinet
- 0.47mm dot pitch
- 90° deflection angle
- Underscan, pulse-cross, blue signal only
- Comb filter for color resolution
- Rack-mountable, dual rack-mountable with optional heavy-duty rack-mount bracket, BA-90A
- Line 1/2 selectable; S-Video/video selectable for Line 1
- External sync input/output for noncomposite video signals
- Built-in audio amp and speaker, 1.0W audio output
- Auto termination
- Automatic degaussing . . \$815.00

Accessories

TY-K1950	Rack-mount brackets, 1 pair (BT-M1950Y) . .	\$375.00
TY-K1490	Rack-mount brackets, 1 pair (BT-H1390Y) . .	200.00
BA-131	Rack-mount brackets, 1 pair (BT-S1360Y/S1370Y)	165.00
BA-90A	Rack-mount brackets, 1 pair (BT-S900Y/S901Y)	125.00
ET-100YC	S-Video/BNC conversion adaptor, 2 pieces (All models)	100.00
AG-BP212	Battery pack 12V, 2.3Ah (BT-S900Y)	88.00
NV-C450	Car battery cord, 16.7' (BT-S900Y)	55.00
AG-C71AE	S-Video (Y/C) cable, 16.6' (all models)	35.00
AG-C70AE	S-Video (Y/C) cable, 10' (all models)	25.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





COLOR VIDEO MONITOR/RECEIVERS

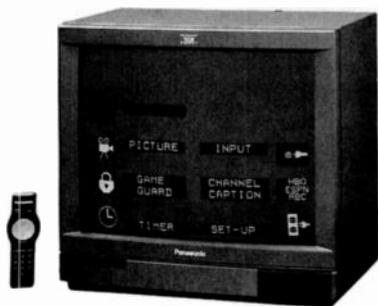


CT-2785VY 27" Diagonal Color Stereo Video Monitor/Receiver

- 110° deflection SuperBlack™ screen ▪ 550 lines horizontal resolution ▪ Easicon™ on-screen menu ▪ Selectable S-Video or Line/RF ▪ Wireless infrared remote control ▪ On-screen display for adjustment of sharpness, brightness, color, tint and channel selection ▪ 181-channel cable compatible tuner ▪ Programmable channel scan ▪ Auto power on/off ▪ Built-in closed caption decoder ▪ Stereo audio in ▪ A/V output allows the user to "loop out" audio/video signals from CT-2785VY to another display device using an RCA type audio/video cable ▪ 3.5W audio amp ▪ Two 3" x 5" speakers

CT-2785VY \$695.00

CT-2785Y Same as above, except monitor only version 650.00



CT-2084VY 20" Diagonal Color Video Monitor/Receiver

- 90° deflection flat square screen ▪ 450 lines horizontal resolution ▪ Easicon on-screen menu ▪ Selectable 1/2/3/S-Video/RF ▪ 20-function wireless infrared remote control ▪ 181-channel cable compatible tuner ▪ Programmable channel scan ▪ Auto power on/off ▪ Built-in closed caption decoder ▪ 1.5W audio amp ▪ 2.5" speaker

CT-2084VY \$475.00

CT-1384VY 13" Diagonal Color Video Monitor/Receiver

- 90° deflection screen ▪ 420 lines horizontal resolution ▪ Easicon on-screen menu ▪ Selectable line 1/2/3/S-Video/RF ▪ Wireless infrared remote control ▪ 181-channel cable compatible tuner ▪ Programmable channel scan ▪ On-screen display for adjustment of sharpness, brightness, color, tint and channel selection ▪ Auto power on/off ▪ Built-in closed caption decoder ▪ 1.5W audio amp ▪ 2.5" speaker ▪ 1/8" mini-plug headphone jack

CT-1384VY \$410.00

COLOR VIDEO MONITORS



CT-2084Y 20" Diagonal Color Video Monitor

- Flat square screen ▪ 450 lines horizontal resolution ▪ Audio and video monitor out connectors ▪ Video input/output BNC ▪ Automatic 75 ohm termination ▪ S-Video in/out (4-pin) ▪ Audio input/output (RCA) ▪ 1.5W amplifier ▪ 2.5" speaker, front panel ▪ Auto on ▪ Line 1/2/3/S-Video, switchable ▪ Built-in comb filter ▪ On-screen display for adjustment of sharpness, brightness, picture, color and tint

CT-2084Y \$435.00

CT-S1390Y 13" Diagonal Color Video Monitor

- Metal cabinet—rack-mountable ▪ 420 lines horizontal resolution ▪ Video/audio (line 1/line 2) ▪ Video input/output BNC ▪ 75 ohm termination ▪ S-Video in/out 4-pin ▪ Phono input/output ▪ 1.5W amplifier ▪ Speaker ▪ Comb filter ▪ Input source is switch-selectable from the front panel ▪ Front panel controls also include: color, tint, brightness, contrast, sharpness, volume and factory preset

CT-S1390Y \$485.00

TY-K1390 Rack-mount adaptor 60.00



CT-1384Y

CT-1384Y/1384YW-1 13" Diagonal Color Video Monitors

- 90° deflection screen ▪ 420 lines horizontal resolution ▪ Audio and video monitor out connectors ▪ Video input/output BNC ▪ Automatic 75 ohm termination ▪ S-Video in/out (4-pin) ▪ Audio input/output (RCA) ▪ 1.5W amplifier ▪ 2.5" speaker, front panel ▪ Auto on ▪ Line/1/2/3/S-Video, switchable ▪ Built-in comb filter ▪ Front-mounted headphone jack ▪ On-screen display for adjustment of sharpness, brightness, picture, color, tint and audio level

CT-1384Y \$360.00

CT-1384YW-1 Same as CT-1384Y except with beige cabinet. 360.00

Accessories

- ET-100YC S-Video/BNC conversion adaptor, 2 pieces (all models, except CT-S1390Y) ... \$100.00
- AG-C71AE S-Video (Y/C) cable, 16.6' (all models) 35.00
- AG-C70AE S-Video (Y/C) cable, 10' (all models) 25.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



DT-2730MS 27" Diagonal Color Video/Data Multiscan Monitor

- Flat square Invar mask CRT ▪ Dot pitch: 0.8mm ▪ Resolution: video 600 TVL, RGB 800 x 600 (1280 x 1024 emulation) ▪ Variable scan rate: horizontal 15-64kHz, vertical 45-160Hz ▪ NTSC, PAL, VGA, SVGA, Mac Quadra ▪ Handheld remote and RS-232C serial remote
- Internal stereo dome speakers with speaker out connectors for a variety of audio monitoring options ▪ Front panel digital controls
- Smart input selector automatically identifies the input and locks to it ▪ Flexible preset memories for input signal and picture controls
- Need for interfaces are minimized with direct-connect PC and MAC connecting

INPUTS:

Front Computer: (1) 15-pin D-sub; **Video:** (1) RCA; **S-Video:** 4-pin DIN; **Audio:** 1 RCA for video; **Back Computer:** (1) 15-pin D-sub, (1) 15-pin HD-sub; **Video:** (2) RCA, (1) BNC parallel to video 2 mode; **S-Video:** (2) 4-pin DIN; **Audio:** (1) RCA for video, (1) RCA for computer, (1) RCA for auxiliary

OUTPUTS:

Back Computer: (1) 15-pin D-sub, (1) 15-pin HD-sub common to input terminal; **Video:** (1) BNC; **S-Video:** (1) 4-pin DIN; **Audio:** (1) RCA for video, (1) RCA for computer, (1) RCA for auxiliary

DT-2730MS\$3100.00



FT-2700 27" Diagonal Multisystem Color Video Monitor

- High contrast flat CRT ▪ 700+ lines horizontal resolution ▪ Auto white balance ▪ Wired/wireless remote control ▪ Blue only function
- ABL in/out ▪ Preset control for color, brightness, contrast, tint and sharpness ▪ 4 standard color system (PAL, SECAM, NTSC 3.58, NTSC 4.43)

FT-2700 \$2580.00



DT-1300MS 13" Diagonal Color Video/Data Multiscan Monitor

- High performance multifunction monitor designed for multimedia applications ▪ Compatible with both video and RGB signals, it is ready to connect to a wide range of video sources and computers
- Automatic scanning functions: horizontal frequencies between 15-50kHz and vertical frequencies between 50-100Hz ▪ RGB bandwidth: 30MHz ▪ 0.28mm dot pitch CRT ▪ Exceptionally high resolution to 1120 x 768 dots (RGB) and 600 TV lines (S-Video)
- 3-mode preset memory (2 RGB, 1 video) ▪ Microprocessor controlled full front panel adjustments with soft-touch keys
- Fail-safe control on/off switch ▪ 15-pin D-sub RGB input/output terminals equipped; connection of multiple monitors possible
- Can also be used as a monitor for checking video projector system images ▪ Built-in front mounted speaker and headphone jack

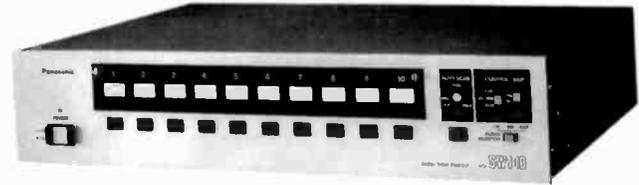
DT-1300MS \$1300.00

Accessories

AG-C71AE S-Video (Y/C) cable, 16.6' (all models) . . . \$35.00
AG-C70AE S-Video (Y/C) cable, 10' (all models) 25.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





UTP-2 Video Signal Transcoder

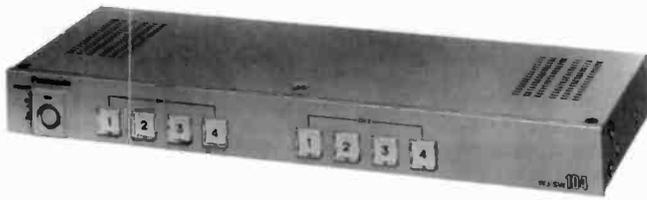
- Transcodes virtually any video signal into any other video signal
- Can handle S-VHS, U-Matic, RGB and RGB with separate sync, as well as MII and Betacam
- Input signals: Y/688kHz; Y/C 3.58MHz, Y, R-Y; B-Y; linear RGB w/sync
- Output signals: Y/688kHz, Y/C 3.58MHz; Y, R-Y, B-Y; linear RGB w/sync, NTSC composite (monitoring)
- 5.5MHz (-1dB) bandwidth, S/N: 60dB
- Front panel level controls with preset switch, front panel NTSC monitoring point
- 19" rack-mountable, 1RU high
- Rack slides provided

UTP-2	.....	\$2550.00
AG-C71AE	S-Video (Y/C) cable, 16.6'	35.00
AG-C70AE	S-Video (Y/C) cable, 10'	25.00

AG-SW100 Audio Follow Video Automatic Switcher

- Video/audio selection of 1 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
- Rack-mountable, bracket included

AG-SW100	\$1370.00
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WJ-SW104 Y/C Switcher

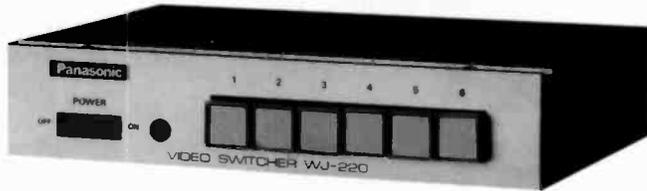
- 4-input, 2-output matrix switcher
- Y/C or composite in/out
- Vertical interval switching

WJ-SW104	\$825.00
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WJ-300C Video Distribution Amplifier

- Selectable 1 input to 6 outputs or 2 channels with 1 input to 3 outputs each channel
- BNC connectors
- Use with all video cameras and system equipment

WJ-300C	.....	\$405.00
WJ-A01	3 1/2" rack-mount frame	70.00
WJ-B01	Blank panel, 3 1/2"H x 2 1/4"W (1/2" span)	40.00
WJ-B02	Blank panel, 3 1/2"H x 5 1/2"W (1/2" span)	40.00
WJ-B03	Blank panel, 3 1/2"H x 8 1/4"W (1/2" span)	40.00



WJ-220/220R Active Manual Switchers

- 6 composite video inputs can be switched to a single video output
- Switching is accomplished during the vertical interval for glitch-free results
- Nonlocking 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	.....	\$390.00
WJ-220R	1 1/2"H EIA rack-mount	.....	390.00



WJ-420 Color Quad System

- Up to 4 surveillance cameras can be connected
- All 4 pictures can be simultaneously displayed on a single monitor divided into 4 blocks
- Built-in field memory allows connection of any 2:1 interface type camera, without requiring genlock capability on the camera
- 8 bit/14.3MHz sampling
- Built-in sequential switch provides 2 types of sequential switching
- On-screen programming
- Border boundary in the quad mode
- Built-in character generator displays up to 8 characters on each of the 4 blocks
- Alarm function

WJ-420	\$1775.00
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WJ-225/225R Active Manual Switchers

- Same as WJ-220/220R, but with 12 composite video inputs

WJ-225	Desktop	.....	\$615.00
WJ-225R	1 1/2"H EIA rack-mount	.....	615.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



PT-M1085U

PT-M1085U Graphic Projector PT-M1083U Data Projector

- Bright 850 lumens output ▪ High resolution for crystal-clear images
- 7" CRTs ▪ f/1.03 hybrid lenses ▪ Liquid cooling air coupling
- Colored lenses provide pure, natural color reproduction ▪ Wide scan frequency ranges support many computer standards
- Selectable baud rates: 9600/4800/2400/1200 ▪ Color temperatures: Presets are 9600°, 6500° and 3200° Kelvin plus user settings ▪ Multiple input capability ▪ High bandwidth ▪ On-screen display ▪ 60"-300" screen sizes ▪ Multiple aspect ratios are user-definable to support various formats such as 4:3, 16:9 and other film formats ▪ Serial remote control ▪ Flexible large system integration with various remote control connectors, 8 ID addresses and system switcher compatibility ▪ 60 scan memories (20 for each aspect ratio) ▪ 7 internal test patterns ▪ Setup is easy with guided 21-zone digital convergence, data copy function, automatic frequency identification and locking ability ▪ Raster swing minimizes CRT burn-in when still images must be shown for extended periods
- Internal diagnostics and error display ▪ User-friendly 43-key multifunction remote control is back lit and features user and maintenance modes ▪ Floor or ceiling/front or rear mount
- Compatible with ET-100DS Advanced Digital Scan Converter
- ET-PK180 mounting bracket included ▪ 120VAC, 60Hz power source ▪ Resolution: M1085U: 1600 x 1280; M1083U: 1500 x 1200
- Signal Bandwidth: M1085U: 90MHz; M1083U: 75MHz
- Horizontal Frequency: M1085U: 15-107kHz; M1083U: 15-70kHz
- 38-150kHz vertical frequency ▪ Retrace Time: Horizontal: 2.6 μsec.; Vertical: 350 μsec. ▪ Signal Terminals: RGB IN 1 Input Level: R, G, B: 0.7V p-p, 75 ohm; G, sync: 1.0V p-p (tri-sync, capable); H/H, V: 0.3-5.0V, high impedance; V: 3-5.0V, high impedance; (BNC connectors) ▪ RGB IN 2 Input Level: VGA compliant; (HD/D-sub 15-pin connector) ▪ Line In/Out: 1.0V p-p, 75 ohm or high impedance (BNC connectors) ▪ S-Video In: Y signal, 1.0V p-p, positive polarity (with negative signal), 75 ohm (mini-DIN 4-pin connector) ▪ Audio In/Out: 0.5Vrms, 33k ohm or higher (RCA type connectors)

Standard Accessories

- Handheld wireless remote control ▪ 79.2' remote control cable
- Batteries for remote control ▪ S-Video/BNC conversion adaptors
- Lens spacers for 70" and 200" (for front projection) ▪ Lens spacers for 70", 100" and 200" (for rear projection)

PT-M1085U	Graphic projector with 1600 x 1280 RGB resolution, 90MHz bandwidth, 15-100kHz horizontal scan	\$19,500.00
PT-M1083U	Data projector with 1500 x 1200 RGB resolution, 75MHz bandwidth, 15-70kHz horizontal scan	14,285.00



PT-L592U LCD Multimedia Projector

- True 800 x 600 SVGA resolution ▪ Intelligent XGA (1024 x 768 dot) compression and VGA expansion ▪ Macintosh compatibility
- 600 ANSI lumens of brightness ▪ 85% center to corner brightness ratio ▪ Wireless mouse control ▪ Polarization converter optical system
- 260W DC metal-halide lamp provides up to 3 years of normal use (average of 4 hours/day during a 5-day work week) ▪ 3000-hour lamp life (ET-LA592) and lamp life indicator ▪ Three 1.3" polysilicon LCD panels ▪ NTSC/NTSC-M/PAL/SECAM compatible ▪ S-Video compatibility ▪ RS-232C computer interface provided ▪ 16.7 million color palette ▪ Two 1W built-in stereo speakers ▪ Lens shift
- Retractable lens for portability and lens protection ▪ Front and rear projection ▪ Power zoom/focus lens capable of projecting a 30-300" diagonal image ▪ Built-in stereo amplifier (1W +1W) and speakers
- Automatic power saver ▪ Blue screen function ▪ Countdown timer function ▪ Selectable on-screen menu (English/German/French/Spanish/Japanese) ▪ Universal 100-120/220-240VAC power supply
- Available options: ceiling mount, mouse cables, carrying case and shipping case ▪ Weighs 20.9 lbs.

PT-L592U	.....	\$8,995.00
ET-PK592	Ceiling mount bracket	500.00
ET-LA592	3000-hour lamp	395.00
ET-MC7202S	Serial mouse cable	65.00
ET-MC7202M	Macintosh mouse cable	65.00
PT-59BG	Carrying case	155.00
PT-59CS	Shipping case	275.00

PT-L292U LCD Color Video Projector

- SVGA (832 x 624) resolution
 - XGA (1024 x 768) compression
 - Macintosh compatibility
 - 300 ANSI lumens ▪ 250W metal-halide lamp ▪ 1000-hour lamp life ▪ Lamp timer ▪ Remote control ▪ Three 1.3" polysilicon LCD panels ▪ NTSC/PAL/SECAM compatible ▪ 1.5W built-in stereo speakers ▪ Manual zoom ▪ Manual focus ▪ Front and rear projection ▪ Weighs less than 20 lbs.
- | | | |
|----------|---------------|------------|
| PT-L292U | ..... | \$6,795.00 |
| PT-29CS | Shipping case | 445.00 |
| PT-29BG | Carrying bag | 205.00 |



ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



LQ-D5500 Digital Optical VideoDisc Recorder

- First digital optical videodisc recorder to feature direct overwriting
- Combines the superior picture quality and multigeneration dubbing of digital component compression (DV) recording with fast access time and high reliability
- Average access time of 0.5 seconds across the disc
- Dramatic advantage in editing and production speed
- A disc can be recorded at least 10,000 times and played back one million times or more, assuring high reliability and low replacement costs
- Suitable for editing and transmitting news and commercials for broadcast and CATV stations, and in video displays at museums and other facilities
- For added diversity, the LQ-D5500 can link directly through the serial digital interface with Panasonic's 1/4" DVCPRO VTR equipment
- Compact and lightweight: 4RU sized for easy rack-mounting

Phase Change Rewritable Recording

This recording method allows direct overwriting, allowing both erase and record in a single operation. Rewriting is extremely reliable. Phase change has been used most successfully with Panasonic WORM videodisc recorders and multifunction optical disk drives.

High Density, High Capacity Recording

With a track pitch of 1.2µm and maximum linear speed of 27ms, the LQ-D5500 offers extremely fast tracking. And thanks to high density, double-sided recording and the mark position recording system, it offers a very large recording capacity of 12G bytes. A single 12" disc can record and play back up to 41 minutes of full-motion video and/or up to 73,800 still images.

Double-Sided Multihead MCAV (Modified Constant Angular Velocity) System

The LQ-D5500 is equipped with 2 heads, 1 for each side of the disc.

Intelligent Servo and Laser Power Optimization

Intelligent servo system detects and corrects disc wobbling and rotational deviations. A learning function also analyzes the disc and adjusts the laser beam for optimum power.

Degradation-Free Multigeneration Dubbing

There's no loss of picture and/or sound quality when editing and dubbing through the digital I/O.

Easy Still-Image Filing

With easy frame-by-frame recording and nearly instant access, the LQ-D5500 is ideal for producing reference images, animation and superimposed images, as well as for filing and archiving images. Several frames can be stored together. Pre-roll and roll only need to be simulated for VTR Protocol—not performed.

Interface Capability with DVCPRO

The LQ-D5500 uses the same digital signal as the Panasonic 1/4" DVCPRO News Gathering Format equipment. Combine the LQ-D5500 with DVCPRO News Gathering and desk editing equipment to create high-speed news production systems with superb picture quality.

Digital Recording with Superior Image and Sound

The LQ-D5500's 4:1:1 digital component compression recording delivers 5MHz in the Y band and 1.5MHz in the C band, plus a 50dB video S/N ratio. The LQ-D5500 also features 2 high quality 48kHz/16-bit digital audio (PCM) channels.

Repeat Function

Since discs require no rewinding, a single disc can be used for repeated recording and playback. This provides a considerable advantage over tape, where continuous recording and playback in applications such as monitoring and video display require 2 VTRs in alternate operation. The LQ-D5500 allows setup to 5 playback zones for continuous playback in sequence.

Search at 40X Normal Speed

The LQ-D5500 provides full-frame playback up to 40X normal speed in either forward and reverse. VAR mode, which provides variable-speed playback up to normal speed in both directions with no noise generation, can be used to transmit slow motion pictures. A jog knob has been included to facilitate operation.

Computer Interfacing

Standard equipment is an RS-232C terminal, RGB video input and output terminal. The LQ-D5500 is well-suited to multimedia applications. It will also interface with personal computers for use in a variety of video systems. Discs contain a 128K byte user data segment for users to write and read dates, titles and other information through the RS-232C terminal. These features support future system expansion.

Analog Interface

LQ-D5500 features analog video input/output terminals for component, composite and YC (S-Video) signals. These terminals allow recording from component-system recording media, such as the MII system.

Digital Interface

Serial digital component video input/output (optional LQ-YA555) and AES/EBU digital audio input/output can be used for high quality, digital-to-digital editing with other digital equipment, such as the Panasonic D-5 system.

9-Pin Remote Terminal for Time Code Editing

The LQ-D5500 is equipped with a 9-pin (RS-422A) terminal and time code generator/reader (VITC/LTC), so it can connect to a standard editing controller for time code editing. The 9-pin terminal has In/Out signals for loophrough connection.

Same Operating System as Conventional Studio VTRs

The LQ-D5500 uses the same operating system, including the time code and REF video, as conventional studio VTRs. Since the interface is the same, an LQ-D5500 can immediately replace an existing VTR.

RS-232C/GPI Option Card

The LQ-YA232 option board adds the Series 3000/4000 OMDR-protocol RS-232C interface and GPI (with 8 ports each for input and output). The built-in ROM allows repeat/interval recording without an external computer.

LQ-D5500	.....	\$28,000.00
LMR13000	12" phase change re-recordable digital double-sided disc	..... 1,100.00

Accessories

LQYA555P	SMPTE 259M component digital serial interface board for LQ-D5500	..... \$2,475.00
LQYA501	Time-lapse recording program card and RS-232C interface for LQ-D5500	..... 2,000.00
LQYA232	RS-232C interface card with GPI and program ROM for LQ-D5500	..... 1,250.00
TQFH332	Double-sided disc cartridge, 108,000 still frames or 1 hour of motion for LQ-3031T	.. 450.00
TQFH331	Single-sided disc cartridge, 54,000 still frames or 30 minutes of motion for LQ-3031T	.... 280.00
LQRC550	Wired remote control unit for LQ-D5500	... 100.00
TQRC330	Multifunction wired remote control unit, 31 functions, 3VDC (2 "AAA" batteries) for LQ-3031T	..... 86.00
AG-C71AE	S-Video (Y/C) cable (16.6')	..... 35.00
AG-C70AE	S-Video (Y/C) cable (10')	..... 25.00
LVK001	Cleaning kit	..... 25.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



SV-4100 Pro-DAT Recorder/Player

- Front panel shuttle wheel
- 0.5-15X speed range
- IR remote control
- 4-stage, 1-bit Delta-Sigma A-to-D converters
- 20-bit equivalent D-to-A converters
- Program, absolute and time-remaining displays
- Pushbutton selection of 44.1kHz/48kHz 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
- Instant playback
- A time cue search
- Accurate synchronization to external video sync or word clock during digital transfers
- External sync capability: 25Hz PAL, 29.97Hz video and 30.00Hz NTSC video/film
- Word sync frequency in both record and NTSC playback mode

SV-4100	.....	\$2950.00
SV-4100EG 120/220/240V	.....	2995.00
RC-410	Wired remote control	315.00



SV-3800 Pro-DAT Recorder/Player

- Front-panel shuttle wheel
- 0.5-15X speed range
- IR remote control
- 4-stage, 1-bit Delta-Sigma A-to-D converters
- 20-bit equivalent D-to-A converters
- Program, absolute and time-remaining displays
- Pushbutton selection of 44.1kHz/48kHz 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
- Single program and skip play
- Automatically clocks to incoming frequencies of 32kHz, 44.1kHz or 48kHz

SV-3800	.....	\$1695.00
SV-3800E 120/220/240V	.....	1995.00
SSE-44	Wired remote control	50.00



SV-3900 Pro-DAT Recorder/Player

- 1-bit precision A-to-D converters
- Advanced 4-DAC system with 18-bit resolution
- For enhanced remote control, bidirectional serial interface supports industry-standard P2 and ES-bus protocol—ES-bus ensures sophisticated control between multiple audio/video machines on a serial local area network—P2 compatible interfaces use similar commands
- Optional SH-MK390 remote controller provides ES-bus serial control of all transport modes and functions
- Includes shuttle wheel, back lit LCD window, dedicated keys and numeric keypad for system assignments, cueing and program play
- Software developer's tool kit available
- Headphone output
- Rack-mount

SV-3900	.....	\$2895.00
SH-MK390	Wired remote control	495.00
SDT-390M	Software development tool kit for Macintosh computer	650.00
SDT-390B	Software development tool kit for IBM compatible computer	650.00



MDA-1 Multichannel Digital Audio Recorder ADAT®

- Super-quick software controlled transport
- 18-bit D-to-A and 20-bit equivalent A-to-D converters
- Servo balanced XLR and RCA interfaces
- On-board instant track cloning and time shifting
- Auto locate functions
- Diecast aluminum chassis

MDA-1	.....	\$3495.00
MDA-1R	Wired remote control	N/C

Digital Audio Tapes

RT-DA44	44-minute ADAT digital mastering tape (ADAT format runs at 3X speed of VCR)	ea./\$12.95
RT-RCLP	Cleaning tape for digital audio tape recorder	ea./11.00
RT-R124M	124 minutes	ea./9.95
RT-R94M	94 minutes	ea./8.80
RT-R64M	64 minutes	ea./7.50
RT-R34M	34 minutes	ea./6.30
RT-R19M	19 minutes	ea./5.50

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





WP-9440 Professional Power Amplifier

- 2X 400W ▪ 5.25" rack space ▪ Forced-air cooling ▪ 20Hz to 20kHz frequency response with THD of 0.006% at 1kHz at full power
- Dual voltage "Super Rail" design ▪ Power bandwidth well beyond 85kHz with flat frequency response ▪ Low overall feedback
- Precision detented input attenuators ▪ Built-in remote status monitoring ▪ Instrumentation quality electronically balanced inputs
- Configured for stereo, mono or bridged input switch-selectable operation ▪ AC breaker ▪ Delayed turn-on surge protection
- Multiway thermal protection ▪ Intelligent V-I limiting ▪ Telemetry available via 4-pin Molex type connector for remote monitoring
- 5-way binding post connectors for each channel ▪ UL listed ▪ 70V output transformers available ▪ Rack-mountable ▪ Wattage ratings at 8 ohms

WP-9440 \$2490.00



WP-1400

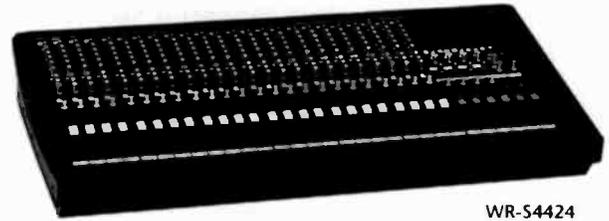
WP-1400/1200 Professional Power Amplifiers

- High performance ▪ Fast and efficient Class H circuitry instantaneously switches to higher voltage power when high level input signal appears ▪ Output transistors installed in a "wind tunnel" style heat sink for efficient and cool operation ▪ "Peak" and "Protect" LED indicators ▪ Intelligent high-speed crowbar circuit for speaker protection ▪ Balanced "instrumentation" quality inputs
- Female XLR and 1/4" TRS phone connectors ▪ 5-way binding (dual banana) speaker output posts ▪ UL listed ▪ 70V output transformers available

WP-1400	400WRMS per channel into 4 ohm load 240WRMS per channel into 8 ohm load Bridged output; 800W, 8 ohms	\$840.00
WP-1200	200WRMS per channel into 4 ohm load 120WRMS per channel into 8 ohm load Bridged output; 400W, 8 ohms	680.00

Accessories

HXF-7350	70V output transformer, 350W for WP-9440 (2 pieces)	\$350.00
HXF-7100	70V output transformer, 100W for WP-1200 (4 pieces)	350.00
HXF-7050	70V output transformer, 50W for WP-9440 (4 pieces)	250.00
HXF-7200	70V output transformer, 200W except WP-1400/1200/9440 (2 pieces)	250.00



WR-S4424

WR-S4424/S4416/S4412 24/16/12-Input Mixers

- Professional 4-bus mixers designed for permanent and portable sound systems ▪ High quality 100mm faders ▪ Balanced XLR per channel, plus 8 input TRS per channel ▪ 48V phantom power on each channel ▪ 3-band equalization with sweepable mid-range on each input ▪ Direct access to the left/right mixing buses from each input channel ▪ 4 aux sends plus direct out per channel ▪ 12-channel console has 15 discrete aux sends ▪ 16-channel console has 19 discrete aux sends ▪ 24-channel console has 27 discrete aux sends
- Each input channel includes LED peak/signal present indicators
- Balanced output on all 4 groups and left and right masters ▪ PFL (Prefader Listen) system per channel

WR-S4424S	24 inputs (20 mono, plus 4 stereo inputs) . . .	\$3495.00
WR-S4424A	24 inputs	3195.00
WR-S4416S	16 inputs (12 mono, plus 4 stereo inputs) . . .	2695.00
WR-S4416A	16 inputs	2395.00
WR-S4412S	12 inputs (8 mono, plus 4 stereo inputs) . . .	2295.00
WR-S4412A	12 inputs	1995.00

WR-C4500 Series Professional Audio Mixers

- Outputs: 4 + additional L/R ▪ Matrix: 4 x 6 ▪ Auxiliary sends: 4 + additional channel direct out ▪ Main metering: VU response 12-segment 3-color LED bar-graph meter ▪ Wide input range with over 20dB headroom ▪ Separate grounding system for minimal crosstalk ▪ Unique auxiliary send multiplier
- | | | |
|----------|--|-----------|
| WR-C4520 | 20 x 4 x 2 x 1 (16 mono, plus 4 stereo inputs); 6 3/4"H x 39 3/8"W x 23"D. | \$3995.00 |
| WR-C4512 | 12 x 4 x 2 x 1 (8 mono, plus 4 stereo inputs); 6 3/4"H x 30 3/8"W x 23"D. | 3195.00 |



WR-M10A Multiple Source Stereo Mixer

- 4 balanced mono input circuits ▪ 6 stereo input circuits ▪ 2 stereo phono input circuits ▪ Mic priority override ▪ Mono master control
 - Micro switches for remote-machine start per input fader ▪ I/O connector panel can be moved to the rear, top or bottom surface
 - Rack-mount 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 \$1050.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





WS-A500 Compact, High Powered Speaker

- 2-way bass reflex speaker using a 30cm woofer
- 200W continuous power handling
- Sensitivity rated at 99dB SPL (1W/1m)
- Frequency response: 70Hz-20kHz (within 20dB)
- 8 ohm input impedance
- Facility speaker that provides clear sound both up close and far away
- 12" ported, direct radiating cone diaphragm transducer, a 44mm compression transducer on a twin-Bessel wave guide and a precision frequency dividing network
- Adopts a larger driver unit in the horn
- Designed for high power and high reliability
- Molded resin based enclosure

WS-A500K Gray \$995.00
 WS-A500W White 995.00



WS-A200 Compact, High Powered Speaker System

- Sensitivity rated at 98dB
- Frequency response 70Hz to 20kHz
- 12" low frequency cone transducer
- Compression driver with twin-Bessel Horn
- High impact molded resin enclosure with integral mounting hardware

WS-A200K Black \$775.00
 WS-A200W White 775.00



WS-A35 Compact, Monitor Speaker System

- 70W continuous power handling
- 2-way bass reflex
- Frequency response 80Hz to 20kHz
- 90° spherical constant directivity horn
- 6" cone woofer
- Built-in mounting points
- Magnetic shielding permits placement next to video monitor
- HF waveguide

WS-A35 \$380.00



WS-A80 Compact, High Powered Speaker System

- 80W continuous power handling
- Sensitivity rated at 92dB SPL (1W/1m)
- Frequency response 65Hz to 18kHz
- 8" low frequency driver
- Thermal protection circuit
- Molded resin enclosure with built-in handle

WS-A80K Black \$360.00
 WS-A80W White 360.00

WS-A10 Compact, Monitor Speaker System

- 80W continuous power handling
- Sensitivity rated at 88dB SPL (1W/1m)
- Magnetic shielding allows placement next to video monitor

WS-A10K Black (sold in pairs only) ea./\$175.00
 WS-A10W White (sold in pairs only) ea./175.00

WS-A550 Compact, High Powered Subwoofer

- Modular low frequency speaker system
- Molded resin based enclosure
- Requires WS-SP2A subwoofer processor
- Houses a 12", ported, direct radiating transducer designed for high thermal power capacity and large volume displacement
- Frequency response: 30-125Hz
- 8 ohm nominal impedance
- 400W power capacity

WS-A550K Gray \$700.00
 WS-A550W White 700.00

WS-A240 Compact, High Powered Subwoofer

- 400W (EIA RS-426A)
- Requires WS-SP2A subwoofer processor
- Sensitivity 91dB
- Frequency response from 30Hz to 125Hz
- High impact molded resin enclosure
- Recessed handle
- Interlocking stacking ribs

WS-A240K Black \$650.00
 WS-A240W White 650.00
 WS-SP2A Subwoofer processor 360.00

Accessories

WS-AQ1W Speaker wall mount for WS-A35/A200/A240/A80/A500/A550 pr./\$170.00
 WS-AQ2C Speaker ceiling mount for WS-A35/A200/A240/A80/A500/A550 pr./150.00
 WS-AQ124 Lean-back stand for WS-A200/A80 6 pk./120.00
 WS-AQ4W Wall mount bracket for WS-A35 pr./115.00
 WS-AQ5C Speaker ceiling mount for WS-A35 pr./115.00
 W2-SA14 Flexible speaker mount for WS-A10 pr./100.00
 WS-AQ2W Speaker wall mount for WS-A10 pr./70.00
 W2-SA15 Mic stand speaker mount for WS-A10 55.00
 WS-AQ3C Speaker ceiling mount for WS-A10 pr./40.00
 ZE-02801 Speaker, forged eyebolts for WS-A80/A200/A240/A500/A550 pr./16.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

UHF WIRELESS MICROPHONE SYSTEMS



Panasonic
Broadcast & Digital Systems Company

WX-RP700/RP410 UHF BROADCAST ENG./EFP WIRELESS MICROPHONE SYSTEM

A compact and lightweight wireless microphone system offering outstanding mobility and impeccable sound quality. The WX-RP410/RP700 Wireless Microphone System is the culmination of RAMSA's advanced LSI technology and years of experience providing professional application wireless microphones to the broadcast industry. You can reap the benefits of this know-how via the remarkably clear and stable audio reception this system provides.

With the WX-RP410/RP700 Wireless Microphone System, you can take full advantage of the freedom and superior mobility of wireless audio for greater flexibility in news gathering, sports or any other type of production—even at the most challenging production sites.

WX-RP700 Wireless Receiver

- Phase lock loop synthesizer system for stable carrier frequencies
- Compander system enables wide dynamic range of 100dB
- 49 channels selectable with group/channel select
- Low voltage battery alert indicator
- Reception level meter
- Antenna selection indicator
- Can be continuously operated for up to 6 hours with alkaline type batteries \$2895.00



WX-RP410 Wireless Transmitter

- Phase lock loop synthesizer system for stable carrier frequencies
- Compander system enables wide dynamic range of 100dB
- 49 channels selectable with group/channel select
- Ultrasmall omnidirectional electret condenser microphone (5mm in diameter)
- Highly resistant to surface friction and handling noise
- Movable clip on the accessory case rotates in 90° increments \$1895.00



PROFESSIONAL SERIES WIRELESS SYSTEM

WX-RP158 Handheld Wireless Microphone

- Cardioid dynamic microphone
- Incorporates Shure® SM58 microphone unit which is highly evaluated by professionals
- Phase lock loop synthesized system for stable carrier frequencies
- Compander system enables wide dynamic range of 100dB
- Highly resistant to crashing shock
- 49 channels selectable with group/channel select
- Selectable input level (PAD): 0dB/-6dB/-12dB
- 8-hour battery life using a single "AA" type dry battery
- Battery alarm LED indicates low battery power
- Unique UHF handheld transmitter with internal antenna \$1950.00



WX-RP110 Handheld Wireless Microphone

- Cardioid dynamic microphone
- Phase lock loop synthesized system for stable carrier frequencies
- Compander system enables wide dynamic range of 100dB
- Highly resistant to crashing shock
- 49 channels selectable with group/channel select
- Selectable input level (PAD): 0dB/-6dB/-12dB
- RAMSA's highly evaluated mic cartridge performance provides clear sound in high band and extended response in low band
- 8-hour

battery life using a single "AA" type dry battery

- Battery alarm LED indicates low power battery
- Unique UHF handheld transmitter with internal antenna \$1695.00

WX-RP810 True Diversity Single Receiver

- A less-interference, very stable, space-diversity type wireless microphone receiver
- It has 1 UHF receiver unit
- By adding an optional Wireless Tuner Unit, WX-RP800, it is possible to receive different frequencies at the same time
- Electronically balanced outputs with level switch (-20dB/-60dB)
- Squelch circuitry automatically triggers audio mute when noise increases due to sudden drop of field intensity
- A/B antenna receiving level meters: signal of the antenna in superior receiving level is displayed in green, while signal of the other one is in red
- Headphone monitor output
- Sound indicator for microphone input level \$2495.00



WX-RP820 UHF Band True Diversity Receiver

Same as above except:

- It has 2 UHF receiver units
- Possible to receive 2 different frequencies at the same time \$3495.00

WX-RP300 Lavalier Belt-Pack Type Transmitter

- Optimum performance for speech
- Phase lock loop synthesized for stable carrier frequencies
- 49 channels selectable with group/channel control
- LED indicates low battery power
- Selectable input level: 0dB/-6dB/-12dB
- Highly resistant to handling noise and surface friction
- Optimum characteristics for wearing the microphone inside clothes
- Resistant to moisture
- Omnidirectional characteristics
- Compact belt-pack type with shielded antenna \$1895.00



WX-RP900 Distributor

- 2 antenna inputs per channel A/B
- Up to 3 wireless receivers can be connected
- Phantom power LED lights in green normally, but turns red when problems occur \$920.00

WX-RP921 UHF Band Powered Antenna

- Compensates for coaxial cable loss from the antennas to the UHF diversity receivers WX-RP810/RP820
- Prevents S/N ratio deterioration caused by dead points and voice interruption by squelch operation
- Phantom power supply system is employed to supply DC power from the WX-RP810/RP820 or UHF antenna distributor WX-RP900 to the WX-RP921
- Coaxial cables are needed separately for antenna connection
- Includes wall mount bracket ea./\$420.00

WX-RP800 Wireless Tuner Unit (Optional)

Receiver to upgrade from WX-RP810 to WX-RP820 \$1000.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

See Our Ads on Pages 16-19

REFERENCE



WV-BP510 Series 1/2" CCD Digital Processing Black-and-White Cameras

- 771(H) x 492(V) pixels provides 570 lines horizontal resolution
 - High sensitivity minimum scene illumination: 0.06 lux at f/1.2
 - 46dB S/N ratio (AGC off) ▪ Digital features: digital adaptive BLC with masking, on-screen titling ▪ Built-in digital motion detector
 - Genlock capability for system expandability, and a variety of synchronization modes (internal, line-lock, VD2 or external) ▪ Up to 32X manual/auto electronic sensitivity up ▪ ELC/ALC ▪ Digital signal processing: 2H enhancer and digital aperture correction ▪ C/CS lens mount selectable ▪ User-friendly on-screen setup menu ▪ Camera ID display
- | | | | |
|----------|--------------------------------------|-------|-----------|
| WV-BP510 | 120VAC | ..... | \$1295.00 |
| WV-BP514 | 24VAC | ..... | 1295.00 |
| WV-RM70 | Control unit with RS-485 interfacing | ..... | 1160.00 |



WV-BP120 Series 1/2" CCD Black-and-White Cameras

- 512(H) x 492(V) pixels provides 380 lines of horizontal resolution
 - High sensitivity minimum scene illumination: 0.1 lux at f/1.2
 - 46dB S/N ratio ▪ LL ▪ ELC and continuous variable shutter speeds between 1/60 and 1/60,000 sec. ▪ ALC (Automatic Light Control) function is available indoors/outdoors ▪ VD2 lock over a single coaxial cable when used with the System 500 WJ-SX550A ▪ Uses C/CS-mount lenses with DC or video auto iris lenses
- | | | | |
|-----------|--|-------|----------|
| WV-BP120 | 120VAC | ..... | \$235.00 |
| WV-BP122* | 12VDC or single coaxial cable for video and power. | ..... | 235.00 |
| WV-BP124 | 24VAC | ..... | 235.00 |



WV-BP310 Series 1/2" CCD Black-and-White Cameras

- 771(H) x 492(V) pixels provides 570 lines horizontal resolution
 - High sensitivity minimum scene illumination: 0.06 lux at f/1.2
 - ELC ▪ Internal sync/line-lock with phase adjustment; external lock
 - VD2 lock capable ▪ AGC circuit ▪ Uses C/CS-mount lenses with DC or video auto iris lenses
- | | | | |
|-----------|--|-------|----------|
| WV-BP310 | 120VAC | ..... | \$350.00 |
| WV-BP312* | 12VDC or single coaxial cable for video and power. | ..... | 350.00 |
| WV-BP314 | 24VAC | ..... | 350.00 |



WV-BP110 Series 1/2" CCD Black-and-White Cameras

- 512(H) x 492(V) pixels provides a high 380 lines horizontal resolution
 - High sensitivity minimum scene illumination: 0.1 lux at f/1.2
 - 46dB S/N ratio ▪ LL ▪ ELC ▪ CS-mount ▪ AGC ▪ Without Vertical Drive 2 (VD2) ▪ Manual CS-mount lenses only
- | | | | |
|----------|--------|-------|----------|
| WV-BP110 | 120VAC | ..... | \$210.00 |
| WV-BP114 | 24VAC | ..... | 210.00 |

WV-MG14 1/2" CCD Black-and-White Camera—PALADIN Series

- 512(H) x 492(V) pixels provides a high 380 lines horizontal resolution
 - Minimum scene illumination: 0.2 lux at f/1.2
 - Advanced electronic light control (ELC) enables the use of inexpensive fixed iris lenses such as WV-LF4R5C3A or WV-LF9C3A
 - Line-lock (LL) capability for roll-free picture during systems operation switching
 - Automatic Gain Control (AGC) circuit provides clear images in low light conditions
 - Wide ambient operating temperature range of -10°C to +50°C ▪ CS-mount.
- | | | | |
|--|--|-------|----------|
| | | | \$175.00 |
|--|--|-------|----------|

*12VDC models do not feature line-lock.

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



CCD CAMERAS



Panasonic
Closed Circuit Video Equipment



WV-CP610 Series 1/2" CCD DSP Color Cameras

- 480 lines horizontal resolution
- Minimum illumination: 2 lux at f/1.2
- Digital 2H enhancer and digital aperture correction
- Excellent color reproduction with internal RGB processing
- Built-in motion detector
- Digital wide dynamic range
- Up to 32X manual/auto electronic sensitivity up
- Advanced auto tracing white balance (ATW)
- Adaptive back light compensation with masking (BLC)
- ELC/ALC
- On-screen setup menu
- Digital features: on-screen titling, masking, digital noise reduction
- Variety of sync modes (internal, line-lock, VD2, external)
- Adjustable shutter speed

WV-CP610	120VAC	.....	\$1750.00
WV-CP612*	12VDC	.....	1750.00
WV-CP614	24VAC	.....	1750.00
WV-RM70	Control unit with RS-485 interfacing	.....	1160.00

WV-CP410 Series 1/2" CCD DSP Color Cameras

- 480 lines horizontal resolution
- 768(H) x 494(V) pixels
- Each pixel includes a microlens
- Minimum illumination: 2 lux at f/1.2
- 0.9 lux at f/0.75 when used with aspherical high-speed lens
- Automatic Gain Control (AGC)
- LL capability with phase adjustment (WV-CP410/414 only)
- Advanced digital back light compensation (BLC)
- VD lock over a single coaxial cable when used with optional WJ-MP404 data multiplex unit or Matrix System 500
- Advanced auto tracing white balance (ATW)
- ELC
- ALC C/CS-mount DC/Video

WV-CP410	120VAC	.....	\$820.00
WV-CP412*	12VDC or single coaxial cable for video and power	.....	820.00
WV-CP414	24VAC	.....	820.00



WV-CL350 Series 1/2" CCD DSP Color Cameras

- 430 lines horizontal resolution
- 340,000 pixels
- Each pixel includes a microlens
- Minimum illumination: 3 lux at f/1.4
- Horizontal noiseless aperture correction and vertical 2H enhancer for crisp picture
- Knee circuitry and highlight aperture for wide dynamic range
- ALC/ELC
- Adjustable shutter speed between 1/60 and 1/10,000 sec.
- C/CS-lens mount
- Auto light compensation (factory preset)/manual back light field compensation set up (divides picture into a grid of 25 zones)
- Line-lock (LL) (AC models only)
- Vertical Drive (VD2) lock over a single coaxial cable when used with optional WJ-MP404 data multiplex unit
- Character generator with ID positioning (16 characters)
- On-screen menu for setup
- Manual back light field compensation setup (divides picture into a grid of 25 zones)
- 8-speed electronic shutter (user-selectable)
- Color genlock, line-lock with 360° adjustable vertical phase

WV-CL350	120VAC	.....	\$1325.00
WV-CL352*	12VDC	.....	1325.00
WV-CL354	24VAC	.....	1325.00

WV-CP220 Series 1/2" CCD Color Cameras

- 330 lines horizontal resolution
- 512(H) x 492(V) pixels
- Minimum illumination: 1.1 lux at f/1.2
- 0.4 lux at f/0.75 when used with aspherical high-speed lens
- Advanced Electronic Light Control (ELC) allowing the use of inexpensive fixed iris lenses for indoor use
- Features an advanced 1/2" Interline Transfer CCD (250,000 pixels) with a microlens on each pixel
- S/N ratio of 46dB
- Acceptance of CS-mount lenses only
- Line-lock (LL) capability for roll-free picture during systems operation switching
- VD2 (vertical drive) lock over a single coaxial cable when used with the optional Matrix System 500
- Uses DC auto iris lenses only

WV-CP220	120VAC	.....	\$550.00
WV-CP222*	12VDC	.....	550.00
WV-CP224	24VAC	.....	550.00

* All 12VDC models do not feature line-lock.

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





**WV-CS404/CST404 Color
Unitized Surveillance
Devices†**

Common Features

- Unitized color video surveillance device that combines a high performance color CCD camera with a 10X zoom lens, receiver and dome housing in compact, 1-piece system
- Digital signal processing
- 480 lines horizontal resolution
- 48dB S/N
- Pan/tilt mechanism provides high-speed 360° endless pan and 90° tilt angle movement
- Digital back light compensation
- Camera ID
- Single cable connection



Optional WV-CU151 System Controller provides 1:1 camera control and camera menu access

- 768(H) x 492(V) pixels
- WV-CS404** Includes common features, plus:
 - Advanced 1/8" CCD
 - 10X zoom lens with focal length of 5-50mm
 - Minimum aperture: f/1.2 at the wide-angle setting to f/1.9 at the telephoto lens position
 - Minimum scene illumination: 3 lux at f/1.2 **\$3270.00**

- WV-CST404** Includes common features, plus:
 - Advanced 1/8" CCD
 - 6.5-65mm zoom lens with 3.3°-32.1° horizontal field of view for extended range applications
 - Minimum aperture: f/1.7 at the wide-angle setting to f/2.5 at the telephoto lens position
 - Minimum scene illumination: 6 lux at f/1.7 **\$3750.00**

**WV-CS604A/CST604 Color Unitized
Surveillance Devices With Presets†**

Includes the same features as WV-CS404/CST404, plus:

- 64 presettable positioning
- 240° per second panning speed in preset mode
- 3° ~ 120° per second variable panning speed in manual/auto pan mode
- Built-in digital motion detector with 48 segment mask settings
- Digital wide dynamic range to effectively monitor both bright and dark areas of a scene
- Digital noise reduction to assure high quality images
- Scene file memory feature can store camera settings and positioning for 10 separate scenes
- Scene files, presets and camera menus are accessible through WV-CU151 or Matrix System 500
- Any scene file is assignable to a preset
- 2-mode auto focus includes: automatic when the controller joystick is in the neutral position and manual with 1-touch activation
- Adjustable pan speed 3° ~ 24° per second

- WV-CS604A** Includes all of the above features, plus:
 - Advanced 1/8" CCD
 - 10X zoom lens with a focal length of 5-50mm
 - Minimum aperture: f/1.2 at the wide-angle setting to f/1.9 at the telephoto lens position
 - Minimum scene illumination: 3 lux at f/1.2 **\$4200.00**

- WV-CST604** Includes all of the above features, plus:
 - Advanced 1/8" CCD
 - 6.5-65mm zoom lens with 3.3°-32.1° horizontal field of view for extended applications
 - Minimum aperture: f/1.7 at the wide-angle setting to f/2.5 at the telephoto lens position
 - Minimum scene illumination: 6 lux at f/1.7 **\$4830.00**

**WV-BS304/BST304 Black-and-White
Unitized Surveillance Devices†**

Common Features

- Digital signal processing (DSP) black-and-white dome camera
- 360° endless panning
- 570 lines horizontal resolution
- 46dB S/N ratio
- Digital back light compensation
- Electronic shutter: off, 1/60, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/8000
- Camera ID
- Single cable connection

- Optional WV-CU151 System Controller provides 1:1 camera control and camera menu access
- 24VAC, 60Hz power source
- Adjustable pan speed 3° ~ 24° per second

- WV-BS304** Includes common features, plus:
 - Advanced 1/8" CCD, DSP, pan/tilt mechanism, 5-50mm 10X zoom lens and receiver in a compact enclosure
 - 771(H) x 492(V) pixels
 - Minimum illumination: 0.08 lux at f/1.2
 - Minimum aperture: f/1.2 at the wide-angle setting to f/1.9 at the telephoto lens position **\$2800.00**

- WV-BST304** Includes common features, plus:
 - Advanced 1/8" CCD, DSP, pan/tilt mechanism, 10X zoom lens and receiver in a compact enclosure
 - 6.5-65mm zoom lens with 3.3°-32.1° horizontal field of view for extended range applications
 - Minimum illumination: 0.2 lux at f/1.7
 - Minimum aperture: f/1.7 at the wide-angle setting to f/2.5 at the telephoto lens position **\$3220.00**

**WV-BS504/BST504 Black-and-White Unitized
Surveillance Devices With Presets†**

Includes same features as WV-BS304/BST304, plus:

- 64 presettable positions
- 240° per second panning speed in preset mode
- 3° ~ 120° per second variable panning speed in manual and auto pan mode
- Built-in digital motion detector with 48 segment mask settings
- Digital wide dynamic range to effectively monitor both bright and dark areas of a scene
- Digital noise reduction to assure high quality images
- Scene file memory feature can store camera settings and positioning for 10 separate scenes
- Scene files, presets and camera menus are accessible through WV-CU151 or Matrix System 500



Any scene file is assignable to a preset

- 2-mode auto focus includes: automatic when the controller joystick is in the neutral position and manual with 1-touch activation
- 500 lines horizontal resolution
- 24VAC, 60Hz power source
- 768(H) x 492(V) pixels

- WV-BS504** Includes all above features, plus:
 - Advanced 1/8" CCD
 - Minimum illumination: 0.1 lux at f/1.2
 - 10X zoom lens with focal length of 5-50mm
 - Minimum aperture: f/1.2 at wide-angle setting to f/1.9 at telephoto lens position **\$4050.00**

- WV-BST504** Includes all above features, plus:
 - Advanced 1/8" CCD
 - Minimum illumination: 0.2 lux at f/1.7
 - 10X zoom lens w/focal length of 6.5-65mm
 - Minimum aperture: f/1.7 at wide-angle setting to f/2.5 at telephoto lens position **\$4650.00**

Accessory

- WV-CS15** Smoke dome for WV-CS404/604/BS304 Unitized Surveillance Devices. **\$70.00**

WV-CU151 System Controller

1:1 desktop controller that operates lens, pan/tilt, wiper, defroster, and an auxiliary device such as a heater and the alarm functions

- WV-CU151 controller can be used for WV-CS404/CST404/CS604/CS604A/CST604/BS304/BST304/BS504/BST504 and WV-RC100/150
- Controls the WV-CS404/604/BS304/504 Series menu and preset memories
- Offers 2 memory presets and can be expanded to control up to 8 unitized camera devices when used with the WJ-SW208 loopthrough switcher. **\$1350.00**

† Refer to product specification data sheet for a complete listing of features and specifications.

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

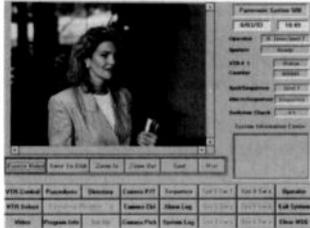




Proteus 100/200/300 and Matrix System 500 CCTV Control Systems

PFW500A Proteus Software (System 500)

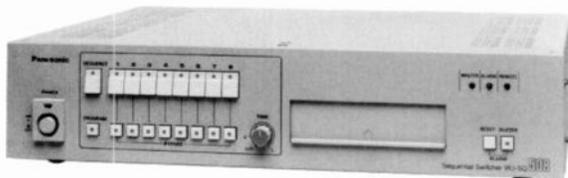
- Windows 95™ compatible
- Operator can view over 500 cameras and control camera locations with pan/tilt devices and zoom lenses from a PC
- PFW500A can control systems with the WJ-SX550A and WJ-AD550 card cages and System 300
- Controls up to 32 VTRs with optional VTR RS-232 interface
- Extends operation parameters of System 500
- Video display on VGA CRT
- Frame-grabber included
- Full floor plan graphic map capability
- Includes the following: system status indicator; auto focus support for Unitized Surveillance Devices; alarm devices may be selectively disabled; user selectable icons; quick setup feature for cameras; extended device icon library; icon shows real time device status; direct camera access using numeric keypad on PC keyboard
- Provides extended functions of System 300 and 500 . . . \$ 4,500.00



- PFW500NTSR** PFW500A software for network, server software 14,500.00
- PFW500NTCL** PFW500A software for network, client software 4,500.00
- PFW500SLA** Proteus Site License Software Package for additional PC control (up to 5 PCs per site). Includes: software, videograbber board, RS-485 converter and manual 2,700.00
- PFW500UGA** Proteus upgrade from PFW500. Includes: software, videograbber board and manual 2,700.00

PFW100 Proteus Hardware Emulation Software (System 300 and 500)

- 2 systems or devices can be controlled by Pentium-based computers equipped with Windows 95
- Direct control of AG-6040/6730/6740 time-lapse recorders
- WV-CU151 controller emulation permits direct menu access and control of unitized cameras (WV-CS604/CS404/BS304/BS504 Series)
- WV-CU550A controller emulation supports up to 2 Matrix System 500 units TBA*

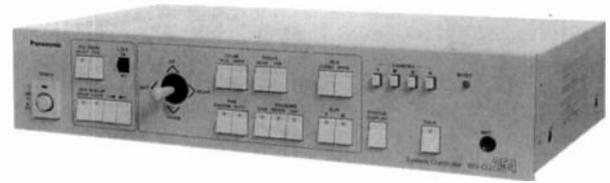


WJ-SQ508 8-Channel Programmable Sequential Switcher (System 300 Only)

- Programmable sequence
- Auto mode bypass
- Built-in alphanumeric character generator
- Loophrough inputs
- Quick-Scan function for rapid camera switching
- Remote control capabilities (with optional WV-CU300 system controller)
- Alarm input
- Password protected programming
- Expandable for master/slave configurations. \$1,610.00

WJ-PC10 Computer Interface (System 300 Only)

- Converts Proteus System 300 coaxial data bus to standard RS-232C data format and back utilizing 2 units
- Expands control distance from current 3000' to virtually unlimited distance, using standard transmission equipment like modems, microwave, fiber laser, etc.
- Allows integration of Proteus System 300 into computer based systems
- Wide variety of RS-232C setup modes and speeds of up to 38,400 bps
- Multiple units can be used on a common data bus
- 12VDC operation \$1,445.00



WV-CU254 System Controller (System 200)

- Remote controller for 4 camera locations (4 camera inputs)
- Up to 3 remote control sites possible via loopholethrough connection
- Controls pan/tilt and lens operation as well as bidirectional audio using optional audio board (WV-PB11)
- Mic and audio output for bidirectional monitoring
- Status of all components at the camera site \$1,430.00



WV-CU300 System Controller (System 300)

- Remote control of up to 8 WJ-SQ508 sequential switchers
- Remote control of up to 64 cameras using optional receivers and accessories
- Camera number display
- Data transfer via coaxial cable
- Up to 3 control sites
- Rack-mountable \$1,285.00

WV-CU101 System Controller (System 100)

- Enables remote control of pan and tilt, zoom lens and receiver functions
- Compatible with the WV-RC100/RC150 receivers
- Multiple camera locations can be controlled using a passive video switcher
- Features controls for pan-and-tilt functions, auto and random pan, zoom in and out, focus near and far, iris control and control of Aux 1 and Aux 2
- Features cable compensation of up to 3000' on RG-59U (Belden 9259 or equivalent)
- All control signals multiplexed onto video signal via a single RG-59U coaxial cable \$860.00

WV-RM70 Remote Control Unit

- Provides RS-485 remote set up and control of unitized cameras using the System 500 with an optional WV-PB5548 RS-485 card
- Provides direct remote control of the digital setup functions on the WV-BP510 and WV-CP610 series cameras
- May also be used with the WJ-SW208 switcher to control up to 8 cameras if digital motion detection is not used \$1,160.00
- *To Be Announced

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



**TIME-LAPSE RECORDER/
PLAYERS/DIGITAL
RECORDER/QUAD**



AG-6740 S-VHS/VHS High Density Time-Lapse Recorder/Player

- S-VHS/VHS recording/playback
- High reliability IQ (Intelligent Quest) mechanism
- Offers time-lapse recording using a 6-hour head in addition to conventional time-lapse recording with a 2-hour head
- 6H head records up to 3X as much information as 2H head
- Recording time (with T-120)—2H mode: 2/L12/L18/L24/48/72/96/120/180/240/480 hours, 1-shot; 6H mode: 6/24/48/72/96/120/180/240/480/960 hours, 1-shot
- Audio recording: 2/6/L12/L18/L24
- 12 fields/second recording in 24-hour mode (up to 3X normal rate of recording)
- Safe recording features: blue screen indicator in non-recording situation, repeat time indicator, tape remain warning
- Warning signal output
- Record checkout
- Built-in TDG
- Remote control
- Alarm/1-shot/series record
- Record check
- On-screen display
- Alarm recall/search
- Field record/playback
- Security lock
- Error buzzer
- Error message
- 400 lines horizontal resolution (S-VHS mode)
- 45dB S/N ratio
- Optional RS-232C interface (AG-IA671)
- 120VAC
- 30W power consumption
- 1-month timer backup
- Series recording \$2325.00



AG-6040 VHS Time-Lapse Recorder/Player

- High reliability IQ (Intelligent Quest) mechanism
- Field record/playback
- 12/18/24 hours (linear slow recording modes) with sound; 24/48/72/84/120/180/240/480 hours and 1-shot mode (time-lapse mode)
- External trigger signal shifts AG-6040 from any of power off, stop and timer recording standby modes into 2H/L12H/L18H/L24H/24H recording modes
- Daily/weekly timer recording
- Automatic repeat recording
- Alarm/alar search recording
- Optional RS-232C interface (AG-IA671)
- Warning signal output
- Power failure recovery recording
- Record review
- On-screen display
- Built-in time/date generator and non-volatile memory
- Optional remote control available (AG-A67)
- 120VAC ±10%, 50/60Hz
- 25W power consumption
- EIA standard, NTSC color signal, 525 lines, 60 fields
- 43dB S/N ratio \$1600.00

AG-6124 VHS Time-Lapse Recorder/Player

- 120VAC powered
- Compact design and easy operation
- Record in 2/6/12/24 hour modes with audio
- Event recording extends operation up to 3 days (3d1, 3d2)
- Emergency recording
- Alarm recording/search/recall
- Summer time (Daylight Savings Time) adjustment
- Auto alarm reset in programmable alarm mode
- Daily/weekly/external timer recording



- Auto repeat recording/auto rewind
- 1-week timer back-up
- Built-in time/date generator
- 300 lines horizontal resolution, B/W
- Noiseless still
- Forward/reverse field advance
- 4-head video system
- Dual mode record lock function
- Easy to read LCD with back light
- Hour meter
- Camera switching output, auto off output and tape end output
- AG-A11 optional wired remote control
- HR (High Response) mechanism uses full loading tape transport system for quicker response in event recording mode \$1050.00

AG-1070DC VHS Time-Lapse Recorder/Player, 24-Hour

Same as AG-6124, except: 12VDC powered Requires 12VDC, 80W power supply \$1250.00

AG-RT600 Real Motion Time-Lapse Recorder/Player

- 120VAC powered
- Compact design and easy operation
- Record at 30fps (8 hours), 20fps (24 hours) and 12fps (40 hours)
- Record in 8/24/40 hour modes with audio (NV-T160ZST tape)
- Emergency recording
- Alarm recording/search/recall
- Summer time (Daylight Savings Time) adjustment
- Auto alarm reset in programmable alarm mode
- Daily/weekly/external timer recording
- Auto repeat recording/auto rewind
- 1-week timer back-up
- Tape end blue
- Built-in time/date generator
- 300 lines horizontal resolution B/W
- Noiseless still
- Forward/reverse field advance
- 4-head video system
- Dual mode record lock function
- Easy to read LCD with back light
- Hour meter
- Camera switching output, warning signal output and tape end output
- AG-A11 optional wired remote control
- Repeat record count indicator
- HR (High Response) mechanism uses full loading tape transport system for quicker response in event recording mode \$975.00



WJ-PD1 Digital AV Disc Recorder

- Uses removable, rewritable optical storage technology
- 3 recording modes: multishot, single shot and time-lapse recording
- These 3 recording modes permit pre-alarm recording in the multishot mode, event alarm recording in the single shot mode and extended recording in the time-lapse mode
- 3-D scan conversion method uses a digital image stabilizer
- 40 pictures maximum multishot recording capacity
- Easy picture storage with fast playback
- Records sound at the same time as a high quality picture
- 120VAC powered
- 35W power consumption TBA*



WJ-420 Color Quad System

- Up to 4 surveillance cameras can be connected
- All 4 pictures can be simultaneously displayed on a single monitor divided into 4 blocks
- Built-in field memory allows connection of any 2:1 interface type camera, without requiring genlock capability on the camera
- 8-bit/14.3MHz sampling
- Built-in sequential switch provides 2 types of sequential switching
- On-screen programming
- Border boundary in the quad mode
- Built-in character generator displays up to 8 characters on each of the 4 blocks
- Alarm function . . . \$1775.00
- *To Be Announced

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



MONITORS



Panasonic
Closed Circuit Video Equipment



WV-BM1900 19" Diagonal B/W Deluxe Desktop Video Monitor

- 850 lines horizontal resolution
- DC restoration, switchable
- Video in/out
- Short H. AFC switch
- Internal/external sync switchable
- Video termination
- Switchable scanning: 5% overscanning, 5% underscanning
- Front panel controls
- Ivory finish

WV-BM1900 \$1025.00



WV-BM900 9" Diagonal B/W Desktop Video Monitor

- 750 lines horizontal resolution
- AC/DC power
- 120VAC/12VDC power
- DC restoration
- Video in/out (no external sync)
- Fixed scanning
- Front panel controls
- No audio
- Rack-mountable

WV-BM900 \$550.00
WV-Q28 Rack-mount brackets 180.00



WV-BM1700 17" Diagonal B/W Deluxe Desktop Video Monitor

- 850 lines horizontal resolution
- DC restoration, switchable
- Video in/out
- Short H. AFC switch
- Video termination
- Cable loss compensation switch
- External sync
- Switchable scanning: 5% overscanning, 5% underscanning
- Front panel controls
- Rack-mountable
- Ivory finish

WV-BM1700 \$875.00
WV-Q22A Rack-mount angle bracket 55.00



WV-BM500 5" Diagonal B/W Desktop Video Monitor

- 700 lines horizontal resolution
- DC restoration, switchable
- Video in
- External sync
- Front panel controls

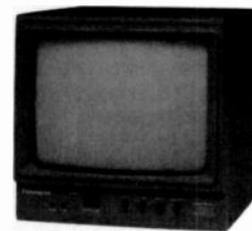
WV-BM500 \$ 500.00
WV-BM503 Triple 5" monitors designed for 19" rack-mount 1500.00



WV-BM1400 14" Diagonal B/W Desktop Video Monitor

- 1000 lines horizontal resolution
- DC restoration, switchable
- Video in/out
- Short H. AFC switch
- Cable loss compensation switch
- External sync
- Switchable scanning: 5% overscanning, 5% underscanning
- Front panel controls
- Ivory finish
- Rack-mountable

WV-BM1400 \$700.00
WV-Q21W Rack-mount brackets 55.00



TR-990C 9" Diagonal B/W Video Monitor

- 700 lines horizontal resolution
- Jet black 90° deflection unipotential picture tube
- BNC in/out connectors
- Automatic 75 ohm termination
- Front panel controls
- Rack-mountable
- No audio

TR-990C \$180.00
TY-K930 EIA 19" rack-mount panel 100.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

REFERENCE



**CameraMan®
3-CCD Camera
Systems**

▪ 3-CCD Camera System is a broadcast-quality camera system that offers maximum performance and value
▪ These cameras have all the functionality of our 1-CCD Camera Systems, but with added features, higher resolution and more accurate color for those applications which require higher performance
▪ The 3-CCD CameraMan has all the functionality of the 1-CCD version, plus the following:



Camera Design: ▪ High resolution camera with 750 TV lines ▪ 13X and 17X lens options ▪ 3½" IT Power HAD™ CCDs ▪ Minimum illumination of 5 lux at f/1.4 for high quality images in difficult lighting conditions ▪ S/N ratio of 60dB ▪ NTSC/PAL with composite, RGB, analog component or S-Video output for higher quality video

System Features: ▪ 125 location presets ▪ White balance control through manual R/B gain adjust and R/B paint adjust ▪ Auto white balance and auto tracing white balance ▪ Linear matrix ▪ Shading compensation ▪ Master pedestal ▪ Gamma selection ▪ Selectable knee position and detail

- CPT-2017-A3N 3-CCD CameraMan with 17X lens. . . . \$22,995.00
- CPT-2013-A3N 3-CCD CameraMan with 13X lens. . . . 18,995.00
- EXT-2304 3-CCD CameraMan extended warranty. . . 4,530.00
- CCK-2000 3-CCD camera control keypad 695.00

**CameraMan 1-CCD
Camera Systems**

▪ CameraMan 1-CCD cameras fit into every application, from videoconferencing to distance learning
▪ Designed to meet the constantly changing needs of small studios, large corporations, and instructional facilities
▪ With CameraMan's advanced features, you receive superb visual communications every time



Camera Design: ▪ High resolution camera with 460+ TV lines
▪ Power zoom lens with autoFOCUS™ ▪ Faster pan/tilt speeds and a wider movement range than other pan/tilt cameras ▪ NTSC/PAL with composite or S-Video output for higher quality video
▪ WhisperDRIVE Plus™ for quiet operation ▪ Optional wide and telephoto lens adaptors to fit almost any room design

Easy Operation: ▪ Digital video IMAGE™ control guarantees the best video image in all views under a variety of lighting conditions
▪ RS-232 interface ▪ RS-485 communications capability for multiple-camera application

Location Preset Features: ▪ More location presets than any other integrated camera (99) ▪ ±.125° location preset accuracy puts the camera right where you want it—every time
▪ Location presets can store a pan/tilt position, zoom perspective and IMAGE setting
▪ Location presets can be stored and recalled via the wireless Digital RF-900™ Keypad or CameraMan SHOT Director™ options

- CPT-2000-A1N 1-CCD CameraMan. \$4,995.00
- EXT-2104 1-CCD CameraMan extended warranty . . . 750.00
- CCK-2000 1-CCD camera control keypad 695.00

1-CCD and 3-CCD System Upgrade Packages

- CPX-2000-U CameraMan Deluxe System \$5,000.00
- CPC-2000-U Presenter Camera System 3,000.00
- CSC-2000-U Student Camera System 2,000.00
- CPL-2000-U Personal Locator Camera System. 2,000.00

CameraMan System Packages

Presenter Camera System

▪ Unique patented autoTRACK™ technology brings freedom and flexibility to videoconferencing and distance learning by giving presenters the ability to get up from the conference room table or move away from the podium and walk across the room to a flip chart without concern over camera angles
▪ Presenters simply wear the Tracking Ring™ and CameraMan follows and focuses on every move
▪ Its built-in wireless microphone captures audio right at the source

- CPC-2017-A3N 3-CCD Presenter Camera System (17X lens) \$26,995.00
- CPC-2013-A3N 3-CCD Presenter Camera System (13X lens) 22,995.00
- CPC-2000-A1N Presenter Camera System 7,995.00
- EXT-2300 3-CCD CPC extended warranty. 5,340.00
- EXT-2100 1-CCD CPC extended warranty. 1,200.00

Student Camera System™

▪ With the CameraMan Student Camera System, each student can "raise a hand" electronically by simply pressing a MY TURN™ button on a microphone
▪ CameraMan pans, tilts, and zooms in on the student, magnifying their image
▪ 3 location presets can be recalled through "press-to-talk" microphones and up to 99 location presets (125 for 3-CCD) can be recalled through the Camera Control Keypad or RS-232 communication port

- CSC-2017-A3N 3-CCD Student Camera System (17X lens) \$24,995.00
- CSC-2013-A3N 3-CCD Student Camera System (13X lens) 20,995.00
- CSC-2000-A1N Student Camera System 6,995.00
- EXT-2303 3-CCD CSC extended warranty. 4,915.00
- EXT-2103 1-CCD CSC extended warranty. 1,050.00
- LPM-2000 Low profile microphone 340.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





STUDIO PRODUCTS

CameraManSTUDIO™

Studio Automation Systems

▪ Fully integrated studio automation system to give 1 person control over multiple CameraMan cameras, digital video effects, digital audio mixing, VTR control, teleprompter, character generation and Transition Macros™—all from 1 graphical user interface

System Features

▪ Common graphical user interface ▪ Transition macros used to store complex production sequences, then recall them with a click of the mouse ▪ Save and recall complete studio configurations ▪ Real time digital camera control ▪ Adjust all camera parameters including gain, paint, master pedestal, etc. ▪ On-screen HOT Keys to quickly store and recall autoTRACK Views™ and location presets ▪ Virtual joystick pan-and-tilt gives you real time control over each camera's movement ▪ Variable speed controls for zoom, pan, tilt and presets ▪ Store and recall camera shot profiles ▪ 8-bit 4:2:2 processing ▪ SHOT Profiler™ ▪ External machine control ▪ 4 video inputs ▪ 8 audio inputs ▪ System includes: signal processor, control processor, keyboard, mouse and 17" color monitor

CSS-2000-N NTSC CameraManSTUDIO System with 4 video inputs (Y, Y/C, Y/R-Y/B-Y) and 8 audio inputs, 2 YCR control ports **\$89,995.00**

Accessories

EPF-2000 Full signal video expansion processor (adds 4 Y, Y/C, Y/R-Y/B-Y) video inputs) **POR***
EPY-2000 Y/C video expansion processor (adds 4 Y/C inputs) **POR***
EPA-2000 Audio expansion processor (adds 8 inputs) **POR***
CRT-2021 21" computer monitor. **POR***
CKE-2000 Enhanced digital video effects and chromakeying **POR***
EPV-2000 VCR expansion (adds 3 VCR control ports). **POR***
SCG-2000 Studio Character Generator option **POR***



CameraMan SCRIPT Viewer™
Teleprompting Systems

▪ ParkerVision has integrated an interactive teleprompting system into the robotically controlled CameraMan camera systems ▪ This camera teleprompting system lets the talent know when to speak and can follow them around the room ▪ SCRIPT Viewer is fully compatible with all CameraMan Studio Products and easily fits into existing setups ▪ SCRIPT Viewer has a direct-view, flat panel 10" or 12" display that pans and tilts with the camera, allowing the talent to continually see the scrolling copy ▪ Font size, color, scroll speed and camera movement can all be controlled via wireless keypad or

software interface ▪ System includes: processor with scripting software, 15" color monitor, keyboard, mouse, flat panel active-matrix color display (10" or 12"), mounting brackets

SVS-2012 System with 12" flat panel display **\$14,995.00**
SVS-2010 System with 10" flat panel display **11,995.00**
SVD-2012 Additional 12" display **6,995.00**
SVD-2010 Additional 10" display **3,995.00**



CameraMan SHOT Director™
Multicamera CCU and Pan/Tilt Control

▪ 1 fully integrated unit gives you everything you need to operate and adjust up to 16 CameraMan cameras ▪ Allows you to run a fully functional, multicamera studio with less equipment and manpower than ever before ▪ System features: speed-adjustable joystick pan, tilt and zoom for greater control over the camera's movement; auto iris to maintain a constant video level; rotary focus control; compatible with both 1-CCD and 3-CCD CameraMan systems
 ▪ Available in autoTRACKing and non-autoTRACK models

JSC-2100 Tracking version **\$3,995.00**
JSC-2000 Non-tracking version **2,995.00**

Deluxe Camera System

▪ Combines the abilities of the Presenter and Personal Locator Camera Systems with distributed preset control and autoTRACK capabilities

CPX-2017-A3N 3-CCD Deluxe Camera System (17X lens) **\$28,995.00**
CPX-2013-A3N 3-CCD Deluxe Camera System (13X lens) **24,995.00**
CPX-2000-A1N Deluxe Camera System **9,995.00**
EXT-2301 3-CCD CPX extended warranty **5,725.00**
EXT-2101 1-CCD CPX extended warranty **1,500.00**

Personal Locator Camera System

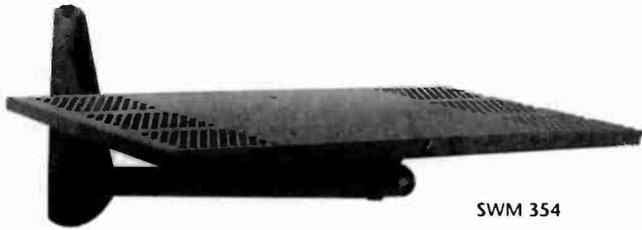
▪ Unique system gives each participant distributed preset control
 ▪ At any time during a meeting, individuals can choose a wide-angle shot of the group or a close-up shot of themselves, or they can share the camera view by pressing a MY TURN™ button ▪ Includes: 3 wireless Personal Locator Keypads™, Chairperson Locator Keypad™

CPL-2017-A3N 3-CCD Personal Locator Camera System (17X lens) **\$24,995.00**
CPL-2013-A3N 3-CCD Personal Locator Camera System (13X lens) **20,995.00**
CPL-2000-A1N Personal Locator Camera System **6,995.00**
EXT-2302 3-CCD CPL extended warranty **4,915.00**
EXT-2102 1-CCD CPL extended warranty **1,050.00**

*Price On Request

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





SWM 354

Slimline® Security Wall Mount

▪ Slim profile and adjustable (0°/5°/10°) tilt and 120° swivel make these mounts ideal for corners and tight spots ▪ All models feature a 2-piece locking security tray with random perforations for easy attachment of monitor ▪ Finish is a scratch-resistant black epoxy

SWM 375	For 25"-27" monitors (24" x 15" tray)	\$102.00
SWM 530	For 19"-20" monitors (22" x 13" tray)	83.00
SWM 354	For 19"-20" monitors (20" x 12" tray)	83.00
SWM 334	For 15"-17" monitors (17" x 12" tray)	71.00
SWM 314	For 13"-16" monitors (13" x 12.5" tray)	67.00
SWM 310	For 9"-13" monitors (10.5" x 11.5" tray)	62.00

Jumbo® Mounts

▪ Designed for professional monitors (13" to 42" diagonal screen size) in public environments ▪ Jumbo mount features adjustable height, width, tilt and complete side-to-side swivel ▪ Top clamps with adhesive pads wrap around the top edges of the set, providing added stability



Jumbo Wall Mounts

JMW 660H	25½"-31½"H x 30"-36"W	\$218.00
JMW 670H	30¾"-36¾"H x 36"-41¼"W	218.00
JMW 630	12¾"-18"H x 13½"-21"W	192.00
JMW 640	15¾"-21"H x 19"-25½"W	192.00
JMW 650	20¾"-26"H x 24½"-30½"W	192.00



Jumbo Ceiling Mounts

JM 670	30¾"-36¾"H x 36"-41¼"W	\$236.00
JM 660	25¾"-31½"H x 30"-36"W	213.00
JM 630	12¾"-18"H x 13½"-21"W	187.00
JM 640	15¾"-21"H x 19"-25½"W	187.00
JM 650	20¾"-26"H x 24½"-30½"W	187.00

Order Jumbo ceiling mounts with 1 of the following ceiling attachment kits:

CMJ 450	For suspended ceiling	\$124.00
CMJ 470	For structural and finished ceilings	32.00

To lower the elevation of a Jumbo ceiling mount, use 1 of the Peerless extension columns:

EXT 110	10' length.	\$120.00
EXT 109	9' length.	108.00
EXT 108	8' length.	96.00
EXT 107	7' length.	84.00
EXT 106	6' length.	72.00
EXT 105	5' length.	60.00
EXT 104	4' length.	48.00
EXT 103	3' length.	38.00
EXT 102	2' length.	27.00
EXT 101	1' length.	21.00

VCR Attachment For Jumbo Mounts

▪ Allows the addition of a VCR to a Jumbo wall or ceiling mount
 ▪ Easy to assemble and can be retrofitted to an existing installation
 ▪ Height and width adjust to fit the VCR:
 3"-4¼"H x 13¼"-17¼"W

VPM 40-j	\$51.00
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Escutcheon Plate

▪ When using the extension column to come through a false ceiling, use this escutcheon plate, or finishing ring, to give a neat, trim appearance to your installation

ACC 640	\$10.00
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ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



ENCLOSURES



EH66



DF8

Extra-Large Environmental Enclosures

- EH66X** Extra-long aluminum, rectangular style enclosure with removable lid and link-lock latch on sides. Maximum camera/lens size 7"H x 7"W x 30"L. Use WM2000 with AH2000 wall mount or PM2000 with AH2000 ceiling/pedestal mount **\$546.00**
- EH66** Extra-large aluminum, rectangular style enclosure with removable lid and link-lock latch on sides. Maximum camera/lens size 7"H x 7"W x 22"L. Use EM22 wall mount or MM22 ceiling/pedestal mount **\$388.00**

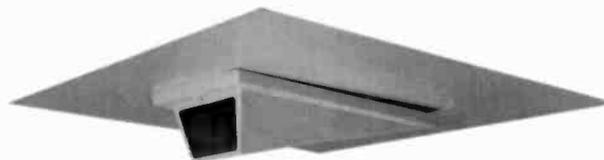
Indoor Discreet Surveillance Dome Enclosures

- DF5** 5.9" drop ceiling with plenum-rated back box and fixed camera mount bracket. Smoked lower dome with opaque liner. Use in hard or suspended ceilings. Not usable with Spectra dome drives **\$164.00**
- DF8** 8.5" drop ceiling with plenum-rated back box and fixed camera mount bracket. Smoked bronze lower dome with white trim ring. Use in hard or suspended ceilings. Maximum camera/lens size 2.1"H x 2.5"W x 7.5"Lt **\$164.00**



EH5723

Indoor Enclosures



Large Environmental Enclosures

- EH5729** All aluminum rectangular style enclosure with front hinged lid and link-lock latch on sides. Maximum camera/lens size 5.5"H x 7.5"W x 28"Lt. Use EM22 wall mount, MM22 ceiling/pedestal mount or EM1109 pipe/pole mount. **\$324.00**
- EH5729-1** Same as EH5729, except supplied with 120VAC, 90W heater and 15W blower. Maximum camera/lens size 6.25"W x 21.50"Lt. **\$498.00**
- EH5729-2** Same as EH5729-1, except supplied with a 24VAC, 50W heater and 10W blower **\$515.00**
- EH5723** All aluminum rectangular style enclosure with front hinged lid and link-lock latch on sides. Maximum camera/lens size 5.5"H x 7.5"W x 22"Lt. EM22 wall mount, MM22 ceiling/pedestal mount or EM1109 pipe/pole mount. **\$282.00**
- EH5723-1** Same as EH5723, except supplied with 120VAC, 90W heater and 15W blower. Maximum camera/lens size 6.25"W x 15.5"Lt. **\$457.00**
- EH5723-2** Same as EH5723-1, except supplied with a 24VAC, 50W heater and 10W blower **\$473.00**

- EH2100** Low profile, "wedge" style drop ceiling enclosure for single camera. Mounts into false/fixed or dropped ceilings. Hinged white ABS lower cover with Phillips head screw. Maximum camera/lens size 3"H x 4"W x 10"Lt. Use with E2100 mounting plate for installation in ceiling tiles **\$139.00**
- EH2100P** Same as EH2100, except plenum-rated back box **176.00**



- EH3010** Extruded aluminum rectangular style construction with removable front and rear end caps. Maximum camera/lens size 3.75"H x 2.75"W x 8"Lt. Gray with black ABS plastic end caps. Use EM2400 wall mount, EM1009U ceiling/pedestal mount or EM1109 pipe/pole mount **\$103.00**
- EH3014** Same as EH3010, except 12"L **118.00**
- † Camera/lens dimensions include BNC connector allowance.

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





PAN/TILTS/ SWITCHERS/MOUNTS

Explosion-Proof Pan/Tilts

- PT1260EX** Heavy-duty, 120VAC with internal limit stops. Maximum load 100 lbs. Use WM2000 wall mount with PA2010 or PM2010 ceiling/pedestal **\$3753.00**
- PT1260EX/PP** Same as PT1260EX, except with presets. **4245.00**



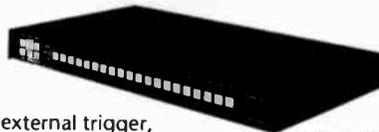
PT1260EX

Outdoor Pan/Tilts

- PT1250DC** Heavy-duty, 115VDC for loads up to 100 lbs. Use WM2000 wall mount with PA2010 adaptor, or PM2010 ceiling/pedestal mount **\$2473.00**
- PT1250P** Heavy-duty, 120VAC operation for loads up to 100 lbs. Use WM2000 wall mount with PA2010 adaptor, or PM2010 ceiling/pedestal mount. **\$2148.00**
- PT1280P** Heavy-duty, 120VAC operation for loads up to 100 lbs. Pre-wired for zoom lens, enclosure power, camera power and video. Use WM2000 wall mount with PA2010 adaptor, or PM2010 ceiling/pedestal mount **\$2346.00**
- PT1253R** Heavy-duty, 120VAC for loads up to 100 lbs. Equipped with adjustable frame scan capability. For use in Vicon V390APT retrofit applications. Use WM2000 with PA2010 adaptor wall mount, PM2010 ceiling/pedestal mount or Vicon V24WM wall mount, V14CM ceiling/pedestal mount **\$2148.00**
- PT680-24P** Medium-duty, 24VAC operation for loads up to 50 lbs. Factory pre-wired feedthrough for all control functions: motorized lens, camera power, enclosure power and video. Use WM2000 wall mount with PA2000 adaptor, or PM2010 ceiling/pedestal mount **\$1682.00**
- PT550P** Medium-duty, 115VDC for loads up to 40 lbs. Use WM2000 wall mount adaptor with PA2000 adaptor, or PM2010 ceiling/pedestal mount **\$1589.00**
- PT573R** Medium-duty, 120VAC for loads up to 40 lbs. Equipped with adjustable frame scan capability. For use in Vicon V330-115APT retrofit applications. Use WM2000 with PM102A and PA2000 wall mount, PM2010 with PM102A ceiling/pedestal mount, Vicon V24WM wall mount or V14CM ceiling/pedestal mount **\$1378.00**
- PT570P** Medium-duty, 120VAC operation for loads up to 40 lbs. Use WM2000 wall mount with PA2000 adaptor, or PM2010 ceiling/pedestal mount **\$946.20**
- PT570-24P** Medium-duty, 24VAC operation for loads up to 40 lbs. Use WM2000 wall mount with PA2000 adaptor, or PM2010 ceiling/pedestal mount **\$946.20**
- PT175-24P** Light-duty, 24VAC for loads up to 20 lbs. For use with PM105 wall mount or PM2010 with PM102A ceiling/pedestal mount **\$1077.00**

Single Output Switchers With Alarm Input

- VA6212** Terminating, external trigger, camera ID, 120VAC input. 12 video inputs, 2 video outputs **\$777.00**
- VA6220** Same as VA6212, except 20 video inputs. **950.00**
- VA6112** Terminating, external trigger, camera ID, 120VAC input. 12 video inputs, 1 video output. **682.00**
- VA6120** Same as VA6112, except 20 video inputs. **855.00**



VA6220

- VA6204** Terminating, external trigger, camera ID, 120VAC input. 4 video inputs, 2 video outputs **\$405.00**
- VA6208** Same as VA6204, except 8 video inputs. **578.00**
- VA6104** Terminating, external trigger, camera ID, 120VAC input. 4 video inputs, 1 video output. **319.00**
- VA6108** Same as VA6104 except 8 video inputs **491.00**

Single Output Switchers Without Alarm Input

- V55108** 8-position switcher with single output. Desktop only. Not rackmountable **\$295.00**
- V55104** 4-position switcher with single output. Desktop only. Not rackmountable. **176.00**

Manual Switchers With Looping Inputs

- MS508LDT** 8-position switcher with looping inputs **\$241.00**
- MS504LDT** 4-position switcher with looping inputs **166.00**

Manual Switchers

- MS508DT** 8-position manual switcher **\$208.00**
- MS504DT** 4-position manual switcher **143.00**

Camera Mounts

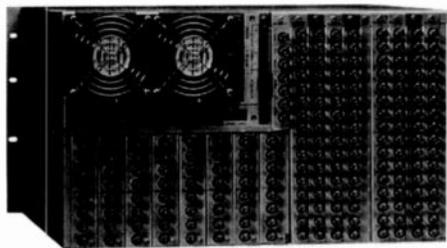
- EM22** Medium-duty wall mount for enclosures with 2" mounting hole pattern and light- to medium-weight cameras. Manually adjustable swivel head. Supports up to 40 lbs. **\$85.00**
- MM22** Medium-duty ceiling/pedestal mount for enclosures with 2" mounting hole pattern and light- to medium-weight cameras. Manually adjustable swivel head. Supports up to 40 lbs. **\$58.00**
- EM2400** Light-duty wall mount with cable feedthrough hole and manually adjustable swivel head. Use with EH3010/3014/4010/4014/4018 enclosures and light- to medium-weight cameras. Supports up to 20 lbs. **\$61.00**
- EM1400** Light-duty wall mount for EH4010/4014/4018 enclosures and light- to medium-weight cameras. Manually adjustable swivel head. Supports up to 20 lbs. (Can also be used with PA101 pole adaptor) **\$60.00**
- CM4400** Light-duty ceiling mount with manually adjusted swivel head and cable feedthrough hole. Supports up to 15 lbs. **\$58.00**
- EM4400** Light-duty wall mount with manually adjustable swivel head and cable feedthrough hole (coax, 2-conductor for camera power). Supports up to 15 lbs. Use with lightweight cameras or EH3010/3014 enclosures **\$50.00**
- EM4401** Light-duty wall mount with ball/swivel head and cable feedthrough hole. Supports up to 7 lbs. **50.00**
- TB1700** Light-duty mount for "T-rail" installations. Ball/swivel adjustable head. Supports up to 7 lbs. **\$46.00**
- CM1700** Light-duty ceiling/pedestal or wall mount. Ball/swivel adjustable head. Supports up to 7 lbs. **45.00**
- CM1400** Light-duty wall mount. Ball/swivel adjustable head. Support up to 7 lbs. **33.00**
- CM1300** Light-duty camera mount with manually adjustable head for wall mount applications. Supports up to 25 lbs. **\$17.00**
- BS1700** Ball/swivel adjustable head with "T-rail" clip. Supports up to 7 lbs. **25.00**



CM1700

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

ROUTING SWITCHERS/ CONTROLLERS



Jaguar Audio/Video Digital/Analog Routing Switchers

- 64 x 64 matrix routing switcher
- Compact 6RU video chassis, 5RU audio chassis
- Digital or analog audio and video versions available
- Wide bandwidth >-3dB @ 125MHz
- Internal system controller with a Windows™ user interface or external system controller may be used
- Internal power supply
- Looping inputs
- Utilizes PESA's WIN3300 controller with Windows user interface
- Expandable

RM4000 Video Routing Switcher

- 48 x 40 matrix routing switcher capable of routing any 1 of 48 inputs to any or all of 40 available outputs
- Compact size
- Wide bandwidth >-3dB @ 125MHz, >-1dB @ 75MHz
- Same crosspoint card and switch card used in the RM5000
- Internal system controller or external system controller may be used
- Rear mounted power supply
- Looping inputs
- 10 1/2"H x 19"W x 13 1/2"D

RM4000 Audio Routing Switcher

- Handles all of your stereo audio or mono audio configurations
- Configured for 48 balanced inputs
- Comes with an auxiliary 9-pin connector that provides the input for an external 4V backup
- Configured for 48 stereo or 96 mono inputs
- Can accommodate 2 rear mounted power supply modules allowing for total redundancy in critical applications
- Connects to the PESA Control System through 37-way parallel control bus
- Four 3-pin power connectors allow maximum expandability for power connection support to equipment, such as audio distribution amplifiers and combiner modules
- Compact 48 x 48 dual audio in 6RU, 96 x 48 single audio in 6RU
- Suitable for timecode over 150kHz bandwidth

RM5000 Video Routing Switcher

- Configured for 48 looping inputs
- Comes with an auxiliary 9-pin connector that provides the input for an external 4V backup
- Configured for 96 outputs
- Can accommodate 2 rear mounted power supply modules, allowing for total redundancy in critical applications
- Connects to the PESA Control System through 37-way parallel control bus connector
- Four 3-pin power connectors allow maximum expandability for power connection support to equipment such as video distribution amplifiers and combiner modules
- Comes with 2 sync inputs, allowing loophrough or dual sync
- Compact: 48 x 96 in 9RU; 96 x 96 in 24RU including dual power supplies
- Wide bandwidth <3dB @ 125MHz, <1dB @ 75MHz
- RGB and RGB+ sync configurations: 16 x 32 RGB in 9RU, 24 x 48 RGBs in 18RU including power supplies
- Looping inputs
- Cable equalization on outputs

RM5000 Audio Routing Switcher

- Handles all of your stereo audio or mono audio configurations
- Configured for 48 balanced inputs
- Comes with an auxiliary 9-pin connector that provides the input for an external 4V backup
- Configured for 48 stereo or 96 mono inputs
- Can accommodate 2

- rear mounted power supply modules, allowing for total redundancy in critical applications
- Connects to the PESA Control System through 37-way parallel control bus
- Four 3-pin power connectors allow maximum expandability for power connection support to equipment, such as audio distribution amplifiers and combiner modules
- Compact: 48 x 96 dual audio in 9RU, 96 x 96 single audio in 9RU, 40 x 40 dual audio and 16 x 16 timecode in 9RU, including dual power supplies
- Integral stereo to mono converters
- Full stereo operation with facility for L+R, L to L and R, R to L and R swap
- Configurable for forward and reverse talkback
- Suitable for timecode over 150kHz bandwidth

Distribution Amplifiers for Video and Audio

- PESA offers a full line of distribution amplifiers for audio and video installations
- Each 2RU frame holds 10 DA modules
- The DA product line includes general purpose audio and video DAs, as well as high bandwidth DA modules for specific power and signaling needs
- Modular designed DA cards are flexible, easily upgradeable for specific facility needs

3300 Control System and WIN3300 User Interface Software

- Full-feature, low cost control system for the full line of PESA routing switchers
- Capable of controlling up to 128 x 128 eight-level switching system
- Independent control of each level, audio follow video, virtual matrix mapping and software re-entry standard
- Matrix segmentation for configuring RGB, Y/C or multiple levels of audio may be configured as smaller matrices with one larger matrix
- Windows based user interface software works on standard 486 IBM compatible computer with version 3.1 Windows or more current
- Control panels connected by twisted pair using RS-485
- RS-232 external interface utilized
- Capable of full diagnostics and configurations of panels, salvos, sources, destinations and much more through user interface package
- Utilizes PESA's RCP family of control panels



6600E Control System

- Up to 256 x 256 capacity and 128 control panels
- Breakaway control of 4 levels
- User-definable 8-character alphanumeric mnemonics
- Component switching for RGB, stereo audio or other signals
- Input blocking for specific outputs
- Control panels; mnemonics and system configurations are stored on E-PROMS which can be updated
- Supervisory/nonsupervisory control with locks and passwords

6600E Control Panels

- Pushbutton panels; universal alphanumeric panel; rotary matrix panel; 10/20-bus panel; 24-category pushbutton panel; universal model II panel; 40-position pushbutton panel; tally relay status indicator panel; ANSI CRT

Call For Pricing

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

REFERENCE
CATALOG
97-98

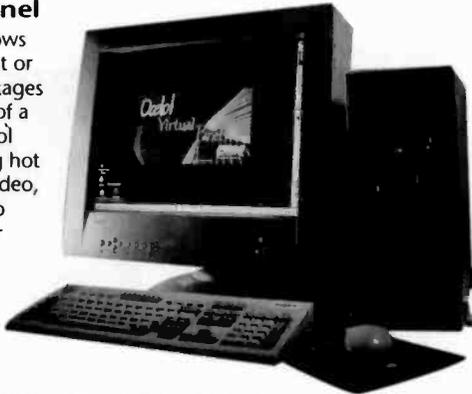


Ocelot 8 x 8 Audio/Video Routing Switchers

- Compact modular design
- 250MHz wide bandwidth analog
- 360Mbps serial digital
- Designed with mix and match digital and analog modules for video, audio and pulse
- Ideal multimedia applications
- Expandable to 16 x 16
- Windows™ based control software
- Supplied with single internal power supply
- Internal controller
- Control through an RS-232/RS-422 serial interface
- User friendly installation of RGB and Y/C
- Remote and local control panels

The Virtual Panel

- Operates in Windows environment
- Direct or network access packages available
- Capable of a wide range of control operations including hot take, audio follow video, breakaway and salvo switching
- Single or multiple destination locking capability
- Utilizes several different X/Y

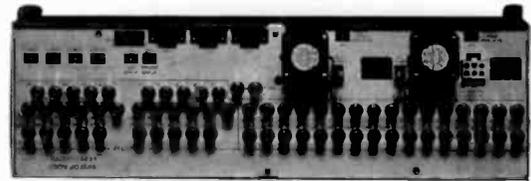


Lynx 24 x 16 Video Routing Switcher

- Compact
- Wide bandwidth
- High-performance
- Designed primarily for small system installations, although it can be used in conjunction with larger System 5 matrices
- Ideal for broadcast, post production, corporate and educational users
- Expandable to a maximum of 48 inputs by 64 outputs
- Single or dual power
- Supplied with single internal power supply
- Supports 24 inputs and 16 outputs in 1RU
- An external, rear mounted connector allows a second backup supply to be connected for critical applications
- An internal controller supports operation from a simple pushbutton or touchpad type control panel

Lynx 24 x 16 Audio Routing Switcher

- Compact
- High-performance
- Designed primarily for small system installations, although it can be used in conjunction with larger System 5 matrices
- Expandable to a maximum of 48 inputs by 64 outputs
- Single or dual power
- Supports 24 stereo inputs and 16 stereo outputs in 2RU
- Additional space within the frame allows a second backup supply to be installed for redundancy
- Optional internal controller supports operation from simple pushbutton or touchpad type control panels



Cougar 32 x 32 Video Routing Switcher

- Compact
- High-performance
- Can be used in conjunction with larger System 5 matrices
- Expandable to a maximum of 64 inputs by 64 outputs
- Single or dual power
- Supplied with single internal power supply
- Supports 32 inputs and 32 outputs in 3RU
- Single or dual internal controller options are available and work with PESA's RCP family of control panels
- Redundant internal power available

Cougar 32 x 32 Audio Routing Switcher

- Compact
- High-performance
- Can be used in conjunction with larger System 5 matrices
- Ideal for broadcast, post production, corporate and educational users
- Expandable to a maximum of 64 inputs by 64 outputs
- Supports 32 stereo inputs and 32 stereo outputs in 3RU
- Redundant internal power available

RCP Control Panel Product Line

- PESA's control panel line offers a full range of products for user interface for routing switcher control
- All RCP panels require 7.5VDC using standard plug-in-the-wall power packs
- RCP panels utilize twisted pair wiring and standard RS-485 interface
- 1RU or 2RU height for all panels, depending on the panel; requiring only 2.75" depth for compact

PVC 3000 Telephone Interface

- Telephone interface for control of PESA routing switchers utilizing the WIN3300 controller
- Utilizes touch tone phone remote access
- 32 user password capability
- 1RU compact design
- Configuration via RS-232 control port from computer running Windows 3.1 or higher version

Novell™ Network Control Software

- Network based routing switcher control systems
- Ideal for situations where a video routing switch is operated from a computer workstation which is connected to a Novell network
- Eliminates the need for separate router control panels to be placed near each computer workstation and reduces the cost of wiring a panel
- Windows 3.1 based software
- Controls matrix sizes up to 512 x 512
- Control for up to 8 switching levels
- User definable source and destination labels up to 10 characters
- Capable of 64 user definable salvos
- User password editing

Call For Pricing

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

LCD PROJECTORS/ VIDEO CONFERENCING SYSTEM/VCR



Philips ProScreen™ LCD Projectors

Common Features

- Uses Philips LIMESCO® (Line Memory Scan Converter) which offers unique and future-proof PC and Mac compatibility (SXGA, XGA, SVGA and VGA) ▪ LIMESCO provides an intelligent, full-screen (no compression) bit mapping technique to automatically translate input resolution upwards/downwards without loss of picture quality or brightness ▪ LIMESCO supports VGA400, VGA, SVGA, XGA and SXGA input signals on VGA panels in ProScreen 4000/4500 and on SVGA panels in ProScreen 4100/4600 ▪ UHP (Ultra High Performance) lamps provide up to 3X longer lamp life than metal-halide lamps ▪ Ergonomically designed ▪ 360° infrared receiver ▪ Wireless remote control with track ball and mouse buttons ▪ Integrated loudspeaker ▪ Stereo line output

LC4600G ProScreen Professional Portable LCD Video/Data Projector

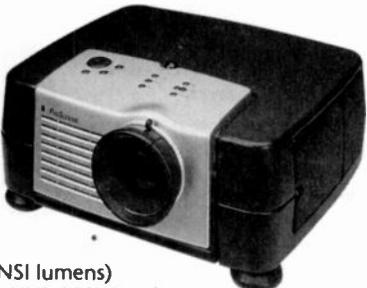


- Uses Philips LIMESCO ▪ Direct hookup of Video and S-Video sources ▪ Cost-effective performance ▪ Constant brightness (450 ANSI lumens) over lamp life of 6000 hours ▪ UHP 100W end user replaceable lamp ▪ Low fan noise ▪ Manual zoom x 1.5; Manual focus ▪ Intuitive controls for confidence and ease of use ▪ Keystone correction: 10° ▪ High reliability backed by professional service ▪ 3 x 1.3" HT PolySilicon active-matrix LCD panel ▪ 1,440,000 pixels, RGB stripe ▪ 150:1 contrast ratio ▪ 6½"H x 13"W x 13"D ▪ True portability at only 17.5 lbs. \$8500.00

LC4500G ProScreen Professional Portable LCD Video/Data Projector

- Uses Philips LIMESCO ▪ Direct hookup of Video and S-Video sources ▪ Cost-effective performance ▪ Constant brightness (550 ANSI lumens) over lamp life of 6000 hours ▪ UHP 100W end user replaceable lamp ▪ Low fan noise ▪ Manual zoom x 1.5; Manual focus ▪ Intuitive controls for confidence and ease of use ▪ Keystone correction: 10° ▪ High reliability backed by professional service ▪ 3 x 1.3" HT PolySilicon active-matrix LCD panel ▪ 921,600 pixels, RGB stripe ▪ 150:1 contrast ratio ▪ 6½"H x 13"W x 13"D ▪ True portability at only 17.5 lbs. \$6695.00

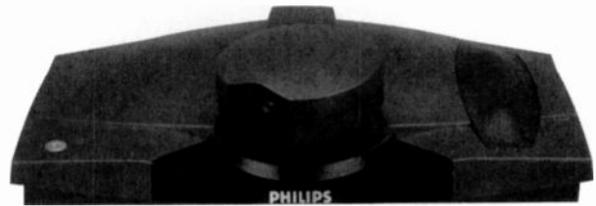
LC4100G ProScreen Professional Portable LCD Video/Data Projector



- Uses Philips LIMESCO ▪ Direct hookup of Video and S-Video sources ▪ Cost-effective performance ▪ Constant brightness (300 ANSI lumens) over lamp life of 2000 hours ▪ UHP 120W end user replaceable lamp ▪ Low fan noise ▪ Intuitive controls for confidence and ease of use ▪ Keystone correction, user adjustable, up to 13° ▪ High reliability backed by professional service ▪ 1 x 6.4" amorphous active-matrix TFT LCD panel ▪ 1,440,000 pixels, RGB stripe ▪ 150:1 contrast ratio ▪ 7½"H x 15¾"W x 13"D ▪ True portability at only 17.5 lbs. \$6695.00

LC4000G ProScreen Professional Portable LCD Video/Data Projector

- Uses Philips LIMESCO ▪ Direct hookup of Video and S-Video sources ▪ Cost-effective performance ▪ Constant brightness (350 ANSI lumens) over lamp life of 2000 hours ▪ UHP 120W end user replaceable lamp ▪ Low fan noise ▪ Intuitive controls for confidence and ease of use ▪ Keystone correction, user adjustable, up to 13° ▪ High reliability backed by professional service ▪ 1 x 6.4" amorphous active-matrix TFT LCD panel ▪ 921,600 pixels, RGB stripe ▪ 150:1 contrast ratio ▪ 7½"H x 15¾"W x 13"D ▪ True portability at only 17.5 lbs. \$5500.00



VCS21NEA Video Conferencing System

- Compact, portable, easy to use video conferencing system designed to be used by an individual or small group of people ▪ Used on a single ISDN BRI (S-interface) line, using an ordinary TV monitor ▪ Includes a remote controllable pan/tilt/zoom CCD camera, codec, computer and super-directive microphone array integrated in a self-contained set-top unit ▪ Complies with H.320 video conferencing standards ▪ True "plug-and-play" video conferencing ▪ Auxiliary viewer/document camera inputs ▪ Auxiliary microphone input ▪ Stereo VCR connection with passthrough ▪ PCMCIA slot (two Type I/II or one Type III) for upgrade functions ▪ High-speed, bidirectional parallel port ▪ Serial communications data port (300-19.2Kbps) ▪ Transmission speeds from 56-128Kbps ▪ Auto and manual call answer ▪ Universal power supply ▪ Languages available for menus, keypads and user guides: English/French/Spanish ▪ Far-end camera control ▪ Supports monitor sizes 20"-35" ▪ Picture-in-picture (PIP) windowing ▪ Diagnostic, power-on and call-in-progress LEDs ▪ On-screen menus ▪ Context-sensitive help ▪ Online documentation ▪ Speed dial directory ▪ Near-end camera presets ▪ Includes shipping and handling case and a handheld remote control ▪ May be used for a variety of applications including trouble-shooting, sales presentations, interactive training, multi-office meetings, quality team meetings, conferences, distance learning and more \$8995.00

VCR100BK Professional Interactive VCR



- Computer interface via 5-pin DIN connector ▪ Selective access of tape via time search functions ▪ Remote 2-way interaction ▪ Random access of tape media for selective retrieval ▪ Status feedback for system monitoring and command verification ▪ Defeat on-screen displays allow wider range of application development ▪ Super fast rewind and fast forward ▪ BNC connections and 3-prong grounded power cord ▪ 4-head monaural design ▪ Multiband TV ▪ 49-function remote control ▪ RC5 wired input ▪ 8-event, 1-year programming ▪ Auto head cleaning ▪ 120VAC, 60Hz ▪ 25W power consumption ▪ 230 lines horizontal resolution. \$599.00
- VCRINTKT* VCR master control software package for VCR100BK and PC compatible computers. 49.95
- *Includes interface cable

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





COLOR TELEVISIONS/ MODULE CARDS



PC7227C SmartCard 27" Diagonal Stereo Television® With SmartCard Expansion Slot

- 27" screen ▪ SmartCard integrated expansion capability permits OEM or 3rd party decoders and controllers to be installed inside TVs
- Clone programming capability ▪ Front control lockout ▪ Channel guide ▪ Volume limiter ▪ Marquee channel forces TV to specified channel when turned on ▪ Audio/video muting ▪ Automatic volume leveler ▪ Built-in closed caption decoder ▪ E.S.P. (Energy Saving Programmability) ▪ 120VAC, 60Hz power source ▪ 181-channel capability ▪ 152W ▪ 1 x 4 Watt audio output ▪ 2" x 5" speaker size
- Weighs 72 lbs. \$530.00



PC7225C SmartCard 25" Diagonal Television With SmartCard Expansion Slot

- 25" screen ▪ SmartCard integrated expansion capability permits OEM or 3rd party decoders and controllers to be installed inside TVs
- Clone programming capability ▪ Front control lockout ▪ Channel guide ▪ Volume limiter ▪ Marquee channel forces TV to specified channel when turned on ▪ Audio/video muting ▪ Automatic volume leveler ▪ Built-in closed caption decoder ▪ E.S.P. ▪ 120VAC, 60Hz power source ▪ 181-channel capability ▪ 60W ▪ 3 x 3.0 Watt audio output ▪ 2" x 3" speaker size ▪ Weighs 75 lbs. \$469.00



PC7220C SmartCard 20" Diagonal Television With SmartCard Expansion Slot

- 20" screen ▪ SmartCard integrated expansion capability permits OEM or 3rd party decoders and controllers to be installed inside TVs
- Clone programming capability ▪ Front control lockout ▪ Channel guide ▪ Volume limiter ▪ Marquee channel forces TV to specified channel when turned on ▪ Audio/video muting ▪ Automatic volume leveler ▪ Built-in closed caption decoder ▪ E.S.P. ▪ 120VAC, 60Hz power source ▪ 181-channel capability ▪ 60W ▪ 3 x 3.0 Watt audio output ▪ 2" x 3" speaker size ▪ Weighs 48 lbs. \$359.00

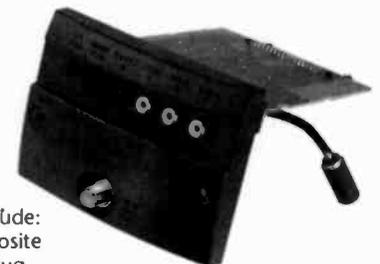
ScanCard™ Module Scan Converter Card

- ScanCard Module fits into the SmartCard television slot and allows PC and Macintosh computers to display on large screen SmartCard televisions for classroom training
- ScanCard Module brings flexibility to a training environment ▪ ScanCard Module allows connection of a computer directly to the back of the SmartCard television so that the signal may be looped to another SmartCard television or another computer monitor
- Allows composite video and S-Video inputs with loopthrough for complete versatility ▪ ScanCard Module also comes with VGA input, RF input, audio (line), audio (S-VHS), Smart Port and RS-232 (SmartLink™) connection input for computer television control
- Outputs include: VGA (loop), composite video (loop), S-VHS (loop), S-VHS audio (loop) and line audio (loop) ▪ Horizontal underscan/overscan ▪ No external software is required ▪ Menu from front panel or remote
- Smart Port priority TBA*



MonCard™ Module Monitor Card

- MonCard Module is a SmartCard product that fits into a slot of a SmartCard television and upgrades a commercial television to a monitor/receiver
- Inputs include: RF, S-Video and audio, composite video and line audio, SmartPlug
- Includes an external speaker jack TBA*



*To Be Announced

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





DVEXtreme Digital Video Effects Generator (NTSC)

▪ Windows® NT based 10-bit digital video effects system ▪ Open platform design makes 3-D digital effects productions easy and fast for broadcast and post-production environments ▪ Provides up to 3 channels of video, each with a separate key signal ▪ Digital 601 inputs and outputs are standard ▪ 10-bit composite and component I/O can be added to each DVE channel ▪ ParticleFX™ and PainterlyFX™ technology for custom effects ▪ 3-D effects engine performs rotation, perspective, placement, sizing, cropping, axis placement, target manipulation, edge alignment and cube/solid builder ▪ Warp engine delivers 4-corner page peels and turns, water ripples, ball effects, explosions, tiles and wave patterns ▪ Imaging effects include border generation, matte generation, extended range defocus, freeze and strobe ▪ Pre-transform keyer provides chromakeying, linear, luma and Genie Keys as well as custom alpha wipe patterns ▪ Copy and paste function ▪ Still store includes a powerful graphic database with a capacity of over 1000 video and key images ▪ System formats: NTSC 525/60Hz or PAL 625/50Hz ▪ Separate level (pedestal) and gain adjustments for each component

DVEXtreme, 3+3 Triple Channel Digital and Analog

Includes DVE control panel with three 601 digital and 3 analog input/output modules (6 inputs) \$63,990.00

DVEXtreme, 3+3 Triple Channel Digital

Includes DVE control panel with three 601 digital input/output modules (6 inputs) \$54,990.00

DVEXtreme, 2+2 Dual Channel Digital and Analog

Includes DVE control panel with two 601 digital and 2 analog input/output modules (4 inputs) \$50,990.00

DVEXtreme, 2+2 Dual Channel Digital

Includes DVE control panel with two 601 digital input/output modules (4 inputs) \$44,990.00

Additional DVE Control Panel 3,990.00

Digital Dual Channel to Triple Channel Field Upgrade TBA*

Digital and Analog Dual Channel to Triple Channel

Field Upgrade TBA*

Analog Input/Output Module Field Upgrade TBA*

Lightning Video Image Storage System (NTSC)

▪ Uses noncompressed 4:2:2:4 digital video to deliver broadcast quality images ▪ Recall and play video images in less than 1/2 second, plus allowing instant placement and sizing of images ▪ Add 1 or 2 ShotBoxes with 1-touch playback for on-air applications ▪ View from 1-100 picons at a time ▪ Search image database by number, date, title, user, subject and other fields ▪ Can have up to 3 active hardware input and output channels each with key, plus additional virtual channels for SVGA monitor preview ▪ Internal storage capacity for over 11,000 images and a fast SCSI interface to external disks for unlimited image storage ▪ Open-system architecture lets you browse, organize and manage files on all network devices including PC, Mac®, SCI™ platforms and proprietary paint systems ▪ Connects easily to other Pinnacle open-system products including FlashFile and DVEXtreme ▪ Options include newsroom automation interfaces and control of popular digital disk recorders ▪ Convert images to other formats such as TGA, TIFF, BMP and JPEG ▪ Operating system: Picture database runs on Windows NT with Pentium® Pro CPU ▪ System formats: 525/60Hz or 625/50Hz ▪ Power requirements: 90-240V, 50-60Hz, auto selectable

Lightning 525-line Serial Digital Interface (SDI) Basic System

Includes: Single channel; serial digital input and output for picture and key; stores 6500 frames, picture and key; built-in real time 3-D DVE for 3-D transitions and layouts with perspective; up to 2 more optional channels can be added. \$25,990.00

Note: Basic channel is SDI I/O, analog I/O is an add-on option.

Options

Lightning Browse Software for 10 Users Provides complete browsing capability for a Windows 95 or Windows NT computer (desktop or laptop). Includes required 10-user network dongle and Lantastic for Windows 95 to connect to FlashFile networks \$14,990.00

Lightning Browse Software for 1 User Same as above, except for 1 user 1,990.00

Add Analog I/O to a Digital Channel Adds analog component/composite input/output to an existing SDI channel (must be ordered with initial system) 5,790.00

Additional SDI I/O Channel Adds SDI channel with picture and key 5,490.00

Second 9G Byte Drive for Basic System Adds a second 9G byte hard drive to the basic system. Increases basic storage to 13,300 frames 4,990.00

Shot Box Control Panel (Maximum 2 per system) Compact control panel for fast still and sequence recall. Can be used by independent second user. Includes interconnect cables 2,990.00

*To Be Announced

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





FlashFile Still Store System

- Fast access to 2000 fields (1000 frames) online
- Advanced library management system with color pictorial browse feature
- Still Prep for sizing, positioning, shadows, borders and cropping stills
- Creative transitions including wipes and dissolves
- Powerful sequence creation using picon view
- Software based interfield deflicker filter and chroma legalization
- Full-bandwidth 4:2:2:4 internal processing
- Analog composite and component (Y, R-Y, B-Y or RGB) I/O
- GPI inputs, RS-422, RS-232 interfaces
- Import/export of Targa, TIFF, Pict and BMP files
- Full-sized alphanumeric keyboard and trackball
- Power cord and keyboard cables
- DOS version 6.22, Norton utilities
- 32M bytes of onboard RAM, DX-4 100MHz overdrive processor
- Operator's manuals \$16,990.00

Flash Grafix Composer

Flash Grafix Composer includes FlashFile Still Store features plus:

Paint Package ▪ Wide range of brushes/geometric shape creation with automatic fill capability ▪ Contrast, negative, mosaic, deflicker and noise reduction adjustments ▪ Hardware assisted zoom ▪ Size, position and rotation of cut-outs ▪ Variable key opacity ▪ Cordless pen and tablet

Titling/Typography Package ▪ Includes 40 TrueType fonts ▪ Reads TrueType typefaces ▪ Positionable borders and drop shadows ▪ Variable border and shadow opacity ▪ Size, position and rotate text

3-D Modeling Package from Crystal Graphics (3-D Designer™) ▪ Wide range of 2-D and 3-D polygon and spline modeling tools ▪ Bump, transparency, mask, shininess, reflection and environment mapping tools ▪ Positionable light sources ▪ Omni, spot, distant and ambient lights ▪ Variable spot cone size and edge detailing ▪ Variable dynamic camera positions

Flash Grafix Composer \$23,990.00

Flash Grafix Composer with 3-D Animation Package

Includes all of the above Flash Grafix features, plus Crystal Graphics animation control software \$24,990.00

FlashFile/Flash Grafix Accessories

Single Channel Service Spares Kit \$13,990.00

Two- to Three-Channel Factory Upgrade for Existing Systems

▪ Upgrade of 486 based systems to provide third, composite output (channel C) with key \$10,990.00

Note: Requires return of system to factory with second channel option already installed.

Second Channel ▪ Provides additional flexibility to operation

▪ Required for dual user operation ▪ Full-bandwidth 4:2:2:4 processing ▪ Analog composite and component (Y, R-Y, B-Y or RGB) I/O \$3,990.00

Third Channel ▪ Provides third composite output (channel C)

with key ▪ Allows channel A and B to act as 2 independent program outputs with C acting as preview \$6,990.00

Note: Requires installation of second channel option and version 4.x upgrade. Factory option only.

Serial Digital Inputs and Outputs with Second Channel

▪ Component serial digital (CCIR 601) video and key input
▪ Program and preview serial digital (CCIR 601) output with associated key
▪ Provides analog component (Y, R-Y, B-Y) output
▪ Composite on channel A, no composite on channel B. \$6,990.00

External Hard Drive Adds 17,000 fields (8,500 frames)

of storage capacity. 5,990.00

3-D Animation (Flash Grafix Only). 4,990.00

ISO Standard External Removable Optical Drive

Same as above except includes ISO standard 1.2G byte optical disk. 3,990.00

Librarian Security Administrator Package ▪ Provides

user-definable password-protected partitions 3,990.00

Shot Box Control Panel ▪ Compact control panel for

simple stills and sequence recall ▪ Can be used by independent second user ▪ Includes interconnect cables. 2,990.00

17" Super VGA Menu Monitor ▪ Includes power cord

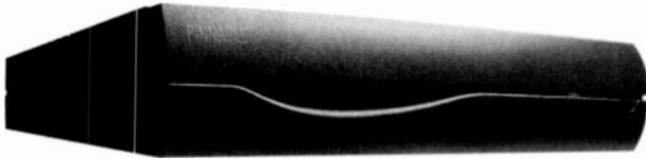
and 3' interconnect cable. 1,390.00

14" Super VGA Menu Monitor ▪ Includes power cord

and 3' interconnect cable 690.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

DESKTOP VIDEO EQUIPMENT



Alladin Complete Videographics Production Tool (NTSC)

■ Alladin is a complete videographics production tool which operates with any IBM compatible 486DX PC or above

3-D Digital Effects ■ Rotation and perspective, size and place
 ■ Real time curvilinear effects including page turn and splash
 ■ Dynamic highlights and shading ■ Over 100 precreated effects
 ■ Variable borders with complex textures ■ Variable drop shadow with independent position and opacity ■ Montage paste buffer
 ■ Trail and sparkle effects ■ Image defocus

Production Switcher ■ 4-input mixer ■ Composite or Y/C I/O
 ■ 2 background, plus 2 DVE busses ■ Luminance/chrominance keying

Component Digital Still Store ■ Uses PC hard drive to store field or frame images ■ Also stores full-bandwidth key (alpha) information ■ Uses unique picons to display stored images

Pinnacle Paint™ ■ Wide range of brushes ■ Geometric shape creation with automatic fill capability ■ Contrast, negative, mosaic, deflicker, and noise reduction ■ Hardware assisted zoom
 ■ Size, position and rotation of cut-outs ■ Variable key opacity

Bundled Inscrber CG Character Generator ■ Includes 12 fonts
 ■ Reads TrueType and Adobe PostScript typefaces ■ Positionable borders and drop shadows ■ Variable text, border, and shadow opacity ■ Size and position text ■ Sub-pixel rolls and crawls
Alladin (Composite or Y/C version) \$10,490.00

Alladin (Component/RGB version) Includes same features as above, except: ■ Component (Y, R-Y, B-Y) in lieu of composite Y/C input/output module. \$12,490.00

Alladin (Serial Digital SMPTE 259M version) Includes same features as above, except: ■ Serial digital (SMPTE 259M) inputs and outputs, plus component (Y, R-Y, B-Y) output for monitoring
 ■ Includes StudioPak™ software option version 2.1x ■ Requires Microsoft Windows 95™ or Windows NT™ \$16,490.00

Serial Digital (SMPTE 259M) Input/Output Module (field upgrade) ■ Provides 4 serial digital inputs with 1 serial digital key input ■ Provides serial digital output plus key ■ Provides Y, R-Y, B-Y output format for monitoring ■ Includes StudioPak software option version 2.1x ■ Requires Microsoft Windows 95 \$6,490.00

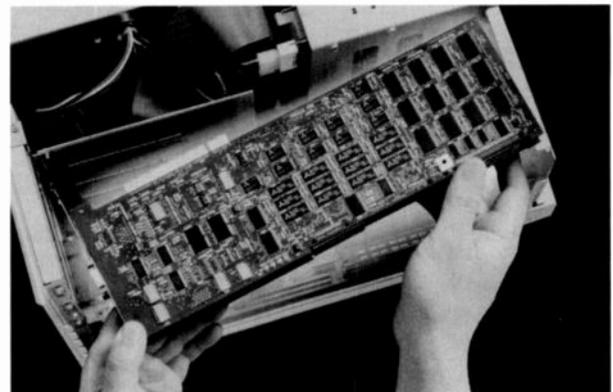
Analog Component Input/Output Module (field upgrade) ■ Provides 4 analog component inputs ■ Input 4 is selectable between RGB and Y, R-Y, B-Y input formats ■ Provides Y, R-Y, B-Y output formats. \$2,990.00

Alladin Control Panel ■ Dedicated control panel for Alladin with 3 axis joystick, T-bar and 1-touch tool buttons ■ Create, recall and play effects call up switcher busses and images ■ Requires StudioPak software version 2.x \$1,990.00

Alladin StudioPak ■ Software option that adds these new capabilities to Alladin: manual highlights, trail flares, strobe, posterize and solarize, variable border color, separate front and back live sources on rotations, axis cursor, advanced paint package, Inscrber CG version 2.1 ■ Requires Microsoft Windows 95 \$990.00

Alladin Options

Alladin StudioPak Graphics Creation Station \$990.00
Alladin Graphics Creation Station 990.00
Cordless Pen and Tablet 470.00
Alladin Effects+ Volume 1 (Transitions and More!) 199.00
Alladin Effects+ Volume 2 (Magical Genie Wipes!) 199.00
Alladin Rackmount Kit 149.00



GeniePlus Post Production System (NTSC)

■ NTSC composite and Y/C system (4:2:2:4 internal processing)
 ■ Complete post production system on a single card ■ Operates with any IBM compatible with PCI bus under Windows 95

3-D Digital Effects ■ Rotation and perspective, size and place
 ■ Real time curvilinear effects including page turn and splash
 ■ Dynamic highlights and shading ■ Over 150 precreated effects
 ■ Variable borders with complex textures ■ Variable drop shadow with independent position and opacity ■ Montage paste buffer
 ■ Trail and sparkle effects

Switcher ■ 2 live input mixer selectable from 6 inputs (3 composite and 3 Y/C) ■ Linear keying ■ Luminance keying

Component Digital Still Store ■ Uses PC hard drive to store field or frame images ■ Also stores full-bandwidth key (alpha) information ■ Uses unique picons to display stored images

Pinnacle Paint ■ Wide range of brushes ■ Geometric shape creation with automatic fill capability ■ Contrast, negative, mosaic, deflicker and noise reduction ■ Hardware assisted zoom
 ■ Size, position and rotation of cut-outs ■ Variable key opacity

Bundled Inscrber CG Character Generator ■ Includes 12 fonts
 ■ Reads TrueType and Adobe PostScript typefaces ■ Positionable borders and drop shadows ■ Variable text, border and shadow opacity ■ Size and position text ■ Sub-pixel rolls and crawls
GeniePlus \$5,990.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





TypeDeko Character Generator

- Advanced 4:4:4:4 fully anti-aliased character generator
- Runs on a standard Pentium-based PC and uses Microsoft Windows NT™ operating system for maximum compatibility and networking flexibility within a multitasking environment
- Real time effects include variable speed wipes, pushes, rolls, crawls, slow reveals, dissolves and optional powerful motion effects
- Analog and/or serial digital with key input/outputs
- Standard input/outputs are composite, component, Y/C and YUV with key reference
- Resolution independent—NTSC, PAL, 16:9, 4:3 or custom resolutions are available for high definition or multimedia usage
- Internal linear keyer with timing control
- Video grab with key
- Built-in command/macro language and editor
- 0.20ns character resolution
- Graphic file import and export with a wide range of file formats
- 500 bitstream TrueType format fonts included
- Readily uses any Unicode-encoded font
- Text manipulation allows you to rotate, scale, expand and compress text
- Typing on a Curve matches text to any baseline you draw
- Unlimited layers for graphic/text composition
- Support for optional international character sets including Middle Eastern and Asian
- Virtually unlimited text styling including: edges, shadows, textures, neons, blurs, etc.
- Event sequencer
- Options: motion to fly characters/graphics on and off screen; automation for true newsroom integration; FastAction keyboard for single-stroke functionality for most Deko functions
- Online help and user manual
- Version 3.0 software with optional live video in a window and cell replay (cell animation)

WriteDeko Character Generator

- Cost-effective, broadcast-quality anti-aliased character generator
- Runs on a standard Pentium-based PC platform using Microsoft Windows NT operating system
- Analog composite input/output with optional component or D1 input/output
- Analog downstream keyer output
- Graphic file import/export
- Event sequencer
- Real time effects such as wipes, pushes, rolls, crawls and slow reveals
- Frame grab
- 500 bitstream TrueType format fonts included
- Readily uses any Unicode encoded font
- Ships with 5 layers for text/graphic composition; optional unlimited layers
- Font enhancement of 2 edges, 2 shadows, 2 frames, 1 face and 1 underline per font
- 2 preset font windows to save up to 16 fonts with style details

- Resolution independent—NTSC, PAL, 16:9, 4:3 or custom resolutions applicable for multimedia or high definition use
- Support for international character sets including optional Middle Eastern and Asian
- Options: Macros/Automation; Typing on a Curve; Unlimited Layers; Logo Compose Software packs; FastAction keyboard for single stroke functionality in time critical situations

TitleDeko Option (For TypeDeko)

- Optional upgrade to TypeDeko or WriteDeko
- Provides editors with the ability to create high quality graphics and to link them by time code to the edited piece
- Ability to export .PICT files to nonlinear editor's EDL, eliminating the need for double entry of titles
- Titles can be switched on and off for editing convenience, but details remain stored in the EDL
- Allows you to add fades, wipes, roll and crawl effects
- Frame accurate reading of the EDL
- Direct editorial control over the position of titles
- Overlays full resolution titles over the output of the nonlinear editor, using Deko's downstream keyer
- Ships with TitleDeko software and time code reader
- 64M byte memory required

PostDeko Graphic and Title Design Option

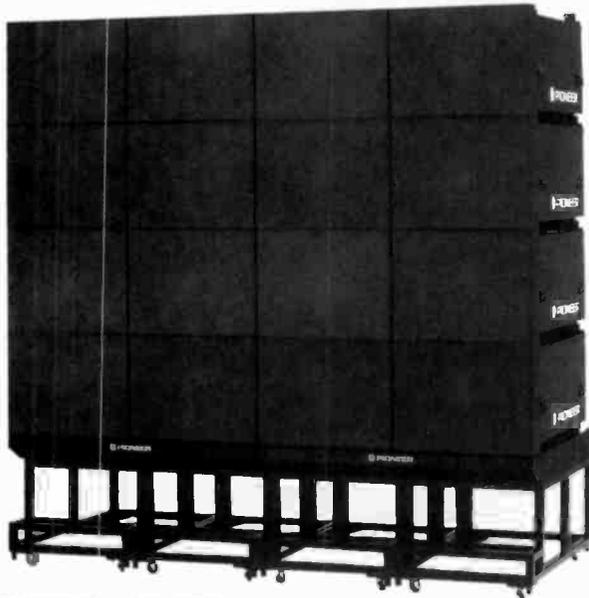
- Off-line graphic and title design system
- Software-only configuration which will run on a Pentium-based PC using Microsoft Windows 95, Windows NT 3.51 or better operating system, even a laptop
- Allows designer to create titles and graphics using all the fonts, graphics and sequencing tools available on a Deko system
- 2 switchable mode choices—TypeDeko or WriteDeko
- Ability to import/export most file formats, including 32-bit files via disk, modem or network
- 500 bitstream TrueType format fonts included
- Event sequencer
- Preset font windows to store fonts with style details for instant use
- Multiple layers for text/graphic composition
- Options: Software pack, to allow all TypeDeko options including Macros, Automation and Motion; Middle Eastern and Asian languages; software to allow PostDeko to function as a StillDeko Browse Station

StillDeko Option

- Available as an option to TypeDeko and WriteDeko
- Library management capabilities for fast and accurate still retrieval
- Image management facilities for keyword and criteria-specific searches and file format independence
- Stack creation and play out
- Template creation

Call For Pricing

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



RM-V2500NA/V2400NA

**RM-V5000V 50"/RM-V4000V 40"
Variable Scan CUBE/RM-V2500NA 50" CUBE/
RM-V2400NA 40" CUBE**

- High resolution videowall providing high impact visual presentations
- Screen options include standard, narrow edge (3mm) or seamless*
- 800 lines horizontal resolution
- Wider viewing angles: 150° horizontal and 60° vertical
- Lenticular sheet with tinted screens increase brightness and improve color contrast between the individual screens
- Linear white balance circuitry
- Dual PAL/NTSC signal input capability
- 25-point digital convergence technology reduces time-consuming multiscreen adjustments by allowing engineers to pinpoint and improve a particular section of the image without altering other areas on the screen
- Basic adjustments to the series such as convergence and white balance can be performed with ease using a personal computer (software package is optional)
- Units can be stacked on the floor or hung from a ceiling
- Up to 5 screens can be placed on top of each other without special reinforcements, and the angle of each screen can be varied anywhere between straight up/straight down
- 600 ft.-L (40"), 420 ft.-L (50") brightness
- Wired remote control optional

RM-V2500NAFS 50" CUBE Frame System	.....	\$9,595.00
RM-V2400NAC 40" CUBE	.....	8,995.00
RM-V2400NAFS 40" CUBE Frame System	.....	8,595.00

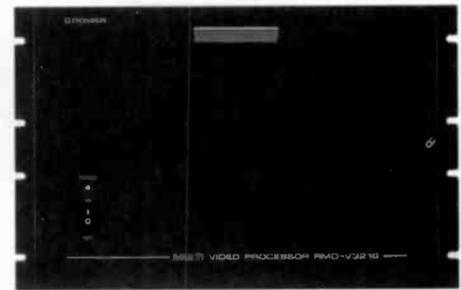
Variable scan videowalls provide high impact visual presentations with 15-35kHz allowing the system to display a computer-generated image directly from a PC.

RM-V5000VFS 50" Variable Scan/Frame System	.....	\$12,595.00
RM-V4000VC 40" Variable Scan CUBE	.....	11,995.00
RM-V4000VFS 40" Variable Scan/Frame System	.....	10,995.00

* Choice of frame systems provides unmatched flexibility in design and portability ideal for mobile or permanent installations.

RMD-V3216/3109 Multivideo Processors

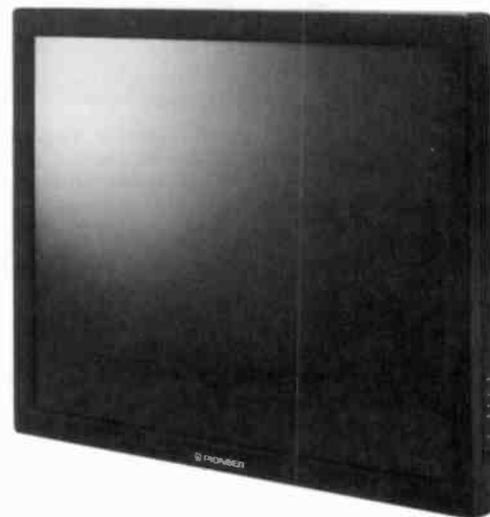
- High performance multivideo processors that employ powerful new ICs to provide versatile capabilities and better pictures at an affordable price
- State-of-the-art innovations including color signal compensation



RMD-V3216

- circuitry and sliced image prevention function provides high on-screen picture quality
- Modular construction simplifies system upgrading and provides input/output switching flexibility
- Equipped with input/output boards that accept NTSC signals as well as computer-generated signals with frequencies of up to 35kHz
- The combination of a variable scan board and an NTSC board enables simultaneous output of computer-generated and NTSC TV images as part of a multiscreen display
- High quality video image reproduction—3-D Y/C separation, 3-D interpolation, NTSC/31.468kHz selectable
- When combined with the RM-V4000V/V5000V Multiprojection CUBE system, it is capable of noninterlaced double density video output
- Number of inputs: RMD-V3216: 2; RMD-V3109: 1
- Number of outputs: RMD-V3216: 16; RMD-V3109: 9
- 100-120VAC, 50/60Hz

RMD-V3216 2-in, 16-out processor	.....	\$39,995.00
RMD-V3109 1-in, 9-out processor	.....	29,995.00



40" Full Color Plasma Display Panel

- 400cd/m² high brightness
- 150:1 high contrast
- 16.7 million colors
- 160° viewing angle
- Thin, lightweight design
- Weighs 66 lbs., 10 oz.

This new form of display technology delivers brighter colors and better contrast ratios all within a monitor only 4" thick and light enough to be wall mounted.

Plasma Display Panel	\$12,995.00
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ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





**LD-V8000 Level I, II, III,
CAV/CLV LaserDisc Player**

- Digital video memory for seamless search without image loss
- Ultra-rapid search speed, 0.5 sec. maximum (CAV), 4 sec. maximum (CLV)
- 4-channel audio (2 digital, 2 analog) ▪ Brushless motor ▪ Still picture with random access audio ▪ LaserBarcode2 compatible ▪ Program dump capability for level II operation in CAV and CLV ▪ Interleaved video playback capability ▪ Text overlay: 12-line, 20-character (upper and lower case) ▪ RS-232C interface to enable computer control ▪ External sync generation and loophrough capability ▪ Automatic power-on start/disc-load start/repeat play ▪ Automatic lock-down ▪ Multispeed playback, 255 increments ▪ E-Z mnemonic computer control ▪ Supplied accessories: Video and audio (stereo) cables \$2695.00



LD-V4400 Level I, III, CAV/CLV LaserDisc Player

- Rapid search speed, 1.0 sec. average (CAV) ▪ Fully compatible with LD-V4200 ▪ E-Z mnemonic computer control ▪ 4-channel audio (2 digital, 2 analog) ▪ Brushless motor ▪ External sync capability with loophrough ▪ Built-in LaserBarcode compatibility ▪ Fully automatic disc loading ▪ Automatic lock-down ▪ Text overlay: 12-line, 20-character (upper and lower case) ▪ Remote control capability ▪ RS-232C interface to enable computer control ▪ Supplied accessories: Video and audio (stereo) cables \$1595.00

**CLD-V2600 Level I and III CAV/CLV
LaserDisc Player**

- Capable of playing 5 kinds of discs: 8" and 12" laserdiscs, 3" and 5" CD discs, 5" CDV discs
- RS-232C interface for computer control ▪ Built-in LaserBarcode, LaserBarcode2 and Barcode CD capability ▪ Brushless motor ▪ Built-in RF modulator
- Front panel shuttle dial for scanning at 9X or 32X speeds
- Headphone jack with volume control ▪ Bright fluoroluminescent front panel display ▪ Auto start and auto repeat ▪ 4 audio channels: 2 digital, 2 analog ▪ Multispeed playback ▪ Supplied accessories: Wireless remote control with enlarged keypad, video and audio (stereo) cables, RF antenna cable \$995.00



**CLD-V5000 Level I, III CAV/CLV
Dual-Sided LaserDisc Player**

- Dual-sided LD playback with E-Turn mechanism ▪ Capable of playing 5 kinds of discs: 8" and 12" laserdiscs, 3" and 5" CD discs and 5" CDV discs ▪ RS-232C interface ▪ S-Video capabilities ▪ Built-in LaserBarcode, LaserBarcode2 and Barcode CD capability ▪ Direct audio CD tray
- 4 audio channels: 2 digital and 2 analog ▪ Supplied RF modulator
- Auto start and auto repeat allow "set and forget" operation
- Headphone jack and volume control ▪ Supplied accessories: Wireless shuttle remote control, video and audio (stereo) cables, RF adaptor, RF antenna cable \$995.00

**CLD-V2800 Level I and III
CAV/CLV LaserDisc Player**

- Compact design ▪ Capable of playing 5 kinds of discs: 8" and 12" laserdiscs, 3" and 5" CD discs, 5" CDV discs ▪ RS-232C interface for computer control ▪ Built-in LaserBarcode, LaserBarcode2 and Barcode CD capability ▪ 4-channel audio (2 digital, 2 analog) ▪ Built-in RF modulator
- Bright fluoroluminescent front panel display ▪ Direct audio CD tray
- Reinforced chassis and grounded power cord ▪ Text display: 10 lines x 20 characters ▪ Auto start and auto repeat allow "set and forget" operation ▪ Headphone jack with volume control ▪ Supplied

accessories: Wireless remote control with enlarged keypad, video and audio (stereo) cables, RF antenna cable, RF adaptor \$895.00

CLD-V5000BCEXP LaserDisc ExploreR System*

Package Includes: ▪ CLD-V5000 Level III, dual-sided laserdisc player ▪ UC-V109BC barcode reader ▪ 9 educational laserdisc titles and guides: Scholastic Software's *History in Motion*; DC Heath's *An American Portfolio*; Optical Data Corp's *Field Trip: Forests*; National Geographic's *Solar System*; National Geographic's *Restless Earth*; Annenberg's *Art of the Western World*; Voyager's *For All Mankind*; Smithsonian's *Dinosaurs*; BBC's *Encyclopedia of Animals, Vol. 1* ▪ Bonus activity guide ▪ Supplied accessories: Wireless shuttle remote control, video and audio (stereo) cables, RF adaptor, RF antenna cable \$1495.00

CLD-V2600BCEXP LaserDisc ExploreR System*

Package Includes: ▪ CLD-V2600 Level III laserdisc player ▪ UC-V109BC barcode reader ▪ 9 educational laserdisc titles and guides: Scholastic Software's *History in Motion*; DC Heath's *An American Portfolio*; Optical Data Corp's *Field Trip: Forests*; National Geographic's *Solar System*; National Geographic's *Restless Earth*; Annenberg's *Art of the Western World*; Voyager's *For All Mankind*; Smithsonian's *Dinosaurs*; BBC's *Encyclopedia of Animals, Vol. 1* ▪ Bonus activity guide ▪ Supplied accessories: Wireless remote control with enlarged keypad, video and audio (stereo) cables, RF antenna cable \$1495.00

CLD-V2800LEX LaserDisc ExploreR™ System*

- Provides a comprehensive multimedia solution that every teacher and student can use ▪ Includes 9 educational laserdisc titles and guides
- Package Includes: CLD-V2800 Level III LaserDisc Player ▪ UC-V109BC barcode reader ▪ 9 educational laserdisc titles and guides: Scholastic Software's *History in Motion*; DC Heath's *An American Portfolio*; Optical Data Corp's *Field Trip: Forests*; National Geographic's *Solar System*; National Geographic's *Restless Earth*; Annenberg's *Art of the Western World*; Voyager's *For All Mankind*; Smithsonian's *Dinosaurs*; BBC's *Encyclopedia of Animals, Vol. 1* ▪ Bonus activity guide. \$995.00

**CLD-V2600ML Ms. Lerner™
Inservice Training Bundle***

- Package Includes: CLD-V2600 Level III laserdisc player ▪ UC-V109BC barcode reader ▪ Ms. Lerner Training laserdisc and program guide
- QuickStart hardware card ▪ Supplied accessories: Wireless remote control with enlarged keypad, video and audio (stereo) cables, RF antenna cable. \$995.00

CLD-V5000LB LaserDisc Hardware Bundle*

Package Includes: ▪ CLD-V5000 dual-sided laserdisc player ▪ UC-V109BC barcode reader ▪ Supplied accessories: Wireless shuttle remote control, video and audio (stereo) cables, RF adaptor, RF antenna cable. . \$995.00

CLD-V2600LB LaserDisc Hardware Bundle*

Package Includes: ▪ CLD-V2600 Level III laserdisc player ▪ UC-V109BC barcode reader ▪ Supplied accessories: Wireless remote control with enlarged keypad, video and audio (stereo) cables, RF antenna cable \$995.00

CLD-V2800LB LaserDisc Hardware Bundle*

Package Includes: ▪ CLD-V2800 Level III laserdisc player ▪ UC-V109BC barcode reader ▪ Supplied accessories: Wireless remote control with enlarged keypad, video and audio (stereo) cables, RF adaptor, RF antenna cable \$895.00

**ML-TRAINER Ms. Lerner Inservice
Training Software Package**

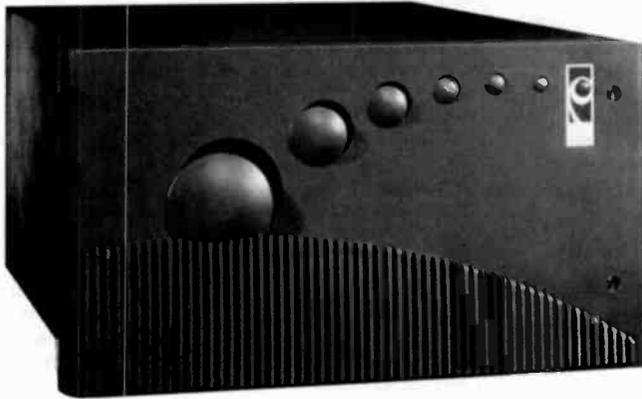
- Presents everything you need to know to become proficient with laserdisc technology ▪ Demonstrates 5 key constructive teaching strategies—each designed to address teaching with the laserdisc player from a different perspective \$299.00

*Free membership in the Pioneers in Learning Club included.

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



DIGITAL VIDEO RECORDER/DATA STORAGE SYSTEM



SPACE™ Digital Video Recording, Storage and Networking System

- SPACE is a full-bandwidth, CCIR-601, 8- or 10-bit digital video recorder that gives high quality, speed and reliability ▪ SPACE operates just like a VTR, but offers much higher quality, performance and functionality ▪ Recording on disk drives instead of tape, SPACE is a nonlinear, plug-and-play VTR replacement completely compatible with all familiar inputs and outputs
- It fits in with existing video plant and computer systems
- Its storage capacity and price are scalable to meet any need

- RAID level 3 data protection protects the audio and video data
- RAID level 1 data protection protects the file and operating systems ▪ Each disk drive is shock mounted to protect internal connectors from vibration corrosion and provides sound dampening ▪ Hot-swappable drives ▪ Responds to industry standard VTR protocols ▪ Comes with a modem for remote diagnostics, downloading new software and enabling new features via a standard telephone connection ▪ Standard ethernet port

- Optional 4 channels of 24-bit AES audio, each with level control, channel assignment and individual channel editing capability, sound in shuttle, slow speed audio scrub and "slip and slide" audio relation to video timing ▪ Full support for both VITC and LTC and VTR-like time code reader/generator features ▪ Provides full complement of built-in analog audio and video monitoring on VTR compatible connectors ▪ SMPTE alarm to warn users of hardware problems ▪ PCI bus circuit board interface ▪ Dual 40M bits Ultra SCSI ports ▪ 10/100 BaseT Ethernet port ▪ All critical assemblies can be replaced or repaired without removing the unit from the rack
- Standard current sharing, redundant, live swap power supplies
- 8 individual temperature sensors and 2 tachometers to monitor cooling ▪ Hot Spare option electrically replaces a failed drive automatically ▪ 15-120 minute storage time ▪ 110/220VAC, 50/60Hz power requirements ▪ 350W ▪ "Clickless" muted edits, individual channel punch-in editing

SPACE \$30,000.00-90,000.00

DataSPACE™ RAID Storage (Preliminary)

- Provides high-speed storage solutions for the TV and computer industries ▪ Every drive is hot-swappable at any time ▪ Each drive outfitted with normal, rebuild and failed operation indicators
- Each drive has its own vibration dampening mounting systems to provide longer drive life, longer connector life and quieter system operation ▪ High bandwidths and fast RAID parity engine allow repair of damaged or missing data quickly ▪ Can be fitted with 1 or more spare drives ▪ Hot Spare software automatically rebuilds data onto a spare drive as soon as a failed drive is detected ▪ Internal bandwidths in excess of 100Mbps ▪ Flexible packaging and multiple drive types allows for systems as small as 12G bytes of storage and expandable up to 162G byte capacity ▪ Standard interconnect is Wide Ultra SCSI capable of up to 40Mbps connection ▪ Each unit provides 2 independent external SCSI buses allowing double speed transfer rates or 2 devices to be connected
- Offers interfaces through FibreChannel PCI cards with connections provided for both point-to-point and true TCP/IP interfaces ▪ Allows user to set the size of the array data stripe
- Redundant, current sharing, live-swappable power supplies
- Dual fans with thermal and rotational monitoring ▪ Can accommodate an internal professional CCIR 601 serial digital video card with AES serial digital audio for integration into any television facility

- DataSPACE arrays use RAID level 3 parity protection against data loss from any single drive failure ▪ Using a hardware parity engine running at faster than 300M bits ▪ DataSPACE is capable of data error detection and correction at speeds in excess of 100M bits
- File system and operating system data is also protected in the RAID implementation

DataSPACE TBA*

*To Be Announced

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



Polaview 305 LCD Projector

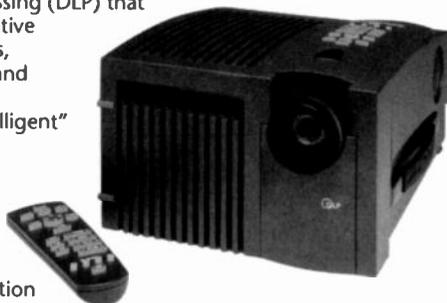
- Supports all popular PC, Macintosh and workstation systems including Sun Microsystems, Hewlett-Packard and SGI
- 300 ANSI lumens ▪ Scaling technology for full-screen and full-resolution viewing of images from 640 x 480 to 1280 x 1024
- Outstanding image quality with uniform corner-to-corner illumination ▪ Portable
- Smallest form factor of all high-resolution, active-matrix projectors ▪ Remote control and presentation software for mouse-like control of projector and computer ▪ Drawing tool for highlighting and drawing on the projected image ▪ Optional Adobe Acrobat Player System, Cyclops Interactive Pointer System and wireless audio



Polaview 305 \$16,995.00

Polaview 222 DLP Projector

- Digital Light Processing (DLP) that is ideal for the executive boardroom, business, education, training and medical/scientific presentations ▪ "Intelligent" compression of XGA (Extended Graphics Array) images integrates image data to preserve signal and discard background information
- DLP technology features narrower pixel gaps, no "screening" effect, and greater fill area
- DLP technology uses Digital Micromirror Device (DMD) to create improved resolution and brightness, high contrast and color fidelity
- Can project images up to 240" diagonally ▪ Provides users with bright computer graphics and video images in 800 x 600 SVGA resolution ▪ Wireless infrared built-in "turbo" remote control to ranges of 50'—includes laser pointer and features illuminated keys
- Last set-up memory ▪ Single reversible cable for projector connections to all Macs, PCs, laptops and desktops ▪ Simultaneous connection with up to 2 computers and 2 video sources ▪ 410 ANSI lumens ▪ Broad compatibility with a variety of different computer/video sources



Specifications

- Display Technology: Single DMD ▪ Pixels: 460,000 ▪ Projector Lamp: 270W metal-halide, 800 lifetime hours ▪ Contrast Ratio: 200:1
- Brightness: 410 ANSI lumens ▪ Resolution: 800 x 600 "Intelligent"; 1024 x 768 VGA compression ▪ Colors: 16.7 million ▪ Screen Size: 3'-20' diagonally ▪ Projection Distance: 3.5'-35' ▪ Projection: Front, rear, ceiling mount ▪ Power Supply: 110/220V ▪ Compatibility: SVGA, Mac 16", Mac II, VGA Graphics, VGA Text, NEC PCSS601, NTSC, PAL, SECAM, S-Video ▪ Keystone Correction: 17° Power Supply: 90-132VAC, 160/255VAC, automatic switching 47-63Hz
- Weight: 22.5 lbs.

Polaview 222 \$7,995.00

Polaview 211 LCD Projector

- Ideal multimedia projection system for brightly lit rooms ▪ Delivers sharp, clear SVGA images that are a precise 1:1 match with SVGA monitors ▪ Automatic scaling (image is automatically "scaled" to fit on the screen) ▪ Automatic focus and zoom ▪ Includes illuminated panel controls, remote on-screen menus, rear-facing stereo speakers
- 110-240VAC, 50/60Hz power ▪ Projects onto wide variety of screens ranging in diagonal size from 30"-300" ▪ Projection method switching function allows switching between front and rear projection and ceiling mount ▪ Lens position adjustment function (for light axis shifts) and an electronic zoom/focus lens allow pictures to be projected from a variety of different positions ▪ Compact, lightweight body, carrying handle and retractable lens function allow easy transport ▪ Wireless mouse function lets you use the remote control unit to control a PC in place of the PC's mouse ▪ Projects excellent XGA images in an SVGA format using even/odd line virtual compression ▪ Automatic standby mode activates when no signal is input for a continuous period ▪ Blue background is projected when no signal is being input, so that screen is not illuminated ▪ Muting functions for video and audio signals, and input signal display function can be toggled on and off ▪ Projector includes: operator's manual, remote control, 2 "AA" batteries, power cord (U.S.), VGA cable, VGA Mac 13" adaptor, VGA Mac 16" adaptor, PC audio cable, video RCA cable, RCA-BNC pin adaptor, audio RCA cable

Specifications

- Display Technology: 3 polysilicon LCD ▪ Resolution: SVGA
- Brightness: 600 ANSI lumens ▪ Number of Colors: 16.7 million
- Contrast ratio: 200:1 ▪ Projection System: Electronic zoom/focus
- Keystone Correction: ±0/10° ▪ Lamp Type: 260W Metal-halide ▪ Lamp Lifetime: 3000 Hours (50%) ▪ Lamp Power: Universal ▪ Computer Compatibility: PC/Mac ▪ Video Compatibility: NTSC/PAL/SECAM/S-Video ▪ Compression: Virtual XGA ▪ Weight: 21.6 lbs.

Polaview 211 \$6,995.00

Polaview 201 LCD Projector

- Most economical of Polaroid's SVGA conference room projectors
- Offers sharpness, detail, and convenience necessary for boardroom quality presentations ▪ Delivers SVGA images that are a precise 1:1 match with SVGA computer screens ▪ Features 800 x 600 SVGA resolution ▪ 1,440K pixel ▪ Display produces clear images even when the ambient light level is high ▪ Simple to operate ▪ Rear-screen projection allows user to set projector to reverse images ▪ Infrared remote control includes front and rear sensors that let users control projector from almost anywhere in the room ▪ External audio connectors transmit stereo output which follows the video source
- Wide projection distances (from 2.5' up to 54.2') ▪ Manual shutter function blanks out screen and mutes sound ▪ On-screen menu display on the presentation screen makes setup and operation simple ▪ Built-in lamp automatically turns itself off if there is no video input for 15 minutes ▪ Polaview 201 includes: operator's manual, remote control, 2 "AA" batteries, power cord (U.S.), VGA cable, VGA Mac 13" adaptor, VGA Mac 16" adaptor, PC audio cable, video RCA cable, RCA-BNC pin adaptor, audio RCA cable

Specifications

- Display Technology: 3 polysilicon LCD ▪ Resolution: SVGA
- Brightness: 300 ANSI lumens ▪ Number of Colors: 16.7 million
- Contrast Ratio: 150:1 ▪ Projection System: Manual zoom/focus
- Keystone Correction: 17° ▪ Lamp Type: 250W Metal-halide ▪ Lamp Lifetime: 1000 hours (50%) ▪ Lamp Power: Universal ▪ Computer Compatibility: PC/Mac ▪ Video Compatibility: NTSC/PAL/SECAM/S-Video ▪ Compression: XGA ▪ Weight: 20.9 lbs.

Polaview 201 \$5,495.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

VIDEO CASES



Porta-Brace
K & H Products, Ltd.

Porta-Brace® HIKER Camcorder Backpack

- The Cordura® backpack is fitted with 2 sturdy, adjustable shoulder straps • Padded waist belt
- Carries most ENG/EFP camcorders • Lightweight, rigid, padded shell • 3 sizes available ..\$427.00



Porta-Brace POLAR BEAR

- Designed to keep camcorder warm in cold temperatures with air activated warmers • Padded with a high loft insulating material • Lined with silver mylar fabric to reflect heat back into the camera chamber • Camcorders with bottom mounted brick batteries will not fit this case\$331.00

Porta-Brace CARRY-ON TWO CAMERA CASE

- Designed to meet FAA suggestions for carry-on luggage
- Offers protection from bumps, dust, rain and snow while in transit\$325.00



Porta-Brace Quick-Draw Camera Case

- Carries and protects camcorder on ground, in cars or in the air
- Padded nylon, hardshell construction and aluminum viewfinder guard provide lightweight security • Includes heavy-duty shoulder strap • Check for models available\$317.00

Porta-Brace Shoulder Cases for Camcorders (With Rain-Top)

- Protects against bumps, scrapes, dust, heat and cold, on your shoulder or off • Features the lightweight pop-out Rain-Top™ sewn to the main body for loss prevention • When ordering be sure to send camera model number, recorder model number and battery style\$308.00

Porta-Brace STORM COAT

- Heavy-duty rain protection
- Newly developed fabric and design shields camera from wet weather damage, dust and abrasion • Extra room for multiple mics, brick batteries and wireless • Camera size same as Rain Slicker
STC-1/2/3/4/5\$225.00



Porta-Brace Camcorder Special Camera Case

- For Hi8 and S-VHS camcorders • Provides padded protection with room for cassettes, batteries and handle grip • Outside pockets hold papers, notes • Window pocket holds I.D.\$180.00

Porta-Brace RAIN SLICKER

- Lightweight cover for camcorders • At home on the shoulder or a tripod • Provides protection as it covers the entire camcorder, top to bottom • All controls are accessed through covered zippered openings
RS\$195.00

Porta-Brace TRIPOD SHELLPACK

- TS Tripod case with rigid indestructible interior housing. . . \$355.00

Porta-Brace Tripod Mummy Two Case

- A soft, lightweight, thickly padded Cordura case with pockets inside and outside • Includes backpack straps and wooden handle
TM ¾" padded, lightweight tripod case\$276.00

Porta-Brace Production Cases

Large Capacity Organizer Cases

- With heavy-duty HB-20 shoulder strap

PC-1 1 divider, 5 outside pockets,
2 mesh pockets\$.308.00

PC-2 2 dividers, 5 outside pockets,
6 mesh pockets\$.332.00

PC-3 3 dividers, 7 outside pockets,
2 extra handles (for 2-person
carry), 9 see-through mesh
pockets\$.356.00



Medium Capacity Organizer Cases

- With heavy-duty HB-20 shoulder strap

PC-101 1 divider, 1 clip-on pouch, 4 see-through mesh
pockets, 3 outer pockets\$.198.00

PC-202 Light and tape case, 1 divider, 1 clip-on pouch,
1 see-through mesh pocket, 5 outer pockets\$.195.00

PC-303 Holds numerous combinations of equipment, additional
partitions available: front pocket, 2 end pockets, Leno mesh
pocket across the back and 4 slip pockets inside top\$.218.00

Porta-Brace Light Pack

- Carries many combinations of lighting gear needed for ENG or EFP production work • Stack system of compartments • Zippered front door carries lights, barndoors, stands, umbrellas, gels, etc. • Carry by hand or as a backpack

LP-2 Light head compartment,
5"H x 9½"W x 31"L\$.305.00

LP-3 Light head compartment,
5½"H x 9½"W x 37"L\$.318.00

LP-4 Light head compartment,
7"H x 10"W x 37"L\$.355.00



Porta-Brace DIFFUSER CASE

- Designed to hold 3 sets of the popular light banks, speed rings, honeycomb diffusion grids along with dots, flags, gels, scrims and reflectors • Foam-padded rigid main compartment protects the honeycomb grids • Special folder for gels • Outside pockets organize the rest • Heavy-duty HB-40 suede shoulder strap and suede leather hand grips included
LP-D2\$275.00

Porta-Brace AUDIO RECORDER CASES

- All access openings are weather protected with pockets for cassettes, batteries, mics, etc. • Shoulder strap included • Tascam, Sony, Panasonic, Nagra, Marantz, HHB, Fostex \$178.00-255.00

Porta-Brace Tech Case (2 sizes)

- Designed for engineers, technicians, reporters/video professionals
- Use as combination personal and service equipment bag

TC-2 11"H x 5½"W x 17½"L\$.178.00

TC-1 11"H x 4"W x 15"L\$.168.00

TC-T Tool Kit Case (can be carried in Tech Case or on belt) . . . 85.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

REFERENCE
CATALOG



Porta-Brace
K & H Products, Ltd.



VIDEO CASES

Porta-Brace® AUDIO ORGANIZER

(With HB-40 and VB-10 Video Belt)
 ■ Comfortably carries a mixer, wireless mic, headphone, shotgun mic, fishpole, handheld mic, filters, attenuators and cables, and small audio recorders
 AO-2U 8"H x 6"W x 14"L \$240.00
 AO-1U 6"H x 6"W x 10"L 230.00



Porta-Brace CARGO CASE

(In 2 sizes with HB-10)
 ■ 5 outside pockets and a wide double-zipped top cover for easy access to large interior ■ Flip-up pocket for special documents or treasures on the inside wall
 CAR-2 Inside measurements 10"H x 8"W x 18"L \$172.00
 CAR-1 Inside measurements 10"H x 8"W x 13"L 165.00

Porta-Brace Director Case

■ Room for producer/director tools plus a detachable SLR or small video camera bag to take for candid shots
 DC-1 \$169.00
 DC-2 Similar to DC-1, with a pocket for a computer 172.00

Porta-Brace AUDIO MIXER COMBO

(With HB-10 shoulder strap)
 ■ Mixer Case and RM-Multi for: Audio Developments, EAA Micromix, Shure, Sonosax, SQN, Audio-Technica. \$143.00

Porta-Brace MONITOR CASES

■ Protection and glare reduction guard with adjustable pedestal ■ Easy access to battery, switches, controls and cable connections.
 Large Portable Monitor/Player
 (Remove from case for use) ■ Heavy-duty shoulder strap included ■ Firm grip hardwood handle
 ■ Lightweight transport case \$158.00
 Lightweight Field Monitors
 (Stays in protective case) ■ Adjustable pedestal and glare reduction guard \$85.00-162.00
 Optional Multiperson Visor
 (16"/40cm) ■ Maximizes shading near the screen for enhanced screen visibility ■ For 9" monitors \$75.00



Porta-Brace Video Vest

■ Designed especially for ENG or EFP photographers ■ Pockets are provided for cassettes, batteries, cables, microphones and accessories ■ Provisions are made for attaching other optional Porta-Brace accessory pockets ■ Generously cut for wearing over heavy clothing
 VV Sizes S, M, L, XL, XXL ... \$198.00



Porta-Brace RUN BAGS

Why should a run bag be cluttered? Speed is necessary, so be organized, find those spares and extras in a hurry. 3 sizes available:
 RB-3 9½"H x 7"W x 25"L \$147.00
 RB-2 9½"H x 7"W x 21"L 142.00
 RB-1 9½"H x 7"W x 18"L 139.00

Porta-Brace WAIST BELT PRODUCTION PACKS

■ Includes waist belt with quick-release buckle and 2 multipocketed, general purpose pouches ■ Optional specialized pouches can be added ■ Designed for Betacam users and others
 BP-2 \$135.00



Porta-Brace Side Kit (2 sizes)

SK-1 Belt pouch, Leatherman multi-use tool, Maglite, Sharpie fine point marker \$100.00
 SK-2 Belt pouch, Leatherman multi-use tool, Stanley snap-off blade knife, Starrett twist-top screwdriver, 2 Sharpie fine point markers 125.00
 SK-3 Same as SK-2 but comes with a Super Leatherman ... 155.00
 SK-1/2/3P Pouch only 35.00/40.00/50.00

Porta-Brace HIP Packs (4 sizes)

■ Made for personal use ■ Can be used either in the belly or fanny position ■ Reinforced interior main compartment and a wide quick-release waist belt ■ Main compartment will hold tapes and batteries or other personal effects ■ Extra front and top pockets hold small items ■ A pocket for your keys on the waist belt ■ Comes with a water bottle and a small handle/shoulder strap
 Hip-4 (Larger) Main pocket: 4" x 6½" x 14" \$100.00
 Hip-3 (Large) Main pocket: 3½" x 6" x 12" 96.00
 Hip-2 (Medium) Main pocket: 2½" x 5" x 10" 92.00
 Hip-1 (Small) Main pocket: 2" x 5" x 7" 85.00



Porta-Brace AUDIO HARNESS/BELT

■ For comfortable, convenient viewing of your audio mixer ■ Keeps everything secure, even while on the run
 AH-2 For heavier equipment \$92.00
 AH-1 For lightweight equipment 70.00
 AH-2H Padded harness only (no belt) 67.00

Porta-Brace MATTE BOX

Carry your matte box setup ready to use in a safe, convenient case. Shrosziel, Petroff, Fujinon (filter case optional, see below) \$145.00

Porta-Brace FILTER CASES

■ Holds four, 4" square or 4½" round filters in padded sections... \$70.00
 Add 1 or 2 sections ea./12.00

Porta-Brace Shoulder Straps

■ Designed for comfort
 HB-20 Cam-C ■ Heavy-duty camera strap with clips
 ■ Padded nonslip suede sewn to foam pads. ... \$58.00
 HB-40 Cam-C ■ Heavy-duty camera strap with clips
 ■ Black leather sewn to foam pad 58.00
 HB-12 Cam-C ■ Lightweight brown suede camera strap with clips 56.00
 HB-20 ■ With heavy swivel hooks for heavy loads
 ■ Padded nonslip suede sewn to foam pads ... 37.00
 HB-40 ■ With heavy swivel hooks for heavy loads
 ■ Black leather sewn to foam pads. 37.00
 HB-10 ■ Medium-duty brown suede shoulder strap ... 31.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

PROJECTOR MOUNTS



Video/Data/Projector Ceiling Mounts

Mount	Model	Make
PBM-855	MP8020, 8030	3M
PBM-845	MP8650	3M
PBM-863	8630	3M
PBM-1700	535	Ampro
PBM-100	1100, 1200	Ampro
PBM-1700	1300, 1500	Ampro
PBM-1700	1700, 2000	Ampro
PBM-2300	2300	Ampro
PBM-1700	2600	Ampro
PBM-2300	3300, 3600	Ampro
PBM-4200	4200, 4300	Ampro
PBM-4200	4600	Ampro
PBM-7000	7000, 7100	Ampro
PBM-7000	7200	Ampro
PBM-101	LCD-100	Ampro
PBM-154	LCD-150	Ampro
UPM-12	575	Apollo
UPM-12	750	Ask
UPM-12	860	Ask
PBM-880	880	Ask
UPM-12	960	Ask
PBM-970	970	Ask
PBM-600	V-STAR	Barco
PBM-600	400	Barco
PBM-600	500	Barco
PBM-600	600, 650	Barco
PBM-700	700, 701	Barco
PBM-600	800, 801	Barco
PBM-808	808	Barco
PBM-1000	1000, 1001	Barco
PBM-1000	1050, 1100	Barco
PBM-1000	1200, 1208	Barco
PBM-1000	1209	Barco
PBM-1000	1500, 1600	Barco
PBM-2100	2100LC	Barco
PBM-3100	3000, 3100LC	Barco
PBM-850	5000, 5100	Barco
PBM-850	8100	Barco
PBM-900	9000 Series	Barco
PBM-H985	9000, 8000, and 5000 Series	Barco
PBM-212	2001	Boxlight
UPM-12	2085	Boxlight
UPM-12	2130, 2135	Boxlight
UPM-12	2196, 2197	Boxlight
PBM-845	2500	Boxlight
UPM-12	2680, 2700	Boxlight
PBM-212	2880	Boxlight
UPM-425	3026	Boxlight
UPM-12	3030	Boxlight
PBM-583	3080	Boxlight
PBM-855	3090	Boxlight
PBM-755	3600	Boxlight
PBM-400	830	Buhlite
PBM-317	NOVA V375	Chisholm



PBM-845

Mount	Model	Make
PBM-845	GALAXY V470	Chisholm
PBM-845	GALAXY S-600	Chisholm
PBM-845	Ez-Pro 800	CTX
PBM-PB	Powerbeam	Davis
PBM-PBV	Powerbeam IV, V	Davis
UPM-12	7010	Dukane
UPM-12	8000, 8010	Dukane
UPM-12	LC-120	Eiki
UPM-12	LC-150	Eiki
UPM-16	LC-180	Eiki
UPM-12	LC-300, 330	Eiki
PBM-425	LC-4200, 4300	Eiki
UPM-12	LC-5200, 5300	Eiki
UPM-12/EXT	LC-6000	Eiki
PBM-755	LC-7000	Eiki
PBM-818	EPS800	Electrohome



PBM-3000

PBM-3000	2500	Electrohome
PBM-3000	3000	Electrohome
PBM-3000	3100, 3101	Electrohome
PBM-3000	3500, 3501	Electrohome
PBM-3000	4000	Electrohome
PBM-3000	4100, 4101	Electrohome
PBM-3000	4500, 4501	Electrohome
PBM-8900	8000, 8100	Electrohome
PBM-8900	8500	Electrohome
PBM-8900	9000, 9100	Electrohome
PBM-8900	9500	Electrohome
PBM-SHST	SHOW STAR, +	Electrohome
PBM-VISTA	VISTA PRO	Electrohome
PBM-317	EDP-2100	Elmo
PBM-515	ELP-5000	Epson
PBM-583	ELP-3000, 3300	Epson
PBM-855	CPL500, 540	Hitachi
PBM-H200	200, 220	Hughes
PBM-H300	310E	Hughes
PBM-H300	320, 335, 3605	Hughes
PBM-212	210	Infocus
UPM-12	550, 570	Infocus
UPM-12	570	Infocus
PBM-583	580	Infocus
PBM-612	610, 620	Infocus
UPM-12	760	Infocus
UPM-16	TVT-600	Infocus
UPM-12	LX-D300U	JVC
PBM-3500	8770	Marantz
PBM-1220	1200, 1202	Mitsubishi
PBM-1220	1250, 1280	Mitsubishi
PBM-1220	2020, 2022	Mitsubishi

Call For Pricing

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





Mounts With Muscle



PROJECTOR MOUNTS

Video/Data/Projector Ceiling Mounts

Mount	Model	Make	Mount	Model	Make
PBM-300	6PG, 9PG	NEC	UPM-12	XG-630	Sharp
PBM-610	10PG	NEC	UPM-12	XG-670, 650U	Sharp
PBM-300	DP-1210S	NEC	UPM-16	XG-690U	Sharp
PBM-300	GP-3000	NEC	PBM-80	XG-800, 850U	Sharp
PBM-680	MT600, MT800	NEC	PBM-80	XG-1000, 1100U	Sharp
PBM-MT	MT	NEC	PBM-15	XV-15U	Sharp
PBM-300	XG75, 110, 135	NEC	PBM-80	XV-35, 37U	Sharp
PBM-400	D-400, 405	NView	PBM-80	XV-80U	Sharp
PBM-400	D-450, 455	NView	PBM-80	XV-90, 95U	Sharp
UPM-12	L110, 115, 500	NView	PBM-80	XV-100P	Sharp
PBM-LUM	LU11, 31	NView	PBM-80	XV-1000	Sharp
PBM-FIN	NFINITY	NView			
PBM-301	B1010, 2010	Panasonic			
PBM-301	PT-101, 105	Panasonic			
PBM-301	PT-200	Panasonic			
UPM-12	PT-L290U	Panasonic			
PBM-301	PT-301	Panasonic			
UPM-12	PT-30L	Panasonic			
PBM-39	PT-L390, 391U	Panasonic			
PBM-1035	PT-M1083U	Panasonic			
PBM-1035	PT-M1085U	Panasonic			
PBM-3500	3500	Philips			
PBM-5000	5000	Philips			
UPM-20	LC-2000	Philips			
UPM-12	LC-2600	Philips			
UPM-12	LC-2700	Philips			
UMP-20	LC-3000	Philips			
UPM-20	LC-5000	Philips			
PBM-855	105, 110	Polaview			
PBM-400	220	Polaview			
PBM-PBV	305	Polaview			
UPM-12	8300, 8400	Proxima			
PBM-10	LB-10	Proxima			
PBM-41	DP4100, 4200Z	Proxima			
PBM-855	DP5100, 5500	Proxima			
PBM-755	DP5600	Proxima			
UPM-20	400	Runco			
PBM-680	500	Runco			
PBM-100	600, 600T	Runco			
PBM-100	750, 750T	Runco			
PBM-300	800, 900	Runco			
PBM-300	980	Runco			
PBM-610	990	Runco			
PBM-H300	4000	Runco			
UPM-12	PLC-100, 150N	Sanyo			
UPM-12	PLC-200, 220N	Sanyo			
UPM-12	PLC-300, 320N	Sanyo			
PBM-425	PLC-500, 510	Sanyo			
PBM-425	PLC-550	Sanyo			
UPM-12/EXT	PLC-700M	Sanyo			
PBM-755	PLC-5500	Sanyo			
UPM-16	MEDIASHOW	Sayett			
PBM-120	SLC-1200	Seleco			
UPM-12	XG-400U	Sharp			
PBM-80	XG-440U	Sharp			
PBM-NV1	XG-NV1	Sharp			
			PBM-1292	HDIH-2000	Sony
			PBM-1292	HDIH-3000	Sony
			PMM-722	VPH-1000Q	Sony
			PMM-722	VPH-1001Q	Sony
			PMM-722	VPH-1030Q	Sony
			PMM-722	VPH-1031Q	Sony
			PMM-722	VPH-1040Q	Sony
			PMM-722	VPH-1041Q	Sony
			PMM-722	VPH-1042Q	Sony
			PMM-722	VPH-1044Q	Sony
			PBM-1272	VPH-1251Q	Sony
			PBM-1272	VPH-1252Q	Sony
			PBM-1272	VPH-1270Q	Sony
			PBM-1272	VPH-1271Q	Sony
			PBM-1272	VPH-1272Q	Sony
			PBM-1292	VPH-1292Q	Sony
			PMM-722	VPH-2030Q	Sony
			PMM-722	VPH-600Q	Sony
			PBM-350	VPL-350, 351Q	Sony
			PBM-154	P400	Telex
			PBM-730	P-7300U	Toshiba
			PBM-317	TLP-310	Toshiba
			PBM-120	LUMENJET 1200	Unic View
			UPM-20	CRYSTAL 1	Vidikron
			PBM-317	CRYSTAL 3	Vidikron
			PBM-100	810	Zenith
			PBM-100	840, 841	Zenith
			PBM-100	851	Zenith
			PBM-100	875	Zenith
			PBM-100	890	Zenith



PBM-1292

Call For Pricing

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





WIRELESS VIDEO SYSTEMS

▪ A large variety of systems ▪ For use in CCTV security and surveillance to professional and broadcast applications

Model	Description	
CCTV		
CS-220	Video and audio	\$2995.00
CS-120	Video only	1995.00

Professional and Broadcast

BE-450	Diversity receiver with high power transmitter	\$6426.00
BE-400	Diversity system for mobile camera use	5184.00
BE-500	Standard system with high power transmitter	4779.00
BE-320	Standard system for mobile and remote camera	3535.00



BE-320R and BE-320T of the 320 Wireless Video System

Antenna Options

▪ For detailed specifications including radiation patterns and technical notes request the "Antenna Options" catalog

Part #	Description	
AH-50/51	Linear and circular polarized high gain panel antennas	\$255.00
AS-30/31	Circular polarized rod antennas	249.00
AH-70	Linear reflector dish antenna (23dBi gain)	175.00
AH-65	Linear reflector dish antenna (17dBi gain)	139.00
AS-20/21	Circular polarized patch antennas	110.00
AS-22/23	Circular polarized patch antennas with 6" pigtail	105.00
AS-24/25	Linear patch panel antenna with 6" pigtail	105.00
AS-10/11	Dipole whip antennas	35.00

ACCESSORIES

BEC-300 Transmitter Mounting Bracket

▪ Can be attached to the back of an NP-1 battery case or on the wireless plate available from Anton/Bauer (#51200427) that attaches to the "Gold Mount" ▪ Accepts either BE-320 or BE-500 transmitters and recesses the power switch to prevent accidental switching



Transmitter mounted on camera with BEC-300

BEC-300 \$110.00

7000016B00 Universal Mounting Bracket

▪ Provides flexibility in mobile or temporary operations ▪ Mounts a transmitter or receiver to a tripod, light stand or similar device that has a 1/4"-20 mounting stud ▪ Tracks a remote transmitter with a tripod by attaching a receiver and panel antenna to the bracket ▪ For temporary transmissions the bracket can be used to attach a transmitter to a tripod or light stand

7000016B00 \$100.00

7000030B00 Rod Antenna Support

Designed to provide additional support to the circular polarized rod antennas (AS-30/31) to prevent accidental damage to the radome or antenna connector

7000030B00 \$85.00

NEMA Enclosures

▪ 4X rated fiberglass enclosures ▪ Can be used to install any model wireless video system in outside environments ▪ Units are pre-wired and come complete with fan, AC/DC converter (AC model), fuse, thermostat and an optional heater ▪ Installer must supply AC or DC power to the system and video/audio connections ▪ Enclosures are configured to internally count either a patch (models AS-22 to 25) or panel (models AH-50 and 51) antenna

Pole Mount: ▪ Pole mount will attach an enclosure or an AH-65/70 antenna to a pole with a minimum diameter of 3.0" ▪ Slots in the pole mount are 1.0" wide ▪ Standard 1/2" or 3/8" strapping is recommended ▪ Comes with mounting hardware for either an enclosure or antenna

Part #	Description	
7000033C00	Medium enclosure, 110VAC, fan and heater	\$785.00
7000033C01	Medium enclosure, 110VAC, fan	725.00
7000033C03	Medium enclosure, 12VDC, fan	625.00
7000028C00	Small enclosure, 110VAC, with fan and heater	535.00
7000028C01	Small enclosure, 110VAC, fan	475.00
7000028C03	Small enclosure, 12VDC, fan	425.00
7200011000	Receive antenna cable extension (for external AH-65 and AH-70 connection)	80.00
7000036C00	Medium pole mount for enclosures and AH-65, 70	60.00
7200004000	Transmit antenna cable extension (for external dipole)	40.00

Antenna Cables

7200006000	18" transmitter extension antenna cable	\$45.00
7200005000	12" transmitter extension antenna cable	43.00
7200004000	6" transmitter extension antenna cable	40.00
7200012000	24" receiver extension antenna cable	42.00
7200003000	18" receiver extension antenna cable	40.00
7200002000	12" receiver extension antenna cable	38.00
7200001000	6" receiver extension antenna cable	35.00

Power Cables

7200007000	Locking coaxial power plug to 4-pin Hirose power plug	\$85.00
7200008000	Locking coaxial power plug to Anton/Bauer power plug (#81688107)	85.00
3800011000	Locking coaxial power plug (user provides cable and other connector)	6.00

6800004000 12V Battery Pack

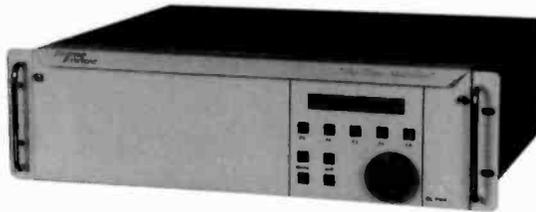
▪ 2.1A hour, high rate 12V rechargeable lead acid battery ▪ Housed in a compact, leather-like case which can be belt-attached or hooked to a shoulder strap ▪ Battery will power a standard low power transmitter a minimum of 24 hours and a receiver a minimum of 8 hours ▪ Cells can be recharged fully and reliably to 100% capacity at all times

6800004000 \$240.00

7200009000	Coiled power cord with connector for battery and locking coaxial power plug	48.00
7200010000	Coiled power cord with connector for battery only and unconnected leads on the other end	40.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

REFERENCE



TIME REDUCTION Time Machine™

- Time Machine reduces program time to create commercial insertion time
 - NTSC, PAL or PAL-M
 - Self-contained, small 3U rackmountable unit which requires no data compression
 - Capable of changing time without changing the pitch (frequency) of the video or audio programming
 - Consists of a mainframe which houses memory and all the electronics necessary for control of the video and audio—Time Machine storage
 - Maximum of 30 seconds of video and 2 channels of time reduction audio is available
 - Fully digital
 - Solid-state
 - Remote, GPI, 232 and BVW type control
- | | | |
|-------------------------|-------|-------------|
| Time Machine 10 seconds | ..... | \$38,000.00 |
| Time Machine 20 seconds | ..... | 66,000.00 |
| Time Machine 30 seconds | ..... | 93,000.00 |

AUDIO/VIDEO DELAYS



Audio/Video Delay

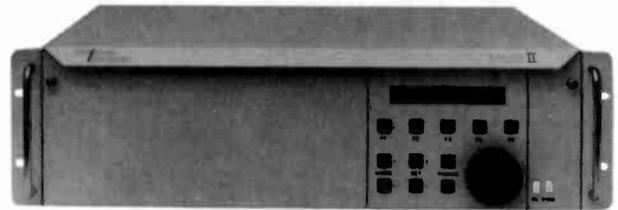
- Small, self-contained 3U rackmountable unit
 - Delays audio and video simultaneously to censor incoming feeds
 - Monitors incoming audio/video feeds to eliminate offensive or undesirable audio/video
 - Cue local operators when a network commercial or announcement needs to be replaced
 - Useful in earth station applications where delay is needed to compensate for differences in audio/video feeds
 - Build the amount of time the signal is delayed (up to 30 seconds)
 - No data compression
 - Fully digital
 - Solid-state
 - Built-in genlockable synchronizer
 - Fully compatible, with component video
 - Switches in alternative video, audio or both
- | | | |
|-------------------|-------|----------------------|
| Audio/Video Delay | | \$8,400.00-83,000.00 |
|-------------------|-------|----------------------|



Pipeline

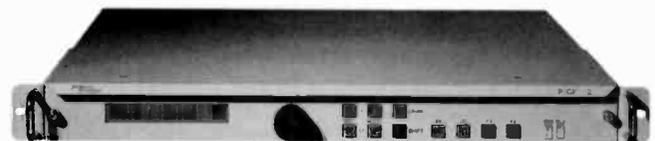
- Pipeline is a second generation adaptation of Prime Image's audio/video delay
 - Video and audio can be delayed separately, together, even in different amounts
 - Delay is available in 1-second increments from 1-10 seconds with no data compression
 - Operation is fully digital
 - Pipeline meets or exceeds all technical standards for broadcast
 - Input virtually any world standard in composite format, with matching output
 - 10-bit video sampling (8-bit is available)
 - Input/output NTSC, PAL, PAL-M, PAL-N, NTSC 4.43, SECAM
- | | | |
|----------|-------|----------------------|
| Pipeline | | \$5,100.00-28,000.00 |
|----------|-------|----------------------|

MULTICHANNEL SERIES



Multi II

- Chassis accommodates any combination of up to 10 standards converters, audio delays, transcoders, distribution amplifiers, routing switchers, time base corrector/synchronizer boards
 - NTSC, PAL, PAL-M, PAL-N, SECAM, NTSC 4.43
- | | | |
|------------------|-------|-----------------|
| Multi II Chassis | ..... | \$2,700.00 |
| Multi II Boards | ..... | 395.00-3,150.00 |



Pick-2

- Chassis accommodates any combination of up to 2 standards converters, audio delays, transcoders, distribution amplifiers, routing switchers, time base corrector/synchronizer boards
 - NTSC, PAL, PAL-M, PAL-N, SECAM, NTSC 4.43
- | | | |
|----------------|-------|-----------------|
| Pick-2 Chassis | ..... | \$1,390.00 |
| Pick-2 Boards | ..... | 395.00-3,150.00 |



TIME BASE CORRECTORS/SYNCHRONIZERS 50 II TBC/Freeze II

- NTSC, PAL or PAL-M
 - AGC on/off; H-position; vertical color advance (1, 2 or 3 lines); horizontal chroma-to-luma adjust
 - 3 levels of detail enhancement
 - Frame or field freeze and variable rate strobe
 - Transcodes composite and Y/C inputs to all outputs
 - Full proc amp controls
 - Optional 3-way adaptive comb filter
- | | | |
|---------------------|-------|------------|
| 50 II TBC/Freeze II | | \$1,999.00 |
|---------------------|-------|------------|

Note: The Prime Image limited 3-year warranty provides for shipping (within the United States), parts and labor at no charge to our customers.

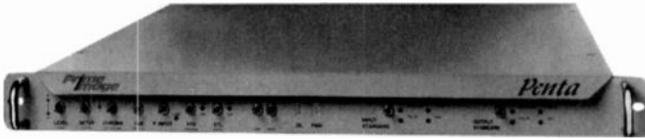
ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

STANDARDS CONVERTERS/ COMMUNICATIONS LINK/CHASSIS



Prime Image

STANDARDS CONVERTERS



Penta Series

▪ Addition of a fifth memory field improves quality of the signal processing and reduces judder anomalies ▪ 1U high rackmountable unit ▪ 15W power consumption ▪ Fully controllable from the front panel ▪ Full proc amp ▪ Ultrastable freeze-frame/field ▪ Variable rate strobe ▪ Built-in time base correction/synchronization within or between standards ▪ Inputs: NTSC, NTSC 4.43, PAL, PAL-M, PAL-N or SECAM ▪ Outputs: NTSC, PAL, PAL-M or PAL-N, exceeds technical specifications and broadcast standards worldwide

Penta \$6600.00

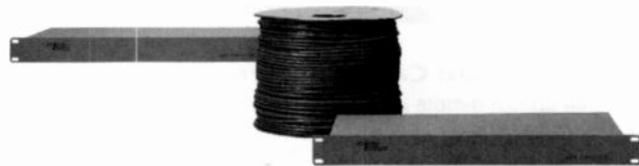


Std/Con Series

▪ NTSC, PAL, PAL-M, PAL-N, SECAM, NTSC 4.43 ▪ 1 or 10 channel standards converters ▪ Each channel has composite or Y/C in and out ▪ Time base corrects and synchronizes input ▪ Each channel has 3-way adaptive comb filter ▪ Full digital design—no drift, no alignment ▪ Many features: freeze, strobe, enhance, AGC, vertical and horizontal color-to-luma adjust and more

Std/Con Series \$4450.00

COMMUNICATIONS LINK



A/V Twister

▪ Sends broadcast stereo audio and video down a single twisted pair conductor up to 5000' (1,525m) ▪ Requires transmitting unit, 1 to 15 receiving units and G-5 twisted pair cable

A/V Twister Audio and Video..... \$5000.00

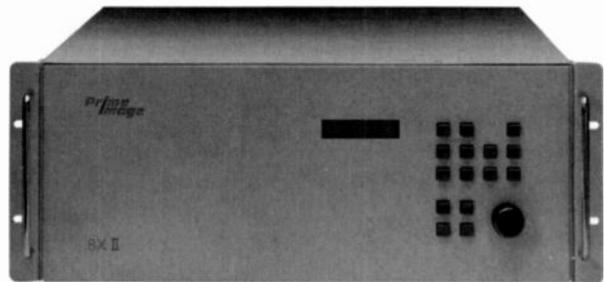
A/V Twister Serial Audio only 2400.00

CableLock-20

▪ Used to reduce interchannel crosstalk in multichannel situations, such as cable TV ▪ CableLock-20 can lock (sync) up to 20 channels together to reduce crosstalk between channels ▪ The product works in all world TV standards ▪ The self-contained 4U chassis is rackmountable

CableLock-20..... per channel/\$650.00

CableLock-20 Chassis..... 850.00



DIGITAL DESKTOP VIDEO

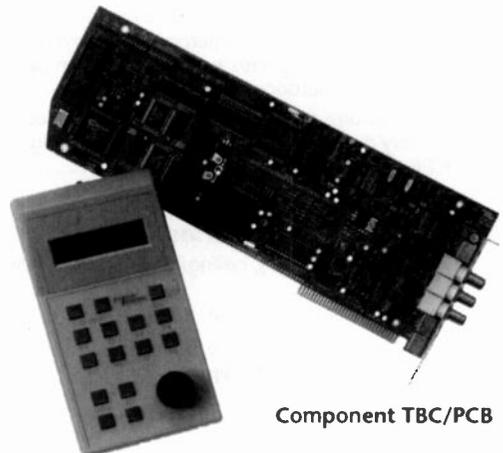
8X-II

▪ Chassis accommodates any combination of up to 8 standards converters, transcoders, distribution amplifiers, routing switches, time base corrector/synchronizer boards ▪ NTSC, PAL, PAL-M, PAL-N, SECAM, NTSC 4.43

8X-II Chassis..... \$450.00

8X-II Boards..... 295.00-1650.00

Note: The Prime Image limited 3-year warranty provides for shipping (within the United States), parts and labor at no charge to our customers.



Component TBC/PCB

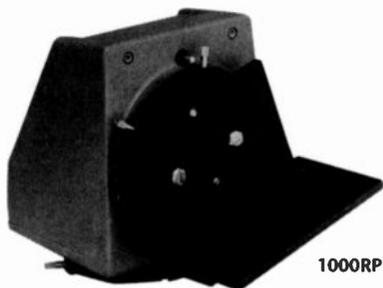
ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

See Our Ad on Page 33



DCS Digital Control System

▪ Engineered to provide precise centralized remote positioning control of TV cameras and zoom lenses ▪ Miniaturized microprocessor based robotic control transmitters (RCT) control up to 8 remote positioning units (RPU) which receive a constantly updated data stream over a serial data link ▪ Data is transmitted to the RPU via Actuator Receiving Units (ARU) which continuously update information controlling speed, position and direction ▪ Up to 16 preset selections for each camera position are easily programmed and stored in memory ▪ ARUs convert serial data information to Pulse Width Modulation (PWM) voltage commands to the RPUs ▪ Distance between transmitter and receiver is effective with separations in excess of 2000' with no discernable deterioration of signal or reliability of remote unit operation ▪ Speed and direction are transmitted on reading RCT joystick arm deflection from center rest position ▪ Operates with RCS unit voltages up to 24VDC ▪ Manual or automatic operation



1000RP

DCS 1000 Series Robotic Positioning Units

- 1000RP** ▪ 15 lbs. maximum load ▪ For outdoor use ▪ Preset pan/tilt ▪ Compact model ▪ 6.5"H x 5.5"W x 10.25"D ▪ Weighs 6 lbs. ▪ Tilt ±90° ▪ Approximately 350° pan ▪ Cast vinyl coated aluminum housing with external aluminum parts anodized for outdoor use \$1695.00
- 1100RP** Same features as 1000RP, except: ▪ 10 lbs. maximum load ▪ For indoor use ▪ 5.75"H x 4.87"W x 6"D ▪ Weighs 5 lbs. ▪ Preset pan/tilt ▪ Miniature model \$1395.00
- 1610RP** ▪ 30 lbs. maximum load ▪ For indoor use ▪ Low profile ▪ Preset pan/tilt ▪ 12.2"H x 9.5"W x 8.0"D ▪ Weighs 25 lbs. ▪ Tilt ±20° angular travel ▪ Approximately 320° max. pan, 270° max. with potentiometers ▪ Cast vinyl coated aluminum housing with external aluminum parts anodized for outdoor use \$2950.00
- 1600RP** Same features as 1610RP, except: ▪ For outdoor use ▪ Heavy duty ▪ 14.9"H x 9.5"W x 8.0"D ▪ Weighs 27.5 lbs. ▪ Tilt ±40° angular travel \$2950.00

Robotic Positioner Accessories

- 4075C** Column mount (10"), ceiling/platform camera/lens mount \$135.00
- 4000W** Wall mounting for 1000RP 129.00
- 4100T** Tripod mount, MTC RPU to tripod (¼" and ⅜" THD). . 119.00
- 4100W** Wall mounting for 1100RP 99.00

DCS 2000 Series Robotic Control Transmitters

▪ PWM voltage commands, storage and instant selection of up to 16 operator programmable preset position commands up to 8 remote camera locations ▪ Units are available for use in either desktop or rackmounting applications ▪ Designed to be mounted with Model 4110ARUC card cage receiver to form a single compact integrated

transmit/receive module, mounted in 5¼"H of vertical rack space
▪ Includes lens control switch for speed mode or position mode



2100RCTD

- 2100RCTD Desktop control/transmitter, preset, time/date. . \$1795.00
- 2100RCTR Rackmounted control/transmitter, preset. 1700.00

Controller Accessory

- 4460DT Serial data distribution tap box \$245.00

4000ARUW/4040ARU Actuator Receiver Modules

- Single weatherproof receiver module which converts incoming serial data from an RCT control transmitter to positioning commands to a remote RPU ▪ PWM DC motor control ▪ Manual/automatic operation ▪ Flat, compact profile allows mounting to any surface ▪ Contains a Model 4400ARUB plug-in receiver board ▪ 12 or 24VDC selectable output voltage ▪ 115VAC input voltage
- 4000ARUW** \$1250.00
- 4040ARU** Same features as 4000ARUW, except: ▪ Does not include weatherproofing 1095.00



4110ARUC Card Cage Receiver

- Controls up to 8 remote positioning units ▪ PWM DC motor control ▪ Manual/automatic operation ▪ 5¼" EIA standard 19" rack system ▪ 100-240VAC, 50/60Hz power supply ▪ 12 or 24VDC switchable each output ▪ 115VAC input voltage ▪ Constructed of 16-gauge steel ▪ 5.25"H x 11.75"W x 11.75"D ▪ Weighs approximately 16 lbs. (fully loaded) ▪ Finish: dark gray powdercoat \$995.00

Receiver Components

- 4400ARUB** Plug-in receiver board \$795.00
- 4410ARUV** Plug-in video switch board 795.00
- 4420ARUS** RS-232 communication board. 795.00
- 4130ARUP** Power supply board for 5-8 cameras. 595.00

Note: Pro/Four offers a wide variety of cables for interconnect and lenses. Lens cables are available based on the lens. Please call for more details.

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



MULTIMEDIA PROJECTORS

Desktop Projector 9200

- XGA (1024 x 768); VGA (640 x 480, 720 x 400, 640 x 400)
- NTSC/NTSC 4.43/PAL (N and M)/SECAM compatibility
- 2 computer, 2 video, 1 S-Video sources ▪ 500 ANSI lumens ▪ 100:1 contrast ratio ▪ 1.3" polysilicon display technology ▪ 16.7 million colors ▪ 120W UHP metal-halide lamp (2000 hours life) ▪ 220W power consumption ▪ Includes: Remote control, U.S./European power cord, lens cap, computer video cable, computer mini-plug to mini-plug audio cable, Mac adaptor, PC control cable, A/V cable, S-Video cable **\$11,999.00**

Desktop Projector 9100

- High resolution, workstation-compatible XGA projector ▪ 300 ANSI lumens
- IBM/Macintosh compatible
- Integrated video (NTSC/PAL/SECAM) ▪ 16.7 million colors
- 1024 x 768 resolution
- Fit-to-View® for full-screen viewing of images from 640 x 480, 800 x 600, 1024 x 768, 1280 x 1024 resolutions ▪ Optional MediaExpress system for computer-free presentations ▪ Compatible with the Proxima Cyclops 2079 ▪ Includes: Workstation connector (13C3), VGA connector (HD-15), Macintosh connector (DB-15), SGI connector (13C3), DEC connector (3C3), composite video/audio cable, computer audio cable, RCA Y-cable adaptor, S-Video cable, PC serial cable, Macintosh ADB cable, programmable Cyclops remote control with Cyclops F/X software and power cord **\$9,999.00**

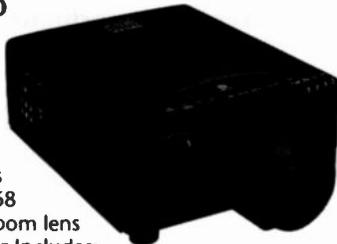


Desktop Projector 5800

- SVGA (800 x 600); VGA (640 x 480, 720 x 400, 640 x 400) resolution ▪ NTSC/PAL/SECAM compatibility ▪ 700 ANSI lumens
- 100:1 contrast ratio ▪ 2 computer, 2 video, 1 S-Video source
- Portable (18.3 lbs.) ▪ 1.3" polysilicon display technology ▪ 16.7 million colors ▪ 260W UHP metal-halide lamp (1500 hours life)
- 350W power consumption ▪ Includes: Wireless remote control, U.S./UK and European power cords, lens cap, computer video cable, computer mini-plug to mini-plug audio cable, Mac adaptor, PC control cable, PS/2 control cable, ABD control cable, A/V cable, S-Video cable, dust cover **\$8,999.00**

Desktop Projector 5610

- High quality SVGA polysilicon projector ▪ 500 ANSI lumens
- IBM/Macintosh compatible
- Integrated video (NTSC/PAL/SECAM) and stereo audio ▪ 16.7 million colors
- 800 x 600 resolution ▪ Supports 640 x 480, 800 x 600, 1024 x 768 (Fit-to-View) ▪ Motorized 1.6:1 zoom lens
- 2 computer and 2 video inputs ▪ Includes: Remote control with mouse control, VGA video cable, RS-232 cable, Macintosh video adaptor cable, composite video/audio cable, computer audio cable, Universal power cord **\$8,499.00**



Desktop Projector 4200z

- Full-featured, SVGA, DLP-based projector ▪ 400 ANSI lumens in color, 1400 in grayscale ▪ IBM/Macintosh compatible ▪ Integrated video (NTSC/PAL/SECAM) ▪ 16.7 million colors ▪ 800 x 600 pixel resolution ▪ Supports 640 x 480, 800 x 600 ▪ Multiple computer, video and audio inputs ▪ 1.5:1 motorized zoom lens ▪ Optional MediaExpress for computer-free presentations ▪ Compatible with the Proxima Cyclops 2074 ▪ Includes: VGA cable, Mac adaptors,

- composite audio/video cable, computer audio cable, RCA-to-mini-stereo adaptor, S-Video cable, programmable Cyclops remote with Cyclops F/X software, power cord **\$7,999.00**

Desktop Projector 5500

- High quality polysilicon projector ▪ 500 ANSI lumens
- IBM/Macintosh compatible ▪ 2 computer inputs ▪ Integrated video (NTSC/PAL/SECAM) ▪ 16.7 million colors ▪ 640 x 480 resolution
- Stereo audio ▪ 1.6:1 motorized zoom lens and focus ▪ Compatible with the Proxima Cyclops 2075 ▪ Includes: VGA video cable, Macintosh video adaptor cable, composite video/audio cable, back lit 19-key infrared remote control, power cord **\$5,499.00**

Lightbook™ Projector 20

- Lightweight, SVGA portable executive LCD projector ▪ 200 ANSI lumens ▪ 16.7 million colors ▪ 800 x 600 pixel resolution ▪ Supports 640 x 480, 800 x 600 ▪ IBM/Macintosh/NTSC/PAL/SECAM/S-Video compatible ▪ Integrated video and stereo audio ▪ Includes: Programmable Cyclops remote control, Cyclops Quick Remote, Cyclops F/X software, executive carrying case, composite video/audio cable, S-Video cable, computer audio cable, VGA video cable, mini-jack-to-RCA cable adaptor, Mac-to-VGA adaptor, VGA-to-Mac monitor adaptor, serial cable, ADB cable, Kensington Security Connector, power cords **\$4,999.00**



Lightbook Projector 10

- Lightweight, portable executive LCD projector ▪ 250 ANSI lumens
- 16.7 million colors ▪ 640 x 480 pixel resolution ▪ Supports 640 x 480, 800 x 600 (Fit-to-View) ▪ IBM/Macintosh/NTSC/PAL/SECAM/S-Video compatible ▪ Integrated video and stereo audio
- Includes: Programmable Cyclops remote control, Cyclops Quick Remote, Cyclops F/X software, executive carrying case, composite video/audio cable, S-Video cable, computer audio cable, VGA video cable, mini-jack-to-RCA cable adaptor, Mac-to-VGA adaptor, VGA-to-Mac monitor adaptor, serial cable, ADB cable, Kensington Security Connector, power cords **\$3,999.00**

MediaExpress Electronic Presentation System

- Optional system for presenting without a computer ▪ Save presentations as Adobe Acrobat PDF files onto a disk, and insert disk into projector ▪ Compatible with Proxima's Desktop Projector 4100z, 4200z and 9100 ▪ Includes: Adobe Acrobat Exchange for Presenter's software in PC and Macintosh format
- ME90H Hard and floppy drive for DP9100 **\$1,899.00**
- ME40H Hard and floppy drive for DP4100z/4200z. **999.00**
- ME40F Floppy drive for DP4100z/4200z **499.00**

CYCLOPS INTERACTIVE POINTER SYSTEM

- Provides cordless point-and-click control of your software and computer ▪ User installable ▪ Includes cables, driver software, camera eye and wand ▪ Optional laser pointer for control up to 40' away
- Cyclops A2079 Compatible w/Desktop Projector 9100 . . . **\$799.00**
- Cyclops A2050-WS Compatible w/Proxima Ovation®+ 944 . . . **499.00**
- Cyclops A2074 Compatible w/Desktop Projector 4XXX . . . **499.00**
- Cyclops A2075 Compatible w/Desktop Projector 5500 . . . **499.00**
- Cyclops A2030 Compatible w/Proxima Ovation 810/820 . . . **299.00**
- Cyclops A2050-PC Compatible w/Proxima Ovation+ 944 and 846. **299.00**
- Cyclops Laser Pointer A90 **295.00**

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

REFERENCE



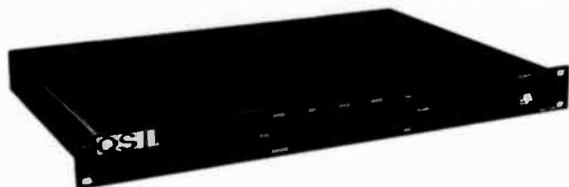
2048 Message Generator

- 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
- Full user control of display placement on-screen
- Relay bypassing on power-down
- 1 1/2"H x 19"W x 12"D
- Rackmount
- 115VAC **\$1995.00**



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
- 1 1/2"H x 19"W x 12"D
- Rackmount
- 117VAC **\$1895.00**



424 Colorbar Generator

- Same as 408, except 24-character identification **\$1995.00**

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 as each second passes, then 200Hz tone at 2-second mark
- Rear panel remote
- 1 1/2"H x 19"W x 12"D
- Rackmount
- 115VAC **\$1595.00**

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
- 1 1/2"H x 19"W x 12"D
- Rackmount
- 115VAC **\$995.00**



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
- 1 SMPTE bar output without ID
- 1 1/2"H x 19"W x 16"D
- Rackmount
- 117VAC **\$3695.00**

VSID-24 Video Source Identifier

- Remote control of active/VBI display
- Remote display delete
- Remote display flash
- 1RU high
- 1- to 24-character display
- Field changeable characters
- Digital vertical positioning
- Display flashing or constant **\$1695.00**

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**



908 Multi-Image Inserter

- 24-bit color
- 256 different colors on screen at the same time from a palette of 16 million colors
- Built-in 8-bit linear keyer
- Imports images
- Digital fader
- 1 RU high
- Floppy drive unit
- 8 programmable input ports
- Mouse controlled menu driven
- Repositionable images
- Resolution 720 x 480
- Rear panel RS-232/mouse port allows for changing logos via remote control
- Edit software included **\$3195.00**
- 908P Same as 908/PAL version, pixel resolution 720 x 512 . . **3495.00**

808 Image Inserter

- Self-contained unit, 1RU high
- Image size, corner screen to full-frame
- 24-bit color
- Built-in 8-bit linear keyer, 256-step
- 256 colors on-screen at any time from a palette of 16 million colors
- Resolution 720 x 480
- Digital fade
- NTSC in/out
- Nonvolatile CMOS memory
- Logo generation
- Full bit-mapped frame **\$1995.00**
- 808P Same as 808/PAL version, pixel resolution 720 x 512 . . **2295.00**
- Logo program charge **150.00**
- Extra logo **300.00**

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 **\$3495.00**

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 **\$1995.00**

6100 Microwave AGC Meter

- Produces variable length, vertical interval single white line in response to microwave receiver's AGC output
- Loophrough input picks up AGC flag
- Selectable vertical interval flag line for multiple hops
- 117VAC
- 1 1/2"H x 8 1/2"W x 5 1/2"D **\$495.00**

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





COMPUTER PROMPTER SOFTWARE

QCP Mark II Software (PC Compatible)

- 12-button variable speed desk control ▪ Pro Sentinel key ▪ For real time applications like news and demanding production situations
- Simultaneous scroll/edit ▪ Closed captioning ▪ Print and communications ▪ Special versions available for most electronic newsrooms \$4450.00

QCP Mark 1.5 Software (PC Compatible)

- 2-button variable speed hand control ▪ Pro Sentinel key
- Full-featured prompting software for production and public speaking ▪ Closed captioning ▪ Split, full screen and prompter word processor modes ▪ Dynamic run-order management ▪ Drop down menus ▪ International fonts ▪ Ultrasmooth glide scroll \$3450.00

CueMac Software (Macintosh Compatible)

- CueMac software program license ▪ Pro Sentinel key ▪ RGB/composite cable ▪ Prompts on virtually all Macs, including the Powerbook line ▪ Create scripts with CueMac's powerful editor or import them automatically from popular word processors—even Windows, DOS and Unix originated documents ▪ Choose typestyles, fonts and character sets, including Arabic, Chinese, Hebrew, Japanese, etc. \$3400.00

QCP LT Software (PC Compatible)

- 2-button variable speed hand control ▪ Pro Sentinel key ▪ For studio or on-location ▪ Easy to use package ▪ File import enables you to load WordPerfect, MS Word and ASCII files right on the set
- Wide selection of fonts and smooth scroll \$2650.00

Computer Video Options

- VGA card with genlockable NTSC output \$895.00
- VGA card with NTSC output \$599.00
- EGA card with composite output 275.00
- VGA-to-NTSC (monochrome) encoder 225.00
- RGB (TTL)-to-composite encoder 95.00

ON-CAMERA VIDEO PROMPTER EQUIPMENT

FDP-11 Flat Display TelePrompter

- For remote/studio applications ▪ Tripod head has minimum 20 lb. capacity
- Above-the-lens mount configuration
- 90-265VAC/12VDC power ▪ Pro Pac 14 or NP-1 equivalent battery source ▪ 10.4" diagonal screen size ▪ Operates in any lighting condition ▪ Lightweight ▪ Outstanding readability
- Can be used with Robotics \$5175.00

FDP-11 HB FDP-11 with high brightness illumination for outdoor use 5975.00



17" On-Camera Prompter (Studio)

- Prompter camera mount ▪ Camera balancing plate ▪ VPS eyeline ▪ Utilizes 39% more viewing area than the 15" on-camera prompter ▪ Uses modular printed circuit board design ▪ Weighs 27 lbs. \$2850.00

MVP-11 11" Video Prompter (Studio)

- MVP-11 eyeline ▪ Prompter camera mount ▪ Below-the-lens system weighs only 20 lbs. ▪ 27% larger viewing area than 9" prompters
- Great for mid-sized studios ▪ AC/DC powered \$2850.00

15" On-Camera Prompter (Studio)

- Prompter camera mount ▪ Camera balancing plate ▪ VPS eyeline
- Exceptional brightness and contrast ▪ Use with any camera application \$2600.00

MVP-9 9" Mini Video Prompter (Studio/Remote)

- AC/DC powered ▪ MVP-9 eyeline ▪ Prompter camera mount ▪ Lightweight, rugged and portable ▪ Proven under an infinite variety of conditions \$2375.00



MINI COMPUTER PROMPTER PACKAGES (Remote/Studio)

MVP-11-C Mini Computer Prompter Package

- QCP-LT software program ▪ Variable speed script control ▪ Pro Sentinel ▪ MVP-11 prompter monitor (AC/DC) with eyeline
- Camera mount \$5375.00

MVP-9-C Mini Computer Prompter Package

- QCP-LT software program ▪ Variable speed script control ▪ Pro Sentinel ▪ MVP-9 prompter monitor (AC/DC) with eyeline ▪ Camera mount \$4895.00

COMPUTER PROMPTER PACKAGE (Studio)

150NCAM-C Computer Prompter Package

- QCP Mark 1.5 software program ▪ Variable speed script control
- Pro Sentinel ▪ 15" prompter monitor with eyeline ▪ Camera mount and balancing plate \$5925.00

Note: For multiple on-camera prompters, refer to On-Camera Video Prompters and add package prompter as required.

VIDEO PROMPTER EQUIPMENT

VPS-100 Console Paper Transport

- Vidicon camera with lens ▪ Remote hand control ▪ Scans and scrolls 8½" wide paper for display on a prompter monitor \$3400.00

15" Freestanding Prompter System (Studio)

- Heavy-duty elevated stand with casters
- VPS eyeline ▪ Mounted independently on a rollaway stand ▪ For lightweight pan/tilt heads and camera support tripods . . . \$3050.00

Presidential Executive Speech Prompter (Public Speaking)

- 15" high resolution prompter monitor
- High efficiency, 2-way optical panel, aluminum base, matching side panels, locking cap and adjustable black anodized rod ▪ Ideal for a public speaking forum
- Sold in pairs ea./\$2600.00



Presidential Executive

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



QPT-15 24VDC Pan-and-Tilt

- Fewer parts for greater reliability
- All components are readily accessible and easy to replace
- Gearing assemblies are constructed of the highest performance materials
- Worm drives are made of machined steel, perfectly matched to the drive gear for smooth operation
- Drive gear is made of Delrin™, a self-lubricating composite used in demanding applications such as aircraft manufacturing
- Tested under almost every conceivable mechanical, electrical and weather related condition, assuring trouble-free performance even under the most extreme conditions
- Optional accessories: potentiometers, heaters
- Available in 12VDC and 24VAC



General Specifications

▪ Voltage: 24VDC ▪ Weight Load Capacity: 15 lbs.

Pan Specifications

▪ Rotation: 0-360° ▪ Torque : 35 lbs./inch ▪ Speed°/Sec (±1°): 1-35
 ▪ Duty Cycle: Intermittent ▪ Power—Amps: 0.3

Tilt Specifications

▪ Tilt ±: 90° ▪ Torque: 90 lbs./inch ▪ Speed°/Sec (±1°): 1-12 ▪ Duty Cycle: Intermittent ▪ Reverse Cycle: Instantaneous ▪ Power—Amps: 0.5

Electrical Specifications

▪ Motor Type: Permanent magnet ▪ Limit Switches: 10 amps, 10 million circle rating ▪ Pin Connectors: 12

Mechanical Specifications

▪ Dimensions: 8¼"H x 5¼"W x 7¾"L ▪ Weight: 7.5 lbs. ▪ Drive Train: Chain-Delrin worm gear ▪ Gear Backlash: Zero adjustable ▪ Bearings: Caged roller and engineered resins ▪ Construction: Steel/aluminum

Operational Specifications

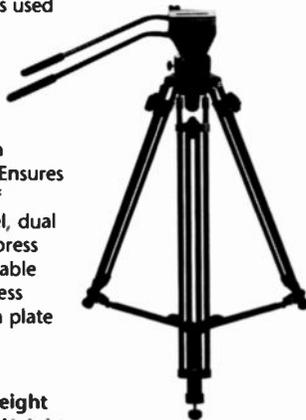
▪ Ambient Temperatures: -15°C (+5°F) to 55°C (+131°F) ▪ Limit Stops: External (adjustable) ▪ Weather Environment: Gasketed to prevent water and dust penetration ▪ Exterior Finish/Color: Baked-on textured epoxy enamel ▪ Color: Ford M-9

QPT-15* 24VDC..... \$1372.00

*Less potentiometers and heater

Jupiter Fluid Head Tripod System

- Designed for lightweight CCD cameras used in broadcast, educational and industrial applications
- Constructed from lightweight alloy weighing only 17 lbs.
- Accommodates cameras up to 30 lbs.
- The fluid head provides smooth, precise pan and tilt movements through continuously adjustable drag controls
- Ensures smooth fluid action from start to stop of camera motions
- Includes: bubble level, dual control arms, 100mm claw ball with express leveling indicator, off-the-ground adjustable spreader, rubber feet reversible to stainless steel spikes, quick-release sliding camera plate and soft touch knobs



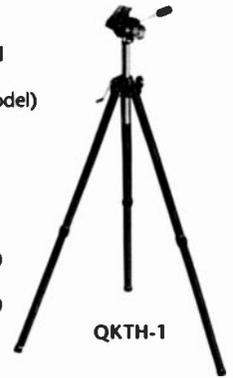
Specifications

▪ Load Capacity: 30 lbs. ▪ Maximum Height (minimum spread): 68.5" ▪ Maximum Height (maximum spread): 66" ▪ Minimum Height (minimum spread): 39.5" ▪ Minimum Height (maximum spread): 35" ▪ Tilt Angle: 45° up and 45° down ▪ Pan Rotation: 360° ▪ Camera Screws: ¼-20 and ⅜-16

QJTH-1..... \$3134.00

Quickset Husky

Tripods, Counterbalance Spring Heads ▪ Load Capacity: 17 lbs. ▪ Maximum Height: 57"-72" ▪ Minimum Height: 23"-31" (dependent on model) ▪ Column Height: 16" ▪ Tilt Angle: 60° up, 90° down ▪ Pan Rotation: 360° ▪ Weight: 7 lbs.
 QKTH-1 Lightweight, all-aluminum tripod. Spring-loaded counterbalance head, elevator column with struts, all black finish. 2-section tubular legs. Maximum Height: 57"
 QKTH-1..... \$332.00
 QKTH-9 Trolley, struts, elevator column, 4" wheels. Maximum Height: 58" 386.00



Photographic Tripods

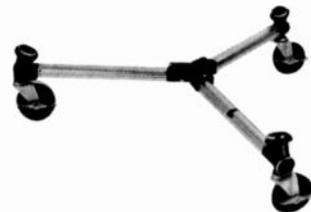
▪ Load Capacity: 17 lbs. ▪ Maximum Height: 72"-90" ▪ Minimum Height: 30"-31" ▪ Column Height: 16" ▪ Tilt Angle: 60° up, 90° down ▪ Pan Rotation: 360° ▪ Side Tilt: 40° up, 105° down ▪ Weight: 7.5-8.25 lbs.
 QKTH-17 Lightweight aluminum tripod. 3-section elevator column and 3-D pan, tilt and side tilt head. Maximum Height: 72" \$374.00
 QKTH-21 Same as QKTH-17, but with 4-section tubular legs 463.00
 QKTH-22 Same as QKTH-17, but with lift column and 4-section tubular legs. Maximum Height: 54" 418.00
 6-14047-9 Video cart monopod, 3-D head. 251.00

Fluid Head Tripod Systems

▪ Load Capacity: 12 lbs. ▪ Maximum Height: 57"-72" ▪ Minimum Height: 25"-31" ▪ Column Height: 16" ▪ Tilt Angle: ±90° ▪ Pan Rotation: 360° ▪ Weight: 8 lbs.
 QKTH-27 3-section legs, elevator column, struts. Maximum Height: 72" \$343.00
 QKTH-29 Trolley, struts, elevator column, 4" wheels. Maximum Height: 58" 339.00

QKTH-30 Fluid Head Tripod System

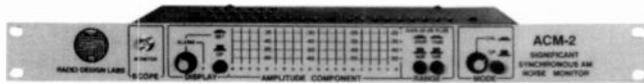
Head: ▪ Capacity: 12 lbs. ▪ Pan Rotation: 360° ▪ Tilt Angle: 60° up, 90° down ▪ Head: Permanently affixed to column ▪ Handle: 14" with custom grip ▪ Mounting: Quick on/off plate with safety lock, 3⅜" x 2½" with ¼-20 screw, 3 balancing locations ▪ Controls: Pan combined brake and drag, tilt brake ▪ Finish: black ▪ Maximum Height: 72" ▪ Leg type: 2-section ▪ Mounting: Manual lift column
 Total Unit: ▪ Maximum Height: 72" ▪ Minimum Height: 26" ▪ Weight: 7½ lbs. \$306.00
 QKTH-31 Same as QKTH-30, but without strut, quick-change plate 259.00
 6-14058-6A Quick-change plate for QKTH-30 38.00



QKD-1 Dolly (For Husky Tripods Only)

▪ Load Capacity: 50 lbs. ▪ Wheel Size: 4" x ⅜" ▪ Wheel Circle: 35" ▪ Folds to: 4" x 6" x 19" ▪ Weight: 8 lbs. \$149.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



ACM-2 FM/AM Noise Monitor

▪ Accurate metering of significant synchronous AM noise ▪ 20-LED bright-string metering with 4 operating ranges ▪ Programmable ACM wide-band, 75µs and high-pass filtering ▪ Programmable alarm with remote status output ▪ Continuous reading remote DC output for AM noise level ▪ Remote DC output representing transmitter power output \$751.00

Rack-Up™ Series

RU-LA2D IHF-PRO Interface ▪ Unparalleled audio performance ▪ Stereo balanced/unbalanced conversion ▪ Connectorized audio interface ▪ Bidirectional audio interface ▪ Gain adjustments. . . \$239.00

RU-BLA2 Stereo Line Amplifier ▪ XLR in/out stereo line amplifier ▪ Gain trim on both channels ▪ Unparalleled audio performance ▪ ½-rack, high density rackmounting \$214.00

RU-MP2 Stereo Mic Preamp ▪ XLR in/out stereo mic preamp ▪ Gain trim on both channels ▪ Selectable phantom on each input ▪ Front or rear panel line level outputs ▪ RF filtered inputs . . \$269.00

RU-MX5 5-Input Mic/Line Mixer ▪ Output level indicators ▪ Mic mixing with phantom capability ▪ Expandable mixing capability ▪ ½-rack, high density rackmounting \$223.00

RU-DA4D 2 x 4 Stereo Audio Distribution Amplifier ▪ Stereo audio distribution with 4 outputs ▪ Mono distribution with 8 outputs ▪ Multiple isolated audio feeds ▪ Individual audio level controls ▪ Audio presence indicators ▪ ½-rack, high density rackmounting \$208.00



RU-BDA3 3-Output Audio Distribution Amplifier ▪ XLR in/out line level distribution amp ▪ Gain trim on input ▪ Stand-alone or rackmountable audio DA ▪ RF filter inputs ▪ ½-rack, high density rackmounting \$201.00

RU-UDA4 2 x 4 Stereo Unbalanced Distribution Amplifier ▪ Stereo unbalanced audio distribution ▪ 4 outputs per channel ▪ Stand-alone or rackmountable ▪ ½-rack, high density rackmounting . . . \$142.00

RU-MDA3 1 x 3 Microphone Distribution Amplifier ▪ XLR in/out microphone distribution amplifier ▪ Gain trim on input ▪ Stand-alone or rackmountable microphone DA ▪ Selectable phantom on input \$203.00

RU-SM12 Dual Channel Audio Meter ▪ Precision audio level metering ▪ Digital string display indication ▪ Precise left/right meter tracking ▪ Individual channel calibration controls ▪ Selectable peak or average metering ▪ Selectable metering of peak L+R/L-R ▪ ½-rack, high density rackmounting \$192.00

RU-VDA4 1 x 4 Video Distribution Amplifier ▪ Video distribution with 4 outputs ▪ Adjustable gain amplification ▪ Input loopthrough jack ▪ Video 1V signal indicator ▪ 10MHz bandwidth ▪ ½-rack, high density rackmounting \$215.00

RU-VA2 Video Attenuator ▪ Dual channels ▪ Front panel level adjustment ▪ Stand-alone or rackmountable ▪ 75 ohm attenuators ▪ ½-rack, high density rackmounting \$130.00

Active Stick-On™ Series

STA-1 Electronic Transformer Pair ▪ Dual channel ▪ Up to 20dB gain in an audio line ▪ Conversion from balanced to unbalanced or unbalanced to balanced ▪ Conversion from high to low impedance or low to high impedance ▪ Frequency response: DC to 25kHz ±0.25dB ▪ Total harmonic distortion: 0.003% to 0.009%; 0.005% nominal. \$122.00

STA-1M Audio Line Amplifier ▪ A single channel audio line amplifier ▪ Balanced or unbalanced inputs and outputs ▪ Bridges a line to avoid loading ▪ Hi/Lo or Lo/Hi impedance conversion ▪ Instrumentation input to isolate ground "loops" ▪ Precisely matches audio levels \$90.00

ST-SH1 Stereo Headphone Amplifier ▪ Allows bridging any audio line, adjusting the gain and driving any impedance headset ▪ The circuit design allows the input to accept either balanced or unbalanced signals, of either high or low impedance. \$103.00

ST-PA2 2W Utility Amplifier ▪ 2WRMS output ▪ Drives 8 or 600 ohms ▪ Low noise and distortion ▪ Adjustable gain \$58.00

ST-PA6 6W Power Amplifier ▪ Up to 6WRMS into 8 ohms ▪ 2 balanced or unbalanced inputs ▪ Full output from small input signals ▪ Frequency response: 30Hz to 40kHz \$79.00

ST-MX3/MMX3/MLX3/MXL3/LMX3 ▪ Mix mic or line level signals ▪ Individually adjustable inputs ▪ Expandable systems (multiple modules may be combined for larger mixing systems) ▪ All mixers are line level output

ST-MX3 Line level mixer, 3 line inputs \$103.00

ST-MMX3 Mic level mixer, 3 mic inputs \$113.00

ST-MLX3 Mic/line level mixer, 1 mic input, 2 line inputs . . \$108.00

ST-MXL3 Line to mic mixer, 3 line inputs, 1 mic output. . . \$108.00

ST-LMX3 Line and mic level mixer, 2 mic inputs, 1 line input, 1 line output 108.00

ST-DA3 Audio Distribution Amplifier ▪ Audio distribution with up to 3 outputs ▪ Balanced or unbalanced input and outputs ▪ Total harmonic distortion (10Hz to 30kHz): <0.03% Hi-Z load, <0.015% 600 ohm load ▪ Frequency response: ±0.25dB 10Hz to 30kHz, ±0.50dB 10Hz to 45kHz \$113.00

STM-DA3 Mic Distribution Amplifier ▪ Feeds 1 mic to 3 inputs ▪ Electrical isolation ▪ Audio isolation ▪ Low-noise performance ▪ Ultralow distortion ▪ Unparalleled phase response ▪ Versatility of "Stick-On" compactness \$113.00

STM-1 Mic Preamplifier ▪ Hi- or Lo-Z input mic preamplifier ▪ 12VDC to 40VDC ▪ Balanced or unbalanced output ▪ Optional phantom supply input ▪ Balanced microphone input accepts impedances from 150 to 600 ohms ▪ Frequency Response: 50Hz to 30kHz ±1dB ▪ Fixed Gain: 50dB nominal ▪ Total Harmonic Distortion: <0.05% \$86.00

STM-2 Low Noise Mic Preamplifier ▪ Same features as STM-1, except: ▪ Variable gain up to 65dB ▪ 2 balanced or unbalanced outputs ▪ Frequency Response: 50Hz to 25kHz ±1dB ▪ 12VDC to 40VDC \$119.00

STM-3 High Gain Mic Preamplifier ▪ Low noise mic preamplifier ▪ Adjustable gain to 75dB ▪ Hi- or Lo-Z mic inputs ▪ 2 balanced or unbalanced outputs. \$136.00

ST-MPA2 Mic Phantom Adaptor ▪ Adds phantom powered mics to standard inputs ▪ 2 phantom adaptors in 1 module ▪ Phantom conversion with full frequency response ▪ Fully trimpot adjustable phantom voltage ▪ Highly filtered phantom power \$75.00

ST-AMC3 Active Mic Combiner ▪ 3 mic inputs to a single mic output ▪ Combines mics of same or different types ▪ Input trimmers permit combining different level mic signals ▪ Combines mics with isolation to feed single mic input \$103.00

ST-PH1 Stereo Phono Preamplifier ▪ Stereo or mono phono preamplifier ▪ Balanced or unbalanced output ▪ Hi- or Lo-Z output ▪ Accurate, low noise preamplification ▪ Left and right output levels adjustable \$113.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





Active Stick-On™ Series (Cont'd)

ST-VCA1 Voltage Controlled Amplifier ■ Controls audio level with DC voltage ■ Remotely controls audio ■ Single-pair DC control of audio ■ Mic/line input VCA ■ Mic/line output VCA ■ Built-in mic preamp \$102.00

ST-RG1 Ramp Generator ■ 0 to 10V output ■ Remote control of RDL™ VCA products ■ Multiple VCA remote control points ■ Dual LED outputs for position indication ■ Ramp outputs capable of driving 2 VCAs ■ Buffered, debounced switch inputs \$93.00

RLC1 Remote Level Control ■ Stick-on accessory ■ Mounts in a wall or cabinet ■ 2 high-intensity LEDs ■ Connection to an ST-RG1 may be made using either 3-pair wire attached to the rear barrier block or by 6 conductor modular phone wire attached to either rear modular jack ■ 2 modular jacks permit daisy-chained installations ■ Tactile-feel up and down buttons \$54.00

ST-VP1 Voice-Over Paging Module ■ Studio quality for preset voice-over or "click-free" paging ■ Module selects, fades and mixes 2 line level sources ■ 2 independent control inputs: fade and hard-cut ■ Fade-down sequence ramps down music, activates voice input ■ Fade-up sequence deactivates voice input and ramps music up ■ Fade rate and depth are user-adjustable ■ Line level inputs and outputs are unity gain \$113.00

ST-EQ3 3-Band Equalizer ■ Low-noise line level graphic equalizer ■ Separate adjustments for bass, midrange and high frequencies ■ Each adjustment provides for boost or cut ■ Balanced input and output \$80.00

ST-CL1 Compressor/Limiter ■ Multistage incremental gain reduction ■ Select average/peak or peak only control ■ Positive audio level protection ■ Smooth inaudible gain reduction ■ Low noise compressor \$125.00

ST-GCA1 Gain Control Amplifier ■ Automatic gain control ■ Wide dynamic range ■ Slow "inaudible" gain reduction ■ Low noise and distortion AGC \$107.00

ST-GCA2 Fast Gain Control Amplifier ■ Fast automatic gain control ■ Gain reduction/expansion ■ Tight dynamic control ■ Positive, fast gain reduction ■ Low noise and distortion AGC \$107.00

ST-LCR1 Logic Controlled Relay ■ More contacts by adding a "slave" relay ■ Activation from logic circuits ■ DPDT switching relay ■ Open collector switching ■ Control from switch, button or logic circuits \$63.00



ST-LCR2 Logic Controlled Relay ■ Alternate-action switching ■ Activation from logic circuits ■ DPDT switching relay ■ Open collector switching ■ Control from switch, button or logic circuits \$93.00

ST-ACR Audio Controlled Relay ■ Control switching from audio signal ■ Switching from mic or line signals ■ Precise threshold adjustment ■ DPDT switching contacts ■ Open collector "slave" output

Release Delay ST-ACR1: Multiturn adjustable 0.5-5 secs. nom. Release Delay ST-ACR2: Multiturn adjustable 5-50 secs. nom. ST-ACR1 \$81.00 ST-ACR2 81.00

ST-ACR1M Mic Audio Controlled Relay ■ Control switching from mic level audio ■ Precise threshold adjustment ■ Adjustable release time from 0.5 to 5.0 seconds ■ DPDT switching contacts \$83.00

ST-VOX1 Voice-Activated Relay ■ Triggered by unbalanced line level input or unbalanced mic level input ■ DPDT relay contacts ■ Open collector "slave" output ■ Adjustable threshold and release delay ■ Fast time constants optimized for any voice-triggered application \$86.00

ST-SSR1 Solid-State Relay ■ Line level audio switching without relay contacts ■ All solid-state, noiseless switching ■ Use to select between 2 inputs, or turn single input on/off ■ Line level inputs and output are unity gain ■ Studio quality audio performance \$88.00

ST-SX4 Four Audio Switcher ■ Remote controllable unbalanced audio source ■ Accepts up to 4 unbalanced audio sources ■ Any of these sources may be selected to feed the output or all sources may be switched off ■ Control of the module is accomplished through a single input terminal ■ Connection of a specified resistance between the control input and ground causes the input to be switched on \$86.00

ST-OSC2A/B Dual Audio Oscillators ■ Low impedance output drives virtually any audio line ■ Outputs may be connected to either balanced or unbalanced lines ■ Multiturn level adjustment permits precise output setting ■ Separate output level control provides for each oscillator ■ Integral AGC circuitry for stable output ■ Each oscillator has 2 separate outputs to drive stereo lines

ST-OSC2A 1kHz and 10kHz frequencies \$88.00 ST-OSC2B 100Hz and 400Hz frequencies 88.00

ST-TC1 Telephone System Coupler ■ Simulates Telco a CO line ■ Adds radio control or paging to KSU ■ Contact closure when line is selected ■ Audio input/output from telephone switching unit \$86.00



Passive Stick-On Series

STD-150/600/10K Dividers/Combiners ■ 4-channel ■ Combine audio signals to a single output ■ Filter RF from an audio line ■ Combine stereo signals ■ Feed mono signal to stereo inputs ■ Combine multiple mics to a single amp input ■ Available in 150 ohm, 600 ohm and 10K ohm models

STD-150 150 ohm \$44.00 STD-600 600 ohm 44.00 STD-10K 10K ohm 44.00

STP-1 Dual Variable Attenuator ■ 2-channel ■ Reduces audio level ■ Feeds audio into equipment ■ Presets audio levels ■ Precisely matches audio levels ■ Prevents input overload ■ Increases audio input headroom \$50.00

TX Series

TX-1W Music on hold amplifier, 1 unbalanced in/1 balanced and 1 unbalanced out; 1W \$65.00 TX-10B Bridging Input Transformer, 10K ohms in/out . . . 32.00 TX-LM2 Line Matching Transformer, 600 ohms balanced in; 1 line unbalanced/1 mic balanced out 28.00 TX-70A 70V Input Interface, 70V/25V speaker line in; 1 line unbalanced out, adjustable 28.00 TX-1A Adjustable Line Transformer, 10K ohms/600 ohms in; 10K ohms balanced out 27.00

General Accessories

ACB-1 Headphone jack box \$23.00 ACB-2 Dual RCA jack box 23.00 PS-24A 24VDC power supply 15.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



AUDIO EQUIPMENT/ EQUALIZERS



AUDIO EQUIPMENT

MA 6S Multichannel Amplifier

▪ 6 independent channels @ 100 WRMS into 8 ohms ▪ Channel pairs bridgeable @ 300 WRMS into 8 ohms ▪ KTM 6 transformer outputs available separately ▪ Euroblock connectors \$1599.00



AVA 22 Dual Channel Audio/Video Delay

▪ 2-channel Dolby Time Link, 9.5 NTSC (8.0 PAL) frames maximum delay ▪ Adjust delay in one field (half frame) increments ▪ Remote contact closure preset recall with optional front panel lockout ▪ Balanced 3-pin XLR connectors \$899.00

AD 22B Dual Channel Audio Delay

▪ 2-channel Dolby Time Link, 327.68ms maximum delay ▪ Displays delay in milliseconds, feet, or meters ▪ Remote contact closure preset recall with optional front panel lockout ▪ Balanced 3-pin XLR connectors \$849.00



CP 64 Commercial Processor

▪ 4 line inputs with 4-level priority assignable to 2 zone outputs with 7-band EQ ▪ 2 independently assignable mic/line page inputs with defeatable ducking ▪ Remote controls available for page assign (PR2), and source/volume (ZR1) ▪ RCA line inputs, Euroblock page inputs, remote and zone outputs \$849.00



VP 12 Voice Processor

▪ Studio grade microphone preamplifier with processing ▪ Phantom power, input gain, low and high cut filters, 2 bands of parametric EQ ▪ De-esser, gate/expander, and compressor each with separate threshold ▪ Processing order is rearrangeable; balanced 3-pin and screw terminals \$599.00



AC 23B Active Crossover

▪ Stereo 2- or 3-way, mono 4- or 5-way configurable ▪ 24dB/octave Linkwitz-Riley filters with driver alignment delays ▪ AC 23B has fully balanced 3-pin (XLR) connectors \$549.00

AC 22B Active Crossover

▪ Stereo 2-way, mono 3-way configurable ▪ 24dB/octave Linkwitz-Riley filters with driver alignment delays ▪ AC 22B has fully balanced 3-pin (XLR) connectors \$439.00

EQUALIZERS

RPE 228 Remote Programmable Dual Channel 1/3-Octave Equalizer

▪ 2 x 28 bands of 1/3-octave constant-Q filters, plus low and high cut filters ▪ RW-232 serial control, user-friendly Windows® control interface (software included) ▪ 16 program memories, 8 recallable by contact closure without a computer ▪ Euroblock connectors \$1249.00

GE 60 Dual Channel 1/3-Octave Graphic Equalizer

▪ 2 x 30 bands of constant-Q interpolating filters ▪ ±12dB boost/cut range; 45mm sliders ▪ Sweepable high and low cut filters ▪ Balanced 3-pin XLR, 1/4" TRS and screw terminal connectors \$899.00



GE 30 1/3-Octave Graphic Equalizer

▪ 30-band constant-Q interpolating filters ▪ +12/-15dB boost/cut range or -20dB cut only; 60mm sliders ▪ Sweepable high and low cut filters; security cover included ▪ Balanced 3-pin XLR and screw terminal connectors; transformer output \$799.00

GE 215 Dual Channel 1/3-Octave Graphic Equalizer

▪ 2 x 15 bands of constant-Q filters ▪ +12/-15dB boost/cut range; 45mm sliders ▪ Level controls, muting relay, bypass and overload LEDs ▪ 3-pin XLR & screw terminal connectors \$559.00

GE 130 1/3-Octave Graphic Equalizer

▪ 30 bands of constant-Q filters ▪ +12/-15dB boost/cut range; 45mm sliders ▪ Level controls, muting relay, bypass and overload LEDs ▪ 3-pin XLR and Euroblock connectors \$529.00



ME 60 Dual Channel 1/3-Octave microGraphic Equalizer

▪ 2 x 30 bands of constant-Q interpolating filters ▪ ±12dB boost/cut range; 20mm sliders ▪ Sweepable high and low cut filters, level controls, and bypass switches ▪ Balanced 3-pin XLR, RCA and 1/4" TRS connectors \$699.00

ME 15B Dual Channel 1/3-Octave microGraphic Equalizer

▪ 2 x 15 bands of constant-Q filters ▪ 6-12dB boost/cut range switchable; 20mm sliders ▪ Level control, bypass switch, overload and signal LEDs ▪ Balanced 3-pin XLR and 1/4" TRS connectors \$429.00

ME 30B 1/3-Octave microGraphic Equalizer

▪ 30 bands of constant-Q filters ▪ 6-12dB boost/cut range switchable; 20mm sliders ▪ Level control, bypass switch, overload and signal LEDs ▪ Balanced 3-pin XLR and 1/4" TRS connectors \$419.00



RA 27 27-Band 1/3-Octave Real Time Analyzer

▪ 27 accurate ANSI Class II filters in 1/3-octave ISO centers, 40Hz-16kHz ▪ Switchable 1dB/3dB ranges; dB level control ▪ Pink noise generator and flat response microphone with 40' cable included ▪ Balanced 3-pin aux mic input, 1/4" TS line input, 1/4" TS pink noise output \$499.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





SPECTRUM



VIDEOWALL PROCESSOR/WINDOWING SYSTEM/SCAN CONVERTER



ComputerWall® Multiscreen Display Controller

- Multiscreen display controller designed for real time, large format graphical presentations
- Accepts high resolution analog computer signals
- Connects directly to RGB monitor port
- Simple hardware installation
- Can be used directly with any software or SCADA system
- Automatically synchronizes to input signals from workstations or PCs up to 1280 x 1024 pixels
- Extremely high image quality
- Splits all computer imagery, including text, graphics, animation and digitized video on single screens or seamlessly across multiple screens
- Full 24-bit internal image processing
- Advanced linear interpolation smooths magnified images
- Accepts NTSC or PAL analog video via optional line doubler
- 2 output modes: Noninterlaced—output scan rate identical to that of the computer source, yielding highest image quality; Interlaced—output scan rate half that of the computer source, allowing use of less expensive display devices
- Expandable to many possible configurations
- ComputerWall processors can be combined to provide 16-way splits on a 4 x 4 display array
- Mullion control: interscreen spacing (bezel) compensation
- Freeze frame
- Remote control of all functions via RS-232 serial port
- Applications include: telecommunications, utilities and transportation, distribution, emergency, police and military operations
- Up to 80kHz horizontal rate
- 45-76kHz vertical rate
- 0.7-1.0V p-p; white positive amplitude
- 75 ohms input/output impedance
- 1-5V (75 ohm) sync amplitude
- BNC connectors
- 100W power

ComputerWall 4-way analog splitter 15.0-18kHz. \$16,995.00

ComputerWall Plus Multiscreen Display Controller

- All features of the basic ComputerWall system
- Built-in, 6-input routing switcher—select from among 6 sources (up to 1280 x 1024 pixels each); displays 4 quadrants of a split image or nonsplit, passthrough images or a combination
- Output signals can be blanked during switching to eliminate undesirable transition effects
- Choice of remote or manual control via front panel pushbuttons

ComputerWall Plus With switcher. \$18,495.00

SuperView™ 100 Video Windowing System

- Advanced multi-input display system
- Allows up to 4 simultaneous, real time video windows and a high resolution computer image on a single monitor
- 24-bit color processing
- Compatible with all workstations and PCs up to 1280 x 1024 pixels



- No computer slots required
- SuperView 100 can be used with large format projectors to create a wall-sized multimedia display
- Pan and zoom for each video signal
- Scaling up to full screen
- Graphic overlays on live video
- Pushbutton front panel controller to position and scale the video window, adjust video parameters and enable graphics overlays
- RS-232 port is provided for computer control
- Power: 90-120VAC/200-264VAC, 47-63Hz, <120W

The SuperView 100 was developed for applications requiring simultaneous display of high quality video and graphics. Designed for maximum flexibility, the system is equally at home in applications ranging from remote video monitoring to teleconferencing to multimedia display. As an external stand-alone peripheral, the SuperView places no burden on the host computer. It offers unsurpassed quality, real time performance under all conditions, a unique set of features, and universal compatibility with PCs and workstations.

SuperView 100 \$15,980.00



RGB/Videolink® 1650 Video Scan Converter

- Transforms computer signals to broadcast standard video in real time
- Computer generated images can then be recorded on videotape or displayed on video projectors, teleconferencing systems and composite monitors
- Automatically synchronizes to computer signals up to 1600 x 1280 pixels
- 15-100kHz scan rate
- Includes virtually all desktop computers and workstations from Sun, DEC, HP, IBM, Silicon Graphics and others
- Auto sync capability to all computers
- Interlaced or noninterlaced
- Flicker elimination
- Broadcast quality NTSC/PAL composite video
- Y/C (S-Video), Y, R-Y, B-Y, RGB video outputs
- Pan and zoom
- Zoom presets
- Full 24-bit color
- Genlock
- Front panel control
- RS-232 serial port

The RGB/Videolink 1650 offers selectable NTSC/PAL composite video, S-Video (S-VHS, Hi8) and component analog video (Betacam/MII) outputs for recording.

State-of-the-art digital signal processing (DSP) circuitry eliminates interlace flicker in the output image. Even thin horizontal lines appear stable. 3 levels of filtering offer the best choice between image sharpness and flicker elimination.

A zoom function lets you scale a portion of the image to fill the video screen and also provides just the right amount of underscan/overscan adjustment.

Synchronization and setup are completely automatic. The RGB/Videolink 1650 measures the input signal and sets up the parameters for the sharpest picture, correct aspect ratio and size of the output image.

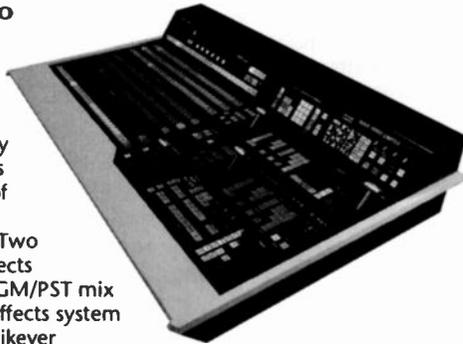
1650	.....	\$6,995.00
920 2315	Cable set for SUN Sparc with 13W3 connector (2 cables)	235.00
520 4386	Cable for SUN Sparc; 13W3 (f) to 4 BNCs; 4'	135.00
520 4354	Cable for SUN Sparc; 13W3 (m) to 4 BNCs; 4'	135.00
920 2312	VGA cable set (2 cables)	135.00
920 2314	Macintosh cable set (2 cables)	135.00
920 4766	Rackmount kit for 1650	225.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



RVS 630 Video Production Switcher

- A powerful and versatile switcher designed specifically to handle the needs and requirements of on-air production
- 30 video inputs • Two 4-bus Multilevel Effects Systems (MLEs) • PGM/PST mix bus • 2 keyers per effects system
- Downstream multikeyer
- 40-event memory system • 11 video buses • 12 aux buses • 15 transitionable sources on screen at one time • 12 keys on screen at one time • VTR control • Enhanced border generator • Custom control with remote control of character generators, still stores and routers • 1 aux bus can feed both sides of a DVE • Integrated frame store control • Full DVE and aux bus tally • 3 ways to recall switcher setup: recall to air, memory recall to preview, keys only recall
- Sequences • Selectively lock-out unused inputs • Transition preview • Bright red on-air lights • Bright yellow nonsync lights and transition inhibit • DVE control featuring 3-axis joystick control of all popular DVEs • Fade-to-black fader handle • Preset black • Transition limit • Fully visible side-by-side keyers • Key memories • Dedicated Key 2 Cut and Auto buttons • Power failure protection • Power consumption: Control panel, 65VA with all options; Frame, 350VA with all options



- panel • Preview selector is positioned next to the mix fader for easy access • Transition preview • Bright red on-air lights • Yellow nonsync indicators • Unique live "memory modes" for 40-event switcher • Extended memory • Enhanced border generator • VTR and DVE control with custom control options • Rotary and matrix wipes • Add up to 4 aux buses to feed the DVE • Safe title and center indicators • Redundant power supply • Power consumption: Control panel, 50VA with all options; Frame, 250VA with all options

RVS 216A/210A Video Production Switchers

- Compact switchers with MLE • Expandable • 10 inputs on the RVS 210A • 16 inputs on the RVS 216A • 3-bus MLE • 4 video levels • 53 wipe patterns (standard on RVS 216A; 24 standard patterns on RVS 210A expandable to 53) • 12-event memory • RGB/Component chromakeyer • Encoded and RGB/Component chromakeyer (RVS 216A only) • True preview • Transition preview • 4 memory system recall modes • Control DSK with fader handle • Nonsync detectors and indicators, key inhibit, and wipe/dissolve inhibit
- Interchangeable PGM/PST bus • 3 DSK sources • Wipe to DSK • DSK self key • Normal/reverse wipes • Variable width drop shadow • "Blinking" titles • Separate controls for split-screen settings • Edit on button • Frame accurate switching • Odd or even field switching
- Interface to a wide range of editing systems

DSK-7023 Downstream Keyer/Fader

- Key character generators, DVEs, graphics and logos • Increase keying power of production switchers • Optional in-desk adaptor for panel • 2 auto transition generators • Optional remote panel gives mouse-like control • Linear keying • Fade-to-black • Adds transparency to opaque keys • Does not require external reference
- Very compact—all on a DA-size card • GPI inputs can start fade and key transitions • Fits Ross VFR-7210 or Leitch 680 series 8-output mounting frames

DSK-7522 Downstream Mixer/Keyer

- Ideal addition to small post production editing suites • Performs as an economical small switcher • Linear keying from a character generator • Mix between any 2 sources or VTRs • 2 auto transition generators • Optional remote gives mouse-like control • GPI inputs can start mix and key transitions • Compact—all on a DA-size card
- Can be used in master control or general keying applications • Fits Ross VFR-7510 or GVG 8800/8900 series 8-output trays

CDK 101 Component Digital Keyer

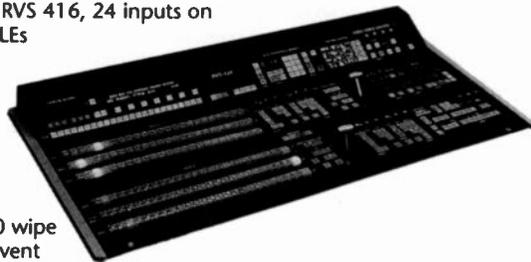
- DA sized digital keyer • Alpha keying and chromakeying • Self keys possible by connecting the same signal to both the video and the alpha inputs • Horizontal and vertical split-screen enable
- Chromakey mode • Key invert • Fully linear key clip and gain preset
- Auto transition rate • Auto transition start • Clip adjust • Gain adjust • Key transparency on/off • Combination auto transition and transparency adjust • 2 identical serial digital program outputs
- EDH checksums are inserted in both outputs • Video format is 10-bit, 270Mbps, SMPTE 259M-C component serial digital

CDK 104 Component Digital Keyer

- Equipped with telecine mode—designed for telecine suites
- Telecine mode features: Letter box formats, adjustable side-by-side and diagonal picture comparisons, linear keys and chromakeys
- Built-in proc-amp • 4-input digital keyer • 4 video and alpha input pairs • Standard desktop control panel • Matte fill generator
- Superblack mattes • Key invert • Clip and gain memories • Split keys • Independent auto transition and fade-to-black generators
- Built-in diagnostics • Crossfade keying and additive keying
- Embedded audio and video proc-amp • Wipes and box mask
- Editor interface • Fully digital 12-bit internal processing

RVS 424/416 Video Production Switchers

- 16 inputs on RVS 416, 24 inputs on RVS 424 • 2 MLEs
- Downstream multikeyer (optional on RVS 416)
- 2 pattern generators
- 4 box mask generators • 50 wipe patterns • 40 event memory (optional on RVS 416) • Pulse regenerator (optional on RVS 416) • Key assignment switcher (optional on RVS 416) • 10-meter control cable
- Extender board (optional on RVS 416) • Transition preview • Proc amp (output processor) • "Key over" transition • 3 memory recall modes • Fully visible side-by-side keyer controls • Transition limit
- Options include: nonsync indicators and transition inhibit; superblack; editor serial interface (100 and 200 protocol); downstream multikeyer (standard feature of RVS 424); extended effects memory system; 40-event memory (standard on RVS 424); chromakey switcher; key assignment switcher (standard on RVS 424); pulse regenerator (standard on RVS 424); redundant power supply (RVS 424 only); extender board (standard on RVS 424)
- Power consumption: Control panel, 65VA with all options; Frame, 350VA with all options



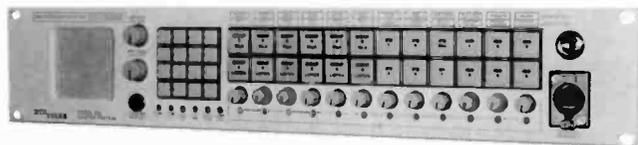
RVS 316 Video Production Switcher

- Versatile 3-keyer, 16-input switcher for live post production
- Incorporates a full 4-bus MLE, a PGM/PST mix bus, DVE and VTR remote control, and a 6-input DSK • Frequently used memory and auto transition controls are conveniently located at the front of the

Call For Pricing

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





SERIES 800 803 Master Station

The RTS™ Model 803 is the successor to the industry standard Model 802 Master Station. It incorporates many new features as standard, which were previously available as options. It is fully compatible with existing RTS TW systems and is plug-in compatible with the Model 802.

- A compatible microprocessor based intercommunications control station
- 12 channels of communications as standard
- Front panel adjustment of 12 listen levels, VOX, IFB, sidetone and lamp dimming
- Offers an array of features including intercom, IFB/SA/ISO and signaling
- 2- and 4-wire capable
- Simple IFB included, support for external IFB using 4000 series components
- ISO support using VCP control panels
- DTMF send for use with external telco interface
- Caller-ID via audio presence indication
- Chime signal send and receive
- Programmable VOX
- Programmable via front panel buttons or external RS-232
- Removable front panel gooseneck microphone
- Programming interlock safety switch
- Programmable relays
- Includes independent adjustments for headset and panel mic gains
- 2 external program inputs as standard
- 2 auxiliary audio inputs as standard
- True stereo operation with listen audio assignable left, right or both
- Nonvolatile user memory
- Dual level button illumination using high visibility, long life LEDs
- Front panel switches with digi-action momentary/latching feature
- 6 separate preset setups available
- Hot mic output adjustable to +26dBm
- Reduced depth and weight from Model 802
- FCC, UL, CSA, VDE and CE approved

803	Master Station	.....	\$4195.00
862	System interconnect	.....	1750.00

Options

803-1	IFB provides 4001/4002 internal emulate. . .	\$125.00
803-2	ISO provides VCP6/VCP12 internal emulate. . .	125.00
803-3	4-wire provides 12 channels of 4-wire, full duplex communications.	125.00
MCP-5	12" Electret Gooseneck Microphone	..... 140.00



848A Programmable Matrix Intercom Station

- Main component of a "distributed summing bus" matrix intercom system
- In a point-to-point system arrangement, each station can talk to any 1 or combination of other stations
- A quantity of 2 stations can be used to create a 2 x 2 minimum sized system, while a quantity of 24 stations make up a 24 x 24 maximum sized system
- In addition to 24 regular talk buses each station has an All Talk bus for system paging and 2 TW intercom conference line circuits for direct connection to standard RTS system intercoms
- Programming features include electronic momentary latching switch action, latch disable, instant mic-on, calling station tallies, received call stacking, auto

stacking answer-back, forced crosspoints, crosspoint inhibit, auto return talk, crosspoint grouping, and busy line lock-out

- A dedicated line matrix intercom system can be used wherever point-to-point intercommunications are required
- The ability to set up and alter (in real time) each station for a group of specific "talk-to" destinations
- Each talk path is dedicated to a send/receive bus
- Each station is augmented with 2 TV intercom conference line circuits, which allows each station to connect to standard TW intercom system lines

848A	User station/24-channel matrix line	.....	\$2500.00
DC848	Data concentrator	.....	1425.00
4025A	1 x 4, 25-pair, 50-pin passive splitter	.....	95.00



Matrix/Conference-Line Intercommunications 810 Master Station

- Compatible with other Series 800 products
- All intercom lines are balanced line-level, and operate in a full-duplex mode
- Interconnection to TW intercom circuits is also possible through ancillary equipment
- A group of 11 pushbuttons serve as the selection switches
- A momentary action All Talk pushbutton enables each station to talk simultaneously
- Can be used to create a 10 x 10, point-to-point squawk system
- A station can talk to multiple stations simultaneously by depressing any combination of buttons
- Depressing the All Talk button will page all stations simultaneously
- The 810-AA can be used as a user station within a 10 x 10 matrix intercom system
- The 810-CL can be used as a user station within a 10-channel conference line intercom system
- Pushbuttons are latching action
- Each channel has a separate talk-and-listen pushbutton, allowing any combination of listening and talking on selected channels

810	Master station, 10-channel squawk system station	.....	\$1850.00
810-M	Master station, 10-channel squawk system station with gooseneck panel electret microphone	.....	1990.00
810-AA	Master station, 10-channel matrix system station	.....	1925.00
810-CL	Master station, 10-channel conference line station	.....	1950.00
810-CL-M	Master station, 10-channel conference line station with gooseneck panel electret microphone	.....	2090.00
810-SCTL	Master station, 5-channel talk/listen conference line station	.....	1950.00
810-SCTL-M	Master station, 5-channel talk/listen conference line station with gooseneck panel electret microphone	.....	2090.00
-M	Gooseneck panel electret microphone	.....	140.00
865	Central matrix/required for 810 squawk system	.....	1335.00
4012	System interconnect, 50-pin to 3-pin connector translation assembly	.....	590.00
4025A	1 x 4, 25-pair, 50-pin passive splitter	.....	95.00

Note: Microphone is optional. May be ordered in 20" or 12" lengths.

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



INTERCOM SYSTEM



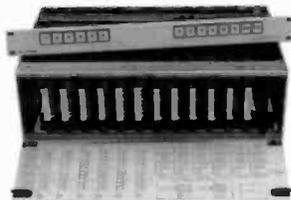
RTS BY TELEX

TW Intercom System

Over 25 different components and accessories Operates in full duplex mode, simultaneous talk-and-listen to and from each user station Up to 75 user stations can be employed Phase III circuitry permits 12V power operation, multichannel selection, 10 mile range and balanced line operation

CIF612, VCP12B Station ISO System

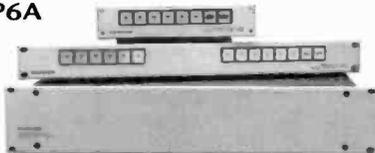
These components provide control, switching and interface (4-wire only) functions for private communications between 6 control stations and 12 user stations.



CIF612 Central electronics card frame \$3450.00
VCP12B Control station for 12 stations 1705.00

VIE306, VCP12A, VCP6A Station ISO System

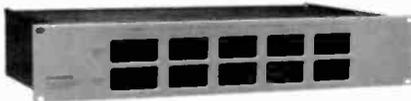
These components provide control, switching and interface (4-wire or 2-wire) functions for private communications between 3 control stations and 6 user stations.



VIE306 Central electronics for VCP6A/12A \$3087.00
VCP12A Control station for 12 stations 1705.00
VCP6A Control station for 6 stations 1015.00

SAP1626 Source Assignment

Source assign panel for channel assignment of 12 circuits and 3 program inputs to 20 TW positions and 6 cameras \$2950.00



SAP612 Source Assign Panel

Source assign panel for channel assignment of 6 channels to 12 TW positions \$700.00

PS31 Power Supply

A single PS31 can power approximately 30 user stations on any combination of 3 powered output channels. A program audio input can be added to any 1 of the 3 channels \$1175.00



PS15 Power Supply

A single PS15 (2 channels) can power 16-20 user stations, depending on model and combinations. Typically, a combination of 15 headset and speaker stations can be powered from a single PS15 \$350.00

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 \$805.00

WMS300 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.

WMS300-L (A4M) Includes call light \$635.00
WMS300-L (A5M) Includes call light 629.00
WMS300 (A4M) 599.00
WMS300 (A5M) 595.00

WM300 Wall Mount User Station

This 2-channel, headset user station fits into a 2-gang electrical box or can be installed in a desktop as a low profile console mount station. 1/4" phone jack included.

WM300-L (A4M) Includes call light \$479.00
WM300-L (A5M) Includes call light 475.00
WM300 (A4M) 399.00
WM300 (A5M) 395.00

MRT327 Modular 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 \$350.00



BP325 Portable User Station

This 2-channel unit features user programmable operational functions. It is a stereo/mono unit with program input and call light. \$345.00



BP318 Portable User Station

This single channel belt pack is small, lightweight and easy to use with headset volume, mic on/off and call light. Includes extruded aluminum case.

BP318 (A4M) \$199.00
BP318 (A5M) 195.00

BP350 Portable User Station

Same features as the BP318 except, 2-channel version

BP350 (A4M) \$314.00
BP350 (A5M) 310.00

SSA324 System Interface

Provides 2 channels of RTS 2-wire to 4-wire conversion or 1 channel of RTS 2-wire to 2-wire conversion (ASM) \$550.00
SSA324-U SSA324 w/signal option board 795.00
SSA324-A, B SSA324 w/coupling transformers, 2 + 4 wires . . 670.00
SSA324-B SSA324 w/coupling transformers, 4 wire side . . . 650.00
SSA324-A SSA324 w/coupling transformers, 2 wire side . . . 630.00

CPK62 Circuit Card Kit

A small-sized user station plug-in circuit (CC62) is provided with all external controls and connectors. \$139.00

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 \$128.00

TWSW Splitter

A completely passive 1 x 5 connector splitter assembly \$106.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





Series 4000 IFB System

This program-interrupt system is used primarily for cueing on-air talent. It is based on a modular building-block concept that allows the user to configure a system sized to meet any requirements. Main system components consist of control stations, user stations and central electronics. A system may grow to four 4003 Control Stations, three 4010 Central Electronics and twelve or more 4030 User Stations.

A brief operational description of an IFB System: The talent is receiving a program feed through the IFB System components. The director pushes a button on the control station, which interrupts the program feed and permits the talent to receive a message from the director's microphone. Two or more talent positions may be interrupted independently or together.

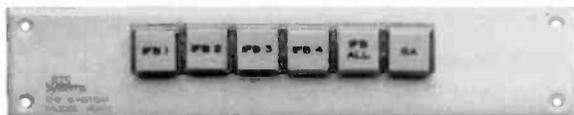
The Series 4000 IFB System control stations are designed to provide the necessary switching commands and voice signal origination that ultimately becomes the part of the composite IFB signals to the talent user stations. Each station provides a given number of switch functions according to its model number. (All switches are illuminated momentary pushbuttons with 2 brightness levels.) The 4001 has 6 switches: IFB-1 through IFB-4, IFB All and SA (Studio Announce). The 4002 has 11 switches: IFB-1 through IFB-8, IFB All, SA-1 and SA-2. The 4003 has 16 switches and provides IFB-1 through IFB-12, IFB-All, SA-1, SA-2 and SA-3.

Each control station model may be ordered with a high quality gooseneck microphone permanently attached to the top panel. (An "-M" suffix is added to the model number; 4001M, 4002M and 4003M.) Should an existing microphone be more suitable for operations, the "-M" suffix model need not be ordered. A terminal-strip connection on the control station microphone preamplifier circuit board accepts a microphone or line level signal from the existing microphone. Any convenient nearby microphone may be used, i.e., an intercom headset microphone, a paging microphone, audio-slate microphone, etc.

The 4010 central electronics unit contains all the necessary control functions and electronics to provide the active link between 4001, 4002 and 4003 control stations and 4030 user stations. It performs the silent electronic switching between program and voice, assigns the program channels to the appropriate outputs, sets the program/voice level mix to the talent, and supplies 2 channels of composite audio, combined with a DC voltage, to the 4030 user stations. In addition, it provides convenient front panel monitoring facilities for setup and testing.

The 4030 user station, a small belt-pack package, allows the user to receive audio signals as designated by the central electronics unit and the control stations. It is the electronics package typically used by talent personnel, such as newscasters, sportscasters, musicians, etc.

Each 4030 contains the necessary electronics to provide a stereo audio signal to the user. Two power amplifiers rated at 1/2W each are capable of driving almost any set of headphones, earphones or even small loudspeakers.



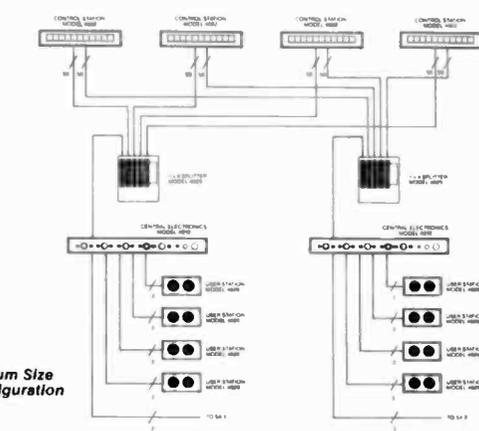
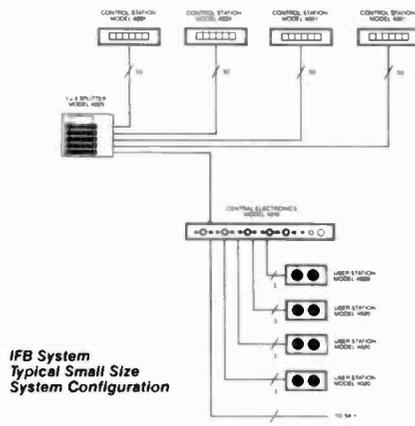
4001	4 IFB, 1 SA control station	\$605.00
4001M-20	4001 with 20" gooseneck mic	745.00
4001M-12	4001 with 12" gooseneck mic	745.00
4001-RMA	Rackmount adaptor for 4001 or VCP6A	90.00



4002	8 IFB, 2 SA control station	\$ 775.00
4002M	4002 with gooseneck mic	915.00
4002-RMA	Rackmount adaptor for 4002	90.00
4003	12 IFB, 3 SA control station	996.00
4003M	4003 with gooseneck mic	1136.00



4010	Central electronics, 4 IFB, 1 SA	\$1920.00
IFB325	Portable single-channel IFB earset user station/talent electronics	155.00
4030	Portable 2-channel IFB earset user station/talent electronics	250.00
4025A	1 x 4 25-pair 50-pin passive splitter	95.00
2233	Wide response announcer earset with 1/4" phone plug	33.00
2234	Wide response announcer earset with coiled acoustical interface tube with 1/4" phone plug	46.00
-M	Gooseneck panel microphone (20" or 12")	140.00



ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





FBX-1020



FBX-2020

**FBX-1020 FEEDBACK EXTERMINATOR®
FBX-2020 DUAL FEEDBACK EXTERMINATOR**

Common features

- 20-bit digital conversion
- 10 patented FBX filters per channel
- Robust feedback control algorithm identifies feedback and places super-narrow filters with 1Hz resolution
- Each filter is custom-made at the moment of feedback
- Filters are placed deep enough to remove ringing tone in 3dB steps
- Ability to distinguish feedback from program material
- Filters do not disturb program material because their ultra-narrow width remains constant no matter how deep they go
- Increased program clarity and intelligibility
- More wireless microphone mobility
- Adaptive, automatic feedback control
- ClipGuard™ adaptive clip level control automates all front panel program level controls and actively extends the effective dynamic range and S/N ratio to at least 110dB
- TURBO mode: ultra-fast feedback filtering in setup
- True constant Q filters: skirt doesn't widen as filter gets deeper
- More gain before feedback (6 to 9dB typical)
- Fast setup (less than a minute per channel)
- Filter tracking: tracks feedback when it drifts with temperature and humidity
- Rugged, full rackmount case for heavy use
- Input/output transformer option

APPLICATIONS

- For feedback control across the entire mix, patch the FBX between the mixer and the power amp
- For feedback control on one input channel or subgroup, patch the FBX at the insert point; choose this setup for targeted feedback control on selected microphones
- FBX provides more gain before feedback in mains and monitors in: theaters/concert halls, worship centers, schools and auditoriums, conference/board rooms, sports arenas and broadcast stations, teleconferencing and paging systems

SPECIFICATIONS

FBX Filters

- Either fixed or dynamic
- Both types are placed the same way: feedback is detected and the filter is placed just deep enough to eliminate it
- The difference comes after the filter is placed: fixed filters remain on the initially detected feedback tone and do not move; these filters provide the initial maximum gain before feedback and are set automatically during setup
- Dynamic filters can release and move to new feedback frequencies and are for adaptive feedback control during the performance
- Factory default is 7 fixed and 3 dynamic per channel, which is easily changed using front panel controls
- 10 independent digital notch filters per channel, controlled automatically from 35Hz to 20kHz
- Filter width: user controllable; either 1/8 or 1/4 octave, True Constant Q; below approximately 200Hz the feedback filters become slightly wider to increase the feedback and rumble capture speed at these low frequencies
- Resolution: 1Hz from 35Hz to 20kHz
- Time required to eliminate feedback: 0.4 seconds, typical @ 1kHz
- Total number of combined filters active per channel: user selectable, from 1 to 10
- Number of dynamic vs. fixed filters per channel: user-selectable

Input/Output

- Input/Output maximum signal levels: balanced +27dBV peak, unbalanced +21dBV peak
 - Output drive: unit will perform as specified driving a load >600 ohms
 - Input impedance: balanced or unbalanced >10K ohms, PIN 2 high
 - Output impedance: balanced or unbalanced 10 ohms nominal, PIN 2 high
 - Bypass: true power off bypass
 - Headroom: +23dB peak @ 4dBV nominal input, balanced I/O connectors: XLR-3 and 1/4" TRS
- Note: Inputs may be balanced or unbalanced. For maximum output capability, outputs must be balanced (XLR or TRS). If either side of an output is grounded, the peak output and dynamic range will be reduced by 6dB.

Performance

- Spectral variation: <.25dB, 20Hz to 20kHz
 - S/N: >100dB typical, "A" weighted
 - THD: <0.02% @ 23dBV sine wave @ 1kHz
 - Dynamic range: >110dB with ClipGuard Automatic Clip Level Control active
- Note: Tests performed using an Audio Precision System One model 322 or equal.

Power Input

- Factory configured to either 115VAC or 230VAC
- 50/60Hz, 12W input

Fuse Replacement

- Replace only with 5mm x 20mm, .315A, 250V, fast-acting fuses

Memory Battery Life

- 7 years, typical

Dimensions

- 1U rackmount; 19.0" x 1.75" x 8.0" nominal (rackmountable)

Weight

- 8.0 lbs. nominal

Options

- Input/output transformer option

Last Configuration Stored in Memory

FBX-2020	Dual feedback exterminator for 2-channel applications	\$1199.95
FBX-1020	Feedback exterminator for single-channel applications . . . . .	.599.95

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



Combi Pedestal

- Studio and field operation
- Compact, modular setup
- 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 planed 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
- Clip-on rubber feet take effect on slippery or delicate surfaces
- 3-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 1-wheel to a 3-wheel steering mode (grab 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, 6" optional
- Maximum load: 55kg
- Weight: 21kg



5198	Combi Pedestal	.....	\$15,475.00
5194	Pedestal CII, identical to Combi, except a steerable dolly	.....	7,695.00
5201	Vario Pedestal 2-75, quick fix.	.....	20,995.00
5202	Vario Pedestal 1-90, quick fix.	.....	18,995.00

Video 90 Fluid Head

- 35mm film applications
- Greater drag
- Longer camera platform
- Horizontal break easier to use
- Leakproof, zero-friction fluid head
- Fluid damping modules precisely control camera/lens combinations weighing up to approx. 80kg
- Damping modules guarantee grades of drag that 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 work independently of the damping and counterbalancing system, bringing the camera to a stop, wherever desired, without transmitting vibrations
- Maximum load: approx. 200 lbs.
- Drag can be completely turned off for sudden movements with the camera
- Grades of drag: 7 each, 0 horizontally and vertically
- Tilt angle: ±60°



8092		\$11,450.00
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Video 60 Plus ENG/EFP Fluid Head

- Compact, lightweight design
- Enlarged tilt angle of +90° at full load
- Self-illuminating touch bubble
- Fine continuous counterbalance adjustment
- Internal rubber seals to prevent ingress of dirt
- Improved camera lock with safety lever
- Leakproof and frictionless damping in 9 levels of finely tuned drag
- Counterbalance system in 18 steps
- Extended sliding range balance plate with spindle drive
- Equipped with 2 telescopic pan arms



6000		\$8,895.00
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Video 20/18 SENSOR and PLUS 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

2000S	Video 20 Sensor, 4" (100mm)	.....	\$7,395.00
2000P	Video 20 Plus, 4" (100mm)	.....	7,060.00
1800S	Video 18 Sensor, 4" (100mm)	.....	5,795.00
1800P	Video 18 Plus, 4" (100mm)	.....	5,450.00

Caddy Support Packages

- Each Caddy system includes the 7-step dampened Caddy fluid head, an ultralight, torsion free, rugged carbon fiber tripod with spreader and a soft bag or a cover
- Fluid head features an adjustable pan arm with 7 steps of adjustment for quick counterbalance and the self-locking Sachtler Touch & Go system

CAD 03 Caddy head on hot pod without transport cover . . . \$6,395.00

CAD 2A 2-stage ENG carbon fiber tripod system. Includes Caddy fluid head, CF 100 ENG 2CF carbon fiber tripod, SP 100 lightweight spreader, ENG soft padded bag 5,795.00

CAD 01 Single-stage carbon fiber tripod system. Includes Caddy fluid head, CF 100 long carbon fiber tripod, SP 100 lightweight spreader, Cover 100 transport cover. 5,590.00

OB-2000/XL Dolly

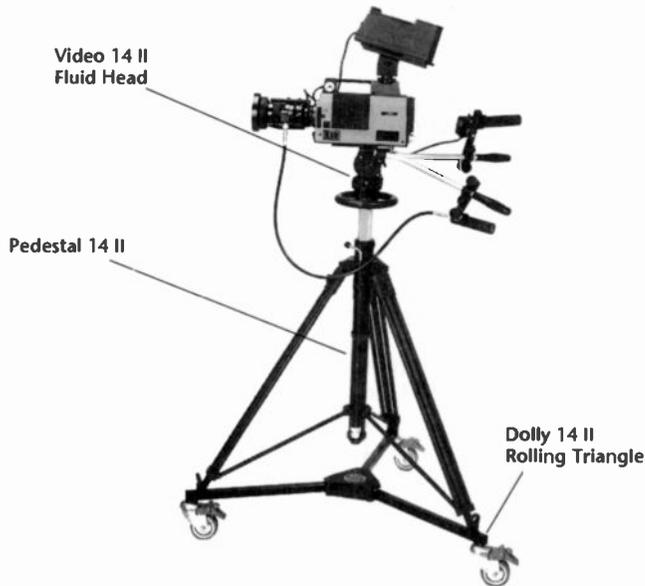
- Developed especially for outside broadcasting
- Can be extended twice
- Crank operated elevation unit
- OB Dolly can have pneumatic tires of 8" diameter
- Extender for the OB Dolly increases the size of the supporting base on the one side and takes the weight off the wheels on the other side



6481	OB-2000 tripod	.....	\$2,975.00
6205	OB-2000 elevation column	.....	2,750.00
6482	OB-2000M tripod	.....	2,575.00
7080	XL dolly	.....	2,435.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

CAMERA SUPPORT EQUIPMENT



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 ▪ 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 ▪ Built-in counterbalance spring tilt $\pm 60^\circ$
 - 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 leveling, a precise circular water level is built-in ▪ Maximum load: approximately 24 lbs.
- 1400 \$2275.00

Pedestal 14 II

- Pneumatically supported center column tripod ▪ Air pressure in the inside of center column can be exactly adjusted to camera's weight
 - Center column can be locked in any position ▪ Even while center column is under pressure, a safety catch is engaged ▪ Center column runs on ball bearings ▪ Using extendable tripod, stroke range of center column can be adapted to shooting requirements ▪ Height range: Spreader 27/46 + 16.5" ▪ Center column range: 16.5" ▪ Maximum load: up to 44 lbs.
- 4191 \$2236.00

Dolly S

- Defined circles and precise parallel movements can be made through the angle lock of the spinning wheel and the independent wheel brake
 - All wheels have cable protection, which can be adjusted according to the required height
- 7065 \$1545.00

Tripod S14 Long

- Works with a height of 15cm off the ground up to a height of approximately 1.50m ▪ 75mm bowl leveling ▪ Black anodized aluminum construction ▪ Maximum load: 33 lbs. ▪ Height range: Spreader 14: 24.8"-54.3"; Dolly 14: 32.8"-59.4"
- 4182 \$530.00

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 ▪ Maximum load: 88 lbs.
- 7051 \$525.00

System Packages

- 1420US System 14/75 Pedestal: Video 14 II; Pedestal 14 II; Dolly 14 II \$4999.00
- 1410 System 14 II: Video 14/75; S14 long; SP14; Cover 14 II 3280.00

Spreaders

- | | | |
|-------|------------------------|--|
| 7013 | SP 150 EX | For DA 150 HD/DA 150 Tripods HD2 and DA 150 Mitchell \$665.00 |
| 7007 | SP 100 | Off-ground spreader for Series 100 and 150 660.00 |
| 7003 | SP 100/150 | Heavy-duty, for all Series 100 Tripods and 150. 599.00 |
| 7002 | SP 100 | For Series 100 Tripod, especially for Carbon Fiber 495.00 |
| 7002K | SP-Mini | For DA Tripod short 100 and 150 495.00 |
| 7004 | Rubber Feet (set of 3) | For Pedestal CII and Combi and Series 100 and 150 Tripods 380.00 |
| 7014 | Rubber Feet (set of 3) | Excenter locking for DA 150 HD and DA 150 HD 2, OB 1, XL2 370.00 |
| 7001 | SP 14 | For S14 Tripod and Pedestal 14. 225.00 |

Sachtler Tripods

- Extremely lightweight, robust and twist-free ▪ Ball-ring leg clamping devices with preset end pressure point ▪ Double claws for attaching ground spreader or dolly—or stainless steel spikes for soft ground

Video 18 through Video 20 Plus/Sensor, Panorama, 4" Interface:

	Code No.	Price
Hot Pod		
HP 10	5185/10	\$2330.00
HP 14	5185/14	2330.00
Carbon Fiber		
CF 100 ENG HD 2CF	5390	2045.00
CF 100 ENG 2CF	5386	1725.00
CF 100 HD	5380	1665.00
CF 100 long	5382	1580.00
CF 100 medium	5351	1540.00
Aluminum (Dural)		
DA 100 ENG HD 2DA	5490	1695.00
DA 100 HD long	5480	1555.00
DA 100 ENG 2D	5186	1335.00
DA 100 long	5182	1095.00
DA 100 medium	5151	1085.00
DA 100 short	5122	950.00

Video 25 II through Video 80 II/Horizon II, Studio II, 65, 80 and Standard 7 + 7, 6" Interface:

Carbon Fiber		
CF 150 EFP 2CF	6386	\$2080.00
CF 150 long	6392	1985.00
CF 150 medium long	6381	1840.00
Aluminum (Dural)		
DA 150 EFP 2D	6186	1720.00
DA 150 long	6192	1620.00
DA 150 medium long	6181	1480.00
DA 150 medium	6157	1465.00
DA 150 short	6132	1165.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





MR-1 Micro Series Wireless Systems With Concert Series III Transmitters

Systems include: ■ CT3L belt-pack or HT-3 handheld transmitter
 ■ MR-1 receiver ■ Cable A, B, or C

Lavalier (Clip-Mic) Systems

Sennheiser MKE-2	\$839.99
Sony ECM-77	799.99
Sony ECM-55	749.99
Sony ECM-44	559.99
Audio Technica AT-831 (unidirectional)	559.99
Audio Technica MT-350 (omnidirectional)	489.99
With female P3 plug (No mic included)	449.99

Handheld Microphone Systems

Shure SM85 Condenser Mic	\$789.99
Shure SM87 Condenser Mic	789.99
E-V 857A N-DYM Mic	689.99
E-V 757A N-DYM Mic	619.99
Shure SM58 Cardioid Mic	579.99
Samson QMIC Hypercardioid Mic	489.99

Headset Systems

Countryman Isomax	\$699.99
Crown CM-311E	689.99
AKG C410	679.99
Audio Technica ATM-75 (Vocal)	569.99
Samson QE condenser (Aerobics)	539.99

Wind Instrument System

AKG C409	\$659.99
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Instrument System

Guitar/Bass	\$429.99
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Receiver

MR-1 Receiver only	\$349.00
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MR-1 Series Accessories

AC-300R Power Supply (optional AC for MR-1 receiver)	\$17.00
P3 3-Pin female plug only (for CT3L)	16.00
MH-10 Wireless Handheld Microphone Clip	15.50
Cable "A" (3.5mm Stereo Mini-Plug to Male XLR Plug)	12.00
Cable "B" (3.5mm Mono Mini-Plug to Mono Mini-Plug)	12.00
Cable "C" (3.5mm Mono Mini-Plug to 1/4" Phone Plug)	12.00



VLXTD Series Wireless Systems

Instrument systems include: VT2G belt-pack, VR22 receiver and AC-300R power supply.

Microphone systems include: VT2L (with detachable P3 mic connector) belt pack, or VH2 handheld transmitter, VR22X receiver and AC-300R power supply. System receivers are equipped with both XLR and 1/4" output jacks.

Handheld Microphone Systems

Shure SM58 Cardioid Mic	\$489.99
Samson QMIC Hypercardioid Mic	379.99

Headset Systems

Audio Technica ATM-75 Condenser (Vocal)	\$449.99
Samson QE Condenser (Aerobics)	409.99

Lavalier Systems

Audio Technica AT-831 (unidirectional)	\$439.99
Audio Technica MT-350 (omnidirectional)	379.99

Instrument System

Guitar/Bass	\$249.99
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VLXTD Series True Diversity Receivers

VR22X w/AC-300R Power Supply (XLR and 1/4")	\$199.99
VR22 w/AC-300R Power Supply	179.99

VLXTD Series Accessories

RM-22 19" Rackmount kit for VR22/22X receiver	\$30.00
AC-300R Power Supply	17.00
P3 3-pin female plug only (for VT2L)	16.00
MH-10 Wireless Handheld Microphone Clip	15.50



VLX Series Wireless Systems

Instrument systems include: VT2G belt-pack, VR2 receiver and AC-300R power supply.

Microphone systems include: VT2L (with detachable P3 mic connector) belt-pack, or VH2 handheld transmitter, VR2 receiver and AC-300R power supply.

Handheld Microphone Systems

Shure SM58 Cardioid Mic	\$409.99
Samson QMIC Hypercardioid Mic	309.99

Headset Systems

Audio Technica ATM-75 Condenser (Vocal)	\$379.99
Samson QE Condenser (Aerobics)	329.99

Lavalier System

Samson ECM-40	\$279.99
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Instrument System

Guitar/Bass	\$199.99
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VLX Series Receiver

VR2 w/AC-300R Power Supply	\$139.99
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VLX Series Accessories

AC-300R Power Supply	\$17.00
P3 3-pin female plug only (for VT2L)	16.00
MH-10 Wireless Handheld Microphone Clip	15.50

VLXTD/VLX Series Transmitters

Handheld Microphone Transmitters

VH2/58 Shure SM58 Cardioid Mic	\$319.99
VH2/QMIC Samson Hypercardioid Mic	219.99

Belt-Pack Transmitters

VT2L Transmitter only with male P3 Connector	\$179.99
VT2G Instrument Transmitter only	159.99

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

LCD PROJECTORS/ EDITING AND ANIMATION DECK



PLC-750M Super-Bright LCD Color Multimedia Projector

- Super bright 900 ANSI lumens
- 921,600 pixels ▪ 3-panel TFT (Thin Film Transistor)
- Reproduction of compressed SVGA ▪ Projects images up to 450" diagonal ▪ Easily connects to VGA and Mac II systems ▪ Multicolor system—NTSC/PAL/SECAM/NTSC 4.43 ▪ Wireless/wired remote control ▪ Multivoltage capability ▪ Power lens shift/up/down
- Projection Lens: f/3.8-4.8 lens ▪ Throw Distance: 3'-53" ▪ Lens Aperture: 2.44" ▪ Audio In: 4 RCA L/R, 1 BNC, 1 DIN 4-pin (S-Video) ▪ Audio Out: 1 RCA L/R ▪ Video Out: 1 RCA
- Computer In: 1 DB25 terminal, 1 DIN 8-pin, 5 BNC (RGBHV)
- Standard Accessories: Remote control unit, 5' remote control cable, AC power supply cord, VGA Y-cable, Mac Y-cable, lens cover, VGA video terminator, Macintosh video terminator, instruction manual and dust cover \$9995.00



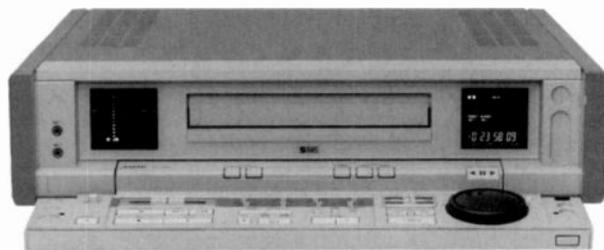
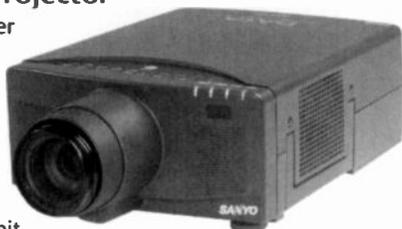
- L/R ▪ Audio Out: 2 RCA L/R ▪ Video In: 1 S-Video, 1 BNC, 1 RCA
- Video Out: 1 RCA ▪ Computer In: 8-pin ▪ Computer Out: 8-pin
- Other Jacks: RS-232C serial port, external speaker output, plus input for wired remote control ▪ Standard Accessories: VGA/Mac Y-cables, remote control unit w/5' cable, dust cover, lens cover AC power supply cord. \$6995.00

PLV-20N Portable LCD Color Video Projector

- Bright 500 ANSI lumens ▪ Ultra-high uniformity rate
- Reversible projector capabilities: right/left, top/bottom ▪ Up to 300" (diagonal) projection image size ▪ S-Video input jack
- LCD panel system: 1.3" TFT polysilicon type x 3 ▪ 921,600 (307,200 x 3) pixels ▪ Optical Resolution: dichroic mirror with integrator lens ▪ 30"-300" diagonal projection image size
- Zoom/focus: 1:1.3, manual zoom ▪ 3:1 up/down ratio ▪ 550 TV lines horizontal resolution ▪ Throw Distance: 4.9'-39.4'
- Projection Lens: f/2.1"-2.7", f/2.8"-3.2" ▪ 200W metal-halide projection lamp ▪ Built-in one-piece 3WRMS monaural speaker ▪ 50/60Hz, 120VAC ▪ 16.9"H x 6.2"W x 15.1"D ▪ 24.2 lbs.
- Color System: PAL/SECAM/NTSC/NTSC 4.43 ▪ Standard Accessories: AC power supply cord; owner's manual; lens cover; dust cover. \$4995.00

PLC-5500N Multimedia Pro-X SVGA LCD Color Projector

- 500 ANSI lumens ▪ Over 85% uniformity ▪ Up to 640" wide zoom image
- Power zoom/focus
- True SVGA
- Compressed XGA
- XGA, SVGA, VGA, Mac and NEC98 computer compatible ▪ 16 lbs. ▪ Unit will project input from S-VHS/VHS VCRs, camcorders, video disc players, video cameras and satellite TV tuners ▪ An audio-visual source can be connected simultaneously with a computer source ▪ Track pad remote control ▪ 250W metal-halide lamp
- Reversible scan function lets user go from front projection to rear projection ▪ Projector is also ceiling mountable ▪ Dichroic mirror and three 1.3" TFT polysilicon LCD panels of 519,168 pixels each ▪ 750 lines horizontal resolution ▪ 16 million colors
- Multivoltage capability ▪ Picture freeze ▪ 30-second countdown eliminates false starts ▪ Optional carry-on hard case. . . \$9995.00



GVR-S955 Editing and Animation Deck

- SMPTE time code generator and reader with built-in drop frame and non-drop frame read/write ▪ Single frame animation controller ▪ Video and audio switcher with 2 independent video and 2 independent audio channels
- S-VHS format ▪ More than 400 lines horizontal resolution (S-VHS) and 240 lines (VHS) ▪ Auto sensing RS-422/RS-232C input ▪ Compatible with most major animation software programs and editing controller systems ▪ Playback video processing ▪ Signal monitoring and VCR status indicators
- Time code status display ▪ S/N: Nominal, 55dB; 100kHz-4.2MHz WTD (VHS) 100kHz-6.0MHz WTD (S-VHS)
- BNC Input: 1.0V p-p, 75 ohms ▪ S-Y Input: 1.0V p-p, 75 ohms
- S-C Input: 0.286V p-p, 75 ohms ▪ Ext. Sync Input: 0.5-4.0V p-p, 75 ohms (composite sync or composite video)
- BNC Output: 1.0V p-p ▪ S-Y Output: 1.0V p-p, 75 ohms ▪ S-C Output: 0.286V p-p, 75 ohms ▪ S/N: Nominal 40dB (normal)
- D-Range: More than 90dB Hi-Fi ▪ Frequency Response: 50-12,000Hz (normal); 20-20,000Hz (Hi-Fi) ▪ Line Level Input: -8dB, 47K ohms ▪ Mic Level Input: -60dB, 10k ohms ▪ Line Level Output: -8dB, 2K ohms ▪ Wow-Flutter: Less than 0.20% JIS WTD
- Power Requirements: 120VAC, 60Hz \$3495.00

PLC-550M Portable High Definition LCD Color Multimedia Projector

- Compact/lightweight ▪ Connects quickly and easily to VGA and Mac II computer systems ▪ Multistandard: NTSC/PAL/SECAM/NTSC 4.43 ▪ (3) 1.3" Polysilicon TFT panels ▪ 921,600 pixels ▪ 550 lines horizontal resolution (S-Video) ▪ 500 ANSI lumens ▪ Projection image adjustable up to 150" (diag.)
- Reversible scan offers rear projection ▪ Image elevation adjustable up 6° ▪ 200W metal-halide lamp ▪ Infrared wireless remote ▪ Built-in monaural speaker with 3WRMS amp (THD 10%)
- Illuminated control panel ▪ Blue background mode
- On-screen display simplifies picture adjustment ▪ 30-second countdown feature eliminates false starts ▪ 120VAC, 50/60Hz
- 21.78 lbs. ▪ Scanning Frequency: Automatic frequency control; H sync, 15kHz-37.9kHz; V sync, 50Hz-70Hz ▪ Over Scan: 7% H; 4% V ▪ Projection Lens: f/2.8-3.2 lens ▪ Lens Aperture: 2.04" ▪ Throw Distance: 5'-40' ▪ Audio In: 2 RCA L/R, 2 computer RCA

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



**Abekas 8150 Component
Digital Production Switcher**

- Integrated DVE functions as either 2 videos or a video plus key plus full-bandwidth SuperShadow™
- SuperShadow provides independent control of all transforms and warps
- UltraWarp™, a quad split with cylinders, rings, swirls and a lens to magnify the picture
- Light the picture with the SurfaceFX™ light source
- Surface textures can be taken from video or from a framestore which can be loaded from a file off of a disk
- Up to 16 inputs, which can be a mix of serial or parallel digital, RGB or YUV component analog or analog NTSC or PAL composite
- 10-bit analog input module supports 4:4:4 chromakeying directly from an RGB camera source
- M/E architectures, 3 μLine keyers and a graphically assisted user-interface make the 8150 easy to use
- Ultamix™ multi-level operation allows simultaneous mix and wipe transitions within either the mix/effects or the full-features program/preset bank
- mBoss™ border generator creates attributes that look like they were created on a character generator
- Sub-pixel processing provides smooth borders with outlines, trails, extrudes, defocused drop shadows and an emboss
- TimeFrame™ effects editor provides 4 independent switcher effect timelines with synchronization for Abekas disk recorders and DVE via LINC™
- Timeline effects can be stored in battery back-up memory, on a floppy disk or on an internal SCSI hard drive
- Optional dual framestore, advanced wipe generator and Abekas reTouch™ color correctors also available



Abekas Texus™ Character Generator

- Texus lets you type up to 100 words per minute with a flexible user-interface that can be customized to accommodate any working style
- An internal Postscript Level 2 interpreter supports Mac and PC Postscript typefaces
- Combine up to 6 attribute layers simultaneously per character
- Combine neon, glows, extrudes, bevels and multiple borders to create visually striking styles

- Create realistic cast shadows with shear, soften, scale and rotate functions
- Texus color ramp feature allows you to apply a 16-color ramp at any angle to each character
- A true graphics cursor provides a point, click and drag interface similar to mouse based text editing
- With video capture, grab a frame of live video and rescale it, apply attributes to it and run it in an effect
- Animate the position, color and transparency of each character along a straight line or splined path
- Animate the transparency of any individual attribute
- Ethernet networking provided
- Multiple Texus character generators can be networked to any workstation for the transfer of Postscript typefaces, TIFF files, and ASCII text files
- Connect an NFS server to the network and use as a central store for pages, fonts, typefaces, etc.



Abekas Dveous™ Digital Video Effects

- Basic system is a twin-channel DVE that can be used in a dual video or video plus key plus full-bandwidth SuperShadow
- 23 x 12-point video filters and 4-point store output interpolators provide superb image quality for picture expansion and compression
- All picture transform information is calculated to 1.2nS spatial precision with full 10 bits per pixel resolution
- All channels have Z-axis keying for intersecting plane effects either between the twin channels on a basic system, or between all 4 channels on a dual twin-channel system
- UltraWarp and SurfaceFX give effects extra realism
- With SurfaceFX, each channel has a dual color light source that can be positioned in 3-D space with either a bar, flood or spotlight shape
- Add surface textures from either live video or from a texture framestore
- TimeFrame Effects Editor standard for independent effect timelines
- Mini shot box recall panel for live productions provides direct access to any effect or any keyframe within an effect
- Optional target framestore and second twin-channel configuration also available with wide-range defocus and retouch color correctors

Call For Pricing

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

DDR/VIDEO CLIP SYSTEM/ WORKSTATIONS



scitex 
DIGITAL VIDEO



Abekas Diskus™ 10-Bit DDR

- Designed to complement a range of graphics platforms like those based on SGI, Mac and PCs
- Diskus brings 10-bit CCIR 601 uncompressed video quality to the desktop
- Analog RGB and Betacam output
- Optional high quality color composite and S-Video output and component analog input
- Up to 3 frames per second synchronous SCSI-1
- Field and frame forward and reverse play/jog
- Variable playspeed $\pm 50X$
- Seamless nonlinear segments playback
- SGI Video Tools™, including virtual control panel and audio interface enhance disk control and file transfer speeds
- Exabyte 8200/8500/8505 support
- High-speed Targa file format conversion
- Real time color space converter
- Reed-Solomon error correction
- VTR auto record
- Speeds productivity with fast file transfer speeds made possible by the inclusion of a fast and wide SCSI-2 interface
- Ethernet interface for image transfer and remote control
- SCSI/Ethernet quick record and window transfer formats
- Normal loop and bounce playback modes
- Film playback mode
- Diskus specified with either 31- or 62-second capacities
- FluidFrame™ slow motion option provides smooth motion with crisp resolution
- VideoTools™, comprised of a graphical user interface and new SCSI-2 driver, was designed specifically for users of graphics workstations
- Optional RotoPhoto™ plug-in drivers for Adobe Photoshop and Premiere allow rotoscoping and video image retouching
- Optional DiskNet™ for batch file transfers between Diskus and Macintosh also standard

Abekas Clipstore™ Video Clip System

- Video recording and replay of full-motion video clips, stills and stills with key signals in uncompressed 10-bit CCIR 601 quality
- The Shot Box control panel provides 1-button access to most functions, including record and playback of clips, stills and stills with key signals
- System consists of enhanced 60-second Diskus with a framestore card providing 4 separate serial component digital outputs, program preview and 2 auxiliary outputs, one of which can be used as a key out
- QuickStore™ software running on a customer-supplied Macintosh controls the capture and storage of stills and clips, database display and cataloging and the compilation and editing of playlists for transmission
- A record of category and title is maintained for every image stored, allowing very fast searches using either criteria
- Clips and stills can be aired live from a Shot Box or a Mac graphical user-interface
- Size, crop and mix stills and clips freely during playback
- Variable rate auto-transitions can be set up on the Shot Box or Mac
- SCSI can be added for archiving to any standard Mac SCSI device



Sphere Digital Nonlinear Post Production Video Workstations

- Designed as an open "network-centric" family of digital media finishing tools
- Utilizes user-friendly interface and real time functionality of VideoCube™ and TurboCube™ and signal processing from Sphere and Abekas
- Built-in RISC based Appleshare™ Media Server to handle multi-user demands
- Each Sphere Media Processor is used by a single operator, while the media server is a shared resource
- Combines media creation tools with decentralized, distributed storage and processing to enhance the collaborative process
- QuickTime™ native media files provide a common format
- An automated archive program can run concurrently with other work being done on the system
- A future-safe architecture allows user to migrate seamlessly into new technology
- Every computer in the network can view and access the files of the other workstations or simultaneously from multiple workstations
- Easy to remove or replace StorageDocks™
- Media files can be exchanged with third-party applications
- Workstations can be configured to provide precise features required for each player's role in the post-production process
- All systems let user redigitize in higher resolution for finishing work
- Digital material may be taken directly from acquisition medium
- Mezzanine boards provide storage and networking capabilities

Sphere systems have been designed as an open, "network-centric" family of digital media finishing tools. Building on the user-friendly interface and real time functionality of the VideoCube and TurboCube, plus the mixing, keying and Dveoc technology from Abekas, the systems incorporate a variety of new storage, networking and file-exchanging technologies. Like most families, the greatest strength of Sphere systems lies in their commonality. Completely open architecture—from file structure to storage media to connectivity with other products—provides infinite flexibility and power to every computer on the network.

Call For Pricing

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

REFERENCE
CATALOG
97-98



DigiSphere™ Editing System

- Offers the same features found in other Sphere workstations, including ergonomic control panel with jog knob and audio-fader familiarity of a conventional edit suite
- Designed for video acquisition, digitization and distribution
- Includes 1 real time video channel, 1 stereo record channel and 4 simultaneous stereo playback channels with real time reverb, gain, pan and equalization
- Other video and audio workstations can simultaneously create media files that go directly to its hard drives
- While it's outputting media to a variety of devices, other workstations can access the same media
- Can be used to catalog and organize media for the editorial process and to do editorial functions like cuts and clip trimming
- Digital CD quality ensures that work can go straight to air
- Voice-over mode lets user record narration while watching and listening to edited program
- Unique build-to-disk function gives maximum mix-down capabilities
- Can easily be upgraded to another level in the Sphere family



MicroSphere™ Editing System

- Entry-level real time nonlinear desktop video finishing system
- Designed to meet the growing demand for high-end desktop video solutions
- Real time effects option that includes real time keying, 3-D DVE, color processing and extensive wipe patterns
- Delivers 2 simultaneous streams of video for full real time transitions and effects
- Utilizes the Truevision® TARGA® 2000 RTX real time video board, the PowerMac 9500 and high-end easy to use professional editing software from Scitex
- MicroSphere offers user-interface consistency, media-file format compatibility and networking efficiency
- Available as an unbundled board-and-software system, or as a complete workstation with fully configured PowerMac 9500, StorageDock 240, monitors, speakers and cables

VideoSphere™ Editing System

- Based on the user-interface and real time functionality of the VideoCube and TurboCube from ImMIX, plus the mixing, keying and Dveous technology from Abekas
- Complete open architecture provides infinite flexibility and power to every computer on the network
- 2 real time streams of video with full real time effects creation, keying and color correction
- Independent third channel for titling and graphics, enhanced by an object-oriented QuickDraw GX-based real time titler
- Wipes, fades, dissolves, picture manipulation and all other effects quickly accessed in real time and infinite in duration
- X-, Y- and Z- axis rotations
- Mosaics and image blurs
- Colored and textured borders
- Drop shadows and border outlines
- Posterization and solarization
- Matte fills and freeze frames
- Fade-to/from-black
- Optional 3-D DVE for ripples, several variations of page turns, warps, rolls, lighting effects, spheres and perspective variations also available

StrataSphere™ Editing System

- Features all the functionality of the VideoSphere plus many extras
- Real time, full-motion alpha keys for both video channels is the equivalent of having 4 channels of video
- StrataSphere also offers a completely nondestructive compositing feature
- By adding new video tracks to the TrackSheet, up to 50 elements with fill key signal integrity can be layered
- Use time code information for detailed editing
- Independent real time title/graphic track includes integrated key processing
- Intuitive track-based visual time display allows independent control of multiple media types
- Indicator display shows manual audio mix memory system
- Color-coded clips and tracks for intuitive editing
- Exact time code location of the playhead displayed
- Quick access effects plus unlimited custom built effects
- Program playhead shows current play position
- WorkSpace holds clips for easy access outside program area



DveousFX Option

- DveousFX option delivers outstanding levels of image quality
- Independent control of all transforms and warps allow user to ripple, italicize or add any other effect to video and drop shadows
- UltraWarp™ feature lets user experiment with cylinders, rings, swirls, quad splits, a magnifying glass and spheres
- A dual-color light source can be positioned in 3-D space in either a bar, flood or spotlight effect to produce realistic highlights and shadows that can interact with page turns and ripples
- SurfaceFX™ adds surface textures

Call For Pricing

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



Set 1081-U/1083-U Microphone Systems

Set 1081-U Handheld Wireless Microphone System

▪ Radiomicrophone system consisting of handheld transmitter, receiver and accessories ▪ For mobile applications ▪ Up to 16 switchable UHF transmission/receiving frequencies ▪ Supply schedule: 1 BF 1081-U handheld transmitter, 1 EM 1031-U receiver, 1 STH 1051 quick-release clamp, 1 battery for handheld transmitter, 2 telescopic receiver antennae, 1 NG 1031 plug-in mains unit, 1AF cable (jack-jack), 1 MK 1080 carrying case ▪ System variants available. \$1995.00

Set 1083-U Pocket Wireless Microphone System

▪ Radiomicrophone system consisting of pocket transmitter, clip-on microphone, receiver and accessories ▪ Up to 16 switchable UHF transmission/receiving frequencies ▪ For mobile applications ▪ Supply schedule: 1 BF 1083-U pocket transmitter, 1 EM 1031-U receiver, 1 MKE 2-1053 clip-on microphone with windshield ▪ 1 battery for pocket transmitter ▪ 2 telescopic receiver antennae ▪ 1 NG 1031 plug-in mains unit ▪ 1 AF cable (jack-jack), 1 MK 1080 carrying case ▪ System variants available \$1995.00

Set 1081-V/1083-V Mikroport Wireless Systems

Common Features

▪ 6 switchable frequencies within a 7MHz bandwidth ▪ Improved RF filtering and interference rejection ▪ Longer operating range for greater flexibility and clear true diversity reception ▪ Includes EM1031-V true diversity receiver, fitted with state-of-the-art circuitry with PLL synthesis, HiDyn plus noise reduction and an Advanced Mute Function for detecting interference and making reliable transmissions ▪ Using supplied rackmount adaptors, 2 EM1031-V's may be attached to fit a 19" rack

Set 1081-V

▪ Contains a handheld transmitter with a supercardioid dynamic microphone with an 80-18,000Hz frequency response ▪ Integrated antenna. \$795.00

Set 1083-V

▪ Contains a small pocket transmitter and an MKE2 red dot miniature clip-on lavalier condenser ▪ Frequency response: 80-20,000Hz \$995.00

Set 108X Combo

▪ Set includes: (UHF only) EM1031, BF1081/83, MKE2-1053, carrying case \$2990.00

MICROPHONES

- MKE102S-60 Omnidirectional lavalier system with high intelligibility and transparency \$317.00
- MKE102S/K6 Combo Omnidirectional lavalier system with powering module 602.00
- MKE104S-60 Cardioid lavalier system with K6 collar cable . . 317.00
- MKE104S/K6 Combo Cardioid lavalier system with K6 powering module. 602.00
- MKE2-60 Omnidirectional lavalier mic with open natural sound 395.00
- MKE2-60/K6 Combo Omnidirectional lavalier mic with K6 powering module 592.00

DIGITAL RECORDING SERIES RF CONDENSER MICROPHONES

- MKH 80 Multipattern condenser mic with dual membrane converter \$2950.00
- MKH 70 P48 Supercardioid/lobe (shotgun) mic with low distortion 1795.00



MKH 20



MKH 60



MKH 40

- MKH 60 P48 Supercardioid/lobe (short shotgun) mic with short interference tube \$1495.00
- MKH 30 P48U3 Bidirectional (figure-eight) mic with symmetrical bidirectional characteristic. . 1450.00
- MKH 20 P48U3 Omnidirectional mic with low distortion . . 1350.00
- MKH 40 P48U3 Cardioid mic with low distortion. 1350.00
- MKH 50 P48 Supercardioid mic with narrow pickup pattern 1350.00



MKH 816



MKH 416

INDUSTRY STANDARD RF CONDENSER MICROPHONES

- MKH 816 TU3 Ultradirectional/lobe (shotgun) mic; uses audio wire (A-B) powering \$1595.00
- MKH 416 P48U3 Supercardioid/Lobe (Short Shotgun) mic for boom, fishpole and camera mountings . . . 1350.00
- MKH 416 TU3 Same as MKH 416 P48U3, but uses 12V audio wire (A-B) powering/handles 124dB/SPL 1350.00

STAGE AND STUDIO MIC SERIES

- MD 441-U Supercardioid mic with 5-position low frequency/2-position high frequency equalization switches \$895.00
- MD 431 II Supercardioid mic with nearly frequency-independent polar pattern . . . 495.00
- MD 421 II Dynamic Cardioid mic; used in broadcast and recording studios 485.00
- MD 425 Dynamic Supercardioid mic for vocal and speech applications 395.00

PRO FORCE SERIES MICROPHONES

- MD 504 Drum miking kit; primarily for instrument miking \$792.00
- MD 504-D MD 504 with MZH504 drum clamp 199.00
- MD 735 ProForce mic with transparent sound and featherweight membrane/voice coil. . 179.00
- MD 736 Same as MD 735, except with on/off switch. 199.00
- MD 504 Cardioid mic. 169.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





Electrostatic Headphones

HE60/HEV70 Push-pull electrostatic design; Class A, mos-fet outputs **\$1799.95**



Full-Sized Circumaural Home Headphones

- HD600 Open dynamic Hi-Fi/professional stereo headphone with advanced diaphragm design . . **\$449.95**
- HD580 Digitally compatible circumaural headphone with Duofol composite diaphragm **349.95**
- HD565 Digitally compatible Open-Aire® dynamic headphone with copper-coated aluminum voice coils **289.95**
- HD545 Digitally compatible Open-Aire dynamic headphone with stereophonic transparent tonal response **199.95**
- HD535 Digitally compatible Open-Aire dynamic headphone Duofol 2-layer membrane **169.95**
- HD525 Open dynamic Hi-Fi stereo headphone with lightweight aluminum voice coils and special diaphragm coating **129.95**

Full-Sized Studio Monitor Sealed Headphones

- HD265 Studio monitor headphone with sealed-chamber headphone format **\$249.95**
- HD25 SP Studio monitor headphone with high-efficiency drivers **149.95**



Expression Line Supraural Series

- HD475 Open-Aire dynamic headphone with AC voice coil **\$149.95**
- HD465 Open-Aire dynamic headphone with Duofol diaphragm **129.95**
- HD455 Open-Aire dynamic headphone with detachable OFC copper cable **99.95**
- HD433 Open dynamic Hi-Fi stereo headphone with OFC copper cable **39.95**

RS 8/RS 6/RS 4 Wireless Headphone Systems

- Range of 250° in all directions ▪ 3 switchable frequencies
- Adjustable volume control on headphone ▪ Automatic on/off switch on transmitter ▪ Stereo indicator LED on headphone
- Special filter protects against interference from amateur radio transmission ▪ 20Hz-20kHz frequency response ▪ 900MHz
- RS 8 HDR 8 stereo headphone with integral radio frequency receiver and T 8 transmitter **\$369.95**
- RS 6 HDR 6 stereo headphone with integral radio frequency receiver and T 6 transmitter **269.95**
- RS 4 HDR 4 stereo headphone, automatic frequency control **159.95**

MX3/MX4/MX5 M-X-Treme In-Ear Headphones

- High fidelity sound reproduction with broad frequency response
- Lightweight design for listening comfort ▪ 3' signal cable for ease of use ▪ Attractive wind-up storage case ▪ Integrated volume control for added convenience on MX5 ▪ 20Hz-22kHz frequency response
- Weight: 0.21oz

- MX5 32.5 ohms impedance. 103dB SPL at 1mW sensitivity. Black with blue decorative rings **\$44.95**
- MX4 16.5 ohms impedance. 106dB SPL at 1mW sensitivity. Blue with black decorative rings **24.95**
- MX3 2.5 ohms impedance. 103dB SPL at 1mW sensitivity. Black with blue decorative rings **14.95**

Full-Sized Supraural Headphones

- HD445 Open-Aire dynamic headphone with large diaphragm for natural, transparent sound. **\$79.95**
- HD435 Digitally compatible full-sized supraural with entry-level, large diaphragm **59.95**

Low Impedance Mini Headphones

- HD56 Digitally compatible reference mini headphone with Extended frequency response **\$29.95**
- HD36 Digitally compatible mini headphone with Triple-wound aluminum voice coils **19.95**
- HD26 Mini headphone designed for portable use **14.95**

Microphone Capsules

- ME67 Long shotgun for low level sounds **\$375.00**
- ME67/K6 Combo **660.00**
- ME65 Supercardioid microphone capsule for directivity across frequency range **295.00**
- Combo (includes MZQ200 case) **610.00**
- ME65/K6
- ME66 Short Shotgun Microphone Capsule; combination of supercardioid at low frequencies and shotgun at 2000Hz **279.00**
- Combo (includes MZQ200 case) **594.00**
- ME66/K6
- ME64 Cardioid microphone capsule with tight directional pattern for isolation from surrounding noise **210.00**
- Combo, includes MZQ200 and case **525.00**
- ME64/K6
- ME62 Omnidirectional microphone capsule for smooth frequency response **185.00**
- ME62/K6 Combo (includes MZQ200 case) **500.00**

K6 Modular Electret Microphone System

- Separate capsules/powering modules can be combined to produce a variety of microphones ▪ 1 module plus a few capsules can provide user with flexibility ▪ Converts from one type of microphone to another by threading together various system components ▪ Capsules use back-electret technology

- K6 Powering Module**
- Universal powering module for ME62/64/65/66/67/ MKE2-60/40-60/102-60 **\$285.00**
- K6P Powering Module**
- Same as K6 except with phantom power only with no on/off switch or battery compartment **\$285.00**
- K6RD Powering Module**
- Same as K6 except with lower sensitivity **\$285.00**



ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



MODULAR MICROPHONE SYSTEM/HEADPHONES



HDE 1030-2
Receiver



SKM 1030-7
Transmitter

Tourguide Infoport Cordless Guide System

Consists of a lightweight, multichannel, wireless microphone and durable, cordless, 2-channel stethophone receiver. Designed so a guide can speak at a normal conversation level and be heard by everyone, the Sennhieser Tourguide system allows any tour to be conducted more successfully. Utilizing radio frequency (RF) technology, the entire system is wireless, which increases mobility. The handheld microphone can be used with a lanyard clip for hands-free operation or stand adaptor. With an optional windscreen, the system can be used in outdoor venues.

SKM 1030-7 Tourguide Transmitter

Radiomicrophone with 100mW transmitter output power (FM), switchable to 6 fixed set frequencies between 30 and 50MHz in the 8m band. For the additional playback of music and speech from tape: version SKM 1030-7 BU with 2.5mm mini-jack input socket is available.

- Rugged casing-wire antenna
- Sensitivity switch for high and low input levels
- Microphone muting switch
- Directional microphone characteristic reduces interfering sounds
- Power supply from 9V battery or accupack (charging contacts enable charging of the accupack in the transmitter)
- Choice of up to 6 channels

Specifications

- 6 transmitter frequencies
- 30-45MHz frequency range
- < ±2kHz frequency deviation
- < 4nW harmonies
- Narrow-band FM modulation
- ±8 kHz nominal deviation
- ±15kHz peak deviation
- 80-12kHz AF frequency response
- 68dB (A) S/N ratio
- < 0.3% Distortion (1kHz)
- 1 x 9V battery power supply
- Approximately 6 hours alkaline operating time
- Approximately 1.5 hours NiCad operating time
- 9.7" x 8.8 oz. (with batteries)

SKM 1030-7 \$985.00

EZL1030-20L System Case

The convenient charging and transport case contains 2 interconnected 10-way charging units for 20 HDE 1030 receivers. Complete charging is carried out within 14 hours and may subsequently be switched to trickle-charge. The case is also used for the storage of the handheld transmitter and the lavalier clip. For rechargeable battery operation of the transmitter, an additional single charger L1032 with plug-in mains unit NT 1032 can be integrated.

EZL1030-20L \$799.00

HDE 1030-2 Stethoset Receiver

High wearing comfort, even over long periods, due to the low 60g weight of this radio receiver.

- Storage and charging in a convenient case
- Interchangeable, easy-to-clean earpads for hygienic use
- Single on/off/volume control
- Plug-in accuplug for up to about 8 hours operating time
- 1 transmitter transmits to as many receivers as required
- Can be color-coded for easy recognition, no risk of confusion
- Can be supplied as single-channel, 2-channel, or 3-channel receiver

Specifications

- 2 receiver frequencies
- 30-45MHz frequency range
- Narrow-band FM modulation
- ±8 kHz nominal deviation
- 52dB (A) S/N ratio
- Approximately 110dB max. SPL (1kHz)
- 50-8kHz frequency response
- < 2% Distortion (1kHz)
- BA90 power supply
- 6 hours operating time
- Approximately 1.87" x 3.15" x 0.67"
- 1.94 oz.

HDE 1030-2 \$299.00

Accessories

EZL1030-20L	Carrying case/charger for 20 HDE 1030-2	\$799.00
HC101	Carrying case/charger for 20 HDE 1030-2	395.00
HDE 1030-2	Receiver	299.00
L92-20	Charging strip for 20 BA90	289.00
L1032	Transmitter charger	285.00
L92-10	Charging strip for 10 BA90	229.00
SEMS 3136	Floor stand	64.00
BA1032	Transmitter rechargeable battery	48.00
NT 1032	Power supply for L1032	35.00
STH 1051	Stand adaptor	24.00
MZW 1032	Gray foam windscreen	19.00
SZU 1032	Lanyard clip	15.00
BA90	Receiver rechargeable battery	11.00
EP405L	Ear cushion	1.25/pr.

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





XG-E3000U/
XG-E1200U

**XG-E3000U XGA Multimedia
Conference Room LCD Projector**

- 600 ANSI lumens ▪ 1024 x 768 resolution ▪ 1:1.6 power zoom focus and shift ▪ Dual computer inputs (5-BNC plus 15-pin)
- Optional ceiling bracket \$12,995.00

**XG-E1200U Super High Brightness SVGA
Resolution Conference Room LCD Projector**

- Full-featured, high performance ceiling mountable projector for boardrooms, lecture halls and other large venues ▪ 832 x 624 resolution for compatibility with SVGA and Mac 16" computers
- 600 ANSI lumens brightness ▪ Remote control power zoom/focus lens with unique shift function to minimize keystone type distortion
- Line-doubled video with composite (NTSC/PAL/SECAM) and S-Video inputs ▪ Built-in audio system ▪ Tabletop, ceiling mount and rear projection modes \$8,995.00



**XG-NV1U 300" NoteVision Full-Color
Portable LCD Data Projector**

- Slim, compact body with carrying handle ▪ Full SVGA (832 x 624) resolution ▪ VGA and Mac (16"/13") compatibility for direct PC connection ▪ 400 ANSI lumens brightness ▪ Wireless remote control with mouse control, laser pointer and back lit functions for perfect presentations ▪ 1:1.4 manual zoom and focus ▪ Large 300", 16.7 million color projection ▪ Mounts on tabletop or ceiling
- 3-D Surround Sound ▪ Built-in amplifier and stereo speakers
- Multisystem video compatibility (NTSC/PAL/SECAM) . . . \$7,995.00



**XG-E690U/XG-E660U SVGA/VGA
Computer/Video LCD Projectors**

- True SVGA (800 x 600) resolution ▪ 480,000 pixels ▪ Full 16.7 million colors ▪ 6.4" active-matrix LCD ▪ 220 ANSI lumens ▪ Wireless mouse control system ▪ Direct SVGA/Mac computer input/output ▪ Macintosh 832 x 624 compatibility with Pan and Scan ▪ Built-in stereo amplifier and speakers ▪ NTSC/PAL/SECAM video compatibility ▪ Tabletop and rear projection capabilities ▪ Built-in carrying handle \$4,995.00
- XG-E660U Same features as the XG-E690U, except: ▪ 307,200 pixels ▪ 640 x 480 resolution ▪ 250 ANSI lumens 3,995.00

Accessories

- AN-T300EZ Powered TeleZoom lens for XG-E1100U (160-320mm, f/4.4-5.1) \$2,795.00
- AN-SC100P RGB-to-video scan converter allows Sharp projectors to be used with VGA or Mac computer 649.00
- AN-CME800A Ceiling bracket for XG-E1100U 350.00
- AN-XGCM10 Ceiling bracket for XG-NV1U 250.00
- AN-XGCM20 Ceiling bracket for XG-E1200U 250.00
- AN-690WM Wireless mouse control (Mac and IBM) with special effects software (IBM only) . . . 175.00
- QA-MACM1 16" Mac monitor loopthrough cable for XG-E690U/XG-NV1U 85.00
- AN-INS800 Ceiling mount insert hardware for XG-E1100U 40.00
- XG-MACLOOP 13" Mac monitor loopthrough cable for data/video projectors 40.00

Cases

- XG-E1000SC Shipping case for XG-E1100U and accessories \$535.00
- XG-E1200SC Shipping case for XG-E1200U 535.00
- XG-NV1SC Shipping case for XG-NV1U 525.00
- XG-E690SC Shipping case for XG-E690U/660U 495.00
- XG-E1000WCC Carrying case w/wheels for XG-E1100U and accessories 385.00
- XG-E1200CC Carrying case for XG-E1200U 320.00
- XG-E1200WCC Carrying case with wheels for XG-E1200U . . . 320.00
- XG-NV1WCC Carry case w/wheels for XG-NV1U 310.00
- XG-E1000CC Carrying case for XG-E1100U 285.00
- XG-E690WCC Carrying case with wheels for XG-E690U/660U 275.00
- XG-NV1CC Carry case for XG-NV1U 175.00
- XG-E690CC Hardshell carrying case for XG-E690U/660U 175.00
- XG-E1200BAG Soft sided carrying bag for XG-E1200U . . . 145.00
- XG-E690BAG Carrying bag for XG-E690U/660U 135.00
- XG-NV1BAG Carry bag for XG-NV1U and notebook . . . 110.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



LCD PROJECTORS/ LCD MONITOR



SHARP
FROM SHARP MINDS
COME SHARP PRODUCTS™



XV-H37VUAP High Luminance Convertible LCD Color Video Projector

- Tabletop/ceiling mountable ▪ Flexible image size from 25" to 300"
- Component video input ▪ Special design long-life metal-halide lamp ▪ 112,320 pixels on each panel produce the brightest, clearest, most improved color contrast ever ▪ Back lit motorized zoom/focus remote control ▪ Built-in 3W amplifier and speaker ▪ 400 lines horizontal resolution ▪ 2 BNC type composite video inputs, 1 S-Video (Y/C) terminal, an analog (15.75kHz) RGB connector, plus 3 sets of audio inputs ▪ Luminance: 1500 lux at 40" screen size ▪ Variable masking. \$4695.00



LCD MONITOR QD-101MM Ultracompact LCD Multimedia Computer/Video Monitor

- Provides full-color video and PC applications in a space less than 2" deep ▪ Connects to VGA and Macintosh sources ▪ 16 million colors ▪ 10.4" TFT active-matrix LCD ▪ 640 x 480 VGA/Mac resolution ▪ NTSC/PAL/SECAM video system ▪ Approximately 500 TV lines resolution ▪ Contrast ratio: 100:1 ▪ Cold cathode fluorescent back light ▪ Built-in composite (RCA), S-Video (4-pin DIN), VGA analog RGB (15-pin HD female) and monaural audio (RCA) inputs ▪ Built-in 1W speaker ▪ On-screen display for adjustments ▪ Adjustment controls on monitor ▪ Side-mounted cable connections for installations ▪ Power source: 120VAC, 60Hz ▪ Power consumption: 32W ▪ Dimensions: 8.2"H x 11"W x 1.85"D ▪ Weight: 3.1 lbs. ▪ Accessories included: 120VAC adaptor, 6' VGA/MCGA cable, 6' Macintosh cable, operation manual \$2995.00

Accessories

- AN-T300EZ Powered TeleZoom lens for XV-H37VUAP (160-320mm, f/4.4-5.1) \$2795.00
- AN-SC100P RGB to video scan converter allows Sharp projectors to be used with VGA or Mac computers. 2649.00
- AN-CMP15P Ceiling bracket for XV-P15UP 375.00
- AN-CM200P Ceiling bracket for the XV-H37VUAP (includes insert hardware) 199.00
- AN-690WM Wireless mouse control (Mac and IBM) with special effects software (IBM only) 175.00
- AN-P3ZHP High mount stand for XV-P15UP 110.00
- AN-EP101P Extension tube for AN-CME800, AN-CM200P and AN-CMP15P 75.00
- AN-INS800 Ceiling mount insert hardware for XV-H37VUAP 40.00
- XG-MACLOOP 13" Mac monitor loopthrough cable data/video projectors 40.00

Cases

- XG-E1000SC Shipping case for XV-H37VUAP and accessories \$535.00
- XG-E650SC Shipping case for XV-P15UP 495.00
- XG-E1000WCC Carrying case with wheels for XV-H37VUAP and accessories 385.00
- XG-E1000CC Carrying case for XV-H37VUAP 285.00
- XV-P15CASE Padded carrying case for XV-P15UP 175.00
- XG-E650BAG Carry bag for XV-P15UP 110.00



XV-P15UP Compact LCD Video Projector

- Compact, lightweight (13.6 lbs.) design ▪ Tabletop/ceiling mount flexibility ▪ Built-in audio amplifier and speaker ▪ Multiple video, S-Video and audio inputs ▪ Built-in carrying handle ▪ Single 3.6" TFT active-matrix LCD panel ▪ Eliminates the use of color filters in the LCD panel and incorporates dichroic mirrors for color separation to project high brightness images nearly 4X the previous single panel models ▪ Center to corner uniformity ▪ Fixed, short focus lens allows you to project large screen images even in limited spaces ▪ 120VAC, 50/60Hz ▪ 30"-150" diagonal screen size ▪ 100,386 pixels ▪ 350 TV lines horizontal resolution ▪ 100:1 contrast ratio \$2495.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





36JS400P 36" Color Television

▪ 36" diagonal dark tint picture tube ▪ Picture in picture ▪ 800 lines horizontal resolution ▪ S-Video input \$1689.00

32JS400P 32" Color Television

▪ 32" diagonal dark tint picture tube ▪ Picture in picture ▪ 800 lines horizontal resolution ▪ S-Video input \$1069.00



25H-M100P 25" Color Television

▪ 25" high-focus, dark tint picture tube ▪ EquiSound ▪ Front A/V inputs ▪ Universal remote ▪ Channel lock ▪ 181-channel tuning capability ▪ On-timer ▪ Sleep timer ▪ Trilingual on-screen menu ▪ Child view limiter ▪ Channel guide lets user scroll through a list of favorite channels ▪ NTSC receiving system ▪ 120VAC, 60Hz power source \$699.00



MTS-S-Video

27JS200P 27" Color Television

▪ 27" diagonally measured dark tint picture tube ▪ S-Video input ▪ MTS stereo with SAP and dbx® noise reduction ▪ 600 lines of resolution ▪ Front and rear A/V inputs ▪ Comb filter ▪ Switchable variable audio output ▪ Trilingual on-screen menu display ▪ Universal plus remote ▪ Equisound ▪ View timer ▪ Favorite color ▪ Personal preference. \$709.00

25HM100-P 25" Color Television

▪ 25" diagonal dark tint picture tube ▪ Trilingual on-screen menu display ▪ Front A/V inputs ▪ Universal remote. \$699.00

25JS100P 25" Color Television

▪ 25" diagonal dark tint picture tube ▪ MTS stereo ▪ Direct access remote ▪ View timer \$650.00



20JS100P 20" Color Television

▪ 20" diagonally measured dark tint picture tube ▪ MTS stereo with SAP and dbx noise reduction ▪ Deluxe trilingual on-screen menu display ▪ Front A/V inputs ▪ Direct access remote ▪ Favorite color ▪ View timer ▪ 3W ▪ Trilingual on-screen menu display \$529.00

19JM100P 19" Color Television

▪ 19" diagonally measured high-focus picture tube ▪ Front A/V inputs ▪ Direct access remote ▪ Closed caption while muting ▪ Favorite color ▪ Sleep timer ▪ Trilingual on-screen menu display \$479.00

13JM100P 13" Color Television

▪ 13" diagonally measured high-focus picture tube ▪ Front A/V inputs ▪ Direct access remote ▪ Closed caption while muting ▪ Favorite color ▪ Sleep timer ▪ Trilingual on-screen menu display \$349.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



VHS RECORDER/PLAYERS/ TV/VCR COMBINATIONS



SHARP
FROM SHARP MINDS
COME SHARP PRODUCTS™

Professional Series VCRs

Common Features

- Sharp super picture clear picture circuit ▪ Shuttle ring on VCR (for FF/rewind/slow-motion) ▪ Wired remote pause in/out jacks ▪ Universal remote control ▪ 19-micron exact-track head system ▪ Record protection
- End-of-video auto repeat ▪ Mid-drive chassis with convenient shuttle control system ▪ BNC type video in/out connectors plus commercial 3-wire (grounded) AC line cord ▪ 1-hour timer back-up
- Double azimuth 4-head drum ▪ 1-year, 8-event programmable timer ▪ 181-channel PLL quartz synthesized tuner ▪ Automatic daylight savings time adjustment ▪ Digital program search system
- Rapid response full-loading tape mechanism ▪ Automatic tracking control system ▪ Real time tape counter plus Auto Zero Back rewind system ▪ Tamper proof function ▪ 2-speed forward/reverse search plus noiseless still frame, frame advance and variable slow motion
- Blue screen noise elimination ▪ HQ high quality picture enhancement
- On-screen trilingual (English, Spanish and French) programming



XA-620A Professional Series 4-Head VHS Hi-Fi VCR

- Includes common features, plus:
- VHS Hi-Fi stereo/MTS sound
 - Industrial BNC video connectors
 - VCR Plus+ programming system
 - Automatic head cleaning system
 - Front A/V input jacks
 - High-speed (150X) fast forward and rewind

XA-620A \$550.00



XA-610A Professional Series 4-Head VHS VCR

- Includes common features, plus:
- VCR Plus+® programming system with cable box channel control
 - Industrial 8-pin and BNC video connectors
 - Automatic head cleaning system
 - High-speed (150X) fast forward and rewind
 - TV/monitor 8-pin connector

XA-610A \$500.00



XA-605A Professional Series 4-Head VHS VCR

- Includes common features, plus:
- High-speed (120X) fast forward and rewind
 - Grounded 3-wire AC line cord
 - Industrial BNC video connectors

XA-605A \$430.00

TV/VCR Combinations

25VTH60PP 25" TV/VCR

- 25" diagonally measured high-focus dark tint picture tube
- Front A/V inputs
- Sharp Super Picture
- Auto clock setting
- 2-way load/eject
- 2-way auto repeat
- Random access remote
- Closed caption while muting

25VTH60PP \$799.00

25VTJ100P 25" TV/VCR

- 25" diagonally measured picture tube
- Front A/V inputs
- Unified TV/VCR remote
- Trilingual on-screen menu display

25VTJ100P \$709.00

20VTH60PP 20" TV/VCR

- 20" diagonally measured picture tube
- Front A/V inputs
- Random access infrared remote
- Bilingual on-screen menu display

20VTH60PP \$695.00



13VTJ100P 13" TV/VCR

- 13" diagonally measured picture tube
- Front A/V inputs
- Unified TV/VCR remote
- Trilingual on-screen menu display

13VTJ100P \$519.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





FP33 Portable Stereo Mixer

- 3-input, 2-output portable mixer designed for remote audio recording, electronic field production, electronic news gathering and location film production
- Dynamic range of over 100dB
- 48V phantom, 12V phantom and 12V T (A-B) power
- Link switch to couple inputs 2 and 3 into a stereo pair
- Comprehensive headphone monitoring control
- Internal DIP switches for 4000 custom set-ups
- Switchable mic/line ins/outs
- Meter lamp
- Adjustable output peak limiters
- MS matrix for headphones
- Tape out 3.5mm jack



\$1795.00

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
- Built-in slate microphone and slate tone
- Built-in tone oscillator
- Built-in phantom and A/B (T) power for condenser microphones

\$1325.00

FP42 Stereo Microphone Mixer

- 2 outputs (1 for each stereo channel) and 4 balanced inputs, each switchable for line or mic level operation
- Each input channel has a low frequency roll-off switch and a center-detented stereo pan pot for convenient stereo mixing
- Mini and 1/4" stereo headphone jacks

\$1240.00

FP16A Distribution Amplifier

- Mic/Line switchable
- 1-input, 6-output, portable audio distribution amplifier for routing multiple audio feeds
- Phantom power
- Link jacks
- All transformer balanced
- 120/240VAC 3 x 9VDC

\$645.00

FP22 Stereo +1 Headphone Amplifier

- Provides two 1/4" or 3.5mm headphone feeds from any type of audio input
- Can mix a line or mic level mono signal (via XLR input) with a stereo signal (via 1/4" phone jack input)
- Provides a maximum gain of 81dB for sufficient amplification of any source

\$425.00

FP11 Microphone-to-Line Level Amplifier

- Portable, 1-input, 1-output
- Provides up to 84dB of gain
- Transformer balanced, XLR input and output
- Switchable peak limiter, peak limiter LED indicator, aux level mini phone jack input, powered by standard 9V battery

\$370.00

M268 Microphone Mixer With Phantom Power

- Compact 5-input mixer for use in PA/paging applications
- 4 transformer balanced XLR low impedance inputs and 4 high-impedance 1/4" phone jack inputs
- High level auxiliary input
- Phantom power
- Mix bus jack
- 120/240VAC, 50/60Hz

\$395.00

M367 Microphone Mixer With Phantom Power

- Transformer balanced inputs/outputs
- 6 selectable mic/line inputs
- 12V, 48V phantom power
- Metal XLR input/output connectors

\$795.00

M267 Professional Mixer With Limiter

- 4 low impedance balanced inputs switchable to mic or line level
- Phantom power on each input
- Fast-acting limiter
- 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
- 120/240VAC, 50/60Hz, 9.5W

\$625.00



M68FCA Microphone Mixer

- 5 channels with 4 microphone inputs (each switchable for high or low impedance) and a high level auxiliary input
- Mic level output and auxiliary output
- 120/240VAC, 50/60Hz
- Female XLR input connectors

\$265.00

SCM810 Automatic Mixer

- Compatibility with any professional wired or wireless mic
- Reliable, quick acting, noise-free mic selection which automatically adjusts to changes in background room noise
- Header type input/output connectors for quick convenient mic connection
- Adjustable EQ per channel: low frequency roll-off and high frequency shelving
- Complete logic on each channel for external control
- 48V phantom power selectable for each input
- Linking for up to 400 mics
- User-configurable parameters for automatic operation
- Last mic look-on circuit maintains ambient sound
- Auto gain adjustment as additional mics are activated
- Active-balanced mic and line level inputs/output
- Highly RF-resistant chassis and circuitry
- 2-color LED indication of channel activation and clipping
- Nonauto aux level inputs with level control
- Front panel headphones output with level control

\$1650.00

SCM800 Microphone Mixer

- Adjustable EQ per channel: low frequency roll-off and high frequency shelving
- 48V phantom power selectable for each input
- Active-balanced mic and line level inputs via a discrete 4-transistor circuit
- Active-balanced line level output
- Superior RF-resistant chassis and circuitry
- LED indication of input channel clipping
- LED output meter with indication of limiter action
- Links up to 32 mics
- Aux level inputs with level control

\$745.00

AMS Automatic Microphone System

Only AMS microphones should be used with AMS mixers. The AMS system will provide optimum automatic performance results only when AMS components operate together.



AMS8000 The AMS8000 mixer incorporates a full complement of logic terminals to provide functions such as LED indicators, mute switches, loudspeaker attenuation, chairman override, etc. 14 lbs., 8 oz. \$2375.00



AMS4000 The AMS4000 mixer incorporates a full complement of logic terminals to provide functions such as LED indicators, mute switches, loudspeaker attenuation, chairman override, etc. 12 lbs., 13 oz. . . \$1650.00



AMS880 The AMS880 video switcher interface connects to AMS mixers. AMS880 directs a video switcher to activate cameras based on which AMS microphones are activated \$1980.00

AMS24 Gooseneck mounted microphone supplied with foam windscreen, 20' cable and mounting flange 265.00

AMS28 Lavalier microphone supplied with neck cord assembly, 20' cable with XLR connector 260.00

AMS26 Probe microphone supplied with foam windscreen and stand adaptor 235.00

AMS22 Low profile microphone supplied with 20' cable with XLR connector. 235.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



WIRELESS MICROPHONE SYSTEMS



SHURE®

Wireless Microphones

- WCM16* Headworn Microphone** = For vocalists who also play an instrument or dance = Frequency response: 50-18,000Hz \$300.00
- WM98 Wireless Microphone** = Perfect for all types of acoustic instrument miking—percussion, brass, reed, wind and strings = Frequency response: 40-20,000Hz = Fully RF protected = Mounting accessories available . . . 204.00
- WM98KCS Miniature instrument microphone with A98KCS horn clamp** . . . 252.00
- WL184 Premium Supercardioid Lavalier** = For use with U1, EC1, SC1, LX1 or T1 wireless body-pack transmitters 150.00
- WL185 Premium Cardioid Lavalier** = For use with U1, EC1, SC1, LX1 or T1 wireless body-pack transmitters 140.00
- WL183 Premium Omnidirectional Lavalier Microphone** = For use with U1, EC1, SC1, LX1 or T1 wireless body-pack transmitters 120.00
- WH10TQG Headworn dynamic microphone with TQG connector** . . . 120.00
- WL93 Microlavaliere Condenser Microphone** = For TV broadcasting, theater and sound reinforcement = Frequency response: 50-20,000Hz = Output level: -58dB 102.00
- WL93T Tan matte finish, tan access** 102.00
- WL93-6 WL93 wireless microphone with 6' cable, black** 108.00
- WL93-6T WL93 wireless microphone with 6' cable, tan** 108.00
- *The WCM16 is a product of Countryman Associates.

Wireless Microphone Systems

- LX2/87 Condenser mic** \$506.00
- LX2/58 Includes SM58 mic** 434.00
- LX4 MARCAD® Diversity Receiver**
 = Monitors and combines signals from 2 radio receivers = Half-rack design
 = Single/dual mounting kits included
 = 5-segment LED audio and RF level meters 418.00
- LX3 Nondiversity Receiver** = With PS31 power supply and ¼-wave antenna
 = Single and dual rackmounting kits
 = 120VAC 270.00
- LX1 Body-Pack Transmitter** = 3-segment LED display = Battery life: 18-20 hours . . . 230.00



LX Series Complete Diversity Systems

- Consists of: = LX4 MARCAD diversity receiver; lavalier, headworn or instrument mic = PS31 power supply = Single and dual rackmounting kit = 9V Duracell® battery = Zippered bag for microphone and microphone cable = Two ¼-wave antennas
- LX14/16** Body-pack/headworn (LX4 receiver, LX1 transmitter, WCM16 microphone) \$948.00
- LX24/87** Handheld (LX4 receiver, LX2/87 transmitter) 924.00
- LX14/98** Body-pack/instrument (LX4 receiver, LX1 transmitter, WM98 microphone) 900.00
- LX24/58** Handheld (LX4 receiver, LX2/58 transmitter) 852.00
- LX14/84** Body-pack/lavalier (LX4 receiver, LX1 transmitter, WL184 microphone) 798.00
- LX14/85** Includes WL185 professional cardioid lavalier mic. 788.00
- LX14/83** Body-pack/lavalier (LX4 receiver, LX1 transmitter, WL183 microphone) 768.00
- LX14/10** Body-pack/headworn (LX4 receiver, LX1 transmitter, WH10TQG) 756.00
- LX14/93** Body-pack/lavalier (LX4 receiver, LX1 transmitter, WL93 microphone) 750.00
- LX14** Less mic, includes WA302 instrument cable 666.00

SC Wireless Diversity Body-Pack Systems

- Consists of: = SC1 body-pack transmitter = SC4 MARCAD diversity receiver with PS30 power supply = Two ¼-wave antennas = Rackmount kit = Condenser lavalier or headworn microphone** = 9V Duracell battery = Zippered bag for microphone and microphone cable
- **Not included with SC14 models.



- SC14/16** Includes WCM16 headworn mic. \$1146.00
- SC14/98** Includes WM98 miniature instrument microphone, single and dual rackmount kits 1098.00
- SC14/83** Includes WL183 lavalier mic 996.00
- SC14/84** Includes WL184 lavalier mic 996.00
- SC14/85** Includes WL185 professional cardioid lavalier mic. 986.00
- SC14/10** Includes WH10 headworn microphone and single and dual rackmount kits 954.00
- SC14/93** Includes WL93 micro lavalier mic 948.00
- SC14** Less mic; includes WA302 instrument cable 864.00

SC Wireless Diversity Handheld Systems

- Consist of: = SC2 handheld transmitter with mic = SC4 MARCAD diversity receiver with PS31 power supply = Two ¼-wave antennas = Rackmount kit = 9V Duracell battery = Swivel adaptor = Zippered bag for microphone and swivel adaptor
- SC24/87** Includes SC2/87 handheld transmitter with SM87 mic . . . \$1140.00
- SC24/58** Includes SC2/58 handheld transmitter with SM58 mic 1068.00
- Note: Please specify rackmount option with every SC wireless system (e.g., SC14835).

T Series Wireless Microphone Systems

- Vocal Artist™ Diversity System**
- TV58D** T4V MARCAD diversity receiver with PS20 power supply, T258 handheld transmitter with SM58 microphone, swivel adaptor, transmitter bag and 9V battery. \$560.00
- TV31D** T4V MARCAD diversity receiver with PS20 power supply, T2/31 handheld transmitter bag and 9V battery 500.00
- TV31S** Same as TV31D, except T3 single antenna receiver. 380.00
- TV58S** T3 single antenna receiver with PS20 power supply, T2/58 handheld transmitter with SM58 microphone, swivel adaptor, transmitter bag and 9V battery. 440.00



- Guitarist™ Diversity System**
- TGD** T4G MARCAD diversity receiver with PS20 power supply, T1G, two WA303 standard guitar cables, transmitter bag and 9V battery \$370.00
- TGS** Same as above, except T3 single antenna receiver 260.00

- Presenter™ Diversity System**
- TPD** T4V MARCAD diversity receiver with PS20 power supply, T1 body-pack transmitter, WL93 micro lavalier omnidirectional microphone, transmitter bag and 9V battery \$480.00
- TPS** T3 single antenna receiver with PS20 power supply, T1 body-pack transmitter, WL93 micro lavalier omnidirectional microphone, transmitter bag and 9V battery 360.00

- Headset™ Diversity System**
- THD** T4V MARCAD diversity receiver with PS20 power supply, T1G, WH10 headset microphone, two foam windscreens, clothing clip, transmitter bag and 9V battery \$480.00
- THS** T3 single antenna receiver with PS20 power supply, T1G, WH10 headset microphone, two foam windscreens, clothing clip, transmitter bag and 9V battery 360.00

ECD Series Diversity Body-Pack Systems

- Consist of: (1) EC1 body-pack transmitter; (1) ECD4 MARCAD diversity receiver with PS20 power supply; (2) ¼-wave antennas; (2) rackmount ears; (1) condenser lavalier microphone; (1) 9V Duracell battery; (1) zippered bag for mic
- ECD14/84** Includes WL183 professional lavalier mic \$1092.00
- ECD14/93** Includes WL93 micro lavalier omnidirectional mic 1044.00

ECD Series Diversity Handheld Systems

- Same as body-pack systems, except handheld transmitter, swivel adaptor
- ECD24/87** Includes EC2/87 handheld transmitter with SM87 mic \$1182.00
- ECD24/58** Includes EC2/58 handheld transmitter with SM58 mic. . . 1110.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



MICROPHONES

VP88 MS Stereo Microphone ■ Single point stereo condenser microphone ■ Frequency response: 40-20,000Hz

VP88 \$995.00
A88SM Shock mount 201.25

SM89 Condenser Shotgun Microphone ■ For distant pickup in location film and TV production ■ Smooth on-axis frequency response with a slight presence rise

SM89 \$927.00
A89SM Adaptor 110.25

SM7 Unidirectional Dynamic Microphone ■ For boom/stand mounting ■ Frequency response: 40-16,000Hz ■ Graphic response tailoring switches permit 4 different microphone response curves. . . . \$566.50

SM81-LC Unidirectional Condenser Microphone ■ Backplate structure maximizes S/N ratio ■ THD lower than most condenser microphones ■ Frequency response: 20-20,000Hz ■ Low RF susceptibility ■ Without cable \$441.50



SM87-LC Supercardioid Condenser Microphone ■ Supercardioid pickup pattern ■ Useful in multiple-miking situations or single-miking in a noisy or reverberant environment ■ Frequency response: 50-18,000Hz ■ Without cable \$292.25

SM98A Miniature Musical Instrument Microphone ■ Preamp is powered by an 11-52VDC phantom power ■ 10dB gain boost switch and 12dB/octave low-end cut-off switch \$291.50

SM944 Unidirectional Condenser Microphone ■ Cardioid polar pattern ■ Elastomer "space frame" shock mount ■ Sound pressure levels up to 141dB (800 ohm load) ■ Phantom power supplies or by 1.5V AA battery ■ Without cable \$280.00

SM2 Headphone/Microphone ■ Adjustable boom ■ Cardioid polar pattern ■ 2 ear cues \$277.50

SM10A/SM12A Headset Dynamic Microphones ■ For remote broadcasting, intercommunications systems and vocal performance for drummers and keyboard players ■ Frequency response: 50-15,000Hz

SM12A-CN Microphone and single monitor earphone . . . \$229.75
SM10A-CN Boom microphone only 156.50

809/819 Surface Mount Microphones ■ Electret condenser ■ Frequency response: (809) 50-20,000Hz, (819) 60-20,000Hz ■ Electronics module features a built-in, low-end roll-off

819 Unidirectional \$227.25
809 Omnidirectional 227.25

SM58 Unidirectional Dynamic Microphone ■ Professional stage microphone with self-contained spherical filter ■ Uniform cardioid pickup pattern ■ Frequency response: 50-15,000Hz

SM58-CN With 25' cable \$212.00
SM58S Without cable, includes on/off switch 196.00
SM58-LC Without cable 188.00



849-LC Unidirectional Condenser Microphone ■ Uniform cardioid polar pattern ■ Tripoint shock mounting system ■ Battery or phantom powerable ■ Frequency response: 40-16,000Hz .. \$211.00

SM62-LC Unidirectional Dynamic Microphone ■ Handheld and stand mounted uses ■ Flat, uncolored frequency response and uniform cardioid pickup ■ Low frequency roll-off ■ Champagne enamel finish with matching swivel adaptor ■ Without cable only. . . . \$208.00

SM63LC/SM63LLC Omnidirectional Dynamic Microphones ■ For on-camera handheld applications ■ Frequency response: 50-20,000Hz ■ Shock mounted isolation system ■ SM63LLC has 3/8" longer handle
SM63LLC \$176.75
SM63LC 155.75

565 Series Unidirectional Dynamic Microphones ■ Uniform cardioid pattern ■ Frequency response: 50-15,000Hz

565SD-LC For handheld or stand mounted use \$141.00
565SD-CN Same as 565SD-LC, but with 20' cable 165.25

515X Series Unidirectional Dynamic Microphones ■ Symmetrical cardioid pickup pattern, feedback suppression and high quality performance characteristics ■ Suitable for sound reinforcement and recording of speech, vocals and most instruments ■ On/off switch ■ Lock plate supplied with 515SB and 515SD-LC ■ Frequency response: 80-13,000Hz

515SB-G18XF Cardioid dynamic, Lo-Z attached to 18" gooseneck, push to talk switch \$80.00
515SB-G18X Low impedance (with 18" gooseneck) 80.00
515SBGX Low impedance (for gooseneck use) 71.50
515SD-X Hi- or Lo-Z without cable dual impedance . . . 62.50
515BSLX Cardioid dynamic, Lo-Z for gooseneck mounting, locking on/off slide switch, attached cable . . . 61.50

SM48 Unidirectional Dynamic Microphone

■ Specially designed cartridge ■ Efficient cartridge shock mount reduces handling and stand noise ■ Peak-free frequency response ■ Uniform cardioid pickup pattern
SM48S-LC With on/off switch \$144.20
SM48-LC Supplied without cable only 134.80



512 Headworn Unidirectional Microphone ■ Frequency response: 50-15,000Hz ■ Open air headphone \$138.00

VP64 Omnidirectional Dynamic Microphone ■ Omnidirectional polar pattern ■ Frequency response: 50-12,000Hz ■ Shock mounted cartridge \$135.00

545 Series Unidirectional Dynamic Microphones ■ Shock mount cartridge ■ Dual impedance (except 545L) ■ Microphone connector is 3-pin

545SD-LC With on/off switch, for handheld or stand mounted use \$127.50
545L Low impedance only, attached cable, for gooseneck applications. 119.00



SM11CN Dynamic Lavalier Microphone ■ Frequency response: 50-15,000Hz ■ For TV and motion picture applications . . . \$116.50

SM18BCN Surface Mount Dynamic Microphone ■ Mounted in foam enclosure at an angle that places the cartridge about 1/8" from the hard surface ■ Frequency response: 150-10,000Hz. \$114.75

588SDX Unidirectional Dual-Impedance Dynamic Microphone ■ Built-in windscreen ■ Uniform cardioid polar pattern reduces feedback ■ Frequency response: 80-15,000Hz, suitable for sound reinforcement or recording of voice and most instruments ■ Effective shock mount isolates the cartridge from unwanted handling or stand transmitted mechanical noise ■ Can be handheld or stand mounted ■ 3-position switch selects on Lo-Z, off and on Hi-Z \$70.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



UHF Wireless Microphone Systems

▪ Systems feature MARCAD® diversity circuitry which provides 2 independent RF sections ▪ Tone Key Squelch prevents unwanted signals and noise ▪ Receiver and transmitter program settings feature a lock to prevent accidental channel changes ▪ Digitally controlled, programmable LCD displays on receivers and transmitters ▪ 5-segment battery display and 3-segment remote battery indicator ▪ 12-hour battery life ▪ Receiver display screens show and allow control of frequency, performer's name, squelch setting and lock out function ▪ LED indicators included for RF and audio level monitoring ▪ Receivers may be linked with an antenna distribution system ▪ Internal power supplies ▪ 191 fully selectable, user-programmable frequencies ▪ Components provide complete, interchangeable system ▪ Transmitter housings are all metal ▪ Receivers feature rugged frontplate ▪ Independent headphone monitor ▪ 2 ½-wave flexible rubber antennas

UHF Wireless Diversity Dual-Channel Combo Systems

Consists of: (2) U1 body-pack transmitters; (2) U2 handheld transmitters with microphones; (1) U4D MARCAD diversity receiver with internal power supply; (2) ½-wave antennas; (2) 2' back-to-front antenna cables; (2) bulk-head adaptors for front mounting antennas; (2) swivel adaptors; (2) portable transmitter carrying cases; (4) zippered bags for microphones and microphone cables; (8) AA batteries; (1) power cord; (1) power daisy-chain cord

- U124D/87 Less lavalier microphones; includes (2) U2/87 handheld transmitters with SM87 microphones. \$5556.00
- U124D/58 Less lavalier microphones; includes (2) U2/58 handheld transmitters with SM58 microphones. 5356.00

UHF Wireless Diversity Dual-Channel Body-Pack Systems

Consists of: (2) U1 body-pack transmitters; (1) U4D MARCAD diversity receiver with internal power supply; (2) ½-wave antennas; (2) 2' back-to-front antenna cables; (2) bulk-head adaptors for front mounting antennas; (2) condenser lavalier microphones or headworn microphones†; (2) portable transmitter carrying cases; (2) zippered bags for microphones and microphone cables; (4) AA batteries; (1) power cord; (1) power daisy-chain cord

- U14D/16 Includes (2) WCM16 headworn microphones. . . \$4376.00
- U14D/98 Includes (2) WM98 miniature instrument microphones. 4280.00
- U14D/84 Includes (2) WL84 professional supercardioid lavalier microphones. 4076.00
- U14D/85 Includes (2) WL185 professional cardioid lavalier microphones. 4056.00
- U14D/83 Includes (2) WL83 professional omnidirectional lavalier microphones. 4016.00
- U14D/10 Includes (2) WH10TQG headworn microphones. 4016.00
- U14D/93 Includes (2) WL93 micro lavalier omnidirectional microphones. 3980.00

- U14D Less microphone; includes (2) WA302 instrument cables. \$3812.00
- † Not included with model U14D.

UHF Wireless Diversity Dual-Channel Handheld Systems

Consists of: (2) U2 handheld transmitters with microphones; (1) U4D MARCAD diversity receiver with internal power supply; (2) ½-wave antennas; (2) 2' back-to-front antenna cables; (2) bulk-head adaptors for front mounting antennas; (2) swivel adaptors; (2) portable transmitter carrying cases; (2) zippered bags for microphones and microphone cables; (4) AA batteries; (1) power cord; (1) power daisy-chain cord

- U24D/87 Includes (2) U2/87 handheld transmitters with SM87 microphones. \$4180.00
- U24D/58 Includes (2) U2/58 handheld transmitters with SM58 microphones. 3980.00

UHF Wireless Diversity Single-Channel Combo Systems

Consists of: (1) U1 body-pack transmitter; (1) U2 handheld transmitter with microphone; (1) U4S MARCAD diversity receiver with internal power supply; (2) ½-wave antennas; (2) 2' back-to-front antenna cables; (2) bulk-head adaptors for front mounting antennas; (1) swivel adaptor; (1) portable transmitter carrying case; (2) zippered bags for microphones and microphone cables; (4) AA batteries; (1) power cord; (1) power daisy-chain cord

- U124S/87 Less lavalier microphone; includes U2/87 handheld transmitter with SM87 microphone. \$3178.00
- U124S/58 Less lavalier microphone; includes U2/58 handheld transmitter w/SM58 microphone. 3078.00

UHF Wireless Diversity Single-Channel Body-Pack Systems

Consists of: (1) U1 body-pack transmitter; (1) U4S MARCAD diversity receiver with internal power supply; (2) ½-wave antennas; (2) 2' back-to-front antenna cables; (2) bulk-head adaptors for front mounting antennas; (1) condenser lavalier microphone or headworn microphone†; (1) portable transmitter carrying case; (1) zippered bag for microphone and microphone cable; (2) AA batteries; (1) power cord; (1) power daisy-chain cord

- U14S/16 Includes WCM16 headworn microphone. . . . \$2588.00
- U14S/98 Includes WM98 miniature instrument microphone. 2540.00
- U14S/84 Includes WL184 professional supercardioid lavalier microphone. 2438.00
- U14S/85 Includes WL185 professional cardioid lavalier microphone. 2428.00
- U14S/83 Includes WL183 professional omnidirectional lavalier microphone. 2408.00
- U14S/10 Includes WH10TQG headworn microphone. . . 2408.00
- U14S/93 Includes WL93 micro lavalier omnidirectional microphone. 2390.00
- U14S Less microphone; includes WA302 instrument cable. 2306.00

† Not included with model U14S.

UHF Wireless Diversity Single-Channel Handheld Systems

Consists of: (1) U2 handheld transmitter with microphone; (1) U4S MARCAD diversity receiver with internal power supply; (2) ½-wave antennas; (2) 2' back-to-front antenna cables; (2) bulk-head adaptors for front mounting antennas; (1) swivel adaptor; (1) portable transmitter carrying case; (1) zippered bag for microphone and microphone cable; (2) AA batteries; (1) power cord; (1) power daisy-chain cord

- U24S/87 Includes U2/87 handheld transmitter with SM87 microphone. \$2490.00
- U24S/58 Includes U2/58 handheld transmitter with SM58 microphone. 2390.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





DISK RECORDERS/VIDEO SERVER/VIDEO STORAGE/INTERFACES

Quickframe™ Disk Recorder

- Random access, seamless nonlinear storage of uncompressed component digital video and audio ▪ 800,000 hr. MTBF disk drives ▪ User-selection of 8- and 10-bit, 525 and 625 line formats ▪ Base 10-minute recording time expandable to 120 minutes ▪ True nonlinear operation with multi-segment support and loop modes ▪ Smooth variable speed playback, even across nonlinear segments ▪ Cine-Play for 3:2 pull-down restoration ▪ Full bidirectional VTR edit control ▪ Add VITC time code and audio at any time with Sierra's Audioframer ▪ Full GPI support ▪ Exabyte and DAT direct back-up ▪ Color monitor output ▪ Ethernet and high-speed SCSI ▪ RS-232 mouse and graphical interface ▪ UNIX and other workstation virtual control panels available ▪ Full range of networking/expansion options



Diskcovery™ Digital Disk Recorder

- Based on Quickframe technology, Diskcovery is designed for any environment, especially desktop ▪ Long-format, nonlinear 4:2:2 video storage ▪ Fully compatible with Sierra utilities ▪ Compact, quiet tower or 3RU rackmount ▪ Fast SCSI target transfers of 3fps ▪ 800,000 hour MTBF disk drive technology ▪ 8- and 10-bit, 525/625 line format, user-selectable ▪ Base 5-minute recording time expandable to 10 minutes ▪ Interpolator for smooth, slow motion ▪ Full RS-422 implementation including frame-accurate VTR control ▪ Color video monitor output ▪ Ethernet and high-speed SCSI ▪ Source time code availability ▪ Serial/parallel digital video ▪ Full range of networking/expansion options



SCSIframer™ Video Server

- Designed for Quickframe family of high-capacity digital disk recorders, SCSIframer provides Fast and Wide SCSI ▪ Exceeds FDDI/100M bit Ethernet performance ▪ 2 or 4 configurable-port models, with each port capable of 6 to 15fps throughput ▪ Cross-port striping support ▪ Individual, full-bandwidth CCIR-601 frame buffers for true concurrent access ▪ Multiple channels of SCSIframer and Quickframe can be matrixed to expand both concurrent user access and available video channels ▪ Built-in analog component and composite video outputs for viewing any or all video streams ▪ Supported by device drivers already integrated into most popular workstation applications ▪ Control interface: RS-422: two 9-pin DSUB ▪ Sync input: Phase locked, NTSC/PAL, negative going pulse with loopthrough (BNC)

Audioframer™ Digital Audio/Video Storage Unit

- Mixes audio with video for VDR storage ▪ 4 channels of uncompressed, 24-bit, 48kHz AES/EBU digital audio with true random-access nonlinear editing and playback ▪ Simple connection to Quickframe or Diskcovery VDRs for instant audio capability ▪ Full support of embedded SMPTE 259M/272A audio ▪ Separate AES/EBU inputs ▪ AES/EBU outputs concurrent with embedded audio ▪ Extracts and formats VITC time code ▪ Digital audio can be independently edited in stereo pairs ▪ Serial 4:2:2 for maximum flexibility ▪ Can be used with key channel for 4:2:2:4 video plus audio broadcast ▪ 1RU ▪ Data interfaces: digital audio input/output: 2 AES/EBU stereo pairs in/out; digital video inputs: 1 serial 4:2:2 SMPTE 259M/272A with embedded audio; digital video outputs: 2 serial 4:2:2 SMPTE 259M/272A with embedded audio

Analogframer™ A-to-D and D-to-A Interfaces

- Built into a 1RU chassis ▪ Houses single digital-to-analog adaptor or a combination of analog-to-digital and digital-to-analog adaptors ▪ Full 10-bit video path allows throughput to Quickframe VDR

Digital-to-Analog

- SMPTE 259M/CCIR601/656 ▪ 270M bits serial 4:2:2 input ▪ Full 10-bit sampling of all components ▪ 2X oversampling ▪ Can be configured to output RGB/Beta/SMPTE YUV component analog video ▪ 525 or 625 auto selection ▪ Concurrent composite PAL or NTSC video output

Analog-to-Digital

- Can be configured to accept RGB, Beta, or SMPTE YUV component analog video ▪ Full 10-bit oversampling of all components ▪ 2X oversampling ▪ 4X serial 4:2:2 output ▪ External sync/sync-on-green/Y selection ▪ 525/625 auto selection

NFS Server™

- Fully NFS compliant ▪ Network transparent ▪ File caching ▪ Unlimited users ▪ Platform compatible with any NFS system ▪ 10 base T ▪ 100 base T ▪ ATM options ▪ SCSI connection to Quickframe ▪ Fast, wide, differential SCSI ▪ Direct connection with SCSIframer ▪ Automatic file conversions ▪ Automatic colorspace conversion ▪ Network transport control for Quickframe ▪ User partitioning of Quickframe ▪ Background operation

QuickLook™ Hi-Res Filmframer

- Enables user to view film resolution material in an off-line environment ▪ Stores film resolution material in full resolution on a 4:4:4 Quickframe or Diskcovery ▪ Using 4:4:4 TransCoder, QuickLook displays the material as 720 x 486 regions of interest (ROI) on a standard studio grade RGB monitor ▪ Incorporates software for workstations enabling users to select ROI from full-size image ▪ Can be used for film transfer/online editing

Digital Video Transcoder

- 4:4:4/4:2:2:4 13-bit bidirectional real time colorspace conversion ▪ Concurrent analog RGB and 4:2:2 outputs ▪ Full 10-bit data path ▪ Serial dual link ▪ RGB analog output from 4:4:4 ▪ YUV analog output from 4:2:2 ▪ Self-contained 1RU 19" rackmount ▪ 4:2:2:4 to/from 4:4:4:4 ▪ Allows RGB/alpha files to be transferred from/to a workstation through Quickframe SCSI ports ▪ Can be used with all Quickframe and Diskcovery 8 4:4:4 or 4:4:4:4 models ▪ Future upgrade path assured ▪ Simple, front mounted controls, space-saving 1RU ▪ Solid-state construction

Ultra SCSIframer

- Departmental level server offering Fast and Wide SCSI 3, providing higher performance connections to workstations ▪ Has bandwidth to transport real time uncompressed video images ▪ Supports multiple workstation connections simultaneously ▪ Up to 4 independent ports serving 4 or more workstations concurrently; each workstation operates as if it had its own dedicated video disk recorder ▪ Designed to operate with any of Sierra's Quickframe or Diskcovery digital disk recorders for recording up to 120 minutes of uncompressed video and audio ▪ 10-bit advanced audio and VTR control are supported throughout the product line

Sierra Control Panel™

- Multipurpose controller for all Quickframe and Diskcovery video disk recorders ▪ Touch-screen interface ▪ Drag-and-drop timeline control ▪ Very small footprint ▪ RS-232/RS-422 control ▪ 4 control ports ▪ 2 x 4 RS-422/232 router ▪ Direct numeric entry keys ▪ Shuttle/jog wheel ▪ Time code/frame display ▪ Hard key GOTO functions ▪ Direct cineplay ▪ Varispeed control ▪ Programmable segments ▪ Macro function ▪ Sync connection for frame-accurate editing ▪ Auto edit compatibility ▪ Replaces trackball (Quicktrack) ▪ Software download capabilities ▪ Mini keyboard connection ▪ Control of SDL Transcoder ▪ Manages 4:2:2/4:4:4:4 Link Quickframes ▪ 3:2 pull-down management ▪ SCSI/Ethernet setup of VDR

Call For Pricing

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



ROUTING SWITCHERS



MANZANITA SERIES ANALOG ROUTING SWITCHERS

▪ Transparent signal performance ▪ 99.9% reliability ▪ Component models are available in standard 40MHz and wide bandwidth versions up to 200MHz ▪ Housed in rugged 1U rackmounting frames ▪ Modular in design ▪ All models except 321S and 324V will accept space-saving local control panels in place of front cover ▪ RS-232 serial interface control is either included or a low cost option for all models ▪ Control panels and options available

44CP/44C/44VS Routing Switchers

44CP

▪ 4 x 4 RGB plus sync routing switcher ▪ 4 terminating RGB video plus sync inputs ▪ 4 independent switching buses with one output per bus ▪ 40MHz bandwidth ▪ Includes RS-232 serial control ▪ External power supply

903160 \$2,400.00

44C

▪ 4 x 4 component video routing switcher ▪ 4 looping RGB or YUV video inputs ▪ 4 independent switching buses with 1 output per bus

903143 \$1,800.00

903143-20 44CW, 100MHz for hi-res display routing 2,150.00

44VS

▪ 4 x 4 video with stereo audio routing switcher ▪ 4 looping video inputs and 4 independent switching buses with 1 output per bus ▪ Stereo audio follow ▪ Includes RS-232 serial control ▪ External power supply

903146 \$1,600.00



1616VAA

TAHOE SERIES ANALOG ROUTING SWITCHERS

▪ More than 20 frame styles ▪ Frames can be fitted with less than a full complement of modules ▪ A variety of video-only, audio-only, audio-follow-video and component video configurations available ▪ Up to 150MHz wide bandwidth ▪ Microprocessor-based design with the control processor in each system ▪ Systems have 3 serial control ports ▪ All essential system data including crosspoint status and routing switcher personality are maintained in battery-backed RAM

1616VAA Analog Routing Switchers

▪ 3RU frame ▪ Holds 1 video crosspoint module and 1 or 2 audio crosspoint modules as well as standard serial interface module ▪ Frames equipped with looping inputs

1616VAA 16 x 16 Video Routing Switcher With 2 Audio Channels
Includes one 1616VAA frame, 1 serial control module, one 16 x 16 video crosspoint module, two 16 x 16 audio crosspoint modules . . \$10,450.00

1616VA 16 x 16 Video Routing Switcher With 1 Audio Channel
Includes one 1616VAA frame, 1 serial control module, one 16 x 16 video crosspoint module, one 16 x 16 audio crosspoint module 8,300.00

1616AA 16 x 16 2-Channel Audio Routing Switcher
Includes one 1616VAA frame, 1 serial control module, two 16 x 16 audio crosspoint modules 6,950.00

1616V 16 x 16 Video Routing Switcher
Includes one 1616VAA frame, 1 serial control module and one 16 x 16 video crosspoint module 6,150.00

1616A 16 x 16 Audio Routing Switcher
Includes one 1616VAA frame, 1 serial control module, one 16 x 16 audio crosspoint module 4,800.00



84VS

SIERRA SERIES ANALOG ROUTING SWITCHERS

▪ Sierra series consists of 8, 12, and 16 input analog routing switchers in a variety of video-only, component video, audio and AFV configurations
▪ Sierra series expands on the Manzanita control system by using a binary parallel-serial system for control panel interconnect ▪ Remote control panels may be daisy-chained to simplify system wiring ▪ Serial portion of control system allows for multiple control masters and audio breakaway (on all Sierra Series routing switchers except the 84VS) ▪ RS-232 serial interface option uses same serial protocol common to all Sierra Video Systems routing switchers ▪ Control panels and options available

84VS Routing Switchers

▪ Uses elements of Manzanita and Sierra Series routing switchers ▪ Video and 2 channels of audio switching are contained in 1 plug-in module

903109 \$2,600.00

903609 84VS fitted w/internal RS-232 serial interface. 2,900.00

P530 230VAC input N/C

88VS Routing Switchers

▪ Modular design ▪ Accepts up to 2 crosspoint modules for the 8 x 8 video and/or stereo audio portion of the configuration requirements
▪ Can house an optional local control panel in its compact 1RU design

88VS 8 x 8 Video and Stereo Audio Routing Switcher (with serial interface)

Includes one 88VS frame, one 8 x 8 video crosspoint module and one 8 x 8 stereo crosspoint module \$3,600.00

88VS 8 x 8 Video and Stereo Audio Routing Switcher

Includes one 88VS frame, one 8 x 8 video crosspoint module and one 8 x 8 stereo crosspoint module 3,300.00

88V 8 x 8 Video Routing Switcher (with serial interface)

Includes one 88VS frame and one 8 x 8 video crosspoint module 2,400.00

88V 8 x 8 Video Routing Switcher

Includes one 88VS frame and one 8 x 8 video crosspoint module 2,100.00

88S 8 x 8 Stereo Audio Routing Switcher

Includes one 88VS frame and one 8 x 8 stereo crosspoint module 1,900.00

SISKIYOU SERIES SERIAL DIGITAL VIDEO/SERIAL DIGITAL AUDIO ROUTING SWITCHERS

▪ Designed for production, broadcast and program continuity facilities
▪ Control system for Siskiyou Series is a super set of the Tahoe control system ▪ Compatible with Tahoe control panels and computer interfaces
▪ Unique Alpha/One alphanumeric control panel ▪ Sizes configurable in increments of 16 inputs or 16 outputs

6464D 64 x 64 Serial Digital Video Routing Switcher

▪ May be used for stand-alone video only, or combined with the 6464E to form an all serial digital video plus audio system ▪ Modular design
▪ 4RU frames include 2 fully redundant power supplies and cooling fans
▪ Video inputs/outputs are grouped in plug-in blocks of 16 per module
▪ Systems available in 16 different configurations
Video systems \$20,000.00-50,000.00

6464E 64 x 64 Serial Digital Audio Routing Switcher

▪ May be used for stand-alone audio only, or combined with the 6464D to form an all serial digital video plus audio system ▪ Modular design
▪ 4RU frames include 2 fully redundant power supplies and cooling fans
▪ Audio inputs/outputs are grouped in plug-in blocks of 16 per module
▪ Systems available in 16 different configurations
Audio systems \$12,000.00-30,000.00

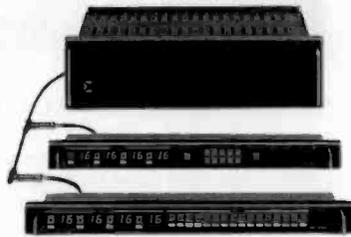
ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





Series 2100 Small Matrix Routing Switchers (8X/16X)

- Listed as a complete system
- Complete system includes: frame, switch module(s), system control interface, system control panel and any additional hardware that may be required to make the system complete
- Normally, the only additional items added would be control panels, custom control software or new modules for expansion



Complete System Pricing

16 x 16	
21616 2CSA	\$14,325.00
21616 3C	13,525.00
21616 2CMA	11,725.00
21616 SV	11,225.00
21616 2C	9,125.00
21616 AV	7,975.00
21616 SO	6,825.00
21616 VO	5,375.00
21616 AO	4,225.00
DVS-1616	2,995.00

8 x 16	
21816 2CSA	\$9,875.00
21816 3C	8,225.00
21816 2CMA	7,625.00
21816 SV	7,025.00
21816 2C	6,025.00
21816 AV	5,425.00
21816 SO	4,825.00
21816 VO	3,825.00
21816 AO	3,025.00

16 x 8	
21168 2CSA	\$7,225.00
21168 3C	6,125.00
21168 2CMA	5,925.00
21168 SV	5,725.00
21168 2C	4,625.00
21168 AV	4,425.00
21168 SO	4,225.00
21168 VO	3,125.00
21168 AO	2,925.00

8 x 8	
2188 2CSA	\$4,850.00
2188 3C	4,150.00
2188 2CMA	4,050.00
2188 SV	3,950.00
2188 2C	3,250.00
2188 AV	2,950.00
2188 SO	2,850.00
2188 VO	2,150.00
2188 AO	2,050.00

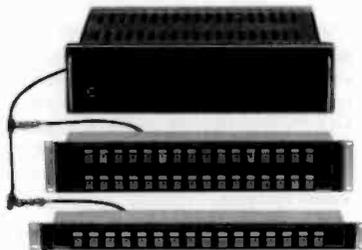
For wideband graphics (95MHz bandwidth)

21168 3C EXB(S)	\$9,975.00
21168 3C EXB	7,900.00
2188 3C EXB(S)	6,300.00
2188 3C EXB	5,100.00

Key: 2CSA=2-channel/stereo; 3C=RGB/comp; 2CMA=2-channel/audio; SV=Stereo/video; 2C=S-VHS; AV=Audio/video; SO=Stereo only; VO=Video only, AO=Audio only; DVS=Digital Video; 3C EXB(S)=3-channel EXB/sync; 3C EXB=3-channel EXB

Series 2100 Sigma Lite Routing Systems

- Listed as a complete system
- Specific model numbers have been assigned to each size and configuration of switcher
- Systems include frame(s) and power supply, switching modules, system control interface module and one master control panel
- System upgrades and additions available



Complete System Pricing

16 x 16	
3CS-1616	\$5,400.00
2CS-1616	4,750.00
3CM-1616	4,750.00
SV-1616	3,450.00
2CM-1616	3,450.00
3C-1616	3,450.00
2C-1616	2,800.00
SO-1616	2,800.00
AV-1616	2,800.00
AO-1616	2,150.00
VO-1616	2,150.00

16 x 8	
3CS-168	\$3,825.00
2CS-168	3,350.00
3CM-168	3,350.00
SV-168	2,875.00
2CM-168	2,875.00
3C-168	2,875.00
SO-168	2,400.00
AV-168	2,400.00
2C-168	2,400.00
AO-168	1,925.00
VO-168	1,925.00

8 x 8	
3CS-88	\$3,025.00
2CS-88	2,700.00
3CM-88	2,700.00
SV-88	2,375.00
2CM-88	2,375.00
3C-88	2,375.00

8 x 8 (cont'd)	
SO-88	\$1,850.00
AV-88	1,850.00
2C-88	1,850.00
AO-88	1,525.00
VO-88	1,525.00

Key: 3CS=3-channel/stereo; 2CS=2-channel/stereo; 3CM=3-channel/audio; SV=Stereo/video; 2CM=2-channel/audio; 3C=3-channel/video; 2C=2-channel (Y/C); SO=Stereo only; A/V=Audio/video, AO=Audio only; VO=Video only

Series 2100 Micro Matrix Routing Systems (4 x 4, 8 x 4, and 16 x 4)

- Complete systems include frame and power supply, switch modules, system control interface, and one master control panel

Complete System Pricing

16 x 4	
21164 3CSA	\$3,700.00
21164 2CSA	3,250.00
21164 3CMA	3,250.00
21164 3C(SY)	3,250.00
21164 SV	2,800.00
21164 3C	2,800.00
21164 DV	2,500.00
21164 SO	2,350.00
21164 AV	2,350.00
21164 2C	2,350.00
21164 AO	1,900.00
21164 VO	1,900.00
Editing Router	2,300.00

8 x 4	
2184 3CSA	\$3,175.00
2184 2CSA	2,825.00
2184 3CMA	2,825.00
2184 3C(SY)	2,825.00
2184 SV	2,475.00
2184 2CMA	2,475.00
2184 3C	2,475.00
2184 DV	1,975.00
2184 AV	1,925.00
2184 2C	1,925.00
2184 SO	1,925.00
2184 AO	1,575.00
2184 VO	1,575.00

4 x 4	
2144 3CSA	\$2,450.00
2144 2CSA	2,200.00
2144 3CMA	2,200.00
2144 3C(SY)	2,200.00
2144 SV	1,950.00
2144 2CMA	1,950.00
2144 3C	1,950.00

4 x 4 (cont'd)	
2144 DV	\$1,725.00
2144 SO	1,700.00
2144 AV	1,700.00
2144 2C	1,700.00
2144 AO	1,450.00
2144 VO	1,450.00

Key: 3CSA=3-channel/stereo; 2CSA=2-channel/stereo; 3CMA=3-channel/audio; 3C(SY)=3-channel/sync; SV=Stereo/video; 2CMA=2-channel/audio; 3C=3-channel/video; DV=Digital Video; SO=Stereo only; AV=Audio/video; 2C=2-channel (Y/C); AO=Audio only; VO=Video only

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



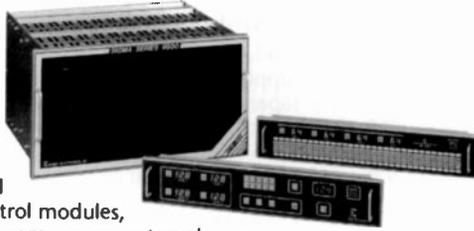
ROUTING SWITCHERS/ DISTRIBUTION EQUIPMENT



SIGMA ELECTRONICS INC.

Series 9600 Large Routing Systems

■ For applications of 16 x 16 to 128 x 128 for any combination of audio, video, pulse, Y/C and RGB(S) switching ■ Systems consist of frames (4 types), switching and output modules, control modules, control panels and in some cases, external controllers ■ All systems feature 4 control levels and an RS-232/422 serial port **POR***



Series 3200 Mid-Sized Routing Switchers

■ Available in various types and sizes of routing switchers from 16 x 16 to 32 x 32 ■ Can be used in applications of video only, audio only, stereo-audio only, any combination of these 3, as well as 2-channel and 3-channel video with pulse and multilayer audio ■ Control scheme provides 4 levels of control ■ All systems come with both RS-232 and RS-422 serial control interfaces ■ Systems include: (1) MASTER CONTROL PANEL & SERIAL PORT ■ Select the size and type required and order the corresponding model number

Complete System Pricing	
32 x 32	32 x 32 (cont.)
3232 3CS \$50,225.00	3232 AV \$20,825.00
3232 3C 38,475.00	3232 SO 14,000.00
3232 SV 26,325.00	3232 VO 13,375.00
3232 2C 25,725.00	3232 AO 8,550.00
32 x 16	16 x 16
3216 3CS \$25,725.00	1616 3CS \$17,900.00
3216 3C 19,600.00	1616 3C 13,725.00
3216 SV 13,775.00	1616 SV 11,800.00
3216 2C 13,475.00	1616 2C 9,550.00
3216 AV 11,025.00	1616 AV 9,050.00
3216 SO 7,575.00	1616 VO 5,375.00
3216 VO 7,350.00	1616 AO Not Available
3216 AO 4,875.00	1616 SO Not Available

Key: 3CS=3-channel/sync; 3C=3-channel video; SV=Stereo/video; 2C=2-channel video; AV=Audio/video; SO=Stereo only; VO=Video only; AO=Audio only

Optional Accessories

SYC-3200	System Control Panel \$750.00
SBC-3200	Single Bus Panel 675.00
RPT-3200	Rapid Take Panel 550.00
MCP-3200	Modem Control 500.00
MAC-3200	Mac Software 500.00
PCC-3200	DOS Software 500.00
PRW-3200	Windows Software 500.00

Series 2100 Modular Distribution

■ 7 different video DAs, an audio DA and a pulse DA ■ 3 different frame sizes available, 2, 6 and 16 modules ■ Modules can be mixed in any desired combination and in the frames with Sigma Switching and Timing modules



SS-2100-16

SS-2100-12	Redundant supply frame, only 12 slots . . \$925.00
SS-2100-16	Module mounting frame, 16 modules, 3RU 650.00

SS-2100-6	Module mounting frame, 6 modules, 1RU \$450.00
VDA-2100	Wideband video DA, 1 x 6, for high resolution graphics, 115 MHz 350.00
VEQ-2101	Wideband video EQ, for up to 500' of 8281 cable 350.00
SDA-2182	1 x 6 Y/C DA with 4-pin S-Video connectors 300.00
VDA-2102x3	Dual 1 x 3, wideband video DA for graphics, 110MHz 280.00
FPS-2100	Spare power supply for SS-2100-16 frame, 120VAC, 50/60Hz 275.00
FPS-2101	Spare power supply for SS-2100-16 frame, 230VAC, 50/60Hz 275.00
SS-2100-2	Module mounting frame, 2 modules half-rackwidth (use RMT-2100-2) 250.00
VEQ-2105	Video equalizing DA, 1 x 6, for up to 1100' of cable, continuous adjustment 225.00
VDA-2106	Precision video DA, 1 x 6, differential in 40MHz, for NTSC, PAL and HDTV 200.00
ADA-2110	Audio DA, 1 x 6, 150kHz bandwidth pluggable screw terminal connectors 200.00
PDA-2115	Pulse DA, 1 x 6, for negative 2V or 4V signals, NTSC or PAL 200.00
VDA-21	General purpose video DA, 1 x 6 looping input, 35MHz 125.00
IAM-2100	Service extender for (2) SS-2100-2 frames 80.00
RMT-2100-2A	Rackmount tray for (2) SS-2100-2 frames 70.00
SBP-2102	Blank panel for RMT-2100-2A 16.00

Series 2100 Digital Video Products

■ Plug-in modules for Series 2100 ■ Can be combined with other Series 2100 Analog modules to assemble versatile system accessories

DVS-1616	Serial digital routing system \$2,995.00
21164 DV	16 x 4 Digital video switcher, complete with control 2,500.00
DVM-1616	Serial digital routing system 2,195.00
2184 DV	8 x 4 Digital video switcher, complete with control 1,975.00
2144 DV	4 x 4 Digital video switcher, complete with control 1,725.00
DBB-2676	Stand-alone, 1 slot 970.00
DBB-2675	Stand-alone bars and black gen 970.00
DMD-2681	Stand-alone, 259M, plus 1 out PAL, 1 slot 800.00
DBB-2175	Digital bars and black generator, SMPTE 259M 795.00
DBB-2176	Modular, 4:2:2 serial digital bars and black generator, 625/50 795.00
DMD-2680	Stand-alone monitoring DA, plus 1 out NTSC 775.00
DMD-2181	Modular digital video, 1 x 4, monitoring, 4 out SMPTE 625.00
DMD-2180	Modular digital video, 1 in x 4 out for SMPTE 259M 600.00
DVD-2104	Precision reclocking Digital DA, 1 in x 8 out 550.00
DEQ-2103	Equalizing Digital DA, 1 in x 8 out for 1000' of cable 425.00
UDD-2102	Utility Digital Video DA, 1 in x 6 out for SMPTE 259M 350.00
UDD-2602	Stand-alone version of above module 495.00

*Price On Request

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



VDA-26

Series 26 Stand-Alone DAs

▪ Available in 7 video DA configurations, audio DA and pulse DA
 ▪ Operate at either 115VAC or 230VAC, 50/60Hz ▪ Unless specified, unit comes from factory set for 115VAC ▪ Can be rackmounted in the RMK-26 rackmount kit

VDA-2600	Wideband video DA 1 x 6 for high resolution graphics, 115MHz bandwidth . . .	\$500.00
VEQ-2601	Wideband video EQ, for up to 500' of 8281 cable	500.00
SDA-2682	YC DA 1 x 6 with 4-pin S-Video connector	475.00
VDA-2602x3	Dual 1 x 3, wideband DA for high resolution graphics, 110MHz bandwidth . . .	455.00
VEQ-2605	Video equalizer, 1 x 6 for cables up to 1100', continuous adjustment.	375.00
VDA-2606	Precision video DA, differential in, 1 x 6, 40MHz, NTSC, PAL, HDTV	350.00
PDA-2615	Pulse DA, 1 x 6, for negative 2V or 4V signals, NTSC or PAL.	350.00
ADA-26	High performance audio DA 1 x 6, 150kHz bandwidth	300.00
VDA-26	General purpose video DA 1 x 6 looping input, 35MHz bandwidth	295.00
SSB-21	Empty box for any Series 2100 DA module	175.00
RMK-26	Rackmount kit, any 3 models, 1RU	50.00

Series 100 Stand-Alone DAs and Accessories

CSG-160	Color sync generator, full complement of RS-170 pulses + subcarrier and blackburst	\$800.00
SAG-100	Safe area generator, superimposes safe title and safe action area over input video (2 out)	495.00
BSG-100A	Black signal generator, 2 RS-170A blackburst outputs	495.00
VDA-115	Video equalizing amplifier, 1 x 6, compensates for 1100' of cable.	360.00
VDA-100A	Video distribution amplifier, 1 x 6, 10MHz bandwidth, 115/230VAC	310.00
ADA-106	Audio distribution amplifier, 1 x 6, flat to 30kHz, gain of -8 to +23dB, 115/230VAC . .	310.00
PDA-100A	Pulse distribution amplifier, 1 x 6, pulse regenerative, 115/230VAC	310.00
AFV-100	Passive audio follow video switcher, 6 x 1, RCA jacks for audio	195.00
FR3-100	Rackmount tray, for 3 of above modules	70.00
BP3-100	Blank panel for unused positions in tray	16.00

Series 500 Modular DAs

FR-500	Module mounting frame, holds 1 power supply and 10 plug-in modules (PS ordered separately)	\$400.00
BSG-550	Black signal generator, 2 outputs	400.00
VDA-515	1 x 6 video equalizing DA	280.00
ADA-526	Audio distribution amplifier, 1 x 6 0.2dB to 30kHz, -6 to +23.5dB of gain	280.00
VDA-511	Sync add, video DA, 1 in x 4 out looping input.	250.00
VDA-512	Video clamp DA (backporch) 1 x 6	250.00
PDA-530	Pulse DA 1 x 6 pulse regenerative	240.00
VDA-510	Video distribution amplifier, 1 x 6, 10MHz bandwidth	240.00
PS-501A	Power supply, powers full frame 115/230	150.00
EX-505	Module extender	30.00



VSD-200

Full-Rack Distribution Amplifiers

VSD-200	Video and stereo-audio 1 x 6, 1RU	\$900.00
VDA-203	3-channel video DA three 1 x 6, for RGB, 1RU	875.00
VAD-200	Video and audio 1 x 6, 1RU	650.00
ADA-210	Audio distribution amplifier, dual 1 x 10 or 1 x 20, -8 to +23.5dB gain adjust, 1RU	610.00
VDA-202	2-channel video DA dual 1 x 6, for S-VHS, 1RU	595.00
ADA-110	Audio distribution amplifier, 1 x 10, -8 to +23.5dB of gain adjust, 1RU	405.00

Passive Switchers

YCS-120A	12 x 1 passive for S-VHS applications, 4-pin YC, stereo audio, 1RU	\$429.00
VSS-120A	12 x 1 passive stereo audio follow video, 1RU, BNC for video, terminal strip for audio	395.00
VSS-120AR	12 x 1 passive, same as VSS-120A with RCA audio connectors	395.00
VAS-120A	12 x 1 passive audio follow video, occupies 1RU, BNC for video, terminal strip for audio	365.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



SYNC/TEST GENERATORS/ SIGNAL PROCESSING



SIGMA ELECTRONICS INC.

SYNCHRONIZING AND TESTING

Encode/Decode/Synchronization

- IGM 2.0 Encoder/decoder/sync generator plus "adjustable sync" out \$3695.00
- IGM 1.0 Encoder and RS-170A sync generator second "adjustable sync" out 2950.00



Test Generator

- TSG-440 RS-170A test and sync generator, 8 patterns, 10 ID memory, countdown, time/date, audio tone \$2195.00

Color Synchronizing Generators

- CSG-455 Master RS-170A sync and 4 patterns out, SMPTE bars, crosshatch, red field, safe areas. . \$1595.00
- CSG-465 Master and genlock version of CSG-455. 1995.00
- CSG-450 Master RS-170A sync generator and 3 blackburst. 1195.00

Series SLX Source Selection Switchers

Available in 16 x 1, 16 x 2, 32 x 1 and 32 x 2 sizes, and in combinations of Audio, Video and Pulse Features an "extremely wide bandwidth" for high resolution graphics Models include: Local Control Panel and Serial RS-232/422 control

Series SLX 32 x 2 Models

- SLX-322 3C 3-channel video, for RGB or component, 9RU \$7925.00
- SLX-322 5V Stereo-audio and video, 6RU. 6575.00
- SLX-322 2C 2-channel video, for Y/C, 6RU. 5575.00
- SLX-322 AV Mono-audio and video, 5RU. 5050.00
- SLX-322 5O Stereo-audio only, 3RU. 3925.00
- SLX-322 VO Video only, 2RU 2575.00
- SLX-322 AO Mono-audio only, 2RU 2425.00

Series SLX 16 x 2 Models

- SLX-162 3C 3-channel video, for RGB or component, 5RU \$4275.00
- SLX-162 5V Stereo-audio and video, 3RU. 3425.00
- SLX-162 2C 2-channel video, for Y/C, 3RU. 2925.00
- SLX-162 AV Mono-audio and video, 2RU. 2500.00
- SLX-162 5O Stereo-audio only, 2RU. 2425.00
- SLX-162 VO Video only, 2RU 1925.00
- SLX-162 AO Mono-audio only, 1RU 1350.00

Series SLX 32 x 1 Models

- SLX-321 3C 3-channel video, for RGB or component, 3RU \$3350.00
- SLX-321 5V Stereo-audio and video, 2RU. 2825.00
- SLX-321 5O Stereo-audio only, 2RU. 2425.00
- SLX-321 AV Mono-audio and video, 2RU. 2425.00
- SLX-321 2C 2-channel video, for Y/C, 2RU. 2425.00
- SLX-321 AO Mono-audio only, 1RU 1350.00
- SLX-321 VO Video only, 1RU 1350.00



SLX-161 SV

Series SLX 16 x 1 Models

- SLX-161 3C 3-channel video, for RGB or component, 2RU. . \$2075.00
- SLX-161 5V Stereo-audio and video, 1RU. 1650.00
- SLX-161 5O Stereo-audio only, 1RU 1350.00
- SLX-161 AV Mono-audio and video, 1RU. 1350.00
- SLX-161 2C 2-channel video, for Y/C, 1RU. 1350.00
- SLX-161 AO Mono-audio only, 1RU 1075.00
- SLX-161 VO Video only, 1RU 1075.00

Remote Control Panels

- RMP-SLX 4 For 32 x 2 models. \$1700.00
- RMP-SLX 3 For 32 x 1 models. 850.00
- RMP-SLX 2 For 16 x 2 models. 850.00
- RMP-SLX 1 For 16 x 1 models. 425.00

Series 2100 Modular and Series 2600 Color Bars, Blackburst Signal Processing and Timing

- DPC-2171 Modular converter, 4:2:2 to YUV, 1 slot . . \$675.00
- DPC-2671 Stand-alone, same as above 850.00
- TXC-2114 Modular transcoder, Y, R-Y, B-Y to NTSC and Y/C, 1 slot 575.00
- TXC-2614 Stand-alone, same as above 750.00
- TCD-2110* Modular transcoder, RGB(s) to Y, R-Y, B-Y (YUV), 1 slot 495.00
- TCD-2610 Stand-alone, same as above 670.00
- TCD-2111* Modular transcoder, Y, R-Y, B-Y (YUV) to RGB(s), 1 slot 495.00
- TCD-2611 Stand-alone, same as above 670.00
- TXP-2113 Modular transcoder, PAL to YUV, 1 slot. . . . 475.00
- TXP-2613 Stand-alone, same as above 650.00
- TXN-2113 Modular transcoder, NTSC to Y, R-Y, B-Y, 1 slot. . 475.00
- TXN-2613 Stand-alone, same as above 650.00
- SLI-2160 Modular source and line identifier, inserts bars, tone and ID on loss of video. 475.00
- SLI-2660 Stand-alone, same as above 650.00
- TPS-2112 Modular transcoder, Y/C to YUV, 1 slot. . . . 425.00
- TPS-2612 Stand-alone, same as above 600.00
- TXS-2112 Modular transcoder, Y/C to Y, R-Y, B-Y, 1 slot. . 425.00
- TXS-2612 Stand-alone, same as above 600.00
- CBG-2155A Modular color bar, tone and ID generator, EIA split field bars, stereo tone 375.00
- CBG-2655A Stand-alone, same as above 550.00
- ATM-21 Modular adjustable timing module, NTSC only, 3 blackburst outputs, ±1.5µsec H adjust, GL to black or video. 365.00
- ATB-21 Stand-alone, same as above 540.00
- BSG-2141 Modular black signal generator, PAL, 1 slot, 3 blackburst outputs. 350.00
- BSG-2641 Stand-alone, same as above 525.00
- ENC-2191* Modular encoder, RGBS to NTSC and Y/C, 1 slot . . 350.00
- ENC-2691 Stand-alone, same as above 525.00
- DEC-2190 Modular decoder, NTSC and Y/C to RGBS, 1 slot. . 325.00
- DEC-2690 Stand-alone, same as above 500.00
- DEC-2192 Modular decoder, PAL/YC to RGBS, 1 slot. . . 325.00
- DEC-2692 Stand-alone decoder, same as above 500.00
- BSG-2140 Modular black signal generator, NTSC, 1 slot, 3 blackburst outputs. 325.00
- BSG-2640 Stand-alone, same as above 500.00

* Models available in looping versions by adding an "L" to end of model number. Add \$30.00 to price.

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





O²™ Desktop Workstation

- Combines desktop workstation performance with the power of a Web-integrated user environment
- Designed for creative and engineering professionals
- Merges compute performance with high-performance Unified Memory Architecture (UMA)
- Delivers internal bandwidth to accelerate graphics and compute-intensive applications
- UMA comes standard with 3-D graphics, powerful image processing, and real time video processing
- Standard compression hardware and software
- Memory is automatically reallocated according to need
- I/O engine maximizes performance by removing bandwidth bottlenecks
- O² is powered by either the 64-bit MIPS® R5000™ or R10000™ processors
- System has a 5-piece modular design to simplify upgrades and maintenance
- Disk drives, system module, and PCI cards can be easily accessed from the rear of the system
- Administration tools guide users through simple maintenance and configuration functions

O² Standard Features

- IRIX™ 6.3 operating system
- Web-integrated user environment
- 32-bit double-buffered graphics
- Hardware-accelerated z-buffer
- Image processing engine
- Video compression engine
- 64M byte system RAM*
- 2G byte system disk*
- 10BaseT/100BaseTX Ethernet™ networking
- 2 Ultra Fast/Wide SCSI buses
- Stereo audio
- 64-bit PCI expansion slot
- CD-ROM
- 17" monitor (1280 x 1024)

*Entry configuration has 32M bytes/1G byte

Key CPU Features

R5000 CPU ▪ MIPS IV instruction set ▪ 2-way superscalar, 64-bit architecture ▪ 32K bytes instruction cache ▪ 32K bytes primary cache ▪ 512K bytes secondary cache

R10000 CPU ▪ MIPS IV instruction set ▪ 4-way superscalar, 64-bit architecture ▪ Out-of-order instruction execution ▪ 32K bytes instruction cache ▪ 32K bytes primary cache ▪ 128-bit dedicated secondary cache bus ▪ 5 separate execution units ▪ 1M byte fast secondary cache

Key Architecture Features

- 2.1Gbps memory bandwidth
- 256M byte memory
- Memory subsystem uses commodity synchronous DRAMS
- ECC memory protection for high memory integrity



OCTANE™ Power Desktop Workstation

- OCTANE can simultaneously tackle more complex tasks such as design and analysis or motion modeling and behavior scripting
- Employs 1 or 2 processors and architecture to shatter the bottlenecks associated with conventional systems and deliver large amounts of bandwidth
- Application software can control data flow within machine and can guarantee critical data transfer gets the necessary bandwidth
- Compute engine can unleash complete power of 1 or 2 R10000 processors to solve one task or to simultaneously solve separate problems
- Architecture expands and scales, beginning with an entry-level single processor system which can be expanded with more memory, texture, geometry, processor and graphics upgrades
- System's graphics acceleration subsystem includes a hardware Geometry Engine processor, dedicated rasterization and ability to take advantage of texturing engine if installed
- Four XIO slots directly connect into the high-speed system architecture of OCTANE

Standard Features

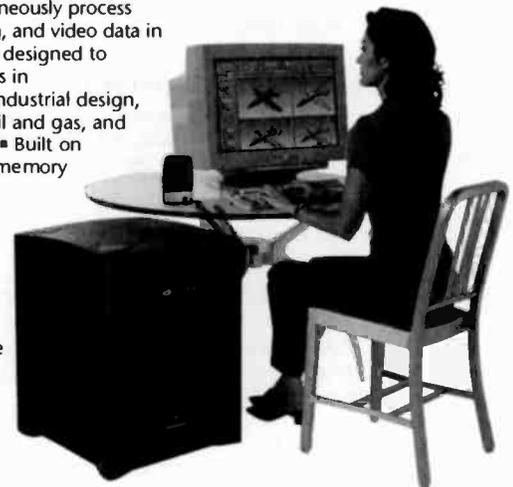
- Single or dual processor, R10000
- Autosensing 10Base-T and 100Base-TX Ethernet
- 64M byte or 128M byte base memory, upgradable to 2G bytes
- One parallel port, two serial ports
- Ultra SCSI 40Mbps internal system disk, two additional disk bays (total capacity 27G bytes)
- External Ultra SCSI port (40Mbps)
- Stereo I/O, speakers, and microphone
- 20" monitor
- Keyboard, mouse
- OCTANE/s², OCTANE/s³, or OCTANE/m² graphics

Key Architecture Features

- 1.0Gbps main memory peak bandwidth
- 1.6Gbps peak, 1.2Gbps sustained bandwidth between subsystems
- 64K primary cache, 1M byte secondary cache
- 32- or 64-bit binaries
- Symmetric multiprocessing
- Priority I/O
- R10000 Features** ▪ Speculative execution ▪ 4-way superscalar operation

Onyx2™ Visualization Supercomputers

- Systems simultaneously process graphics, imaging, and video data in real time and are designed to handle challenges in manufacturing, industrial design, entertainment, oil and gas, and visual simulation
- Built on Scalable Shared-memory MultiProcessing (SMP™) architecture
- Creates highly configurable computer modules featuring scalable system bandwidth and low-latency memory access
- Onyx2 family features high-performance MIPS RISC processors, Geometry Engine® processor technology, and development tools



Onyx2 InfiniteReality™ Dual Rack

- Up to 24 R10000 processors with 4M bytes secondary cache and 2 InfiniteReality visualization pipelines or up to 8 R10000 processors with 4M bytes secondary cache and 4 InfiniteReality visualization pipelines
- Up to 320M bytes frame buffer
- 16 or 64M bytes texture memory
- Up to 12G bytes system RAM
- Up to 200G bytes disk storage

Onyx2 InfiniteReality Rack

- Up to 8 R10000 processors with 4M bytes secondary cache
- Up to 2 high-performance graphics pipelines
- Up to 320M bytes frame buffer
- 16 or 64M bytes texture memory
- Up to 4G bytes system RAM
- Up to 100G bytes disk storage

Onyx2 InfiniteReality Desktop

- Up to 4 R10000 processors with 4M bytes secondary cache
- Up to 160M bytes frame buffer
- 16 or 64M bytes texture memory
- Up to 2G bytes system RAM
- Up to 45G bytes disk storage

Onyx2 Reality™

- Up to 4 R10000 processors with 1 or 4M bytes secondary cache
- Up to 80M bytes frame buffer
- 16 or 64M bytes texture memory
- Up to 2G bytes system RAM
- Up to 45G bytes disk storage

Onyx2 MXI™

- Up to 4 R10000 processors with 1 or 4M bytes secondary cache
- Up to 27M bytes frame buffer
- 4M bytes texture memory
- Up to 2G bytes system RAM
- Up to 45G bytes disk storage

Call For Pricing

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



Origin200™ High-Performance Workgroup Server

- Origin200 server has high-performance processors, buses and powerful I/O to support complex applications
- Expandable and upgradable
- Origin200 server with WebFORCE™ software meets Web intranet and Internet needs
- Can support large database systems for such applications as Web-based intranet solutions, decision support, PDM, or product design
- Origin200's high-performance file-serving technology eliminates unwieldy management and redundant replication of data
- Provides high-speed networking options, OPI, file and print serving, Macintosh®, PC, and CEPS integration, image archiving, and Web serving for intranet and Internet publishing applications
- High-performance CPU, networking, I/O capabilities, modularity, and rackmount ability
- Features real time simulation, signal processing, telemetry and data acquisition applications
- Provides high-performance rackmountable platform for animation rendering
- Provides fast compute, large memory, and large I/O necessary for analysis in the areas of high-energy physics, fluid dynamics, FEA, structural mechanics, and computational chemistry
- Origin200 can be a LAN server, seamlessly interoperating with any PC, providing powerful file, print, application serving, and resource sharing among DOS/Windows®, Windows NT®, OS/2®, NetWare™, Macintosh and UNIX computers
- Servers easily adapt to changes in an evolving computational environment using Scalable Shared-memory MultiProcessing architecture (S:MP™)
- Servers can range from the single processor deskside tower to a 128-processor Origin2000™ system
- Deskside tower can hold 1 or 2 MIPS® R10000™ processors and up to 2G bytes of high-speed DRAM
- Each tower supports 3 full-size industry-standard PCI slots for additional networking and peripheral attachment, which provides 266Mbps I/O bandwidth
- For applications requiring more bandwidth the tower supports 1.6Gbps high-performance XIO™ interconnect cards
- Each tower can hold up to six 3.5" hot-pluggable Ultra SCSI devices and two 5.25" devices, including CD-ROM, DAT or a DLT
- Tower features CrayLink™ Interconnect which enables the connection of two towers, forming a large, 4-CPU shared-memory system
- Linking Origin200 towers via CrayLink doubles CPU and I/O performance
- CrayLink interconnected towers can operate as a single system or as independent systems
- System's capabilities are easily expanded by adding CPUs to the configuration
- Origin200 servers use an advanced standards-based 64-bit UNIX operating system
- 460W power supply, 50/60Hz
- 110/220VAC single phase autosensing worldwide voltage
- Tower dimensions: 23"H x 9"W x 26.5"D; rackmount dimension: 6.8"H x 17.4"W x 25"D
- 75 lbs.



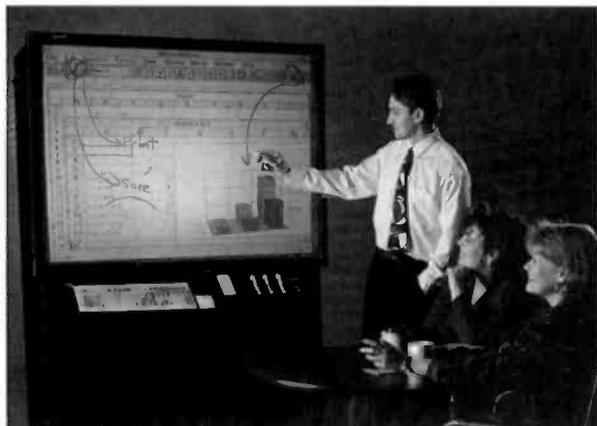
Origin2000™ High-Performance Servers

- Servers utilize S:MP architecture, allowing for fast growth or redeployment of computing assets
- Servers can expand from single processor deskside systems to 128-processor scalable servers
- System resources can be deployed as tightly integrated arrays of small Origin2000 systems or as single large shared-memory systems
- Offers ECC memory, redundant power and cooling, hot-pluggable disks, and RAID storage options
- Modular architecture allows powering down of certain portions of a system without disabling the entire system
- Origin2000 Module can hold up to 8 MIPS R10000 processors and up to 16G bytes of fast-access memory on 4 dual CPU node cards
- Each module also provides 5.12Gbps sustained I/O bandwidth through 12 XIO slots, providing powerful I/O capabilities
- Each module can hold up to 5 internal 3.5" Ultra SCSI devices and a CD-ROM
- Independent power and cooling (redundant power optional)
- Module features 6 external CrayLink Interconnect ports which extend the connection fabric to multiple modules in a large hardware cache-coherent shared-memory system for seamless enlarging of system
- Origin2000 can be mounted in a deskside enclosure in which the module becomes a fully functional deskside server, ideal for both compute- and I/O-intensive applications
- Origin2000 can also be mounted in a rack enclosure in which multiple modules may be connected in a variety of configurations; each rack can hold up to 2 modules and multiple racks can connect with CrayLink Interconnect
- System capabilities can be extended by adding node cards to the module; the S:MP architecture delivers increased performance and scalability by distributing memory on the CPU boards
- Modules support industry-standard expansion through optional PCI or VME XIO adaptors
- High-performance visualization capabilities are supported
- Servers use Cellular IRIX™ operating system which takes advantage of the scalability of Origin2000 while providing compatibility with previous versions of IRIX and compliance with X/Open and POSIX standards
- Origin2000 supports high-performance networking protocols, including NFS™ versions 2 and 3
- Deskside system: 25.5"H x 21"W x 23"D, 215 lbs.
- Rack system: 73"H x 28"W x 40"D, 700 lbs.
- Deskside voltage: 110-220VAC
- Rack voltage 220VAC single-phase
- Frequency: 50-60Hz

Call For Pricing

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

REFERENCE



Rear Projection SMART Board™ Interactive Whiteboard System

Harness the Power of Interaction

A SMART Board lets you harness computer power to communicate ideas in meetings or in front of a class. The *Rear Projection SMART Board* allows you to stand directly in front of an interactive electronic whiteboard and open files, edit documents or play video clips by simply touching on the Board. Anything you can do at a desktop computer you can do in front of a group. Best of all, since you use a SMART Board like an ordinary whiteboard, it is easy to use for meetings, presentations or classes.

Communication Without Limits

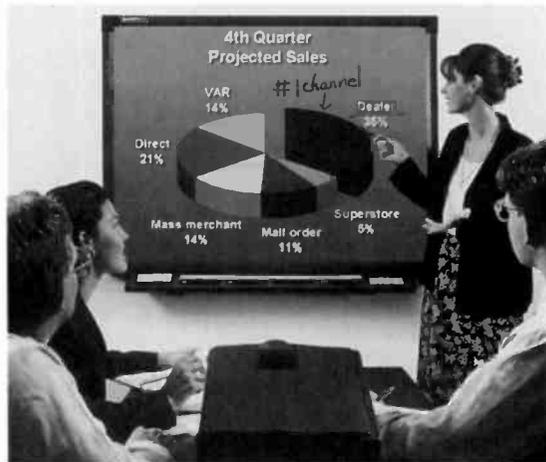
Add the leading conferencing application to the SMART Board, then share information in a fully interactive shared work space in remote meetings or distance education classes. Draw a diagram on your SMART Board, and the same diagram immediately appears on all SMART Boards in the conference. With SMART Aware™ and SMART Boards, you can use everyday whiteboard tools to meet at a distance.

Wall-mounted <i>Rear Projection SMART Board 720</i> (72" diagonal)	\$9999.00
<i>Rear Projection SMART Board 585</i>	\$4999.00
Wall-mounted <i>Rear Projection SMART Board 585</i> (58½" diagonal)	7999.00
<i>Rear Projection SMART Board 420</i> (42" diagonal)	7499.00

Note: Prices do not include projectors.

Includes:

Rear Projection Board, SMART Super Screen, Rear Projection Cabinet (except wall-mounted units), SMART Pen Tray and shelf, SMART Styluses, all necessary cables and power supply, SMART Board driver and SMART Notebook software.



SMART Board Interactive Electronic Whiteboard System

The SMART Board facilitates group collaboration in your meetings and training sessions by allowing you to naturally bring computer power into your meeting room—all in a solution that works, looks and feels like a regular whiteboard.

The Power of Interaction

Once you attach the SMART Board to your computer, project a computer image on the SMART Board and you have an interactive whiteboard. Just touch the SMART Board to control software and bring up documents, spreadsheets or designs. With the SMART Board, it is natural to use your software during a meeting to gather input from all participants and review, edit, then save files. Plus, you can still use the SMART Board as a whiteboard—simply pick up a marker and write notes over your software. You leave meetings with ideas communicated, implemented and saved.

Never Take Notes in a Meeting Again

You can also use the SMART Board without a projector to capture whiteboard notes immediately on your computer. The SMART Board recognizes 4 colors of pens and an eraser, so you can write as you would on an ordinary whiteboard. After meetings, you can print, e-mail, or copy and paste your notes into other applications.

Interaction at a Distance

Project onto the SMART Board, connect computers using any of the leading conferencing software and your team has a fully interactive shared work space that can be used to communicate with groups in remote locations. Anything that appears on one SMART Board appears directly on all SMART Boards. Share more than just handwritten notes—also share images, applications or documents.

SMART Board 720 (72" diagonal)	\$2999.00
SMART Board 585 (58½" diagonal)	2399.00

Includes:

Wall-mount kit, SMART Pen Tray, 4 dry erase markers, 4 color styluses and eraser, all necessary cables and power supply, SMART Board driver and SMART Notebook software.

Accessories

Floor Stand 720	\$549.00
Floor Stand 585	499.00
SMART 2000 Conferencing Software	299.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



Kudos IQ Modular System

- Complete modular system developed to solve multiformat interface problems and facilitate transition from analog to digital
- All modules designed to uniform size—all fit into a common 3RU or 1RU enclosure and use a common power supply
- Enables any combination of analog, digital, video or audio modules to be fitted into the same enclosure
- 10-bit component digital processing
- Decoding, encoding, synchronization and timing, digitization, test and measurement, digital interfacing, signal distribution and audio processing abilities included



Kudos IQ 3-Channel DAC

- Provides conversion to analog component from 10-bit 4:2:2 inputs
- Provides a convenient way to produce Y_{bP_r} or GBR from a 4:2:2 input
- Choice of full spec CCIR 601 or economy filters
- Can accept SMPTE/EBU N10 or Betacam or MII input levels
- Level and timing adjustments by remote software control or locally
- 525/625 operation



Kudos IQ 3-Channel ADC

- Converts from Y_{bP_r} or GBR to 4:2:2
- Sampling rate is obtained from separate loopthrough sync input or from syncs on Y or G
- 13.5MHz luminance sampling rate is standard
- Adjustments may be performed locally or from a remote control panel
- 10-bit operation
- Digital chroma clamping for accurate levels
- 525/625 operation
- Full specification 601 prefiltering

Kudos A-to-D and D-to-A Converter Range

- Provides conversion between 4:2:2 and Y_{bP_r} and GBR
- 10-bit conversion between serial digital and analog component
- Compact 1U rackmounting can incorporate 2 channels of A-to-D or D-to-A
- Serial and parallel digital interfaces
- Y_{bP_r} and GBR interfaces
- 525/625 operation

Kudos CC10 Color Corrector

- Composite and Y/C color corrector
- Offers comprehensive color correction facilities suitable for both broadcast and industrial applications
- Provides all the necessary controls for online correction of composite and Y/C signals
- Composite and Y/C inputs/outputs
- Nondecoding transparent signal path retains full bandwidth
- Separate correction controls for black, gamma, white and super white
- Full range of processing controls, including black stretch
- Split display of corrected and uncorrected pictures
- Continuously adjustable (360°) hue correction
- External key allows portions of corrected picture to be masked
- Nonvolatile memory stores 5 sets of correction parameters
- PAL and NTSC versions available

Kudos CVR22 Standards Converter

- Bidirectional sharp 2-field, 4-line aperture conversion
- 8-bit, 4:2:2 processing throughout
- Full 5.5MHz composite/component bandwidth
- Proprietary Gate decoding for wideband performance with minimum cross effects
- Digital horizontal/vertical enhancement
- Inputs/outputs in composite, component and Y/C with additional GBR output
- Choice of 2 conversion apertures
- Built-in vidiplax decoding
- Rugged TBC performance enables reliable processing of poor quality input signals
- PAL-M and PAL-N option
- Full range of proc-amp controls
- Fully genlockable
- Applications include: Broadcast, post-production, ENG/SNG, newsroom, duplication, satellite, corporate, education, government, cable and advertising

Kudos CVR22D Same as CVR22, but with serial digital output



CVR45

Kudos CVR45/CVR25 Standards Converters

- Full power of 4-field, 4-line aperture conversion within a single rack unit
- 8-bit, 4:2:2 processing throughout
- Full 5.5MHz composite/component bandwidth
- Proprietary wideband Gate decoding of PAL, NTSC and SECAM delivers sharp output pictures with minimum cross effects
- Rugged TBC performance enables reliable processing of poor quality input signals
- Powerful adaptive frame based recursive noise reduction
- All digital horizontal/vertical enhancement
- Choice of conversion apertures
- Inputs of composite, Y_{bP_r} and Y/C
- Simultaneous PAL and SECAM outputs
- PAL-M and PAL-N compatible
- Full range of adjustable proc-amp and enhancement controls
- Fully genlockable
- Bidirectional operation
- Built-in vidiplax decoding

Kudos CVR45D Same as CVR45, but with serial digital output

Kudos CVR25 2-field version of the CVR45

Kudos TPG20/TPG21 Test Pattern Generators

Kudos TPG20 Test Pattern Generator

- Complete reference test source for multistandard, multiformat environments
- Continuously expanding range of ultrahigh quality, mathematically generated precision test signals (approximately 500 patterns)
- Patterns available in all broadcast standards and formats, including frame-grabbed images
- Line based patterns, frame based patterns, moving patterns and real pictures
- All composite test patterns are resident in their encoded form—0 decoding errors or drift
- Fully genlockable
- Easy to use
- Output exceeds specification for testing CCIR 601 digital equipment
- 2 complete frames of storage, allowing instant switching between patterns
- Unlimited number of patterns, including full-frame real images, may be downloaded from a PC
- Serial and parallel composite/component digital outputs
- 10-bit resolution on 3 independent channels
- Compatible with 16:9 aspect ratio, EDTV, PALplus standards and low bandwidth HDTV
- Format independent structure gives compatibility with future standards and patterns

Kudos TPG21 Programmable Test Pattern Generator

- Fully programmable test pattern generator with nonvolatile memory for customized patterns
- Capable of downloading line, field and frame based patterns and reference picture
- Creates new line based pattern
- Runs under Windows™
- Test line display tool for video measurements
- Numeric parameter entry allows accurate positioning of pulses, bursts, etc.
- Oscilloscope style display with markers for frequency, time and amplitude measurements
- Allows assembly of test charges from test lines
- Cut and paste of lines from test line editor



TBS24T

Kudos TBS24/TBS24T Transcoding TBC Synchronizers

- TBS24T's recursive noise filter is useful for getting rid of wideband (white) noise
- TBS24T is useful for compression preprocessing applications
- Full broadcast quality multiformat wideband synchronizer
- 8-bit, 4:2:2 processing throughout
- Proprietary Gate decoding technology delivers sharp pictures at full bandwidth
- Digital horizontal and vertical enhancement
- Powerful frame based recursive noise reduction (TBS24T only)
- Wide range of video parameter adjustment controls
- PAL to SECAM output transcoding (TBS24T only)
- NTSC to PAL-M transcoding option
- PAL to PAL-N transcoding option
- Simultaneous PAL and SECAM outputs
- Integral test pattern generator

Kudos TBS24D Same as TBS24, except with serial digital output

Call For Pricing

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



Supervisor™ Large Screen Optimizer

- Designed to enhance large screen reproduction of standard video and VGA computer graphic images
- Precision digital interpolation eliminates flicker and visible line structure in large screen displays and videowalls
- Gets the most out of your projector, achieving its full resolution potential
- Oversampling gives stunning quality on large screen images
- Locks to and displays all normal TV and computer generated video signals
- Overlays computer images onto upconverted video signals
- Input can be panned and zoomed to emphasize part of image
- Full 16:9 to 4:3 aspect ratio control
- Gamma control to compensate display nonlinearity
- Built-in test patterns for display alignment
- Multiple genlock configurations including VGA
- Compact size, low power consumption
- Remote control as standard
- Videowall control
- Optional single standard decoder
- Eliminates the effects of visible line structure and interlace
- Employing a 9-point spatio-temporal filter, the Supervisor will enhance the perceived definition of large scale displays, exploiting the output display medium to its maximum potential, whatever the input
- Supports a wide range of display devices, from HDTV monitors to videowalls to computer graphic projectors
- Applications include corporate presentations, product launches, simulators, electronic theater, home theater and videowalls
- Has the capability to insert video from a computer into the main picture, with full control over size and positioning
- 1RU
- Fully genlockable
- Standard Supervisor accepts RGS or color difference signals from component recorders
- Optional decoder handles PAL/NTSC composite inputs from terrestrial TV tuners, satellite receivers and VHS players
- Decoder option also handles Y/C signals from S-VHS cassette recorders



Magic DaVE Compact DVE and Switcher

- Available in digital/8-input digital versions
- Delivers a combination of video effects and mixing capabilities
- Full bandwidth performance
- Housed in a 2RU mainframe
- Controlled by compact, stand-alone unit
- 8-bit, 4:2:2 signal processing
- 4 inputs
- Internal pattern generator
- Works simultaneously with mix of composite, Y/C and component signals
- Provides full broadcast specification synchronizing TBCs on all inputs
- Standard effects include 3-D perspective, infinite zoom, 2 light sources, mosaic, solarization, false color, multitile and twin tile effects with intersecting planes
- Warps, shapes and distortions available as solid, hollow or sliced in half
- Image modulation, including flag wave and ripple effects
- Dual-source, double-sided page turns and rolls with live video on both sides using just one channel of DVE
- Quad peels and push on/off effects with 2 live sources also included
- Mixer capability: Program/preset M/E architecture, A/B wipe/mix, DVE wipe on/off, fade-to-black
- 4 sets of video inputs
- 1 key input
- Horizontal overscan
- Ideal for broadcast studio, post production facility and educational institutions

Transphix Computer to Broadcast Bridge

- Converts computer generated video to broadcast television standards
- 3-D filter structure can handle interlacing without loss of picture quality
- Automatically senses input standard
- Quality conversion of high resolution workstation animated graphics to standard TV video
- Does not require the scanning rates of the workstation to be changed
- True scan format conversion using high quality wide aperture 3-D interpolation
- Handles high-speed motion without introducing judder
- Handles any resolution of input graphics and auto-detects all aspects of the input scan format
- Provides standard TV rate output in a range of useful output forms (e.g. SDI and composite)
- Full control of picture zoom, shrink, and offset

MDD500 Multistandard Digital Decoder

- Adaptive field-based comb decoder which has 2 modes of operation
- Aperture can be configured to operate over 3 fields to produce a sharp picture with a nominal delay of 1 frame
- Minimum delay mode over 2 fields retains the sharp resolution associated with a field-based comb decoder but has an overall delay of 2 lines with $\pm\frac{1}{2}$ line adjustment
- Compact analog to SDI interface
- 1 or 2 channels in 1RU enclosure
- Adaptive multitap vertical-temporal filter
- Minimum delay (<3 lines) separation mode
- Input loopthrough
- Output can be locked to input
- Full processing amplifier controls
- Built-in test signals

MDD1100 Multistandard Digital Decoder

- Adaptive field-based comb decoder with integral frame synchronizer
- Operates over 3 fields to provide sharp resolution but has minimum delay of only five lines
- Comb artifacts are minimized by a temporal adaptation algorithm
- Analog to SDI interface with Synchronizer
- Multiple, field-based aperture for high quality Y/C separation
- Adaptive vertical filtering suppresses Hanover bars
- Multistandard (except SECAM)
- Easy to use configuration menu
- Designed for unattended operation
- Processing amplifier included
- Integral test patterns

MDE1000 Multistandard Digital Encoder

- Compact, all-digital unit delivers quality signals in any of the world's major composite broadcast standards
- All-digital implementation of controls and processing eliminates the need for online adjustment after setup
- Precision 6-standard encoder with digital SECAM
- Unique digital gate technology delivers signals virtually free of cross-luminance and chroma effects
- Automatic standards detection
- Delay variable from 1 line to 1 frame
- Handles vertical interval signals
- 12-bit DAC for precise output
- Built-in test patterns

Kudos NRS50/NRS30 Noise Reducers

- Full-featured video processor incorporating a 3-filter noise reducer
- Combines a frame-based adaptive recursive filter, an advanced 3-D median filter and a spatial low-pass filter
- A TBC/synchronizer and video processing amplifier provide operational flexibility
- Serial digital component output combined with 3-filter noise reducer makes multi-function bridge from analog to digital and compression preprocessor
- Powerful integrated noise reducer with analog interfaces
- 3-D median filter with variable shape and size to remove impulse noise and dropouts
- Unique asymmetrical implementation of median filter for minimum process delay
- Recursive filtering to remove white noise
- Luminance and chrominance low-pass spatial filtering
- Automatic noise level measurement and bargraph display
- Automatic threshold settings for hands-off operation
- Overscan to remove visible head switch disturbance

Kudos NRS30

Same features as the NRS50, except has component output only

Call For Pricing

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



DVCAM CAMCORDERS/ DOCKABLE RECORDER



SONY®

Business and Professional Group

DVCAM™ Recording Format

In the DVCAM recording format, 1 frame of video signal is recorded with 10 NTSC/12 PAL tracks. Based on Discrete Cosine Transform (DCT), each track consists of Insert and Track Information (ITI), audio, video and sub code. The ITI is a reference signal for precise tracking and time codes on the sub code area. 8-bit component digital recording with a 5:1 compression ratio and sampling at the rate of 4:1:1 provide superior picture quality and multigeneration capability. The intra-frame compression scheme is ideal for editing applications. Sony's ClipLink™ system allows operators to mark scenes "OK" or "NG" in-camera, either in the field or in the studio. The ClipLink system records an Index Picture onto a special area at the end of the tape. That recording then becomes available for drag-and-drop editing. ClipLink also speeds the transfer from videotape to hard drive by enabling editors to automatically transfer only selected scenes. The up to 4X real time data transfer allows a 1-hour shoot to transfer in just 15 minutes. The QSDI™ Interface forms a connection that makes 4X real time data transfer possible. Based on SDI, QSDI handles ¼" digital compressed video plus uncompressed audio and data.



DVCAM COMPONENTS



DSR-200 1-Piece 3-CCD Camcorder

- 1-piece camcorder with shoulder mount design, integrated lens and viewfinder
- All digital acquisition
- Three ⅓" CCD image sensors
- DV input/output based on IEEE 1395 connector
- Up to 184 min. recording time on standard DVCAM tapes
- Super SteadyShot® image stabilization for tripod-like stability during handheld shoots
- Control-L (LANC) connector for use with selected Sony consumer video products
- Integrated 10X zoom lens with additional 2X digital zoom
- Integrated 1" black-and-white viewfinder
- 8-bit, 4:1:1 digital component video
- Choice of audio modes: 16-bit, 48kHz, 2-channel audio or 12-bit, 32kHz, 4-channel
- Photo mode for digital still and electronic printing applications

DSR-200..... \$6,400.00

DSR-130L DVCAM Digital Camcorder

- DSR-1 digital videocassette recorder plus DXC-D30 digital camera
- TruEye™ processing for faithful color reproduction
- 850 TV lines of horizontal resolution
- Skin Detail with auto skin tone detection
- 'Black Halo' free clean detail
- Real time self-diagnostics
- Power HAD™ CCD
- ClipLink system
- Viewfinder menu
- Time code superimposed during playback
- Freeze mix function
- Remote 10-pin RS-232C
- Auto tracing white balance function
- S/N: 63dB

DSR-130L..... \$19,400.00

DSR-1 Digital Videocassette Recorder

- 2 selectable audio channel modes: 2 and 4 channels
- Features ClipLink system
- The DSR-1 has both a Pro 76-pin Digital and a Pro 50-pin connector for direct connection with Sony's digital and analog cameras: DXC-D30, DXC-637, DXC-537A, DXC-327A and DXC-327B
- When connected to the DXC-D30 digital camera, becomes the DSR-130L DVCAM digital camcorder
- Compact and lightweight
- Record review function
- Frame-accurate backspace editing
- Viewfinder playback capability
- Built-in SMPTE time code generator and reader
- Time base stabilizer
- Full-color picture playback in the field
- VTR full-function control
- Comprehensive LCD display

DSR-1..... \$7,400.00



DSR-PD1 Compact ⅓" CCD Digital Camcorder

- Compact DVCAM format digital camcorder with 680,000 pixels
- 2½" Swivelscreen™ color LCD with advanced color viewfinder
- Super SteadyShot picture stabilization
- 20X digital zoom, 10X optical zoom lens
- PCM stereo digital audio
- 4-mode auto exposure
- Built-in speaker with volume control
- Component video recording
- Accupower™ lithium-ion battery power indication system
- Photo mode for high quality still images
- A/V digital fader (to black)
- Manual focus
- Selectable white balance
- DV IN/OUT interface allows edits between 2 DVCAM camcorders without generational loss
- Drop frame time code
- Extended data code
- Control-L (LANC) editing interface
- Audio dubbing
- 40 min. max. recording time using PVDM-40ME cassettes
- Rugged design
- Dimensions: 5¼"H x 2¾"W x 4¾"D
- Weight: 1.1 lbs.

DSR-PD1..... \$2,975.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



DSR-85 Digital Videocassette Recorder

- Built-in SMPTE time code generator/reader
- Built-in time base corrector
- Frame-accurate editing capability
- High-speed picture search
- Jog audio
- Sony integrated remote control system
- Built-in character generator
- Capable of playing back consumer DV cassettes at normal and 4x speed
- User-friendly operation
- Self-diagnostics and error log
- Hours meter shows total operating time, drum rotation time, transport operation time and number of thread/unthread operations for maintenance purposes
- Power requirements: 100-120VAC, 50/60Hz
- Power consumption: 170W
- Supplied accessories: AC power cord, operating instructions and RCC-5G 5m 9-pin remote cable

DSR-85 \$18,000.00
DSRM-10 Wired remote controller 335.00



DSR-60 Digital Videocassette Recorder/Player

- Capable of playing back tapes recorded by both DV and DVCAM formats
- Analog outputs: Video—2 composite, 1 component, 1 S-Video and 1 RGB; Audio—4 balanced XLR types
- RS-422A, TBC remote and Control-S remote control interfaces
- Capable of writing and reading cassette memory data for ClipLink operation
- Built-in time code generator/reader conforms to SMPTE standard
- Built-in time base correction
- Jog audio
- Auto repeat function
- Power on playback capability
- High-speed picture search
- EIA standard 19" rackmountable
- Self-diagnostics function

DSR-60 \$6,300.00
DSRM-10 Wired remote controller 335.00



DSR-80 Digital Videocassette Recorder/Player

- Standard sized cassette tape records maximum 184 minutes
- Tapes recorded by consumer DV camcorders can be played back by the DSR-80 without an adaptor
- Optional time code I/O and SDI I/O boards available
- Analog inputs and outputs: Video—2 composite I/O, 1 component I/O, 1 S-Video, 1 RGB; Audio—4 balanced XLR types
- 2 AES/EBU digital audio I/Os
- RS-422A, TBC remote and Control-S remote control interfaces
- Capable of writing and reading cassette memory data for ClipLink operation
- Built-in time code generator/reader conforms to SMPTE standard
- Built-in time base correction
- Frame accurate editing
- High-speed picture search
- EIA standard 19" rackmountable
- Self-diagnostics function

DSR-80 \$9,895.00
DSRM-10 Wired remote controller 335.00



DSR-30 Digital Videocassette Recorder/Player

- 15µm track pitch
- Plays back consumer DV tapes
- Control-S serial remote control interface
- Control-L connector for use with some Sony consumer video products
- DV input/output based on IEEE 1394 standard
- Clear frame still
- Photo and date index search
- Auto repeat
- Power-on playback and record
- Near-frame accuracy: editing ±5 frames

DSR-30 \$4,800.00
DSRM-10 Wired remote controller 335.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

EDITING SYSTEM



SONY®

Business and Professional Group

ES-7 EditStation™

- Full-functional hybrid editing system with 4X normal speed transfer capability
- User can choose either nonlinear or linear editing or a combination of both
- Unique mixed tape/disk operation, Disk B-roll™, requires less disk capacity
- The disk recorder of the ES-7 behaves as 2 players and 1 recorder simultaneously, allowing a full A/B roll edit without the need for additional devices—ideal for layering complex effects
- Direct Digital Link eliminates the signal degradation that occurs because of repeated uploading and downloading between a tape and the Disk Unit
- Incorporating the same compression scheme as the DVCAM Series VTRs, uniformly compressed data can be directly transferred via a QSDI™ interface
- Realizes 4X normal speed transferring with no degradation of picture quality when connected to the Sony DSR-85/85P DVCAM VTR
- All-in-one concept including editing software, OS, PC, audio mixer and online operating manual avoids the need for OS installation and complicated PC interfaces
- Real time layering
- ClipLink™ permits shooting data acquired with a DVCAM Series camcorder to be instantly sent to the ES-7 via a DVCAM Series VTR, giving the user access to clips containing an Index Picture, scene number and shot log information for each scene
- Instant access to clips and an intuitive "drag and drop" operation make the ES-7's GUI highly effective
- Putting clips onto the the StoryBoard allows rough editing before uploading to the Disk Unit
- ClipEditor is used to make or modify video clips; once inside ClipEditor, head/tail frames of a clip can be trimmed, or view and modify details of each clip
- Effects-Selector allows selection from approximately 450 striking digital real time effects in category groupings
- Drag and drop clips and effects to the TimeLine to build a visual representation of a final program
- High performance DME switcher available
- Analog composite, S-Video (Y/C), RGB and component (Y/R-Y/B-Y) input/output formats are standard; digital SDI and QSDI signals are also supported by an optional interface
- Direct touch graphics
- Project files containing Index Picture and time code information can be exchanged between multiple ES-7 EditStations, using Ethernet or MO disk
- Built-in audio mixer offers fully automated audio-follow-video performance as well as independent control of all 8 channels
- Variable compression rate
- ESDraw™ feature
- Optional conventional-style control panel



ES-7 EditStation Components

- Consists of a computer, CD-ROM drive, floppy disk drive, mouse, keyboard, digital audio mixer, OS (Windows NT 3.51), Editing Manager (editing software), TextComposer (character generator software), online manual, printed installation manual and tutorial guide
- Up to 4 VTRs controllable
- Multiformat inputs/outputs (composite, S-Video, component) available
- Linear editing capable with the ESBK-7021 or ESBK-7023
- Supports ClipLink operation when connected with a DVCAM Series VTR with a tape containing CM (cassette memory)
- Direct Touch Graphics, project file exchange as standard

ES-7 \$22,500.00

Optional Accessories for the ES-7 EditStation

ESBK-7011 Dedicated Control Panel for intuitive operation.
Cable included \$1,350.00

ESBK-7021 Basic DME Switcher Board Provides a variety of wipes: horizontal/vertical, circle, heart, matrix, rotary, clock with border and softness. Effects keying such as chromakey, luminance key, linear downstream keyer and key-mask capability. Color corrector, matte color generator and various kinds of emboss patterns available. X/Y/Z rotation, multi-slide/split, mosaic with cropping, picture-in-picture, zoom-up, stream and bounce capability \$5,200.00

ESBK-7022 3-D Effect Board for Basic DME Switcher Board Adds X/Y rotation with perspective, page turn, page roll, sphere, real paint, stained glass and wave modulation \$2,200.00

ESBK-7023 Advanced DME Switcher Board 4:2:2 processing. Wide variety of wipes: horizontal/vertical, circle, heart, matrix, rotary, clock with border, softness and soft border. High quality linear keying such as chromakey, luminance key, linear downstream keyer and key-mask capability. Color corrector, matte color generator and various kinds of emboss patterns available. X/Y/Z rotation, multi-slide/split, mosaic with various cropping, picture-in-picture, stream and bounce capability. \$6,150.00

ESBK-7024 3-D Effect Board for Advanced DME Switcher Board Adds fancy effects such as trail, FantaTrail™, shadow, lighting, X/Y rotation with perspective, page turn, page roll, sphere, real paint, stained glass and wave modulation \$3,800.00

ESBK-7031 QSDI Interface Board Compressed digital signal input/output (P1/P2/AUX/R) for upload/download. Enables Direct Digital Link with DVCAM Series VTRs. High-speed link capability with the DSR-85/85P \$3,800.00

ESBK-7032 SDI Interface Board Digital signal input/output (P1/P2/AUX/R) for upload/download and linear editing. Digital link capability with DVCAM Series VTRs, Digital Betacam and other equipment with SDI interface to form a nonlinear or linear system \$2,700.00

ESBK-7041 Disk Recorder Board Use with the ESBK-7045. Enables simultaneous connection of up to 4 Disk Units. Indispensable for nonlinear or hybrid system including Disk B-roll \$7,250.00

ESBK-7045 Disk Unit Utilize with the ESBK-7041. Indispensable for nonlinear or hybrid system including Disk B-roll \$10,500.00

ESBK-7051 SCSI Option ½-sized ISA board. Allows connection with various devices; MO drive and hard drive for project file exchange or graphics image storage \$350.00

ESBK-7052 Ethernet Option ½-sized ISA board and driver software. Enables networking among multiple EditStations or other computer systems for project file or graphics image exchange \$400.00

ESBK-7071 ESDraw Consists of a small daughterboard and Draw software. Enables graphics to be made in addition to the standard TextComposer. Direct Touch Graphics capability \$2,100.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



Betacam SX™ System

- Designed to achieve superior picture quality, faster editing, increased system flexibility and greater productivity in every aspect of news gathering and production
- Betacam SX uses the 4:2:2 Studio Profile, a subset of the MPEG 4:2:2 profile at main level, to maintain broadcast quality pictures from camera through post-production
- Using Serial Digital Data Interface (SDDI) networking technology permits the transfer of compressed video and audio material at greater than real time without picture degradation
- Using a robust compression algorithm that achieves higher picture quality at a reduced bit-rate (10:1), the 4:2:2 Studio Profile is the key to superior digital acquisition, high-speed transmission from the field to the broadcast station, high-speed material upload to server, nonlinear editing, cost-effective archival storage and server based play to air
- The 10:1 compression rate allows either high-speed transmission or simultaneous 2-channel transmission of different video source signals within a limited bandwidth
- 507 (525/60) lines per frame
- 1/2 tape consumption
- 4-channel audio
- 60 minutes recording time with S-Cassette
- Robust tape format records 8-bit, 4:2:2 component digital video signals and supports four channels of 16-bit/48kHz digital audio
- Powerful Error Correction Code (ECC) automatically compensates for off-tape data errors caused by burst errors during recording and playback
- Maintains compatibility with current analog systems
- Automatic Alignment System maximizes accurate tape recording and reproduction of digital data
- Automatic RF Equalizer optimizes gain and phase of off-tape RF signals

DNW-90WS/90/7 Camcorders

- Designed to bring superior quality and high mobility to single camcorder operations in the field
- Smaller recording head drum has made possible a design more compact than conventional analog Betacam SPT™ camcorders with a shorter overall length and lower center of gravity
- Weighs 13 lbs., 3 oz. including tape, battery and lens
- Provide full-color playback without an external adaptor
- Can incorporate an optional Slot-in wireless microphone receiver and internal light system
- Can be used with conventional Betacam SP metal particle tape (BCT-MA/UVWT)
- DNW-7 and DNW-90 are equipped with 1.5" monochrome viewfinders; the DNW-90WS comes with a wide 2" monochrome viewfinder for easy focusing even in 16:9 widescreen mode
- Several shutter speeds available: 1/100, 1/25, 1/50, 1/100, 1/1000 and 1/2000 of a second
- 2-layer menu system visible in the camcorder viewfinder or may be displayed on a monitor screen
- Setup cards allow a large number of setup

- parameters to be stored
- Equipped with 4 types of color filter: 3200K, 5600K + 1/8ND, 5600K, and 5600K + 1/8ND
- Turbo gain function quickly raises the gain level to +36dB for immediate adjustment in low-light shooting conditions
- Noise barrier built-in
- Auto tracing white balance
- Extensive LDC displays provide critical information on VTR operating status
- Built-in diagnostic system
- Fail-safe audio recording
- Stereo audio line output (5-pin XLR)
- Superimposed shot ID on color bars
- Lithium-ion battery
- AC adaptor
- 6-pin remote interface
- Genlock capability/camera return
- Record/review function
- Camera PC setup unit with interactive status reporting

DNW-90WS

- Switchable between 4:3 standard and 16:9 widescreen ratios
- Equipped with 3/8" 520K switchable 16:9/4:3 widescreen Power HAD™ FIT CCDs

DNW-90WSPAC2 Includes tripod attachment and hard case \$45,500.00

DNW-90WSPAC1 Includes tripod attachment 44,710.00

DNW-90

- Equipped with 3/8" 520K Power HAD IT CCDs
- Incorporates 10-bit/36MHz full digital signal processing in the camera section and Betacam SX recording in the VTR section

DNW-90PAC2 Includes tripod attachment and hard case \$38,500.00

DNW-90PAC1 Includes tripod attachment 38,000.00

DNW-7

- Equipped with 3/8" 400K Power HAD IT CCDs
- Incorporates 10-bit/28MHz full digital signal processing in the camera section and Betacam SX digital recording in the VTR section

DNW-7PAC2 Includes tripod attachment and hard case \$26,500.00

DNW-7PAC1 Includes tripod attachment 26,000.00

DNV-5 Betacam SX Recorder Unit

- Can be used with any camera with a standard 50-pin Betacam interface which allows for a smooth transition from analog to digital format
- Analog Betacam SP metal tapes can be used for Betacam SX recordings with the DNV-5
- 525/60, 625/50 switchable
- Weighs only 6 lbs., 6 oz.
- Full color audio and video playback without an adaptor
- Operates up to 105 minutes with a fully charged BP-L60 lithium-ion battery
- Records up to 60 minutes on a single S-cassette
- Records shot details onto tape including, time, date, shot ID, cassette number and shot number
- Good shot and REC start markers can be placed on the tape to speed the edit search process
- Markers appear as picture stamps on the GUI
- Slot-in wireless microphone receiver
- Internal light system
- Versatile camera adaptor
- REC/review function
- TC REGEN function allows continuity of time code recording
- Stereo audio line out
- Fail-safe audio recording
- Low acoustic noise
- Comprehensive LCD display
- 12VDC, +5.0V/-1.0V power requirements
- 20W power consumption. \$17,000.00



ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



**DVW-700 PAC 2
One-Piece Digital Betacam® Camcorder**

- Both video and audio signals are digitally processed, thereby staying in the digital domain from image and sound acquisition recording
- Three 2/3" Hyper HAD 1000™ FIT CCDs
- 850 TV lines horizontal resolution
- High sensitivity of f/8.0
- S/N ratio: 62dB
- High sensitivity of f/8.0
- Robust cassette compartment and dust protection systems
- Low acoustic noise
- Field playback capability and viewfinder playback
- 10-bit/36MHz full digital signal processing
- Comprehensive LCD display
- Audio tone generator
- 10-bit A/D converters for the RGB output signals of the CCDs obtain a wide dynamic range and superior picture quality
- Setup card
- Selectable gamma correction curve
- Variable linear matrix
- Variable detail frequency
- Skin tone detail
- Detail clip
- Level dependence and crispening
- Knee correction control and dynamic contrast control
- Black/white shading compensations
- Cross color suppression
- Dual optical filter
- Variable speed electronic shutter

DVW-700 PAC 2 \$61,000.00
 DVW-700WS PAC 2 Wide-screen version 69,000.00



**BVW-D600 PAC 2 One-Piece
Betacam SP® Camcorder**

- Three 2/3" Hyper HAD 1000 FIT CCDs
- 850 TV lines horizontal resolution
- High sensitivity of f/8.0
- S/N ratio: 62dB
- 10-bit/36MHz digital signal processing
- 10-bit A/D converters for the RGB output signals of the CCDs obtain a wide dynamic range and superior picture quality
- Selectable gamma correction curves
- Variable linear matrix circuit
- Variable detail frequency
- Skin tone detail
- Detail clip
- Level dependence/crispening
- Knee correction control and dynamic contrast control
- Black/white shading compensations
- Cross color suppression
- Dual optical filter
- Variable speed electronic shutter

BVW-D600 PAC 2 \$61,000.00

**BVW-400A PAC 2 One-Piece Betacam SP
Camcorder**

- High performance single piece (inseparable) type camcorder
- 700 lines horizontal resolution
- 62dB S/N ratio
- Incorporates an Extended Clear Scan (ECS) function, allowing the variable shutter speed to be extended below field rate, which permits the BVW-400A PAC 2 to work with any PC monitor
- 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
- Sensitivity of f/8.0 at 2000 lux and 89.9% reflectance
- Ultracompact mechanical deck allows the smallest body in Betacam SP lineup
- Approx. 15 lbs., 7 oz. including battery, cassette and 13 x 9 lens with extender
- Low power consumption of 22W
- Up to 50 minutes of operation with a single NP-1A battery
- More than 30 minutes of recording time using an 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-50 via CCZR-5 cable for emergency recording needs
- Electronic shutter with shutter speeds of 1/100, 1/250, 1/500, 1/1000, 1/2000 sec.
- Full color genlock capability
- High resolution viewfinder with quick start CRT
- Center marker, safety zone marker (80% or 90% selectable) and VTR save mode indication provided



Supplied Accessories

- LC700CP case
- VCT-14 tripod adaptor
- Extension board
- Rain cover
- Shoulder belt
- Operation and maintenance manual

BVW-400A PAC 2 \$59,240.00



**BVW-300A PAC 2
One-Piece Betacam SP Camcorder**

- High performance single piece (inseparable) type camcorder
- Shares most features of the BVW-400A PAC 2 differing only in imager type
- Incorporates 768 IT Hyper HAD CCD imager with 380,000 active pixels
- 700 TV lines resolution
- S/N: 62dB
- Sensitivity f/8.0 at 2000 lux
- 1.5" viewfinder with removable eyepiece
- Emergency back-up capability using a cable to external BVW-50 VTR
- Viewfinder playback and VTR status indications
- Small, maneuverable and low power consumption

BVW-300A PAC 2 \$45,900.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





BVP-700



BVP-750

BVP-700/BVP-750 Studio/OB/EFP Cameras

The BVP-700 studio and BVP-750 portable camera heads were designed as 2 separate "shell" housings. Each are physically and ergonomically optimized for their separate operational tasks, but common in their inclusion of a precision receptacle chamber to house the plug-in, interchangeable, Integrated Imaging Capsule "mini-camera." Thus, optically and electronically, the 2 cameras produce precisely the same pictures. This engineering approach offers a number of important advantages:

- Total compatibility between the studio and portable cameras
 - The ability to quickly configure combinations of "hard" (studio) and "soft" (portable) cameras tailored to the needs of a given program production
 - Incorporation of future improved CCD upgrades as they become available—merely by acquiring a new Integrated Imaging Capsule
 - Rapid and convenient upgrade from 4:3 to 16:9 operation—by plugging in the appropriate Integrated Imaging Capsule
 - An order of magnitude additional protection against RFI
- 3 separate levels of the system design were individually optimized to ensure consistent capture of high quality images:**
- Integrated Imaging Capsule: Provides the very best in RGB video performance, incorporating Sony's Hyper HAD™ 1000 imagers with improved smear performance
 - RGB video processing and control: Incorporating of every contemporary control, supporting multiple levels of picture enhancement, facilitates unparalleled creativity and allows fully centralized technical management
 - Wideband triax: A totally new design that allows delivery of practically all that the camera head produces in terms of picture quality where it is needed most—namely, at the output of the remote CCU

The broad range of controls for creative picture-making in the BVP-700/750 include:

- Comprehensive control of horizontal and vertical enhancement for ideal image sharpness. These controls encompass variable detail peak frequency, accurate detail level clipping, new skin tone detail with wider control range, etc.
- Linear matrix adjustment to customize the colorimetry to specific end user requirements
- Black gamma control for optimum reproduction of dark areas

- EVS and Super EVS functions to enhance vertical resolution
- Color correction by 1 color axis selected from a choice of 6 axes (at CCU)

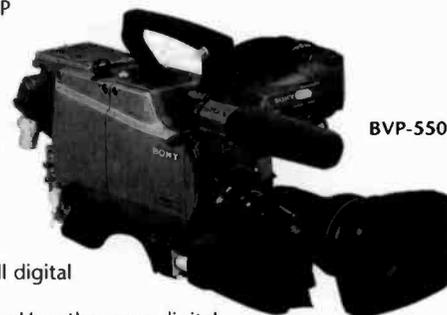
Other features include:

- 900 TV lines horizontal resolution
- 63dB S/N ratio
- Sensitivity is f/8.0 at 2000 lux
- 3-chip, 3/8" FIT CCD

BVP-700 High-end studio/OB camera shell	\$55,647.00
BVP-750 High-end studio/OB companion shell	47,250.00
BVP-750/1 BVP-750/1 studio companion shell	47,250.00
OHB-750W 16:9 520K FIT Integrated Imaging Capsule	33,165.00
OHB-750 520K FIT Integrated Imaging Capsule	28,400.00

BVP-500/BVP-550 Studio/OB/EFP Cameras

- An integrated DSP camera system designed to operate as the cost-effective "workhorse" in the Studio/OB/EFP system hierarchy that includes the high-performance BVP-700/750



BVP-550

- 10-bit/36MHz full digital signal processing
- High density LSIs
- Uses the same digital command system as the BVP-700/750
- BVP-500 system can be configured at 3 levels, from a choice of 3 Integrated Imaging Capsules, different only in the CCD Imager type employed
- Similarly, the BVP-550's smaller, more compact Integrated Imaging Capsule is also available with a choice of 3 CCD imagers
- Digital camera circuits provide stable, consistent picture reproduction, with setup parameters that are not influenced by physical factors such as temperature, vibration and the passage of time
- Exact setup parameters can be saved using an IC Memory Card
- Control potentiometers are eliminated by the adoption of digital processing, simplifying camera setup
- Integrated Imaging Capsules are separate (not interchangeable as with the BVP-700/BVP-750)
- The BVP-500/BVP-550 feature a 3-chip 3/8" IT (as opposed to FIT for the BVP-700/BVP-750) pickup device
- S/N ratio is 62dB (as opposed to 63dB for the BVP-700/BVP-750)

BVP-500 Studio camera shell	\$25,700.00
BVP-550 PAC 3 BVP-550 camera shell with BVF-C10W 1.6" 16:9 LCD color viewfinder	16,300.00
BVP-550 PAC 2 BVP-550 camera shell with BVF-20W 2" 16:9 black-and-white viewfinder	15,450.00
BVP-500 PAC 4 Dockable camera shell with standard 1.5" black-and-white viewfinder and tripod plate	15,000.00
OHB-500WS 520K FIT 16:9/4:3 Integrated Imaging Capsule for BVP-500	28,500.00
OHB-550WS 520K IT 16:9/4:3 Integrated Imaging Capsule for BVP-550	27,600.00
OHB-500 520K FIT Integrated Imaging Capsule for BVP-500	24,000.00
OHB-550 520K FIT Integrated Imaging Capsule for BVP-550	23,000.00
OHB-451 520K IT Integrated Imaging Capsule with CC/ND filter remote control ability for BVP-550	8,750.00
OHB-400 520K IT Integrated Imaging Capsule for BVP-500	8,750.00
OHB-450 520K IT Integrated Imaging Capsule for BVP-550	8,000.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





DXC-D30 Digital Video Camera

Digital Camera Signal Processing Technology

▪ The DXC-D30 incorporates state-of-the-art digital camera processing technology which is designed to fully exploit the benefits of DSP (Digital Signal Processing)

TruEye™ Process

▪ Manages video signal data according to 3 factors—brightness, hue and saturation—so that color in even a wide dynamic range can be reproduced faithfully without hue factor distortion associated with conventional RGB analog or digital processing

Real Time Self Diagnostics

▪ System informs the operator, in real time, of the connecting conditions of the LSI (Large Scale Integration) circuits and printed circuit boards, as well as electrical connection conditions between the camera and a VTR

High Picture Quality

▪ High horizontal resolution of 850 TV lines, and high S/N ratio of 63dB ▪ Newly developed circuits drastically reduce the aliasing phenomenon which was found even in conventional digital cameras

High Stability and Uniformity

▪ DSP technology assures a high degree of stability in the video output of the DXC-D30 ▪ Picture tone is stringently kept uniform among multiple DXC-D30s

Detail Corrections by DSP

▪ Skin detail with auto detection of active area ▪ Black halo-free, clean detail ▪ Red vertical detail correction ▪ Horizontal detail frequency can be controlled by the VF Menu system

Power HAD™ CCD

▪ Newly developed sensor features a minimal smear level equivalent to the conventional FIT CCDs, which addresses even the stringent demands of the high-end production field ▪ Total performance of the Power HAD CCD sensor approaches that of the standard FIT

Low Smear Level

▪ Vertical smear level is -125dB, which is the same level as conventional FIT sensors ▪ Low smear level gives the operator more freedom to shoot subjects in high light situations

High Sensitivity

▪ Power HAD sensor achieves a high sensitivity of f/11.0 at 2000 lux, 3200°K and minimum illumination of 0.5 lux ▪ High sensitivity affords a greater opportunity to shoot under extremely low-light conditions

High S/N Ratio

▪ Improved CCD process combined with the camera's new digital circuits means CCD noise is reduced ▪ Signal-to-noise ratio is improved to 63dB, the top level specifications in the industry

Automatic Functions for Ease of Operation

- Total Level Control System (TLCS) ▪ Intelligent Auto Iris and conventional Auto Iris ▪ EZ Focus function ▪ EZ Mode function
- Auto Tracing White Balance (ATW)

Enhanced Functions for Picture Creation

- Camera setup management with STD and FILE positions ▪ Setup data management with DVCAM cassette includes SetupNavi™ camera setup file storage and SetupLog™ automatic recording of camera setting data ▪ RS-232C standard 10-pin remote connector for file management from personal computers

DXF-701 1.5" Black-and-White Viewfinder

- Developed for use with the DXC-D30 ▪ Offers V/H detail control, 2 red REC tally lamps and TAKE tally lamp ▪ Reliable and ergonomic design ▪ Wide range of diopter adjustments (-3 to 0) is provided to compensate for differences in eyesight

System Versatility

- Equipped with 2 types of connectors ▪ The Pro 76-pin Digital connector allows the DSR-1 digital onboard recorder to be directly docked to the DXC-D30 ▪ The Pro 50-pin connector allows a variety of dockable analog video recorders to be attached, and supports CA-537/327/325A/325B camera adaptors and RM-M7G, CCU-M5 and CCU-M7 controllers

Other Features

- Remote control of Hyper Gain ▪ Black stretch and compress ▪ Dual zebra ▪ Monitor OUT connector (BNC) ▪ Programmable gain ▪ Clear Scan (CLS) ▪ Data and time superimposition ▪ Built-in 1kHz audio reference ▪ Adjustable shoulder pad ▪ SMPTE/SNG color bars

- DXC-D30L Dockable DSP camera with DXF-701 viewfinder, external microphone and VCT-U14 tripod adaptor \$12,000.00
- DXC-D30H Dockable DSP head only 10,800.00
- DXF-701 1.5" black-and-white viewfinder 1,000.00



CCU-TX7 Triax Camera Control Unit

- Designed to be the core unit of the triax camera control system for the DXC-D30 video camera ▪ Either AC or DC (12V) operation
- High-speed, high quality, up to 10-bit serial data transmission
- Uses analog component video transmission, which has a 9MHz bandwidth for the luminance (Y) signal and 4.5MHz for the color difference signals (R-Y/B-Y) ▪ 1500m maximum cable length via 14.5mm diameter triax cable (with return video) ▪ A teleprompter video channel can also be transmitted through the same cable
- Provides composite, Y/C, component (Y/R-Y/B-Y) and RGB signal outputs ▪ 4-pin WF (waveform monitor) MODE connector, plus WF output and a PIX (picture monitor) output ▪ 2 inputs for return video ▪ Color teleprompter compatible ▪ Flexible intercom system
- Program microphone system ▪ RS-232C port ▪ Coaxial control capability ▪ ½ rack width, 4RU high

- CCU-TX7 \$9,500.00
- CA-TX7 Triax camera adaptor for CCU-TX7 5,500.00
- RCP-TX7 Remote control panel for CCU-TX7 2,600.00
- COU-TX7 Compact and basic camera control unit 1,000.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



UVW-100B Betacam SP® 1-Piece Camcorder

- Enhanced version of the Betacam SP one-piece camcorder
- Incorporates Power HAD™ CCD sensor
- Low smear and high sensitivity
- Automatic adjustment of auto tracing white balance, intelligent auto iris and total level control system
- Equipped with Sony Clear Scan™
- Zebra video level indications
- Built-in color bar generator
- Built-in safety zone and center marker generator
- Betacam SP component recording format
- Viewfinder playback
- Backspace editing
- Full-function control
- Warning indications
- Real time/date recording function
- Audio system
- Recording review function
- 8-digit LCD multiple display
- Audio CH-1 level control
- Tape remaining and audio level indications in the viewfinder

System Configurations

UVW-100BL	Camcorder without lens	\$14,500.00
UVW-100BK/C17	UVW-100BL camcorder, YH17X7 KRS Canon lens and LC-423TH case	18,280.00
UVW-100BK/F16	UVW-100BL camcorder, S16X6.7 BRM Fujinon lens and LC-423TH case	18,280.00



EVW-300L Hi8™ Camcorder

- 3 high density 1/2" Interline Transfer (IT) Hyper HAD™ sensors
 - 700 TV lines resolution
 - 60dB S/N
 - 2 hours of recording capability
 - Camera genlock capability for multiple camera operation
 - Built-in 8mm time code generator
 - Quick start recording—0.5 seconds from pause to recording mode
 - Large LCD window
 - Zebra video level indication
 - Built-in color bar generator
 - Extremely low lag
 - No registration error
 - No geometric distortion
 - High image burning resistance
 - No blooming or comet-tails
 - Operates continuously over 90 minutes from a single NP-1B battery
 - Built-in microphone
- EVW-300L \$7,850.00



DXC-327B 3-CCD Color Video Camera

- Compact, high performance camera with superior picture quality and system flexibility
- Features Power HAD CCD sensor
- Low smear and high sensitivity, even under difficult lighting conditions
- Electronic shutter with 6 speeds
- Safety zone and center marker generator
- Built-in character generator
- Built-in microphone
- Zebra video level indication
- 3-position power switch
- RM-M7G connector
- Gain-up switch: 0, +9, +18dB
- Automatic warning system
- Auto iris control
- Genlock capability
- Automatic black level function
- Automatic white/black balance
- 2-line image enhancer

DXC-327BH	Camera head only	\$6,200.00
DXC-327BL	DXC-327B camera head, VCT-U14 tripod adaptor, DXF-601 viewfinder	7,250.00



DXC-LS1 1/4" CCD Lipstick Camera

- 1/4" IT Hyper HAD CCD image sensor
- 380,000 picture elements
- 470 TV lines horizontal resolution
- f/5.6 sensitivity at 2000 lux
- S/N Ratio: 46dB
- Advanced color matrix technology allows individual adjustment of colors without changing the overall white balance
- Camera head is 35mm long and 12mm in diameter
- Camera control unit incorporates a powerful DSP which provides enhanced picture quality plus automatic adjustment features
- On-screen menu
- Industrial, broadcasting and security applications

DXC-LS1	\$1,650.00
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ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





DXC-755 3-Hyper HAD™ CCD Color Camera

- 2-piece design (camera head/CCU) combines flexibility and high quality into 1 system
- IT (Interline Transfer) CCD sensor with 380,000 effective picture elements
- 750 TVL resolution
- S/N ratio: 60dB
- Linear matrix
- Gamma on/off selection
- Detail level adjustment
- Selectable knee position
- Variable speed electronic shutter
- Multiple signal output
- Genlock capability
- Title generator
- Color bar generator
- Automatic functions
- Status indication
- Accepts bayonet mount lenses with 6-pin connectors
- Monitor output from camera head. **\$11,200.00**



DKC-5000 Catseye™ Digital Camera System

- 1/2" CCD with 440,000 pixels for each red, green and blue CCD capturing over 800 x 800 TV lines of resolution
- 10-bit A/D conversion for increased tonal expression
- SCSI-2 interface for fast transmission
- Use of 1/2" FB 38mm bayonet-type lens for easy compatibility
- Lens adaptor allows use of 2/3" lenses
- Expands from 2 to 10 frame memory storage capability with the DKB-5008 Expansion Board
- Connects directly to a UP-D7000 Digital Color Printer to print without a computer
- Programmable dynamic range (gamma and knee)
- Flash photography possible with X contact output
- Film camera can be synchronized for photo proofing applications
- Connect the system to a personal computer for storage and retrieval of digital images
- Very versatile, cost-effective professional digital photo imaging solution meets the requirements of a wide range of imaging applications, including prepress and publishing, scientific imaging analysis, industrial imaging, computer graphics, photo proofing and instant portraiture **\$10,950.00**

DXC-9000 3-CCD Progressive Scan Color Video Camera

- Compact 1/2" IT Hyper HAD 3-CCD color video camera
- Progressive scan feature outputs all electric charges accumulated every 1/60 sec. to provide a complete frame
- Utilizes square pixels for computerized image processing
- Built-in memory provides 3 types of output signals: VGA mode, normal mode and frame shutter mode

- Freeze function
- Long term exposure function
- High sensitivity of f/5.6 at 2000 lux
- 700 lines horizontal resolution, 480 lines vertical resolution
- Auto white balance, auto tracking white balance
- 1/60, 1/100, 1/125, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10,000 sec. shutter speed selection
- CCD IRIS™ and auto gain control functions
- 3-pattern light metering system with selectable detection area
- On-screen menu
- Built-in RS-232C. **\$6,500.00**



DXC-950 3-CCD Color Video Camera

- 3-CCD camera incorporates 1/2" IT Power HAD CCDs with 380,000 effective picture elements
- High sensitivity of f/9.5 at 2000 lux
- Improved HAD sensor™ reduces smear level by 20dB
- 750 TV lines horizontal resolution
- S/N ratio: 60dB
- Compact and lightweight
- On-screen menu
- Precise picture controls: linear matrix function, shading compensation, detail level adjustments, selectable knee position
- CCD integration mode selection
- Variable speed electronic shutter: 8-step speed function 1/100 (flickerless mode), 1/25, 1/50, 1/100, 1/1000, 1/2000, 1/4000, 1/10,000 (seconds); long term exposure function (1 frame step selection); clear scan function (1 H step selection)
- CCD IRIS function
- Variable white balance control
- 3-pattern light metering system
- Flash synchronization function
- Multiple signal outputs
- RS-232C interface
- Genlock capability
- Color bar generator
- System flexibility
- Bayonet mount lens adoption

DXC-950	DXC-950 and the 16X VCL-716BXEA	\$ 5,600.00
DXC-950/16PAC	DXC-950 and the 17YH17x7KTSB dual hot shoe lens.	10,885.00
DXC-950/17PAC	DXC-950 and the 13X CVL-713B dual hot shoe lens.	10,160.00
DXC-950/13PAC	DXC-950 and VCL-712BXEA lens	8,500.00
DXC-950/12PAC	DXC-950 PAL 3-CCD camera	8,330.00
DXC-950P		5,650.00

DXC-151A 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 (1/60-1/10,000 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. **\$1,850.00**

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





DXC-C1 1/2" CCD Soakable Color Camera

- Small, lightweight, liquid-resistant camera head (42H x 42W x 44mmL) and separate camera control unit
- Supplied liquid-resistant, 5m, detachable cable allows for quick, error-free attachment, detachment or replacement
- Accepts C-mount lenses and C-mount microscope adaptors
- Cable length can be extended up to 15m by connecting an optional CCMC-12P10C extension cable (10m)
- 1/2" EIA width allows 2 units to be installed side-by-side in a standard 19" EIA rack
- 1/2" IT Hyper HAD™ CCD sensor with 380,000 effective picture elements
- 470 TV lines horizontal resolution
- Sensitivity of 4.5 lux (f/1.2) minimum illumination
- S/N ratio: 48dB
- RGB and Y/C outputs
- CCD IRIS function automatically controls exposure by electronically adjusting for incoming light levels
- Variable speed electronic shutter
- Flange back adjustment function
- Precise picture controls from CCU
- White balance control

\$5,600.00

Accessories

MVA-12	Microscope adaptor	\$870.00
TGR-750	Title generator	\$90.00
CCMC-12P10C	10m extension cable	\$70.00
MVAC-33/O	Microscope coupler for Olympus	\$310.00
MVAC-33SM	Microscope coupler for Nikon SMZ-10 Series	\$255.00
MVAC-33/N	Microscope coupler for Nikon	\$220.00



VID-P300 3-CCD Video Presentation Stand

- Incorporates the DXC-930 color video camera
- Three 1/2" IT Hyper HAD cameras have 380,000 effective picture elements
- Unique on-chip micro lens technology gives a high sensitivity of f/5.0 at 2,000 lux
- HAD sensor structure dramatically reduces smear levels
- 720 TV lines horizontal resolution
- S/N ratio: 58dB
- RGB signal output capability
- S-Video signal output capability
- 12X powered zoom capability
- External sync lock capability
- Flip-up camera head
- Built-in back light function
- RS-232 interface for control from a PC
- Menu screen

\$13,450.00



DXC-107A Single Chip CCD Color Video Camera

- IT (Interline Transfer) HAD™ (Hole Accumulated Diode) sensor CCD chip with 380,000 effective picture elements
- 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 S/N: 48dB
- 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)
- 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
- Variable speed electronic shutter (1/100 NTSC, 1/250, 1/1000, 1/2000, 1/4000, 1/8000 sec.)
- 4-digit ID number can be generated and superimposed on the picture
- Only 5 1/2" long and 12.7 oz.

\$1,525.00

VID-P100 Video Presentation Stand

- Using a color video camera, unit displays 3-D as well as flat objects such as charts, drawings, books, etc.
- Because images are displayed on TV monitors, computer displays and projectors, special conditions such as a dimly lit room are not required
- 1/2" CCD with 380,000 effective picture elements
- 420 TV lines horizontal resolution
- Employs inverter type lighting (fluorescent lamps) on both right and left, which reduces reflection
- High-speed auto focus
- Auto iris control
- Auto white balance
- 10X revolving zoom lens
- Flip-up, pan-and-tilt
- S-Video input/output connector (4-pin DIN)
- Video switcher function
- Mic input capability
- Built-in back light
- Negative/positive switching
- RS-232C interface for control from a PC
- B/W mode

\$3,500.00



ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





HDVS High Definition Video System

- A new generation High Definition Video System for program creation in the DTV era
- Studio/OB and mobile EFP acquisition systems
- Simultaneous origination of Digital HDTV and Digital Widescreen SDTV
- All-digital HDTV post-production system
- Conforms to SMPTE Digital HDTV and SDTV production standards

HDW-700 High Definition Camcorder (Preliminary)

- Achieves extremely high quality picture—same as that of the current HDC-500 1" CCD HDTV camera—by adopting a newly designed 2/3" HD CCD with 2,000,000 picture elements



- Makes use of Sony's newly developed HD Digital Compression Technology
- Field frequency 59.94Hz or 60Hz switchable
- Either HD lens or conventional 2/3" lens mountable
- Full color video and audio playback without adaptor
- Compact, lightweight and robust
- Same videocassette size as Digital Betacam for easy tape management
- 40-minute recording time with S cassette
- Long continuous operating time—approx. 120 min. with 1 BP-L90 lithium-ion battery or 80 min. with the BP-L60



HDC-700

HDC-750

HDC-700/750 Dual Format Studio Camera and Portable Camera (Preliminary)

- Newly designed 2/3" HD CCD with 2,000,000 picture elements obtains the same picture quality as the current HDC-500 1" CCD HDTV camera
- High quality, long distance optical fiber operation between camera head and CCU
- Compatible with the current BVP-700/500 Series control system, sharing conventional peripheral equipment to help users upgrade from existing equipment to the HDC-700 Series easily
- HD viewfinder aspect ratio is 16:9/4:3 switchable
- Can be used with either HD lens or conventional 2/3" lens

- HDC-700 Dual format studio camera, 44.09 lbs.
- HDC-750 Dual format portable camera, 13.01 lbs.
- HDCU-700 Dual format camera control unit

HDW-500 High Definition Digital VTR (Preliminary)

- HD Digital 1/2" cassette VTR uses Sony's newly developed HD Digital Compression Technology to obtain superlative picture quality for high-end production applications
- Same videocassette size as Digital Betacam for easy tape management
- Dimensions and operation are similar to the Digital Betacam VTR, offering users an easy transition from their existing systems to the HD Video System
- Long recording time—more than 2 hours with L cassette
- Standard HD SDI (High Definition Serial Digital Interface) and optional 525 system outputs meet the needs of differing applications
- Optional enhanced video processing board provides superb quality variable speed playback and bidirectional vertical filtering between the two 1125 active line standards of 1080 and 1035
- Video bandwidth: Y: 26MHz, PB/PR: 8.6MHz
- Video quantization: Input/output interface: 10 bits; Bit reduction: 8 bits
- Audio sampling frequency: 48kHz
- Frequency response: 20Hz–20kHz
- Audio quantization: 20 bits/sample
- Dynamic tracking range: -1X to +2X normal playback speed

HDS-7000 High Definition Digital Video Switcher (Preliminary)

- High quality digital video signal processing with 74.25MHz/10-bit sampling rate; for use with High Definition Video System
- Specially designed for both live and post-production editing operation
- Integrated with a 3-M/E (Mix/Effect) bank system and 30 HD SDI (High Definition Serial Digital Interface) primary inputs
- 2 powerful key processors and a color background generator are standard on each M/E bank, and a high quality chromakeyer is available as an option
- Various mix and wipe effects
- Frame memory and RGB color correction function
- All video inputs and outputs are by HD SDI, using coaxial cable for wiring convenience and high quality transmission
- System interface with peripheral equipment such as HDME-7000 HD Digital Multi-Effects and BVE-9100 Editing System allows convenient system configuration
- Superb man-machine interface for both live and editing operations derived from Sony's DVS-7000 Digital Video Switcher
- Accepts various formats/operational modes: 1125/60 or 1125/59.94 operation; 1080 or 1035 active line operation; and 16:9 or 4:3 mode switchable operation

HDME-7000 High Definition Digital Multi-Effects (Preliminary)

- High quality digital video signal processing with 74.25MHz/10-bit sampling rate; for use with High Definition Video System
- Provides a variety of attractive effects—inherits many of the effects of the Sony DME Series
- Advanced man-machine interface employs track ball, Z-ring and familiar color-coded GUI derived from the Sony DME Series for quick, easy operation
- System interface with peripheral equipment such as HDS-7000 HD Digital Video Switcher and BVE-9100 Editing System allows convenient system configuration
- Compact, unique 2-channel-DMEs-in-1-chassis design saves space, reduces power consumption and simplifies cable installation
- All video inputs and outputs are by HD SDI, using coaxial cable for wiring convenience and high quality transmission
- Accepts various formats/operational modes: 1125/60 or 1125/59.94 operation; 1080 or 1035 active line operation; and 16:9 or 4:3 mode switchable operation

Call For Pricing

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



DVR-2100/DVR-2000 D-1 Component Digital Videotape Recorders

- 8 RU high, weighs 154.5 lbs. and has a power consumption of 450W
- Accepts small, medium and large sized cassettes with a maximum recording time of 94 minutes
- Dynamic Tracking Heads™ on the DVR-2100 permit broadcast quality, variable speed playback from -1 to 2X normal speed, including still and slow motion modes
- Equipped with only the digital input and output ports for video and audio, to integrate the VTR effectively into a component digital system
- Both parallel and serial A/V digital I/O ports are provided, 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
- Enhanced editing functions
- Special editing modes for animation recording, pin-registered film-to-tape transfer and sequential playback using 2 DVR-2100s
- 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

DVR-2100	\$140,000.00
DVR-2000 Same as the DVR-2100 except without Dynamic Tracking	120,000.00

D-1SP Mastering System

- Allows a standard D-1 format 625/50 recording to be played back as either a 625/50 or a 525/59.94 standard video data stream
- Consists of a D-1SP VTR and a DVPC-3232 playback adaptor

DVR-2100SP/2000SP Enhanced 4:2:2 D-1 Videotape Recorders

- Derived from the DVR-2100 and DVR-2000
- Will record and play back a parallel data stream formatted in the style of EBU Tech 3246, with a nonstandard field rate that is in the range of 47.95 to 48Hz
- Provides full support of the DVPC-3232 in all its operational modes

DVR-2100SP	\$145,000.00
DVR-2000SP Same as the DVR-2100SP, except without Dynamic Tracking	125,000.00

DVPC-3232 Frame-Based Image Processor/Playback Adaptor

- Playback adaptor for the D-1SP VTRs
- Intended for use with frame-based video
- Will take an input video data stream and convert it from a 625 line, parallel data stream with a variety of field rates to a standard 525/59.94 data stream
- High quality, dual standard, composite encoded, analog output

DVPC-3232	\$47,500.00
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DVR-28/DVR-20 D-2 Composite Digital Videotape Recorders

- DVR-20 is a 94-minute recorder, which accepts small and medium sized cassettes
- DVR-28 is a 208-minute VTR that accepts small, medium and large sized cassettes and is intended for the most advanced recording and editing applications
- An advanced tape transport design features Ultrasonic (US) guides, which decrease the friction between the tape and guide, resulting in high response operation in jog, still and shuttle modes
- An advantage of increased responsiveness is the ability to quickly locate and precisely make in/out editing point decisions
- The adoption of US guides also contributes to reducing servo lock-up times from the standby ON mode
- Incorporates digital jog sound, which provides excellent quality recovery of the digital audio channels while in the jog mode
- The monitoring system offers channel condition monitoring and error message logger systems
- When an error occurs during the recording or playback mode, the operator is alerted via an error message displayed on a diagnostics menu
- This Error-Logger feature, which alleviates the need for real time observation of the condition of the VTR, captures errors, warnings and other conditions by time code location for later analysis and printout, if needed
- An ultralinear A/D video converter enables the DVR-20/28 series to provide excellent differential and integral linearity characteristics while working in an analog environment
- Units use a high resolution audio A/D converter at 20 bits/sample for all 4 digital audio channels to achieve a wide dynamic range of 105dB
- Use of ADSPs (Audio Digital Signal Processors) in the audio signal processing block allow audio signals to be handled at a 20-bit sampling rate
- Multiloop test feature
- Dynamic Tracking Heads extend the high quality video applications for these recorders, allowing broadcast quality video to be reproduced within the range of -1 to 3X 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 play of all 4 digital audio channels within the range of ±15% normal speed in increments of 0.1%.



DVR-28	\$88,000.00
DVR-20	65,500.00

DVR-P28/FLX D-2 Composite Digital Player

Player only version of the DVR-28 for Flexicart \$62,380.00

DVR-P20/FLX D-2 Composite Digital Player

Player only version of the DVR-20 for Flexicart \$42,330.00

DVR-2 D-2 Digital Videotape Recorder

- Designed primarily for electronic field production
- Can be connected to the BVP-70 or any other camera outfitted with 26-pin connectors, including Betacam SP® cameras
- Mic and line level audio inputs
- Phantom power for microphones
- Backspace editing capability
- Accepts both small (32 minutes of recording time) and medium cassettes (90 minutes of recording time)
- High performance system, uses advanced electronic chips to provide a broadcastable picture with full error correction and error concealment
- Video bandwidth of 6MHz
- Video S/N ratio of 54dB
- Shuttle speed at 16X play speed
- 65W power consumption
- Battery life of 100 minutes

DVR-2	\$46,800.00
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ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



DVW Series Component Digital Betacam® VTRs

High Quality Digital Audio

▀ Provides the capability to record 4 channels of 20-bit digital audio signals, which can be independently editable ▀ To ensure wide dynamic range for analog audio signals, super linear A/D and D/A converters are used for Digital Betacam, achieving high resolution and dynamic sound quality

Long Recording Time

▀ Adoption of the coefficient recording technology achieves longer recording time than the current Betacam format ▀ While a large cassette provides a maximum recording time of 124 minutes, a small cassette supports up to 40 minutes of recording

Betacam SP Playback Capability

▀ DVW-A500 and DVW-A510 have the capability to play back tapes which are recorded in the current Betacam SP (metal/oxide tape) format without compromising any performance ▀ This compatibility is highly beneficial for users to utilize existing tape archives while realizing many advantages of digital technology ▀ A current system can be upgraded from analog to digital step-by-step or all at once ▀ Automatic detector inhibits accidental recording on Betacam SP cassette tapes

Serial Digital Interface

▀ Equipped with SDI (Serial Digital Interface) which conforms to the SMPTE 259M ▀ A 4:2:2 component digital video signal embedded with 4 channels of digital audio signals is carried via a single coaxial cable allowing simple connection with other SDI-equipped devices, including Sony DVS Series switchers ▀ SDI also gives the benefit of long distance transmission up to 200 meters without extra hardware, which is much farther than parallel digital signals can reach

Digital Jog Sound

▀ Complete reproduction of 4 channels of digital audio is achieved in the range of -1 to +1X normal playback speed even in the jog mode

High-Speed Picture Search

▀ Recognizable color pictures can be obtained even in shuttle mode at up to approximately ± 50X normal playback speed, allowing for quick search for the desired picture

Dual Dial Operation

▀ Adopts a dual dial operation to select jog and shuttle modes ▀ Mode can be switched by pressing the search dial in the same manner as current Betacam VTRs

Dynamic Tracking™ Playback

▀ Provides broadcast quality pictures over the range of -1 to +3X normal playback speed ▀ DVW-A500 and DVW-A510 can also provide DT playback of analog signals from Betacam tapes in the same range

Program Play

▀ Allows video recordings to be reproduced within the range of ±15% normal speed in increments of 0.1%

▀ With BKDW-507 optional audio program play board installed, 4 digital audio signals can also be compressed or extended with pitch control along with video ▀ This is useful to change the duration of a program in order to fit into an allocated time period of longer or shorter duration

Read-Before-Write; Preread Editing Capability

▀ In the DVW-A500 and DVW-500, DT playback heads for digital signals are located ahead of the record heads on the head drum ▀ Previously recorded video and audio signals are read by these DT heads, enabling the signal to be instantly re-recorded onto the same track after signal processing by external equipment

Digital Audio Crossfade

▀ DVW-A500 and DVW-500 recorders are equipped with a digital audio crossfade system, which achieves smooth audio transition during audio insert editing ▀ Previously recorded audio signals are read by advance DT heads and immediately re-recorded onto the same track after being mixed with the input audio signal ▀ Crossfade duration can be selected

Automatic Equalizer

▀ Digital Betacam VTRs employ an automatic equalizer to optimize reproduction of digital data by adjusting gain and phase of the off-tape RF signal ▀ With powerful error correction and concealment capability, this automatic equalizer supports accurate reproduction of video and audio data, ensuring stable picture and sound quality

Auto Edit Tracking

▀ The DVW-A500 and DVW-500 have an automatic edit tracking system for accurate tracking during editing ▀ When in the preroll mode, recording heads play back pre-recorded video tracks and their tracking is automatically optimized by referring to this off-tape RF signal ▀ This secures precise tracking for editing and also minimizes the need for manual tracking adjustment, achieving efficient editing

- DVW-500 Editing recorder (digital only) \$51,500.00
- DVW-510 Player (digital only) 39,000.00
- DVW-A500 Editing recorder (analog/digital) 59,500.00
- DVW-A510 Editing player (analog/digital) 44,500.00

DVW-250 Digital Betacam Portable VTR

▀ Equipped with 10-bit analog component/composite video A/D converter ▀ 20-bit high quality digital audio signal is recorded on 4 channels ▀ Compact and lightweight (14 lbs., 8 oz.) ▀ Low power consumption of approximately 26W ▀ Continuous DC supply with automatic switching between external and internal batteries ▀ Up to 124 minutes of recording/playback time using L-size digital Betacam cassette ▀ Full-color video and audio confidence playback capability ▀ High-speed picture search provides a recognizable picture at up to ±8X normal speed in color (2/5/8X selectable) and up to ±24X normal speed color in fast forward/rewind mode ▀ Large LCD display for audio level meter, channel condition, video level meter and menu setting indications ▀ Accurate backspace editing capability ▀ Can be used in a simple editing system via a 9-pin remote control interface ▀ Color freeze frame capability ▀ Versatile inputs/outputs

DVW-250 \$33,450.00

DVW-522 Digital Betacam Player

▀ Playback time greater than 124 minutes using L-size digital Betacam cassette ▀ 2-way dial control of jog and shuttle modes ▀ High-speed picture search ▀ Dynamic Tracking playback delivers high quality picture over the range of -1 to +3X normal playback speed ▀ Setup menus for basic operational parameters ▀ LTC, VITC, CTL and user bit information may be superimposed on the playback picture via either video or RF output

DVW-522 \$20,000.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





DNW-A100 Digital Video Hybrid Recorder

- Combines digital tape and digital disc recording in a single unit
- Functions as a stand-alone "cuts-only" editing system
- Control panel operates basic editing functions on both hard drive and tape with jog/shuttle dial
- Tape material can be selected with Mark IN and mark OUT and downloaded to the hard drive for accurate edit cuts
- Connect the DNW-A100 to the DLE-110 Live Editor and GUI-based nonlinear editing can be performed on-line
- Can be used as a buffer to preselect materials for recording to a hard-drive server which makes the storage capacity of a server system more manageable
- Audio and video material may be transferred at faster than real time from buffer to server
- Through an SDDI interface images can be pooled from the recorder directly to the A/V server at up to 4 times normal speed
- Can be used as an archiving recorder
- Maintains analog playback capability
- Superb picture quality of the Betacam SX format
- 8-bit, 4:2:2 component digital recording complying with MPEG2 4:2:2P@ML
- 4-channel, 16-bit/48kHz digital audio
- Compact and lightweight
- Equipped with SDI I/O for simple connection with other SDI-equipped devices
- Analog Betacam/Betacam SP™ playback capability
- 90-minute recording on the built-in hard drive disk
- High-speed picture search with VTR: ±50 times normal play speed
- High-speed picture search with HDD: ±100 times normal play speed
- Jog speed control over a range of -1 to +1 times normal play speed
- 2 editing modes: full edit and simple edit modes
- Voice-over recording function
- 525/60, 625/50 switchable

.....\$49,500.00



DNW-A45

DNW-A50/A45 Digital Video Hybrid Recorders

- Cost-effective digital video hybrid recorders without SDDI interfacing and high-speed tape/disk operation
- Can be utilized in applications not requiring high-speed capability

DNW-A50

- Equipped with a hard disk drive capable of 90-minute recording

.....\$34,500.00

DNW-A45

- Equipped with built-in hard disk drive capable of 45-minute recording

.....\$29,900.00



DNW-30

DNW-A30/30 Digital Video Cassette Player

- Designed for easy integration into current analog systems
- Can be installed in the current Sony Flexicart® multicassette systems
- Record in the Betacam SX format, which records 8-bit, 4:2:2 component digital signals using an advanced compression algorithm
- Preserves 507 active lines per frame as well as vertical blanking signal information
- Supports 4-channel, 16-bit/48kHz digital audio
- DNW-A30 has the capability to play back analog Betacam and Betacam SP recordings made on oxide or metal particle tape
- Both S-size (provides up to 60 minutes of playback time) and L-size (provides up to 184 minutes of playback time) cassettes can be used
- Simple, user-friendly operation
- High-speed picture search available in shuttle mode at up to 50 times normal play speed in forward and reverse directions
- Variable speed playback is also available over the range of -1 to +1 normal play speed
- Jog speed control available over the range of -1 to +1 times normal play speed
- Built-in self-diagnostic system
- Incorporates an Automatic Alignment System to maximize the accurate reproduction of digital data
- Automatic RF equalizer optimizes the gain and phase of off-tape RF signals
- SDI, component and composite outputs are all switchable from 525/60 to 625/50
- 2 SDI output ports
- 3 analog composite outputs
- Outputs for 4 channels of analog audio
- Remote control through Sony 9-pin remote interface
- RS-232C remote control
- 15-pin video control port through which the video processor can be adjusted from an optimal BVR-50 video processor controller

DNW-A30 Features capability to play back tapes recorded in the analog Betacam and Betacam SP formats . . . \$24,000.00

DNW-3020,000.00

DNW-A22 Digital Videocassette Player

- Simple player for viewing recorded and edited tapes
- Superb picture quality of the Betacam SX format
- Analog Betacam/Betacam SP playback capability
- Preserves 507 active lines per frame as well as vertical blanking signal information
- Supports 4-channel, 16-bit/48kHz digital audio
- Can use both S-size (provides up to 60 minutes playback time) and L-size (provides up to 184 minutes playback time) cassettes
- Simple operation from the control panel with jog/shuttle dial
- Using optional RF adaptor, pictures and audio can be monitored using a conventional television receiver
- Automatic alignment system
- High-speed picture search: ±50 times normal play speed
- LTC, VITC, CTL and user-bit information may be superimposed on the playback picture
- 525/60, 625/50 switchable

.....\$12,500.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



BETACAM SP RECORDERS/PLAYERS

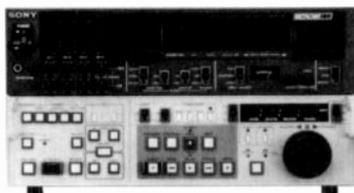


SONY®

Business and Professional Group

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 +2X 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
- 66 lbs.



BVW-75 \$44,000.00

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 a single coaxial cable, greatly 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 +3X normal speed
- High-speed picture search provides recognizable color pictures at up to 10X 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-sized cassette
- Built-in, sophisticated self-diagnostics



BVW-D75 \$37,000.00

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 time code reader and time base corrector
- Built-in character generator and characters can be superimposed via Video Output 3
- Free from color framing as long as the recording component signals are fed directly from the component signal source
- RS-422 serial interface and 36-pin parallel interface
- Recording capability
- Built-in editing facility
- 225W power consumption
- 2 independent SC-H phase indicators for composite input and output
- 66 lbs., 2 oz.
- 5 rack units high



BVW-70 \$39,500.00

BVW-D265 Betacam SP Player

- Dynamic tracking head offers 4fsc serial composite digital output for direct video and audio signal transmission to D-2
- The serial digital signal carries digital video as well as 4 channels of embedded digital audio
- Component analog video outputs, AES/EBU digital audio outputs and analog outputs of the same channels for interface to existing equipment

BVW-D265 \$42,600.00

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
- RS-422 serial interface and 36-pin parallel interface
- Dynamic motion control (DMC) playback which, when activated, will allow the BVW-65 to memorize the tape speed trajectory for noiseless playback picture within the Dynamic Tracking range of -1 to +2X normal speed
- 175W power consumption
- 61 lbs., 11 oz.
- 5 rack units high

BVW-65 \$34,000.00

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
- 160W power consumption
- High-speed picture search
- Built-in time code reader and time base corrector
- Built-in character generator and characters can be superimposed via Video Output 3
- RS-422 serial interface and 36-pin parallel interface
- 59 lbs., 8 oz.
- 5 rack units high

BVW-60 \$29,000.00

BVW-50 Portable Betacam SP Recorder/Player

- 90-minute recording/playback time and a 50% reduction in power consumption
- Built-in time base corrector
- Continuous operation for up to 200 minutes on 1 fully charged BP-90A or up to 180 minutes on 2 fully charged NP-1Bs
- 4 audio channels consisting of 2 longitudinal and 2 AFM channels
- Longitudinal audio provided with Dolby™ C type noise reduction (NR) 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 allows connections to Betacam SP studio decks
- Built-in time code generator/reader; time code genlock capability
- Input using component or composite signals
- Automatic back space editing



BVW-50 \$18,300.00

BVW-22 Betacam SP Player

- Plays back Betacam SP (metal particle) and conventional Betacam (oxide) videotapes
- Plays back S-sized 5/10/20/30 and L-sized 60/90 minute videotapes
- Front-loading function, convenient for limited spaces
- 4 audio channels feature 2 linear channels with Dolby C type NR and 2 AFM channels
- Dolby NR is automatically switched on when a metal tape is played and switchable when an oxide tape is played
- RM-770 wired/wireless remote control, supplied
- Recognizable monochrome pictures at 3.5X speed in search mode with instant lock-up
- Built-in RF modulator allows monitoring audio/video on ordinary TV receiver tuned to CH3 or CH4
- Superimpose function superimposes time code, CTL and user bit data on the monitor through the video, RF or monitor outputs, selectable on/off
- LED display shows TC, CTL, user bit, error messages or adjustment modes
- Compact and rackmountable (4 units high)

BVW-22 \$7,500.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

See Our Ads on Pages 12-15





Betacam SP™ 2000 Pro Series PVW-2800 Recorder/Player

- More than 90 minutes of recording/playback time using L-sized metal (for both recording and playback) or oxide (for playback only) cassettes
- High-speed picture search provides recognizable color pictures at up to 10X normal speed in forward and reverse (24X 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 Dynamic Tracking™ function)
- Built-in time base corrector with advanced high quality digital dropout compensator
- 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 units high, 19" rackmountable, approximately 55 lbs.)
- Low power consumption (130W) **\$20,500.00**



PVV-3 Betacam SP 2000 Pro Dockable Recorder/Player

- When combined with the DXC-D30 3/8" 3-CCD camera, the PVV-3 becomes the PVW-D30L camcorder
- The use of 2 tracks eliminates cross-color and cross-luminance effects inherent in composite recording
- Displays remaining battery power and tape length both on the LCD panel and a viewfinder
- Real time calendar recording system
- Easily integrates with Anton/Bauer lighting equipment to enhance system versatility
- Built-in loudspeaker and external microphone power supply
- Frame-accurate backspace editing
- Also docks with DXC-637 and DXC-327B. **\$10,400.00**



PVW-2650 Player With Dynamic Tracking

- Superior picture quality, inherent in the Betacam SP format
- Dynamic Tracking provides broadcast quality noiseless playback within -1 to +3X normal speed
- More than 90 minutes of playback time using L-sized cassettes with metal or oxide tape
- High-speed picture search provides recognizable color pictures at up to 10X normal speed in forward and reverse (24X in monochrome)
- 2 longitudinal audio channels with Dolby C type NR system
- Direct RS-422A 9-pin interface with other RS-422A equipped Sony machines (Betacam/Betacam SP VTRs, BVU series U-Matics)
- Built-in time base corrector with digital dropout compensator
- Built-in LTC/VITC/user bits reader
- 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 units high, 19" rackmountable, approximately 55 lbs., 2 oz.)
- Low power consumption (130W) **\$19,480.00**

PVW-2600 Editing Player

- More than 90 minutes of playback time using L-sized cassettes with metal or oxide tape
- High-speed picture search provides recognizable color pictures at up to 10X normal speed in forward and reverse (24X 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
- Built-in time base corrector with digital dropout compensator
- Built-in LTC/VITC/user bits reader
- Built-in character generator
- 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 units high, 19" rackmountable, approximately 54 lbs.)
- Low power consumption (110W) **\$13,640.00**

VA-300 Betacam SP VTR Playback Adaptor

- Provides full-color picture and 2-channel audio playback for recording checks on a TV monitor or microwave transmission in the field
- Equipped with time base stabilizer, which provides high quality dropout compensation and highly stable video images
- External sync lock
- Compact, lightweight and low power consumption
- Both composite and S-Video outputs are provided. **\$2,500.00**



BVV-5 Betacam SP Recorder Unit

- Simultaneous playback of video and audio
- Can be operated as a combo camcorder when connected to BVP Series camera, 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. **\$15,300.00**



Optional Accessories for BVV-5

VA-500 Playback Adaptor

- When connected to the BVV-5 via a 20-pin connector, the BVV-5 can provide color playback and outputs either VA-500 or VHF RF signals **\$3,650.00**

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 . . **\$3,300.00**

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



BETACAM SP RECORDER/PLAYERS



SONY®

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UVW-1600

UVW-1200 Player

Includes common features, plus: ■ Built-in SMPTE time code (LTC/User-bit) reader ■ Y/R-Y/B-Y component signal output via BNC connectors are switchable to RGB output connector ■ S-Video (Y/C separate) output connector ■ Auto repeat function ■ 4RU high, approx. 17.5kg ■ Low power consumption (63W) \$5,670.00



UVW-1800 Betacam SP Editing Recorder/Player

■ Outstanding picture quality thanks to the Betacam SP format
 ■ More than 90 minutes of recording and/or playback time using L-sized Betacam SP cassettes ■ 2 longitudinal audio channels with Dolby C type noise reduction system shown in bargraph indicators
 ■ Frame-accurate editing: assemble and insert (video, audio CH-1, audio CH-2 and time code) editing capability when controlled from optional RS-422A equipped editing controller unit ■ Dedicated longitudinal time code track ■ Built-in time base corrector with advanced high quality digital dropout compensation ■ Built-in SMPTE time code (LTC/User-bit) generator and reader ■ RS-422A 9-pin interface ■ Y/R-Y/B-Y component signal input and output via BNC or 12-pin DUB connectors ■ S-Video (Y/C separate) input/output connectors ■ Optional TBC remote control unit UVR-60
 ■ High-speed picture search provides recognizable color pictures at up to 5X normal speed in forward and reverse (16X in monochrome) ■ Built-in character generator to monitor display information such as VTR status, time code, self-diagnostic message, setup menu, etc. ■ Initial setup menu to preset various detailed operational parameters ■ Digital hours meter ■ Built-in self-diagnostics with detailed warning messages ■ Compact and lightweight (4RU high, approx. 19kg), 19" rackmountable ■ Low power consumption (85W) \$10,350.00

UVW Series Betacam SP Recorder/Players

Common Features

■ Outstanding picture quality thanks to the Betacam SP format
 ■ More than 90 minutes of recording and/or playback time using L-sized Betacam SP cassettes ■ 2 longitudinal audio channels with Dolby™ C type noise reduction system shown in bargraph indicators ■ Dedicated longitudinal time code track ■ Built-in time base corrector with advanced high quality digital dropout compensation ■ High-speed picture search provides recognizable color pictures at up to 5X normal speed in forward and reverse (16X in monochrome) ■ Built-in character generator to monitor display information such as VTR status, time code, self-diagnostic message, setup menu, etc. ■ Initial setup menu to preset various detailed operational parameters ■ Digital hours meter ■ Built-in self-diagnostics with detailed warning messages ■ Compact and lightweight, 19" rackmountable

UVW-1700G CG Frame Recorder

Includes common features, plus: ■ Especially designed for CG application ■ Frame-accurate insert editing (video only) capability when controlled from optional RS-422A equipped editing controller or computer via RS-232C ■ Built-in SMPTE time code (LTC/User-bit) generator and reader ■ RS-232C D-sub 25-pin interface/RS-422A 9-pin interface for external equipment (switchable) ■ Y/R-Y/B-Y component signal inputs and outputs via BNC connectors are switchable to RGB input/output connector ■ Both separate sync and sync-on-green channel connectors ■ S-Video (Y/C separate) input/output connectors ■ Trigger remote out for video printers (stereo mini jack) ■ 4RU high, approx. 19kg ■ Low power consumption (85W) \$9,530.00

UVW-1600 Editing Player

Includes common features, plus: ■ Built-in SMPTE time code (LTC/User-bit) reader ■ RS-422A 9-pin interface ■ Y/R-Y/B-Y component signal output via BNC or 12-pin DUB connector ■ S-Video (Y/C separate) output connector ■ Optional TBC remote control unit UVR-60 ■ 4RU high, approx. 18kg ■ Low power consumption (65W) \$8,830.00

UVW-1400A Recorder/Player

Includes common features, plus: ■ Built-in SMPTE time code (LTC/User-bit) generator and reader ■ 25-pin remote control interface complied with RS-232C interface for external computer operation ■ Y/R-Y/B-Y component signal inputs and outputs via BNC connectors are switchable to RGB input/output connector ■ Both separate sync and sync-on-green channel connectors ■ S-Video (Y/C separate) input/output connectors ■ Foot switch control capability for scientific research ■ Trigger remote out for video printers (stereo mini jack) ■ Backspace editing for smooth transitions between scenes with optional remote controller or computer via RS-232C interface ■ Auto repeat function ■ 4RU high, approx. 19kg ■ Low power consumption (85W) \$7,730.00

UVW Series Accessories

VBX-10	Component color corrector for UVW Series	\$6,000.00
UVR-60	TBC remote controller for UVW-1800/1600	670.00
SVRM-100A	Remote control unit for UVW Series	335.00
RMM-130US	Rackmount unit for UVW Series	200.00
RCC-30G/US	RS-422 remote control cable (30m) for UVW-1800/1600	250.00
RCC-10G/US	RS-422 remote control cable (10m) for UVW-1800/1600	150.00
RCC-5G/US	RS-422 remote control cable (5m) for UVW-1800/1600	120.00
VDC-C5/US	12-pin dubbing cable (5m) for UVW-1800/1600	114.00
SYC-5	S-Video cable (5m) for UVW-1400A	42.25
SYC-2	S-Video cable (2m) for UVW-1400A	35.00
FS-20	Foot switch for UVW-1400A	25.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



VO-9850

VO-9850/9800 U-Matic® SP Videocassette Recorder/Players

- Dolby™ C noise reduction ▪ 9-pin RS-422 serial interface
- TBC connection ▪ Jog/Shuttle dial operation $\pm 1/16$ X to 8X ▪ 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 ▪ 5RU high ▪ 47 lbs., 2 oz.

- VO-9850 With full automatic assemble and insert editing \$12,200.00
- VO-9800 Without full automatic assemble and insert editing 8,000.00
- BKU-705 Time code generator/reader for VO-9850 . . . 1,575.00
- BKU-704 Time code reader for VO-9850/9800 1,225.00
- BKU-703A 33-pin editing interface board for VO-9850/9800 550.00



VO-9600 U-Matic SP Videocassette Recorder/Player

- Dolby C noise reduction with auto detection ▪ XLR connectors for balanced audio input/output ▪ Audio dubbing on channel 1 ▪ System versatility ▪ Sendust Head for improved S/N 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 ▪ 4U high, rackmountable ▪ Still picture ▪ Quick start ▪ Self-diagnostic functions ▪ 7.6"H x 16.7"W x 19.3"D ▪ 37.5 lbs. \$5,550.00

VP-9000 U-Matic SP Videocassette Player

- Automatic SP mode detection system ▪ Dolby C noise reduction with auto detection ▪ Sendust Head for improved S/N ratio ▪ 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 ▪ 4U high, rackmountable ▪ Still picture ▪ Quick start ▪ Self-diagnostic functions ▪ 7.6"H x 16.7"W x 19.3"D ▪ 37.5 lbs. \$4,025.00

VO-8800 U-Matic SP Portable Videocassette Recorder/Player

- Dolby C 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. \$5,350.00

- VO-8800 PAC TC VO-8800 plus BKU-706 plug-in time code generator \$6,600.00
- BKU-706 Plug-in time code generator for VO-8800 . . . 1,475.00
- CMA-8A AC adaptor for VO-8800 and camera 720.00
- LC-8800 Carrying case for VO-8800 350.00
- AH-8800 Carrying handle for VO-8800 116.00

VP-7020 U-Matic Videocassette Player

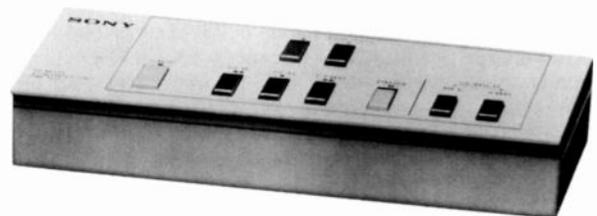
- Frame code and RS-232C interface capability ▪ Long pause with tape protection ▪ Timer operation. \$2,450.00

VP-7040 U-Matic Videocassette Player

- PAL/SECAM/modified NTSC. \$3,450.00

Accessories for U-Matic Recorders/Players

- BKU-701 Interface Board**
 - Computer interface board, which reads frame code and provides an RS-232C interface for Type 7 and 9 U-Matics \$500.00
- BKU-702 Interface Board**
 - 33-pin parallel interface board for Type 7 and 9 U-Matics . . . \$630.00
- IF-500 Interface Box**
 - Multiple interface box, enables interfacing between Sony VO/VP, SLO, BVH, BVU, BVW, BVE series. \$1,675.00
- RFK-634 RF Modulator**
 - Switchable CH3/CH4 RF modulator for Type 7 and 9 U-Matics \$174.00
- RM-580 Remote Control Unit**
 - Bidirex search dial ▪ LED tape timer, includes frame counts ▪ DC operation (power supplied from VTR) ▪ Preroll start jack for remote start ▪ 10'-60' cable. \$1,075.00



- RM-500 Remote Control Unit**
 - DC operation (power supplied from VTR) ▪ 10'-60' cable . . \$340.00
- RM-690 Wired Remote Control Unit**
 - For VO-8800, Type VII U-Matics, VP-9000, VO-9600 and BVU-150 ▪ Handheld ▪ Wired operation \$193.00
- RM-770 Remote Control Unit**
 - For VO-8800, Type VII U-Matics, VP-9000, VO-9600 and BVU-150 ▪ Handheld ▪ Wired or wireless operation \$217.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

Hi8/8mm/RECORDER/ PLAYERS



SONY®

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EVO-9850 Hi8 Recorder/Player

- Video Hi8 format for excellent picture quality
- Full editing capability: assemble and insert (Video/PCM-1/PCM-2/Time Code) editing mode
- Built-in TBC (8 bits, 4fsc) controlled from the optional remote control unit
- Digital noise reduction (chrominance and luminance noise reducer)
- Frame-accurate time code based editing capability: 0 frame accuracy
- Quick response mechanism
- SMPTE time code IN/OUT interface (optional)
- Built-in 8mm time code generator/reader
- Pulse Code Modulation (PCM) digital and Audio Frequency Modulation (AFM) stereo audio recording systems
- JOG/SHUTTLE dial for picture search
- Dial menu operation
- 9-pin remote connector (RS-422A)
- PCM audio monitoring capability in the JOG search mode
- Optional Sony 33-pin remote interface
- 8mm DUB IN/OUT (7-pin) connectors
- U-Matic® DUB OUT (7-pin) connector
- S-Video in/out connectors
- 19" rackmountable, 3U high

..... \$7900.00



EVO-9720 Hi8 Recorder/Player

- Twin-deck desktop editor
- 7.0MHz high luminance FM carrier frequency along with wide 2.0MHz frequency deviation provides 400 TV lines horizontal resolution
- Digital noise reduction (YNR/CNR)
- Digital DOC (Drop-Out Compensator)
- S-Video in/out connector
- High fidelity audio
- RS-232C interface ports
- External sync input
- GPI out terminal
- Provides 2 ways to assemble editing when using the supplied RM-E9720 edit controller—Quick Edit or Program Edit
- Slow/freeze edit function
- Black/white fader
- 8mm time code generator/reader and RC time code read capability
- Audio signal flow indicator
- Background color generator
- Still timer
- PCM/AFM audio mix ratio volume

..... \$7850.00

EVO-9500A Hi8 Videocassette Recorder/Player

- Video Hi8 format for 400 TV lines of resolution
- Video Hi8 and standard 8mm format recording/playback capability
- PCM digital stereo and AFM recording systems
- Auto repeat function
- Dual azimuth 4-head design provides clear, still and slow motion pictures
- Control-P terminals for multiple VTR operation
- Additional audio recording on the PCM sound track
- 8mm time code insertion/overwrite capability
- Wireless and wired remote control using optional remote control unit
- Timer REC or PLAY operation from an external AC timer
- S-Video in/out connectors (4-pin DIN) to reduce cross color and dot interference

..... \$3300.00

RM-S52A Wired/wireless remote control unit 365.00

GV-S50 8mm Video Walkman™

- Available with or without TV tuner
- Full VCR recording and playback capabilities
- Up to 5-hour recording on a cassette
- Video/audio input/output for editing and playback through home TV
- 4" active-matrix color LCD display
- AFM Hi-Fi stereo with Mega Bass® sound
- Full-function 8mm VCR
- 5-hour recording on one 8mm videocassette
- Flying Erase™ head for noise-free picture transitions and smooth editing inserts
- Video/Audio input/output for connection to any camcorder or VCR
- TV tuner section comes with detachable cable compatible TV tuner pack
- 6-event, 10 month programmable timer on tuner pack
- 990 channel TV tuner presets
- RF signal boost
- External antenna jack
- Dimensions with tuner pack attached: 3 1/4"H x 7"W x 5"D

GV-S50 With tuner \$1299.00

GV-S50BSN Without tuner 1200.00

EVO-220VID 8mm Recorder/Player

- Quasi playback capability of Hi8 recorded tapes
- SP/LP mode recording
- Quick-start recording, AFM Hi-Fi stereo audio recording
- Bilingual or stereo program sound monitoring
- AC/DC operation

..... \$1025.00

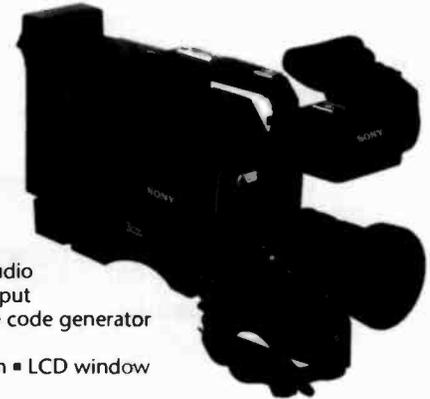


EVV-9000 Hi8 Dockable Recorder

- Docks to the Sony DXC-637/537A/327A/325 3-CCD color video cameras to form a compact, lightweight camcorder
- 400 TV lines of resolution
- Video Hi8 and standard 8mm format recording/playback capability
- Y/C separate video input
- PCM and AFM audio
- XLR balanced audio connectors
- Mic/line input selectable
- Built-in time code generator (DF/NDF selectable)
- Record/review function
- LCD window
- Built-in ear speaker
- RF out

..... \$3800.00

VA-90 VTR adaptor for EVV-9000 1050.00



EV-C200 8mm/Hi8 Recorder

- SP record mode
- Tape stabilizer
- Head cleaner
- Auto tracking
- Linear time counter
- High-speed rewind
- Remote included
- Flying Erase head
- Skip scan
- Commercial skip, frame advance/reverse, 2X fast play, edit switch and Control-L

..... \$699.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

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S-VHS/VHS RECORDERS/PLAYERS/ CONTROL UNIT



SVO-5800 S-VHS Recorder/Player

- Built-in time base corrector ▪ Chroma process improvement
- 4-channel audio playback system ▪ Dolby™ noise reduction
- Frame-accurate editing ▪ Built-in SMPTE time code reader ▪ 9-pin remote interface ▪ Character superimposition ▪ On-screen setup menu ▪ Correspondence to 16:9 wide screen ▪ Auto head cleaner
- S-Video signal output (4-pin DIN) \$5850.00

SVP-5600 S-VHS Player

- Same as the SVO-5800, except player only version \$4325.00

Accessories

- UVR-60 Time base remote control \$670.00
- SVBK-170 Component output board 590.00
- RMM-980 Rackmount kit 340.00
- SVRM-100A Control-S remote control unit 335.00
- RCC-30G/US RS-422 cable, 30m. 250.00
- RCC-10G/US RS-422 cable, 10m. 150.00
- RCC-5G/US RS-422 cable, 5m. 120.00
- SYC-5 15' cable 42.25
- SYC-2 6' cable 35.00



SVO-2100 S-VHS Videocassette Recorder

- Designed for business and industrial applications as well as professional video production ▪ S-VHS recording format and Hi-Fi stereo audio system (4-channel audio recording) ensure high quality picture and sound performance ▪ When used with the FXE-100 or FXE-120 (via the optional SVBK-10 RS-232C interface board), frame-accurate editing based on time code can be performed
- Auto head cleaner ▪ Continuous auto repeat playback
- Simultaneous recording via the video-in connector or video-through connector ▪ 1-time playback possible ▪ Power on recording/playback capability ▪ Audio insert editing \$2100.00
- SVBK-10 RS-232C interface 600.00

SVO-2000 S-VHS Editing Recorder/Player

- Audio/video insert editing ▪ Assemble editing ▪ Auto repeat playback ▪ VCR Plus ▪ 400 lines horizontal resolution ▪ Hi-Fi stereo audio ▪ Adaptive picture control system automatically tests an inserted tape and checks the condition of the video heads ▪ Control edit 5-pin terminal ▪ Synchronized editing ▪ Dual mode shuttle control ▪ Index search ▪ Auto head cleaner ▪ Digital auto tracking
- Key inhibit function ▪ 181-channel frequency synthesized TV tuner
- Linear time counter ▪ Hook hole is provided for the VCR to be chained for security \$1490.00

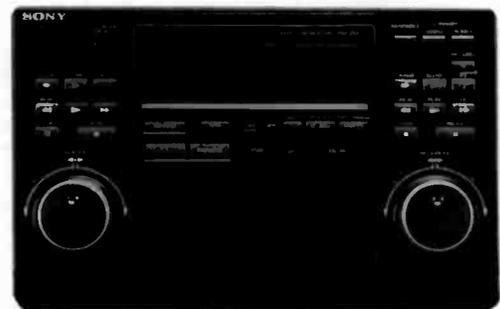


SVO-9600 S-VHS Hi-Fi Recorder/Player

- 4-channel audio system (2 Hi-Fi/2 normal channels with Dolby NR)
- 90dB of wide dynamic range in Hi-Fi recording ▪ Auto repeat/auto rewind/counter memory function by programmed operation ▪ Timer "play" function for unattended VTR operation ▪ S-Video out connectors—4-pin DIN ▪ Sync "in" connector (BNC) \$3425.00

SVP-9000 S-VHS Hi-Fi Player

- Same as the SVO-9600, except player only version \$2725.00



RM-250 Editing Control Unit

- Up to 20 program editing, assemble editing, video/audio insert editing functions are possible ▪ 2 jog/shuttle dials for a player and a recorder enable quick picture search and simplify the editing process ▪ Preview and review functions for monitoring the results of a rehearsed or an actual edit ▪ Power requirements: 6VDC ▪ Power consumption: 0.5W ▪ Supplied with edit control cable, AC power adaptor and operation manual \$790.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



VHS DUPLICATION EQUIPMENT



SONY®

Business and Professional Group

SVO-1620/1520/1420/1320 Series VHS Recorder/Players

Common Features

- VHS HQ system ensures clear edged pictures ▪ DA PRO 4-head design offers superb resolution and excellent color playback in 3 speeds: SP, EP and LP (SVO-1520/1320 do not record in LP mode; playback only) ▪ Offers a variety of playback modes, including noiseless clear still pictures, slow motion and 2X normal speed
- Tape stabilizer ▪ Ideal for satellite program recording, presentations, point-of-sales, point-of-information displays
- High-speed FF/rewind time (2½ min. with a T-120 videocassette)
- Digital auto tracking automatically adjusts tracking for tapes recorded on other machines ▪ Auto head cleaner ▪ Continual auto repeat playback ▪ Sequential playback with multiple VTRs ▪ 1-time playback ▪ Dual Mode Shuttle (DMS) Ring for controlling FF/rewind/still/play/stop operation ▪ Key inhibit function deactivates all function keys on the VTR and remote control to prevent accidental operation ▪ Wireless remote-off switch deactivates the wireless remote control ▪ Control-S in/out terminals allow the VTR to be remotely controlled by other Sony equipment ▪ Video in/out BNC connectors ▪ Index search



SVO-1620 VHS Hi-Fi Recorder/Player

- Includes common features, plus: ▪ Hi-Fi stereo audio system
- Power-on recording/playback capability allows unattended automatic VTR operation the moment power is supplied to the VTR from externally connected equipment ▪ Sensor recording allows unattended automatic recording via the video in connector ▪ LP mode recording capability ▪ Linear time counter superimposition
 - Remaining tape length superimposition ▪ TV tuner \$740.00

SVO-1520 VHS Hi-Fi Recorder/Player

- Includes common features, plus: ▪ Hi-Fi stereo audio system
- Power-on recording/playback capability allows unattended automatic VTR operation the moment power is supplied to the VTR from externally connected equipment ▪ Sensor recording allows unattended automatic recording via the video in connector
 - Foot switch control/tally out \$680.00



SVO-1420 VHS Recorder/Player

- Includes common features, plus: ▪ Monaural audio system
- LP mode recording capability ▪ Linear time counter superimposition ▪ TV tuner \$460.00

SVO-1320 VHS Recorder

- Includes common features, plus: ▪ Monaural audio system
- Foot switch control/tally out \$440.00

SVP-1110A VHS Player

- Features Optimum Picture Control system and long-life heads for clear and crisp picture reproduction ▪ SP/LP/EP mode playback
- Auto repeat playback ▪ Auto power on ▪ Auto rewind ▪ Off power eject ▪ Auto head cleaner ▪ Digital auto tracking ▪ Control-S in terminal ▪ Ideal for in-room movies, point-of-purchase/point-of-information, education and presentations \$320.00



SVO-965

SVO-965/SVO-915 VHS Duplicators

Common Features

- Long-life drum assembly ▪ Direct drive tape transport eliminates drive belts and provides stable tape transport, long-life operation and ease of maintenance ▪ Electronic tape tension control ▪ Strong aluminum diecast chassis ▪ Automatic head cleaner ▪ High quality image and audio ▪ 4-channel audio inputs and audio level controllers ▪ Remote control operation ▪ Serial remote interface
- Control-S terminal ▪ Bidirectional remote control ▪ Digital hours meter ▪ Test terminals ▪ Auto off ▪ Standby notice function ▪ Record indicator ▪ Automatic check system ▪ Loophrough A/V connectors
- Data set function ▪ User ID code recording ▪ Compact and lightweight ▪ Low power consumption

SVO-965	Recording/playback VTR	\$1853.00
SVO-915	Recording only VTR	1615.00

Accessories

SVRM-960	Bidirectional remote control unit (SVO-965 only)	\$4925.00
SVAC-904	Bidirectional remote control	1600.00
SVCC-960	Automatic cassette changer	580.00
SVRM-901	Remote controller board	315.00
SVBK-902	Bidirectional interface board (SVO-965 only)	206.00
SVBK-901	34-pin parallel interface board	161.00
SVAC-903	Audio head cleaner	60.50
SVAC-901	Audio meter unit	57.25
SVAC-902	Cassette holder	31.30

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

See Our Ads on Pages 12-15





FARAD Multichannel Digital Disk Recorder

- Multichannel disk recorder offering uncompressed storage of up to 5 channels of 10-bit SMPTE RP 259M digital video
- Multichannel capability simplifies installation, integration and reconfiguration
- A single system can provide multiple video sources for vertical editing
- Video, key and depth storage
- 4:2:2 channels can be merged together to create a 4:2:2:4 signal for use in high-quality compositing
- DME depth information can also be stored with the key data
- Time code recording
- In addition to video, audio and LTC, other vertical interval data can be recorded
- RAID redundancy provides protection against loss of digitized data
- Multiple simultaneous recording capability
- Digitizing time can be reduced by recording different material onto separate disk channels
- Allows multiple user to perform unrelated editing tasks with a single system
- Simultaneous record and playback capability allows one digital disk system to act as both source and recorder for nonlinear editing of uncompressed digital video
- Enables multiple users to share the digital disk system resource
- System can operate in either 525 or 625 line standard without the need to reformat disks or change hardware
- Imports and exports graphic elements over standard computer networks

- Main chassis is 10RU high
- Expansion chassis (max. 2): 3RU each
- Up to 113 minutes of video can be stored using 9G bytes disk drives
- 5 serial digital component I/O ports provided on main chassis
- 5 RS-422 ports provided on main chassis
- Microsoft Windows® NT operating system
- 1200VA maximum power consumption

FARAD-1136	FARAD system with 6 channels and 113 minutes of storage	\$246,000.00
FARAD-1135	FARAD system with 5 channels and 113 minutes of storage	239,000.00
FARAD-1134	FARAD system with 4 channels and 113 minutes of storage	228,000.00
FARAD-1133	FARAD system with 3 channels and 113 minutes of storage	221,000.00
FARAD-1132	FARAD system with 2 channels and 113 minutes of storage	210,000.00
FARAD-994	FARAD system with 4 channels and 99 minutes of storage	215,000.00
FARAD-993	FARAD system with 3 channels and 99 minutes of storage	208,000.00
FARAD-992	FARAD system with 2 channels and 99 minutes of storage	197,000.00
FARAD-773	FARAD system with 3 channels and 77 minutes of storage	168,500.00
FARAD-772	FARAD system with 2 channels and 77 minutes of storage	157,500.00
FARAD-492	FARAD system with 2 channels and 49 minutes of storage	125,500.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



LASER VIDEODISC RECORDER/PLAYER



SONY®

Business and Professional Group



LVR-3000AN CRV Disc Recorder

- Features time-lapse recording functions that are precise and easy to use
- Stores individual frames of video at programmable intervals to provide still, real time, full motion video or time-lapse recording with sequential playback
- The most recently recorded frame sequences—up to 330 frames back—can be played back at variable speeds to evaluate the change in growth or mutation of the cells being studied so optimum recording intervals can be determined
- Employs the same component video recording (YUV) employed in Sony Betacam video recorders
- The disc system records up to 48 minutes of motion video or 87,000 still images onto a 12" write-once optical disc
- The CRV disc media holds 128K bytes for text based information such as user ID and indexes \$18,800.00



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
- 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
- User memory mode: Any 2 fields can be stored in the memory for instantaneous reference at any time
- 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
- External computer control capability via the built-in RS-232C port (compatible with LVR/LVS and LDP series protocol)
- Equipped with a 9-pin remote interface (RS-422 serial) to be controlled by BVE Series editing control units
- High resolution black-and-white mode
- A 64K byte area for user data on each side of the disc
- Noiseless pictures can be played at still and slow motion speeds
- Multiconnection capability using video input connectors
- Genlock capability
- System sync phase adjustment for connection to an SEG or switcher \$11,100.00



LVR-3300M B/W Laser Videodisc Recorder

- Single carrier, direct frequency modulation recording
- Alloy formation helps retain the sharpness of original image
- Elimination of color signals allow increase in resolution (600 TV lines)
- 6.7MHz wide bandwidth
- Noncontact optical laser pickup system continuously reproduces pictures without image or media deterioration in playback mode
- Records images onto both sides of disc
- Disc drop-out ratios do not exceed twice the initial level, allowing long term storage
- Easy time-lapse recording, interval between recordings can be set from 0.1 seconds
- Advanced auto review
- Quick random access within 0.5 seconds
- Frame picture recording (maximum 43,500 frames)
- Frame memory
- Noiseless picture playback at variable speeds
- Repeat function
- Indicator panel
- Search dial
- User data
- Index indication on-screen function
- Custom index
- Remote control
- External REC control terminal
- 19" EIA standard rackmountable
- RS-232C interface
- 525/625 dual mode signal processing
- Sync lock capability \$18,800.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

See Our Ads on Pages 12-15

REFERENCE
CATALOG
97-98



FlexSys Transmission System

- Family of efficient, reliable, configurable "off the shelf" playout systems
- Can be configured as single or multichannel solutions according to transmission needs
- Every FlexSys system includes STAS-10, a modular building block which typically contains scaleable storage, device control, signal routing and operational software elements
- Adding optional equipment such as Flexicart, LMS and stand-alone VTRs to the STAS-10 foundation forms a playout system with fully integrated software and hardware
- Open, industry-standard physical interfaces and protocols are inherent in the design of FlexSys
- Traffic and host interfaces conform to existing Sony standards
- All video and audio signals are connected either via a Serial Digital Interface (SDI) or Serial Digital Data Interface (SDDI)
- Video compression implementation is the same as that used in Betacam SX™
- High quality video is assured with full 4:2:2 chroma preserved



Server-Only or Hybrid Playout System

- Short form material, typically commercials and promos, can be stored in and played from the Sony range of RAID-3 based video servers (MAV-S100 and MAV-S110) in either a caching or noncaching mode
- Long form material, typically traditional programs, can be stored and played from tape, using either a Flexicart (with added automation benefits) or stand-alone VTRs of varying formats (S-VHS to Digital Betacam™)
- When a server and a Flexicart are combined, they form a powerful yet simple hybrid playout system capable of delivering high quality video pictures for single or multichannel use
- A STAS-10 system configured with Betacam SX VTRs can hold 129 hours of material, enough to run unattended for 24 hours a day for more than 5 days

Familiar, Intuitive User Interface

- GUI is based upon the same design as that of Flexicart, LMS and Betacart, ensuring a minimal learning curve
- 2 basic operational functions—Filing and Playout—can be operated from individual terminals or a common GUI
- GUI operation is ideal in a restricted operating environment or multichannel organization requiring the maximum number of channels for a given floor space

Highly Configurable

- Designed as a modular system supporting several styles of operation and different numbers of output channels
- Simple reconfiguration means that other modes of operation can be easily achieved without costly software and hardware customization

Multichannel Operation

- STAS-10 supports 3 modes of playout, incorporating long and short form material which all can be accommodated by the same system
- STAS-10 modules are capable of delivering continuous playout of up to 3 channels of video, each with 4 channels of embedded audio
- Both caching and noncaching operations are supported, and expansion to further channels is possible by adding Copy Manager software and a near line server such as an existing LMS or simply another STAS-10

Contribution Quality Compression

- Material on hard disk is compressed, yet RAID-3 based storage delivers studio quality, robust video
- Full chroma bandwidth of the SDI signal is retained and the associated 4 channels of audio are stored uncompressed
- Component digital video at 270M bytes/sec. is compressed nominally at 10:1
- Compression codecs, using MPEG2 4:2:2P@ML compression algorithms, use sub-micron Sony LSI chip sets to achieve high reliability and low power consumption

Interfacing

- Supports both LMS-style Host and TMS interfaces, facilitating simple integration with higher level systems

System Interface Unit SIU-80 and Support Boards

- SIU-80 is a general-purpose chassis capable of holding up to 8 special-purpose interface cards from the BKS1 range
- Configured with the appropriate cards, the SIU-80 forms the core of a FlexSys System
- Chassis can hold bit rate reduction encoders and decoders, as well as the server data controller card which interfaces to the SCSI bus of the MAV range of RAID-3 servers

Maintenance and Information Status Reporting (ISR)

- ISR system is based on software that allows up to 1000 individual items of digital broadcast equipment to be effectively monitored, controlled and managed from a single networked PC
- Specific equipment icons keep the operator informed of the status of all equipment connected to the ISR system
- Detailed information is available at the ISR terminal, where it can be monitored, managed and archived

System Specifications

- **Application Software:** Windows NT based intuitive GUI
- Online context-sensitive help
- Supports up to 3-channel playout with 3 individual playlists
- Separate Filing and Playout terminals or single GUI operation
- Overlap and Gap warning

- **Fault Tolerance:** RAID-3 server technology
- Data rebuild on-air
- Hot-swappable components
- Redundant components
- Database backup

- **Server Subsystem:** MPEG2 4:2:2P@ML compression
- 4 channels of uncompressed audio
- Up to 24 hours of RAID-3 storage
- Simultaneous filing and playback
- Confidence replay during filing
- Fragmentation management

- **Interfaces:** Support for analog formats
- LMS-style Traffic and Host interfaces
- As-Run, As-Filed, As-Delete and Error logs
- DVS-M1000 automation interface
- ISR support for all component parts

- **Device Control:** Flexicart-based tape playout
- Stand-alone tape-based playout

Call For Pricing

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



BitStream™ and VideoStore™ Multichannel Video File Server System (Overview)

- High performance multichannel video distribution with enhanced operability and superb image quality
- Can provide up to 60 hours of online audio/video clips, and can nonlinearly feed 12 independent simultaneous output channels at 5Mbps, or 6 independent genlocked channels at 5 or 10Mbps
- Clip duration may range from 4 seconds to 8 hours 40 minutes
- System excels in 3 areas of operation: encoding, loading and playback
- System hardware includes VST-1000, VSR-1000 and VSH-1000
- Board configuration is dependent on whether the system will be set up for 5Mbps or 10Mbps operation
- Real time loading, with computer control through a variety of automation software packages
- Can also be configured for data streamer storage by adding an optional Library Unit
- Clip distribution via network
- Quick random access
- Remote diagnosis through RS-232C or RS-422A remote interface port
- Ideal for broadcast, cable TV, giant video screens, videowalls, cruise lines, near video-on-demand, video-on-demand and advanced video delivery systems for industry, education, hospitals, museums and retail outlets

VST-1000 BitStream MPEG-2 Encoding Unit

- Incorporates Sony's MPEG-2 chips to deliver the full performance capability of the MPEG-2 standard
- Built-in frame synchronizer assures compatibility with a variety of input sources
- Feeds can be encoded without the need for additional preprocessing with a processing amplifier or other device
- Built-in Machine Control feature controls the video source device
- Built-in decoder board for video monitoring
- Clip Identification Embedding provides foolproof verification of clip playout
- 5Mbps or 10Mbps operation
- Optional motion estimation (ME) expansion board
- 2- or 4-channel audio input board available
- Closed caption capability
- SDI capability

VST-1000 \$45,000.00



VSR-1000 VideoStore Media Control Unit

- Performs all the control functions of the VideoStore system using output from the VST-1000
- Can control up to seven VSH-1000 Media Units to enable storage of up to 60 hours of programming
- Up to 12 discrete output channels may be installed in each Media Control Unit for 5Mbps operation, with simultaneous 2-channel input possible
- For higher performance 10Mbps operation, up to 6 discrete output channels may be installed, with a single channel input
- Optional clip exchange board enables simultaneous 2-channel loading to dual inputs (at 5Mbps) and single-pass encoding to other VideoStore units for systems configured with more than 2 Media Control Units
- Optional Ethernet interface board allows local area connectivity and enables video clip distribution through an external wide area network
- Operation through a general purpose interface is also possible
- Fault tolerant architecture for simple maintenance

VSR-1000 \$23,000.00



VSH-1000-2G VideoStore Media Unit

- Stores output of the VST-1000
- Contains 6 hard disk drives
- Up to seven VSH-1000 Media Units may be connected to each VSR-1000 Media Control Unit to enable storage of up to 60 hours of video programming with the use of optional 4G byte HDD units
- Hard disk drives are in an impressively simple RAID-3 configuration which not only allows hot-swapping of HDDs, but also enables more economical capacity increases than by adding conventional RAID arrays
- Automatic data rebuild in the event of failure of any single HDD in the unit

VSH-1000-2G \$20,000.00



AirTraC™ Transmission Automation Software For VideoStore

- A companion to the VideoStore server which allows control of every aspect of commercial insertion
- Import schedules from traffic computer system
- Organize schedules into playlists
- Encode new material
- Monitor system status for up to 36 simultaneous output channels
- Control channel playlist and make modifications as late as 10 seconds prior to air
- Copy, save or delete clips in the Librarian window
- Optimize hardware with the Maintenance module
- Export detailed As-Run logs
- Point-and-click user interface is intuitive, logical and based on earlier Betacart®, Library Management System™ and Flexicart® software
- Offers full support for all of VideoStore's features, tools and options

Specifications, Real Time Controller:

- Hardware: Pentium® class rackmount PC, 16-port RS-422 smart serial card, time code reader card, GPI (24 I/O) card
- Operating system: QNX V 4.222 with TCP/IP option
- Devices controlled: VST-1000 BitStream Encoder, VSR-1000 VideoStore System, SDX-VS300 AIT Drive, Flexicart Systems, VTRs (using Sony RS-422 protocol), routing switchers (Utah™ UDI-1B, CVG-7000, Pesa™ RC-5000), general purpose tally/relays

Specifications, Workstations:

- Hardware: Pentium class desktop PC, 17" VGA monitor (1024 x 768)
- Operating systems: OS/2 Warp® Connect V3.0, Windows NT
- Additional software: Sybase® SQL Anywhere V5.0

AirTraC \$59,000.00

BZSR-100 Videostore Playout Software

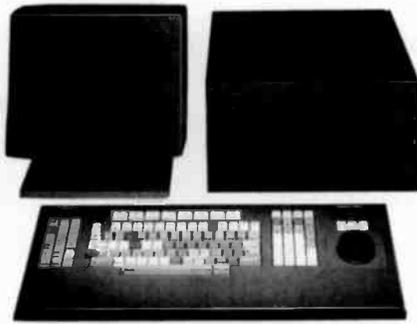
- Easy-to-use playout control application software for VideoStore Multichannel Video File Server System consisting of 4 software modules
- Encoding Control Software controls VST-1000 for encoding video clips from an external VTR or live source into an MPEG-2 data stream
- Playout Control Software controls VSR-1000 for playing out clips for up to 6 channels
- Playout Monitoring Software monitors the status of each playout channel
- Off-line Playlist Creation Software creates playlists off-line
- General system requirements: Windows NT V3.51, 24M byte RAM, 3.5" floppy disk drive, min. 5M byte HDD space to run the application, Ethernet capability and display monitor with resolution of 800 x 600 or higher

BZSR-100 TBA*

*To Be Announced

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





BVE-9100 Edit Controller

- Full nonlinear operation when used with digital disk recorders
- Expanded control of learn/recall of the production equipment built around itself and extensive data management as well
- Synchronized jog feature with BZE-9102 V1.2 advanced operating software, giving the user simultaneous jog control over a VTR, a digital disk recorder and the key frame effects of a switcher and digital effects system
- The implementation of 9-pin protocol allows the BVE-9100 to download a number of edits as a sequence of events to a digital disk recorder; the digital disk recorder then executes these as a seamless pass preview
- EDL management capability has been enhanced in addition to the full list management functions, which were already available on the BVE-9100
- The maximum number of edits in a single EDL has been increased to 9998 edits
- Auto "B" roll means you no longer have to make a manual copy when performing an A/B roll edit with both sources required from the same reel
- Archive recorder function records all of the edits onto a separate VTR, keeping a history of the edit sessions on tape
- Option of adding a graphic display to enhance the operability and data display by presenting the relevant video frames on a high resolution 1280 x 1024 display
- Has enough memory to capture 1 second of video around a point specified by the editor
- Switchable 525/625 operation

BVE-9100 \$17,400.00

Options

BKE-9000K1	Expansion kit	\$8,750.00
BZE-9102	Advanced operating program	6,850.00
BKE-9410	Dedicated editing keyboard	5,000.00
BKE-9510	8" floppy disk drive	4,300.00
BKE-9006A	2x 9-pin Ampex VPR-3/6 interface	4,250.00
BKE-9400A	QWERTY editing keyboard	4,200.00
BZE-9603	Switcher control program (GVG Kadenza™)	4,075.00
BZE-9605	Switcher control program (Abekas A84) ..	4,075.00
BKE-9002	4x intelligent device controller interface ..	960.00
BKE-9003	4x RS-232C interface	1,500.00
BKE-9012	4x 9-pin Sony VTR	3,975.00
BZE-9101	Basic operating program	3,225.00
BKE-9004A	2x 9-pin Sony VTR or 1 x video switcher interface	2,200.00
BKE-9500	Dual 3.5" MFD	3,600.00
BKE-9008	Kaleidoscope™ interface	3,300.00
BZE-9606	Switcher control program (Ampex AVC VISTA™ series)	3,275.00
BKE-9107	Hard disk unit	3,200.00
BKE-9009	Sony DME-5000/9000 interface	3,200.00
BKE-9631	Parallel switcher interface	3,000.00
BKE-9011	Video switcher/audio mixer/monitor switcher interface	2,875.00
BKE-9601	Time code generator/reader	2,650.00
BKE-9600	Intelligent device controller	2,325.00

BKE-9013	4x color corrector (BVX-D10) interface ..	\$2,325.00
BKE-9604	Component character superimposer	2,275.00
BKE-9651	General purpose interface kit (16 ports) ..	2,200.00
BKE-9401	Sub keyboard	2,150.00
BZE-9601	Switcher control program (GVG100/1680/300, Sony HDS-1000T)	1,100.00
BZE-9602	Switcher control program (GVG 200)	1,100.00
BZE-9604	Switcher control program (Sony DVS-8000/BVS-3000 series)	1,100.00
BZE-9611	Mixer control program (Sony VSP-8000, Graham-Patten GPS-600 series)	1,100.00
BKE-9602	Character superimposer	1,075.00
BKE-9632	Parallel mixer interface	1,000.00
BKE-9633	Monitor switcher interface	1,000.00
BKE-9603	Expansion RAM board for serial switcher interface	530.00
BKE-9611	9-pin VRT control/superimposer control ROM kit	415.00



BVE-2000 Version 2 A/B/C Roll Edit Controller

- Enhancements to the original BVE-2000 have been added, including:
 - Color VDU capability
 - DMC Learn
 - Audio mixer initial panel
 - Display process delay adjustment
 - Arithmetic function
 - TBC snapshot for digital Betacam
 - Switcher preview function
 - Setup for data storage to floppy disk
 - Save/recall of PF key data

Original BVE-2000 Features:

- Connects to a maximum of 12 VTRs, and controls up to 6 simultaneously
- Variable speed control over VTRs equipped with Dynamic Tracking™
- Full recorder assignment; monitor switcher interface ensures correct previews will be made
- 4 VTR audio channels can be independently controlled during insert of split editing
- For Sony D-2 and Digital Betacam VTRs, which incorporate pre-read capability, the BVE-2000 provides control of this feature on an edit-by-edit basis
- LTC (Longitudinal Time Code), VITC (Vertical Interval Time Code) or CTL (Control Track) based editing can be independently selected for each VTR
- Crosspoint assignment, wipe pattern recall, keyers and other switcher functions can be controlled
- Separate control of downstream keyer function
- Pop-up window menus
- Graphic display shows current edit status
- Supports both 90-pin serial control using ESAM II protocol and a 15-pin parallel connector to interface to a variety of audio mixers
- 6 alphanumeric characters can be used to specify source tapes being used for editing
- 20 programmable function keys store 255 keystroke sequences in memory
- Advanced match frame edits
- Built-in 3.5" floppy drive
- 8 standard GPI ports
- 2 RS-232 ports

BVE-2000 Version 2 \$11,175.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



DLE-110 Live Editing System

- GUI-based, nonlinear editing system designed for live program production
- Provides rapid replay, slow motion playback and quick editing of highlight scenes for live applications such as sports programs and outside broadcast events
- With the hard disk of the Hybrid Recorder, the DLE-110 provides simultaneous playback and recording
- Quick assembly and playout of highlight scenes from the hard drive take place while the system continues to record a live source and while new edit points are marked
- Broadcast-quality video and audio using DNW-A100/A50/A45 Digital Video Hybrid Recorder as storage component
- Live-oriented GUI, dedicated control panel
- Long recording time with the hard drive of the Hybrid Recorder as well as extended storage devices
- Endless recording function
- Backup recording and archiving on tape simultaneously. \$89,500.00

DNW-A220 Digital Portable Field Editor

- Delivers Betacam SX format picture quality, recording 8-bit, 4:2:2 component digital signals
- Compact and lightweight design
- Analog playback capability
- Combines 2 VTRs, 2 LCDs and built-in speakers
- Detachable operation; can be separated into 2 portable VTRs
- Operates on BP-L60/L90 lithium-ion batteries via the V-shoe attachments
- Long recording time
- Speedy and simple operation
- High-speed picture search: ±24 times normal play speed
- Jog speed control
- Good shot marker handling
- 525/60 or 625/50 versatility
- Remote control interface *TBA

DNE-50 Digital Editing System

- Designed to complement the digital advantages of the Sony range of Betacam SX™ Digital Video Hybrid Recorders
- Simple GUI-based editing capabilities provide remote control of hybrid recorder functions
- Jog/shuttle dial and dedicated function buttons give a hands-on feel
- High-speed tape shuttle with picture stamps
- Features online editing capable of maintaining MPEG2 4:2:2 profile at main level used in Betacam SX format
- Can be used as a stand-alone off-line editor with optional MO drive
- Simultaneous recording on the optional MO disk while shooting to speed editing process
- Script writing and production notes
- Voice-over recording
- Creation of Edit Decision List (EDL)
- Compact and lightweight: weighs approximately 12 lbs., 2 oz. including a base station, a notebook PC and a BP-L60 battery
- Operates for about 4 hours using 2 fully charged batteries
- 525/60, 625/50 switchable \$10,500.00



DNW-A20 Digital Portable Viewer

- Incorporates a videocassette player, an LCD and a built-in speaker into one unit
- MPEG2 4:2:2P@ML picture quality
- Analog playback capability
- Compact, lightweight design
- Long playing time
- Battery operation
- High-speed picture search: ±24 times normal play speed
- 525/60 or 625/50 versatility
- Requires 12VDC power *TBA
- *To Be Announced

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



FXE-120 Video Editing System

- An A/B roll editing system designed for quick, easy video editing
- Provides 3 switchable RS-422 and/or RS-232C ports for control of 2 players and 1 VTR
- Basic VTR functions such as play, stop, still, FF, rewind and record are controllable through these interfaces
- Can be interfaced with home-use LANC VTRs in order to expand the versatility of player VTRs and camcorders
- CTL signals, SMPTE/EBU standard longitudinal time code and 8mm time code can be used to specify locations on source and master tapes
- Composed of 2 buses, the A-bus and B-bus, each of which provides P1, P2, aux inputs and background color
- Each bus has a frame synchronizer
- Since the FXE-120 accepts and outputs both composite and Y/C video signals, system integration with the combination of various VTR formats such as S-VHS, Hi8™ and Betacam SP™ is possible
- GPI outputs provided
- 4 blackburst outputs
- Audio-follow-video editing can easily be realized as the FXE-120 features audio mixing capabilities
- 4 fsc sampling of input video signals, 8-bit quantizing and 4:1:1 digital processing of signal processing
- Chrominance Noise Reduction (CNR) and Luminance Noise Reduction (LNR) circuits maximize picture quality, and a digital vertical enhancer maintains sharp picture
- Color correction is available
- 135 kinds of wipe patterns, including picture scroll and slides, are programmed into the FXE-120
- Wipe patterns can be accessed with a press of the corresponding button or by retrieving the pattern number using the 10-key buttons
- Borders and soft edges can be added to wipe patterns, and border colors are selectable
- Mix effects such as mosaic mix, black-and-white mix, posterization mix and picture-in-picture are provided
- Fade-to-black and fade-to-white effects can also be performed
- Visual effects such as mosaic, posterization, pixel trail, multi-picture, mono-tone, strobe and zoom are provided
- Picture freeze can be performed in frame or field mode
- Multiple effects may be combined
- Chromakeyer and luminance keyer provided to superimpose characters, figures or video sources on background scene
- Assemble or insert editing
- Split edit function provided
- Editing data for 99 events can be stored
- User-friendly control panel
- 1 dial, 1 monitor operation. \$7600.00



PVE-500 A/B Roll Edit Controller

- 3 RS-422 9-pin remote control interfaces for 2 players and 1 recorder
- Variable speed control over 3 VTRs equipped with Dynamic Tracking™ enables noiseless editing of slow motion and reverse picture material
- Basic VTR functions (play, still, FF, rewind, stop, eject, record, etc.) controlled remotely from the PVE-500 panel
- Display counter for each VTR provides position and editing data
- Accepts time code, control track signal and relative time code as editing references (any of these can be set separately for each VTR)
- Editing data for 99 edits can be stored in the built-in EDL
- Audio split capability allows the audio edit in-point to be set separately from the video edit in-point
- Can control an audio mixer remotely, allowing audio-follow-video editing
- Serial and parallel mixer interfaces can be set by selecting the serial/parallel switch by the connector
- A reference video input connector accepts external reference video signals for synchronized operation with other equipment in a system
- For save/load of EDL data onto a floppy disk, an RS-232 interface port is provided for interface to a compatible PC
- GPI output enables basic control of peripheral equipment such as audio tape recorders and title generators, which cannot be directly interfaced with the PVE-500
- Self-diagnostics function for troubleshooting and maintenance
- Comprehensive error message
- Power requirements: 100V/120V/220V to 240VAC, ±10%
- 12W power consumption
- Editing accuracy: ±0 frame with time code, ±1 frame with CTL
- Edit reference: control track signal, SMPTE/EBU time code
- GPI out: Active low—low level 0V-0.5V; high level 3.5V-5V
- AC power cord supplied. \$3725.00



RM-450 Editing Control Unit

- Interfaces among Betamax™, U-Matic®, U-Matic® SP, Betacam™ and 1" VTR formats
- 33-pin and 9-pin connectors for various VTRs
- Can reference off control track (CTL), time code or relative time code (RTC)
- Shuttle/jog modes
- Error indicators with audible warning
- Assemble or insert editing
- Split editing (insert mode only)
- Butt editing
- Quick editing
- Trim functions
- Preview/review functions
- 3-position synchronization selector
- Easy data presetting through 2 DIP switches. \$2000.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

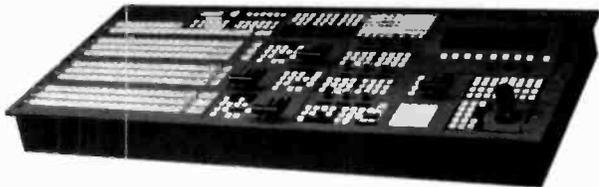




DVS-7250 Digital Production Switcher

- 2-mix/effects digital production switcher designed for mid-market applications and migration to DTV
- Includes a program/preset mixer and optional dual-downstream keyer
- Compatible with either component or composite signals and operates in both 4:3 and 16:9 aspect ratios
- Configurable with up to 36 video inputs and 14 auxiliary buses
- Snapshot memory for quick effects learn and recall
- DME-LINK™ effects control
- Insert panels completely replace the DME's stand-alone control panel
- Router Integration and Tally Expansion™ (RITE) provides user-defined source identification and tally processing-plus integration with DVS-B series of routers
- SDI I/O can be switched between digital component and digital composite operations
- Advanced FineChroma™ keyer with full 4:4:4 video and key processing, auto and manual modes, color cancellation, spot color correction and shadow and density control

DVS-7250/HVY	Includes significant option configuration	\$225,250.00
DVS-7250/MED	Includes moderate option configuration	193,655.00
DVS-7250/LITE	Includes minimum option configuration	169,965.00



DVS-7200 Digital Video Switcher

- Flexible digital video switcher for post-production, studio production and OB truck applications
- Employs 2 Mix/Effects banks which allow re-entry between the M/Es
- 2 keyers and a color background generator are standard on each M/E
- 2 optional downstream keyers allow for a total of 6 simultaneous key layers
- Optional input boards provide up to 36 primary inputs
- 14 auxiliary buses are supplied, with Edit PVW available using 1 of the buses
- Compact control panel features design elements of the DVS-7000 and can be supplemented by optional panel units
- Optional automatic chromakeyer with Color Cancel function for each M/E
- Full control of up to 4 Sony digital multi-effects systems
- DME-LINK function
- Processed Key function links the switcher keyer to an external DME
- Component/Composite and 4:3/16:9 switchable
- BVE-9100 Series serial control
- Optional router interface unit
- Redundant power supply
- 100-240VAC, ±10%, 50/60Hz

DVS-7200	\$49,000.00
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DVS-8000C/1 Component/DVS-8000/1 Composite Digital Video Switchers

- A total of 32 primary/external key inputs—DVS-8000: 8 channels of composite serial digital video (standard), 24 channels of composite analog or composite serial digital video (option); DVS-8000C: 32 channels of component serial digital video (standard)
- 24 inputs are assigned as primary sources and 8 for external key sources
- 2 M/E buses, plus program/preset bus with mix/wipe/DSK capabilities
- Clean Chromakey™ system for each M/E bus (option)
- 2 independent key processors with priority control for each M/E bus

DVS-8000C/1	Component	\$91,850.00
DVS-8000/1	Composite	76,500.00

DVS-7000 Digital Live Switcher

- 2 alternative versions—a 3 multi-effects type and a 3 multi-effects plus PGM/PST type
- 3 mix/effects systems all have 2 key buses and 2 independent key processors
- 4 key snapshots per keyer
- Up to 3 dual chromakey processors can be installed
- Full 4:4:4:4 video/key processing
- Large EL display panel
- 36 primary inputs provided using optional input boards
- 14 aux buses feed video and key signals to external devices
- Conversion between component and composite digital video operation is switchable
- Operates on either the 525- or 625-line standard
- Composite configuration operates in NTSC and will accept both analog and digital sources
- Will switch between 4:3 and 16:9 operation
- A variety of switcher panels available for different applications
- FlexiPad™ holds 99 snapshot memories, 9 wipes and DME-LINK™ memories
- 3.5" floppy disk holds snapshots, key memory, keyframe memory and set-up data
- 2 frozen frame memories
- Independent color background generator with a color mix capability
- 2 optional remote control panels available
- Power requirements: 100V-240VAC, ±10%, 50/60Hz

DVS-7000	\$72,000.00
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DVS-2000C 4:2:2 Component Digital Video Switcher

- 4 serial digital inputs
- Accepts up to 16 serial digital inputs in a single M/E bank
- Allows mixed operation of analog and digital component video inputs
- Up to 3 keyers including a DSK can have powerful modifiers and a high quality chromakey effect
- Dynamic priority control of the 2 keyers provided on the M/E bank
- DME/WIPE™ feature allows integrated control of the DME-3000 digital multi-effects system
- 8 matte generators with color mix capability
- Up to 99 snapshot memories available for storing panel status
- Dedicated control panel with integral LCD screen

DVS-2000C	\$21,650.00
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DVS-M1000C Digital Master Switcher

- Fully digital control switcher for small to mid-range master control operations
- Specifically designed for digital multi-channel broadcasting
- System consists of 2 compact 19" rackmountable components—a 5RU processor and a control panel which can be desk or rackmounted
- System will handle 12 primary inputs in serial digital component format
- 4 channels of audio are embedded in each primary video
- 8-channel audio for multisound operation
- Switcher can be controlled from an automated presentation system, its own control panel or both at once
- Graphic user interface software will be supported as an option for status display and set-up changes
- 7 mode preset trigger buttons included to control pulses to external equipment
- Can operate in either 525/60 or 625/50 mode via menu selection
- Source name display
- Preview bus

DVS-M1000C	\$24,750.00
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ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

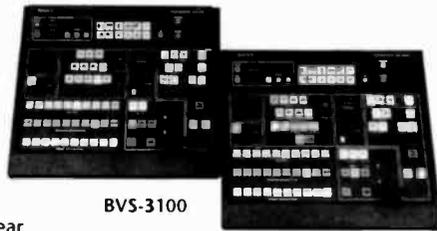




BVS-3200C/3200/3100 Video Switchers

Common Features

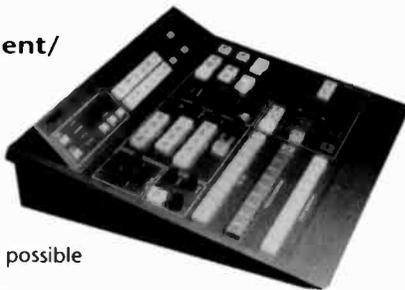
- Full-featured production switchers for total "shooting to editing" system
- Multiple layer mix/effects architecture for both live and post-production
- Linear downstream keyer (DSK) ▪ Master fade-to-black ▪ Linear keying provides component chromakey, key/fill selection, key mask, key priority and DSK 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) ▪ Chromakey input with 3 BNC connectors for both RGB and Betacam™ signals
- 1 composite external key mask input ▪ RS-422 interface through 9-pin D-sub connector ▪ Standard DME-450 interface through separate 9-pin D-sub connector ▪ Tally connector assignable to primary inputs, external key source/fills and DSK source/fill
- Transition rate adjustable from 0 to 999 frames in single steps
- "Flip-flop" transitions for automatic transfer of input in preset bus to program bus ▪ 2 independent linear M/E keyers (BVS-3200)
- Internal effects matte generators available as key fills ▪ Standard component video chromakeyer 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



BVS-3100

BVS-3200C Component/Composite Video Switcher

- Includes common features, plus:
- 10 primary inputs including color-black and color background ▪ 2 keyers plus DSK ▪ Composite/component mixed operation possible
 - RGB, Y/R-Y/B-Y or Betacam (12-pin) inputs available ▪ Fully adjustable internal box mask and ext. mask input



\$29,400.00

BVS-3200 Composite Video Switcher

- Includes common features, plus:
- 2 linear keyers and standard E-FILE switcher memory ▪ 2 keyers, plus DSK ▪ 10 primary inputs including color-black and color background ▪ 10 basic and 8 matrix wipe patterns with modifiers ▪ Fully adjustable internal box mask and ext. mask input

\$21,600.00

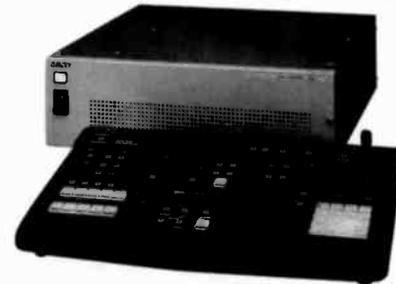
BVS-3100 Composite Video Switcher

- Includes common features, plus:
- 1 linear keyer

\$14,900.00

DFS-500 Digital Multi-Effects Switcher

- 2-D, 3-D, linear and nonlinear effects are standard and easily programmed and memorized ▪ Dropshadow, trails and lighting effects can be easily created using an optional board
 - Over 200 factory preset patterns ▪ 4 primary inputs, a fader lever and title keyer ▪ Cut, mix and various wipes are included in the preset patterns
 - Accepts input signals in composite, component (Y/R-Y/B-Y) and S-Video formats; any combination of these signal formats can be used within the system
 - Processes all input signals in the digital component domain, making the DFS-500 particularly suitable for interfacing with Betacam SP series VTRs
- \$18,400.00
- BKDF-501 Trail and lighting board 5,400.00
- BKDF-504 8-bit linear downstream keyer 2,575.00
- BKDF-503 Rackmount kit 218.00



DFS-300 Integrated Digital Multi-Effects/Production Switcher

- Cut, mix, wipe, slide, rotate and many other 2-D effects and optional 3-D linear (perspective) and nonlinear effects such as page turn, roll and sphere can be created with the unit's programming function
- Up to 20 created effects are stored in the standard user programs for instant recall
- 330 factory preset effects, including wipe, compression, rotation, slide, split, mirror, stream, etc.
- 111 of the most frequently used wipes are available from the preset patterns and 13 of them are directly accessed with a press of the keypad
- Effects modification is provided for some of the preset effects such as mosaic, posterization, solarization, wave, multipicture, strobe, frosted glass, cinema mode, etc.
- 4 primary inputs ▪ Internal video generator for multiple mattes ▪ Chromakey and luminance key controls are standard
- For white balance adjustment or to give some special tonal effect, color correction of FRGD or BKGD sources is possible
- Snapshot function stores the panel status for subsequent recall
- Genlock capability ▪ 2 frame synchronizers
- Both serial and general purpose remote control interfaces

\$10,700.00

DCK-500 Digital Chromakeyer

- Advanced chromakey, luminance key and color correction capabilities
- 8-bit quantization and 4:2:2:4 sampling digital processing
- Auto chromakey ▪ Manual key control including color cancel
- For white balance adjustment or to give some special tonal effect, digital color correction of FRGD and/or BKGD sources is possible
- Accepts and outputs the following video signal formats: component (Y/R-Y/B-Y), RGB sync, S-Video (Y/C) and composite
- Can store up to 20 sets of its panel status information
- 2 built-in frame synchronizers

\$7,000.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



MULTI-EFFECTS PROCESSORS



SONY

Business and Professional Group



DME-9000 (SYSTEM-G) Digital Multi-Effects Processor

- Allows simple, fast, interactive creation of complex objects of revolution
- Controls menu monitor and displays a central axis of revolution and a profile outline
- Specific object is created in real time by deforming the profile outline and/or shifting the axis of revolution to produce the desired output
- Can map incoming video to the created object
- Once an object has been created, you can deform the surface of the object
- All internal video processing uses 10 bits and the component serial digital input and output signals are also 10-bit format
- Also provides an 8-bit key channel
- Utilizes adaptive field/frame conversion
- Anti-aliasing filter
- Keyframe animation in the DME-9000 allows you to develop sequences of effects up to 60 seconds in duration
- Extensive range of standard digital effects ranging from simple 2-D linear all the way to 3-D nonlinear

DME-9000 \$224,910.00



DME-7000 Digital Multi-Effects System

- Creates wide range of video effects, from 2-D to 3-D nonlinear
- Standard effects: 3-D transform, background and edge, freeze and recursive, picture modify and video modify
- The BZDM-7020 is essential to initiate the DME-7000 system
- 4:2:2:4 processing with 10-bit resolution
- Interfaces directly with Sony 10-bit digital switchers
- Calculates an interpolated pixel from the surrounding 8 x 8 pixel data
- 99 animated effects can be created and stored in keyframe memories
- 4 types of motion paths are available to connect keyframes into a trajectory
- Snapshot memory stores all

the status data of the current work buffer in 99 memories

- Provides serial interface with Sony BVE series edit controllers
- Handles either composite or component video signals
- Signal processing can be switched between 525/60 and 625/50
- NTSC operation possible
- Switchable operation between 4:3 and 16:9 aspect ratio systems

DME-7000		\$28,000.00
BKDM-3023	Digital/analog component in/out board . . .	9,750.00
BKDM-7070	Advanced shadow effects board	9,700.00
BKDM-7060	Key channel and recursive effects board . . .	9,600.00
BKDM-3050	Combiner and lighting board	9,450.00
BKDM-3022	Digital/analog composite in/out board (525/60 only)	8,900.00
BKDM-3040	Wipe and graphics board	8,600.00
BKDM-3010	DME control panel	8,600.00
BKDM-3020	Digital composite in/out board (525/60 only)	7,750.00
BKDM-3030	Nonlinear effects board	7,350.00
BKDM-3021	Digital component in/out board	6,600.00
BKDM-7041	Digital SKETCH board	4,000.00
BKDM-7031	Digital SPARKLE effects board	3,500.00
BZDM-7020*	Operation software with manual	1,600.00
CPD-15SF2	Color display monitor	549.00

* The BZDM-7020 is essential to initiate the DME-7000 system.

DME-3000 Digital Multi-Effects Processor

- Perfectly handles either composite or component video signals with just a change of input/output boards
- All signals are processed in 10-bit resolution, contributing to high quality picture manipulation
- In the digital component mode, digital signals from VTRs are directly processed in the 4:2:2 mode; in the analog component mode, signals are A/D converted at a sampling frequency rate of 13.5MHz for the luminance signal and 6.75MHz for each of the color difference signals; in the composite mode digital signals are processed in the DME-3000 without bit rate conversion
- Frame-based picture processing
- Anti-aliasing filter
- A variety of visual effects from 2-D to 3-D nonlinear such as rotation, perspective, skew, slide, page turn and sphere
- Video modifying effects such as solarization, posterization, mosaic, defocus and negative
- Designed to interface with and complement Sony switchers, editors and VTRs

DME-3000 \$22,600.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



BVM-2811 28" Color Monitor

- CPU based control system enables combinations of display parameters such as aspect ratio, signal standard and internal/external sync to be assigned to the monitor inputs and held in 4 memories for later recall at the touch of a button
- Specifically designed for critical signal evaluation use
- 16:9 aspect ratio CRT
- 750 TV lines horizontal resolution. \$30,340.00

BVM-8044QD 8" Color Monitor

- Component serial digital interface terminal
- Aspect ratio is selectable from 4:3 and 16:9
- High resolution CRT assures 450 TV lines horizontal resolution at center (composite video)
- Stabilized color temperature with a beam current feedback circuit
- Analog component (Y/R-Y/B-Y or RGB), Y/C and analog composite video inputs
- NTSC comb filter
- Accepts external sync
- Tally input
- Blue only, H/V delay, underscan capability \$2,655.00



EVERGREEN SERIES MONITORS

Common Features

- Divided operating concept features separate display and control units
- Desired functions achieved by inserting optional decoder adaptors directly into the rear panel
- Super HR Trinitron ensures a high resolution
- RS-485 serial remote control and parallel remote control capability
- Supported by Sony Interactive Status Reporting (ISR) system for remote monitor diagnosis
- Built-in auto alignment system for easy set-up
- Aspect ratio is switchable between 4:3 and 16:9
- All inputs (other than the analog component inputs, which are standard) can be customized by fitting appropriate plug-in boards
- HR Trinitron CRT with SMPTE-C phosphors

BVM-20E1U 20" Color Video Monitor

- Includes common features, plus:
 - 1000 TV lines of resolution
 - Equipped with color temperature alignment system for easy set-up with industry standard color analyzers
 - Stabilized color temperature obtained with a beam current feedback
 - Component RGB input facility available
 - Serial and parallel remote capability
 - AG pitch: 0.25mm \$9,350.00



BVM-14E5U/14F5U

BVM-14E5U 14" Color Video Monitor

- Includes common features, plus:
 - AG pitch: 0.22mm
 - 900 TV lines of resolution \$7,460.00

BVM-14E1U 14" Color Video Monitor

- Includes common features, plus:
 - 900 TV lines of resolution
 - AG pitch: 0.22mm \$6,875.00

BVM-20F1U 20" Color Video Monitor

- Same features as the BVM-20E1U, except:
 - 900 TV lines of resolution
 - HR Trinitron CTR with SMPTE-C phosphors
 - AG pitch: 0.30mm \$6,425.00

BVM-14F5U 14" Broadcast Monitor

- Includes common features, plus:
 - AG pitch: 0.25mm
 - 800 TV lines of resolution \$5,535.00

BVM-14F1U 14" Color Video Monitor

- Includes common features, plus:
 - AG pitch: 0.25 mm
 - 800 TV lines of resolution \$4,950.00

Evergreen Series Optional Accessories

BKM-21D	SDI multidecoder adaptor	\$1,980.00
BKM-22X	SDI input expansion adaptor	880.00
BKM-24N	NTSC decoder adaptor	585.00
BKM-25P	PAL decoder adaptor	585.00
BKM-26M	PAL-M decoder adaptor	585.00
BKM-27T	Tri-standard decoder adaptor	585.00
BKM-10R	Control unit	585.00
BKM-30E20	19" rackmount kit for 20" units	470.00
BKM-28X	Analog video input expansion adaptor	385.00
BKM-32H	Control unit attachment kit	220.00
BKM-31E14	19" rackmount kit for 14" display units	220.00
BKM-30E14	19" rackmount kit for 14" stand-alones	220.00
BKM-33H20	16:9 mask for 20" display units	200.00
BKM-33H14	16:9 mask for 14" monitors	200.00
MB-510	19" rackmount kit for BKM-10R	141.00
RCC-5G/US	5m 9-pin cable for RS-485/422 remote control	120.00
RCC-30G/US	Same as RCC-5G/US, except 30m	250.00
RCC-10G/US	Same as RCC-5G/US, except 10m	150.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



COLOR/MONochrome MONITORS



SONY

Business and Professional Group

PVM-20M4U 20"/PVM-14M4U 14" Color Monitors

- 800 lines horizontal resolution
- SMPT E C phosphors for accurate color matching
- Beam current feedback circuit
- NTSC comb filter
- Various input terminals such as component (Y/R-Y/B-Y), RGB, Y/C and composite for flexible use
- Will accept NTSC, PAL and SECAM signals; NTSC 4.43 can also be reproduced
- Caption vision decoder
- External sync
- 4:3/16:9 capability
- Underscan, H/V delay capability
- Automatic color control (ACC) off mode
- Auto/manual degaussing
- Auto chroma/phase setup
- On-screen menu
- Remote/tally
- Sub-control mode

PVM-20M4U \$2850.00
PVM-14M4U 1530.00



PVM-20M2U 20"/PVM-14M2U 14" Color Monitors

- 600 TV lines horizontal resolution
- Stable color balance with the beam current feedback circuit
- Auto chroma/phase setup
- Comb filtering for precise Y/C separation
- RGB, Y/C and composite video inputs available
- Blue only mode available
- 6500K color temperature
- Auto/manual degaussing
- On-screen menu facilitates adjustment/operation
- Caption vision decoder

PVM-20M2U \$2465.00
PVM-14M2U 1235.00

PVM-5041Q 5" Color Monitor

- 220 TV lines horizontal resolution
- Especially suited for field operation
- Beam current feedback circuit
- Comb filter for NTSC
- Component (Y/R-Y/B-Y or RGB) and composite video inputs
- Normal scan/underscan
- Pulse cross
- Blue only mode
- AC/DC operation
- Audio monitoring
- Carrying handle

PVM-5041Q \$1280.00

PVM-2950Q 29" Cubic Color Monitor

- 600 TV lines resolution
- Prismatic cube shape, can be stacked both vertically and horizontally
- Auto white balance with beam current feedback
- 16:9 aspect ratio
- Index remote control
- 2000 character display with RGB input
- Quad standard—PAL/SECAM/NTSC/NTSC 4.43
- 5W per channel stereo amplifier
- Component input (Y/R-Y/B-Y)

PVM-2950Q \$2155.00



PVM-8044Q 8" Color Monitor

- High resolution CRT assures a resolution of 450 TV lines at center (composite video)
- 3 inputs: component (Y/R-Y/B-Y or analog RGB), Line A (composite video or Y/C), Line B (composite video)
- Employs a beam current feedback circuit for stability in the color balance
- Accepts external sync and sync on green
- Blue only, HV delay, underscan capability
- 19" EIA standard rackmountable
- AC/DC operation capability
- Wired remote control

PVM-8044Q \$1650.00

PVM-4B1U 4" Quadruple Monochrome Monitors

- Assembly of four 4" screens (measured diagonally)
- Ideal for camera monitoring in video studio and surveillance systems with multiple camera installations
- Compatible with EIA and CCIR systems
- High resolution of 500 TV lines
- Stable picture reproduction with the high voltage regulation circuit
- Accepts an external sync signal
- Loophrough video and sync terminals with automatic 75 ohm termination
- Can be mounted in a standard 19" rack
- Individual power and individual controls available

PVM-4B1U \$2660.00

TU-1041U TV Tuner Unit

- Receives 181 VHF/UHF and cable channels
- Automatic/manual preset function
- Multichannel TV Sound (MTS) decoder enables the reception of Second Audio Program (SAP) broadcasts (SAP reception is possible when these services are encoded)
- Automatic fine tuner
- Remote control capability
- 19" EIA rackmountable
- Optional DC power source for field production
- Front panel channel indicator can be turned off in an energy saving mode to extend battery life

TU-1041U \$525.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



PVM-20N2U/14N2U Trinitron Color Monitors

- High resolution of 500 TV lines with Trinitron CRT
- Monitors provide stable color reproduction with Beam Current Feedback Circuit
- RGB and loopthrough Y/C and composite video input terminals available
- Accepts NTSC/PAL/SECAM and NTSC 4.43 signals



PVM-20N2U

switchable aspect ratio

- On-screen menu with choice of 5 languages to facilitate monitor adjustment/setting
- Input channel can be selected via remote terminal (phono)
- Built-in speaker for audio monitoring
- Metal cabinet housing
- 19" EIA rackmountable with optional rackmounting bracket or slide rail kit
- 100-240VAC, 50/60Hz power supply
- 6MHz, ±3dB frequency response

- PVM-20N2U 20" (19" viewable) color monitor \$1225.00
- PVM-14N2U 14" (13" viewable) color monitor 695.00

PVM-20N1U/14N1U Trinitron Color Monitors

- Stable color reproduction with the Beam Current Feedback Circuit
- High resolution of 500 TV lines with Trinitron CRT
- Loopthrough Y/C and composite video input terminals available
- Accepts NTSC/PAL/SECAM/NTSC 4.43 signals
- 4:3 aspect ratio
- Built-in speaker for audio monitoring
- Metal cabinet housing
- On-screen menu with choice of 5 languages
- 19" EIA rackmountable with optional rackmounting bracket or slide rail kit
- 6MHz, ±3dB frequency response
- 100-240VAC, 50/60Hz power supply

- PVM-20N1U 20" (19" viewable) color monitor \$1150.00
- PVM-14N1U 14" (13" viewable) color monitor 595.00



PVM-8041Q 8" Color Monitor

- 3 inputs: component (Y/R-Y/B-Y or analog RGB), Line A (composite video or Y/C), Line B (composite video)
- Employs a Beam Current Feedback Circuit for stability in color balance
- Accepts external sync and sync on green
- Blue only, HV delay, underscan capability
- 19" EIA standard rackmountable
- AC/DC operation capability
- Wired remote control capability

- PVM-8041Q \$1165.00

PVM-8040 8" Color Monitor

- Can be used as basic monitoring device
- Employs a Beam Current Feedback Circuit for stability in color balance
- Composite video or Y/C input with audio input
- 19" EIA standard rackmountable
- Built-in speaker

- PVM-8040 \$980.00

PVM-136 13"/PVM-96 9" High Resolution Monochrome Monitors

- Compatible with EIA and CCIR systems
- Aspect ratio is switchable between 4:3 and 16:9 to accommodate wide screen formats
- Horizontal resolution of 1000 TV lines for PVM-136 and 900 TV lines for PVM-96
- Convenient operating functions, such as underscan, H/V delay, notch filter and tally lamp
- Accepting external sync signals, the monitors can be synchronized with other equipment
- Built-in speaker
- Metal cabinet minimizes signal interference

- PVM-136 \$1015.00
- PVM-96 775.00

PVM-137 13"/PVM-97 9" General Purpose Monochrome Monitors

- Digital uniformity compensation (color and luminance)
- 3000K, 5000K, 6300K, 9300K color temperatures
- Apple ColorSync compatible (with optional TC software)
- Manual/auto degauss
- 640 x 480 up to 1280 x 1024
- H: 31.5-85kHz, V: 50-150Hz

- PVM-137 \$620.00
- PVM-97 450.00

CPD-300SFT 20" Multiscan Color Monitor

- 20" Trinitron CRT (19.1" viewable) size
- Supports resolutions up to 1600 x 1200 noninterlaced
- Digital multiscan technology to support multiple PC and Mac
- Windows 95, plug-and-play compatible (DDC-2AB)
- Meets MPRII, EPA and NUTEK standards
- On-screen display of comprehensive digital controls for easy image adjustment

- CPD-300SFT \$1699.99

CPD-200SF 17" Multiscan Color Monitor

- 17" Trinitron CRT (16" viewable) size
- Digital multiscan technology to support multiple PC and Mac
- Windows 95, plug-and-play compatible
- On-screen display of digital controls for easy picture adjustment
- Supports resolutions up to 1280 x 1024 noninterlaced
- Meets EPA, NUTEK and MPRII standards

- CPD-200SF \$799.99

CPD-15SF2 15" Multiscan Color Monitor

- 15" Trinitron CRT (13.9" viewable) size for excellent picture quality
- Digital multiscan technology to support multiple PC and Mac resolutions
- Supports resolutions up to 1024 x 768 @ 80Hz
- Meets EPA, NUTEK and MPRII industry standards
- Windows 95, plug-and-play compatible
- On-screen display of digital controls for easy picture adjustment
- Display performance for mainstream business and home entertainment applications



- CPD-15SF2 \$549.99

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



LMD-1040XC/1 10" LCD Color Monitor

- Composite video input ▪ S-Video with loopthrough ▪ RGB analog input ▪ Contrast ratio: 100:1 ▪ A-Si TFT active-matrix ▪ 9300K color temperature ▪ On-screen display functions ▪ Remote control

LMD-1040XC/1 \$7500.00

LMD-1041 10.4" LCD Monitor

- 10.4" LCD multimedia with 640 x 480 resolution active-matrix TFT panel with brightness of 200 nits
- Accepts VGA or Macintosh computer signals as well as NTSC and PAL video signals in composite ▪ Y/C, RGB or Y/R-Y/B-Y formats
- Underscan for video signals
- Supplied infrared remote control with index function
- Stereo speakers ▪ Soft touch controls ▪ AC power operation

LMD-1041 \$3330.00



GDM-20SE2T 20" Multiscan® Trinitron Computer Display

- With on-screen display
- Maximum resolution up to 1600 x 1200 at 75Hz (PC), 1280 x 1024 at 75Hz (Mac)
- Scanning capabilities of 30-96kHz horizontal, 48-160kHz vertical ▪ Meets EPA/MPRII/ NUTEK emission standards and Windows® 95 plug-and-play configurations

GDM-20SE2T \$2199.99



GDM-17SE2T 17" Multiscan Trinitron Color Monitor

- Ideal for desktop publishing and graphic-intensive applications
- 17" Trinitron CRT (16" viewable) size ▪ Digital Multiscan technology to support multiple PC and Mac resolutions ▪ Supports resolutions up to 1600 x 1200 noninterfaced ▪ On-screen display of comprehensive digital controls for easy picture adjustment
- Windows 95, plug-and-play compatible (DDC-2AB) ▪ Meets EPA, MPRII and NUTEK industry standards ▪ TCO '92 compliant

GDM-17SE2T \$1099.00

PGM-200R1U Color Graphic Monitor

- Provides well-focused, high contrast pictures by refracting light away from the viewer ▪ Designed to display computer VGA signals
- Has built-in software that allows for on-screen display ▪ Expansion slot turns the PGM-200R1U into versatile multimedia monitor by allowing a scan converter to be installed ▪ Active loopthrough output and worldwide power supply ▪ As an antistatic screen, it reduces the level of particles and dust that can collect on the face of the CRT ▪ 600 TV lines resolution ▪ Component, 4:3 and 16:9 signal ratio capability

PGM-200R1U \$2295.00

FDL-X600 5.9" LCD Color Monitor

- 5.9" (visible size) LCD ▪ Thin film transistor active-matrix LCD panel with 194,040 pixels ▪ Accepts NTSC/PAL signals ▪ DC operation
- Switchable to B/W mode ▪ Color temperature switch selectable: 500K/6500K/9300K ▪ Automatic detection of ext. sync and sync on green ▪ Multiple input facilities ▪ Built-in monaural speaker ▪ 330 TV lines (NTSC) and 300 TV lines (PAL) horizontal resolution

FDL-X600 \$2310.00



GDM-2000TC 20" Super Fine Pitch Trinitron® True Color Monitor

- Digital uniformity compensation (color and luminance) ▪ 3000K, 5000K, 6300K, 9300K color temperatures ▪ Apple ColorSync compatible ▪ Manual/auto degauss ▪ 640 x 480 up to 1600 X 1200
- H:31.5-85kHz, V:50-150Hz

GDM-2000TC \$4250.00

PGM-2950 29" Color Graphic Monitor

- Provides well-focused, high contrast pictures by refracting light away from the viewer ▪ Designed to display computer VGA signals and has built-in software that allows for on-screen display ▪ As an anti-static screen, it reduces the level of particles and dust that can collect on the face of the CRT ▪ 600 TV lines resolution
- Component, 4:3 and 16:9 signal ratio capability

PGM-2950 \$2195.00



ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



VPH-1292Q SuperGraphics MultiScan CRT Projector

- Accepts signals with a horizontal frequency of up to 135Hz
- 9" electromagnetic focus CRTs with universal optical coupling system and circuits
- Hybrid HACC lenses for superior and stable picture performance
- High 2000 x 1600 dot resolution (measured at fH: 94kHz, fV: 60Hz)
- Features a wide RGB bandwidth of 120MHz for precise reproduction of high frequency computer graphic images
- As well as Y/C and composite video input, the projector has 2 slots for optional interface boards from the Sony IFB Series
- Can be remotely operated from the supplied remote control unit
- Memory function
- Multiscan capability: horizontal 15-135kHz, vertical 38-150kHz
- Light output: 1000 lumens (peak), 300 lumens (white)
- Adjustable beam spot distortion for axis/diagonal, magnetic
- Focus for improved corner focus
- 2 types of handle for moving and installing, attached or built-in handles
- Optional IFB series interface boards, the SIC series signal interface cable and the PC-1271 signal interface switcher for enhanced system
- Can be used with screens from 90" to 300" in size with a simple adjustment (factory preset 120")

Specifications

Optical

Projection System: 3 tubes, 3 lenses, direct projection system

Picture Tubes: 9" (7.7" phosphor size) high luminance, optically coupled, electromagnetic focus

Projector Lens: High performance multicoated HACC lens f/1.15/167mm, HD-10 optical resolution 10 lp/mm

Projected Picture: 90"-300" diagonal

Size: (factory preset: 120")

Light Output: ANSI lumens; 225 lm (fH: 135kHz, fV: 50Hz, 6500K)

Contrast Ratio: 100:1

General

Color System: NTSC, PAL, SECAM, NTSC 4.43 (automatically selected)

Resolution: 2000 x 1600 dots (RGB IN measured at fH: 94kHz, fV: 60Hz) 700 TV lines (video in)

RGB Bandwidth: 120MHz (-3dB)

Scanning Frequency:

- Horizontal:** 15~135kHz
- Vertical:** 38~150Hz

Retrace Time:

- Horizontal:** 1.4µs
- Vertical:** 400µs

Color Temperature: 9300K, 6500K, 5400K, 3200K

Test Signals: Hatch (coarse), hatch (fine), hatch (fine, invert), cross hair, dot pattern, H pattern, window, pluge, all white

Registration Points: 21 points

Power Requirements: 120VAC, 50/60Hz

Power Consumption: 850W max.

Dimensions: 15¼"H x 29¾"W x 39¾"D

Weight (approx.): 202 lbs.

Inputs/Outputs

Video In: Y/C: Mini DIN 4-pin connector
Composite: BNC connector

Input A: RGB in (supplied with IFB-11)
RGB in: 5 BNC
Audio in L/R: Phono x 2 (not available)

Input B: Open for other IFB series inputs

Video Out: Composite video: BNC connector

Controls In/Out: Loophrough mini connector

Remote 1: 14-pin connector (male)

Remote 2: D-sub 9-pin connector (female, RS-422 port)

VPH-1292Q **\$31,990.00**

Supplied Accessories

▪ IBF-11 interface board ▪ RM-PJ1292 remote commander ▪ Remote control cable (15m) ▪ Handles (4) ▪ "AA" size batteries (3) for RM-PJ1292 ▪ AC power cord ▪ Operation/installation manual

Optional Accessories

VPX-010 Projector auto setup system **\$11,330.00**

VPS-100

- HG1** 100" curved screen **4,920.00**
- PC-1271** Signal interface switcher **2,840.00**
- IFB-3000** Interface board for double scanning, composite video input (3X), Y/C input (3X), component input (Y/R-Y/B-Y) (3X), and audio input. . . . **3,580.00**
- VPS-72HG1** 72" curved screen **1,340.00**
- IFU-1271** Interface unit; 1 IFB slot unit when 2 outputs (5 BNC x 2), converts digital signal level to analog signal level; separate/composite sync selectable **1,270.00**
- VPS-100FH** 100" flat screen **1,070.00**
- PSS-1270** Suspension support/mounting bracket. **895.00**
- IFB-1200** Interface board for component (Y/R-Y/B-Y) input and audio input **820.00**
- IFB-101** Interface board for index number selection for max. 100 projectors and AC power on/delayed AC power on function **555.00**
- IFB-30** Interface board for digital RGB input (D sub 9-pin, male) and audio input **535.00**
- IFB-20** Interface board for analog RGB input (D sub 9-pin, male) and audio input **490.00**
- IFB-11** Interface board for analog RGB input (BNC x 5) and audio input **390.00**
- IFB-1000** Interface board for composite video input/output, Y/C input/output and audio input **390.00**
- RM-PJ10** Remote infrared sensor for wireless projector control **145.00**
- RM-1270S** Infrared remote control **69.00**

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

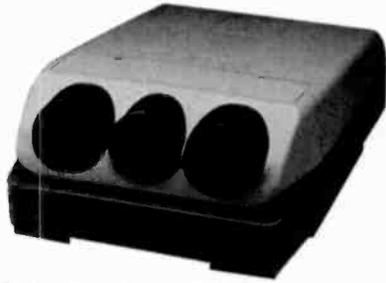


CRT/LCD PROJECTORS



SONY®

Business and Professional Group



VPH-G70Q Multiscan Projector

- Accepts horizontal frequency signals from 15–110kHz
- 8" electromagnetic focus CRTs ▪ Hybrid HACC lenses ▪ 120MHz RGB bandwidth ▪ 240 ANSI lumens brightness ▪ 1700 x 1200 pixel resolution ▪ Independent brightness and color uniformity adjustments ▪ Picture orbiting function reduces the risk of CRT burn
- Power saving mode ▪ Multilanguage on-screen menu ▪ ABL link function and index operation for multiprojection applications
- Loophrough remote connectors ▪ Optional built-in line doubler
- RS-422A communication port ▪ RGB/component (Y/R-Y/B-Y), HDTV, Y/C and composite video input terminals ▪ Universal optical coupling ▪ Memory function ▪ Selectable white balance ▪ ABG (Automatic Background) on/off function ▪ Optical alignment and polarity change ▪ Fine adjustment ▪ Remote control unit supplied
- Pop-out carrying handles \$21,990.00

VPH-D50Q Multiscan Projector

- Accepts signals with a horizontal frequency of 15–64kHz
- 7" static focus CRTs ▪ 75MHz RGB bandwidth ▪ Produces a light output of 160 ANSI lumens and a resolution of 1280 x 1024 dots
- Picture orbiting function reduces the risk of CRT burn ▪ Power saving mode ▪ Multilanguage on-screen menu ▪ ABG (Automatic Background) on/off function ▪ ABL link function and index operation for multiprojection applications ▪ Loophrough remote connectors ▪ Optional built-in line doubler ▪ RGB/component (Y/R-Y/B-Y), HDTV, Y/C and composite video input terminals
- RS-422A communication port ▪ Universal air coupling
- Memory function ▪ Remote control unit supplied ▪ Pop-out carrying handles \$9,990.00

VPH-1044Q SuperBright™ CRT Video Projector

- Factory adjusted for 100" flat screen, adjustable from 67" to 250"
- High resolution of 700 TV lines (composite video) ▪ High output of 140 lumens (all white), 700 lumens (peak white) ▪ HACC lens ensures a high contrast, sharp display with minimum thermal drift
- Component (Y/R-Y/B-Y) and RGB input terminals ▪ Compatible with NTSC, PAL and SECAM; NTSC 4.43 can be reproduced
- Supplied with wireless/wired remote control unit. \$8,590.00

VPH-1001Q SuperBright CRT Video Projector

- Factory adjusted for 100" flat screen, adjustable from 67" to 250"
- High resolution (Video 650 TVL) ▪ High brightness of 700 lumens
- Displays 2000 characters ▪ PAL/SECAM/NTSC/NTSC 4.43, auto sense ▪ Y/C input ▪ Built-in speaker ▪ Delta TAC II lens . . . \$4,990.00

Projector Accessories

- VPS-100HG1 100" curved screen for VPH-1044Q/1001Q \$4,920.00
- EXB-DS10 Internal line doubler board for VPH-D50Q/G70Q 2,200.00
- VPS-72HG1 72" curved screen for VPH-1044Q/1001Q. . . 1,340.00

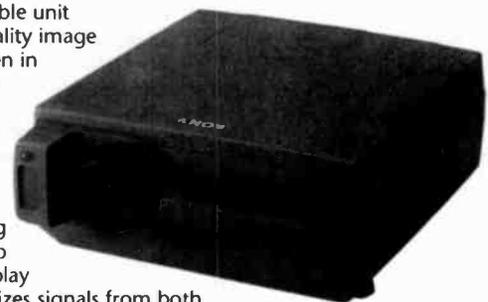
- VPS-100FH 100" flat screen for VPH-D50Q/G70Q/1044Q/1001Q \$1,070.00
- PSS-10 Projector suspension support for all VPH Series projectors 760.00
- IFB-30 Interface board for digital RGB input (D sub 9-pin, male) and audio input for VPH-D50Q/G70Q 535.00
- IFB-12 Interface board for analog RGB, component (Y/R-Y/B-Y), HDTV (Y/Pb/Pr, GBR), Y/C and composite video input/output for VPH-D50Q/G70Q 490.00
- IFB-20 Interface board for analog RGB input (D sub 9-pin, male) and audio input for VPH-D50Q/G70Q 490.00
- IFB-21 Interface board for analog RGB input/output (HD D-sub 15-pin) for VPH-D50Q/G70Q 490.00
- PSS-722 Suspension support for VPH-1044Q/1001Q 395.00
- IFB-1000 Interface board for composite video input/output, Y/C input/output and audio input for VPH-D50Q/G70Q 390.00
- PSS-70 Projector suspension support for VPH-D50Q/G70Q 390.00
- RM-PJ10 Infrared remote control receiver for VPH-D50Q/G70Q 145.00

VPL-W400Q LCD Video Projector

- Portable LCD video projector ▪ 400 ANSI lumens ▪ 600 TV lines of resolution ▪ Reproduces 4:3 and 16:9 signals in their original aspect ratios ▪ 4:3 signals can also be displayed in 16:9 format via the 16:9 precision LCD panel incorporated in the projector ▪ Accepts composite video, Y/C video, component, RGB and HDTV ▪ Can reproduce images from various video equipment onto screens with sizes ranging from 41" to 300" ▪ 5 memories for each of 2 inputs
- On-screen multilingual menu display shows status of major operational functions \$5,990.00

VPL-V500Q Portable LCD Projector

- Compact, portable unit provides high quality image reproduction, even in bright light ▪ 500 ANSI lumens
- Creates uniform image color and brightness from corner to corner of screens ranging in size from 40" to 300" ▪ Plug-and-play operation recognizes signals from both and Macintosh® computers and selects the appropriate data display mode, including dot phase, horizontal size and shift ▪ Can be used as a desktop mounted projector, ceiling mounted projector or for rear projection ▪ 250W metal-halide DC lamp ▪ On-screen menu display in 7 languages ▪ Joystick wireless remote commander provided. \$4,990.00



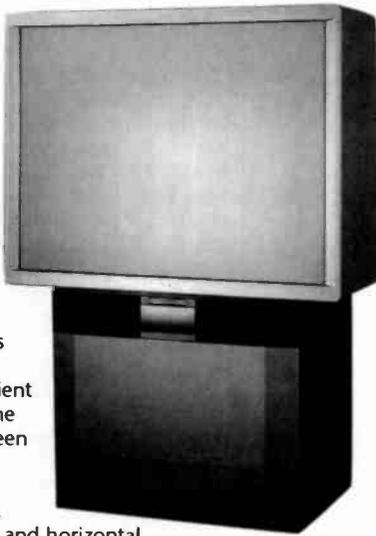
ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



RVP-6010Q MultiScan Rear Screen Video Projection System

- 60" rear projected screen
- Contains projection head, rear projection screen, reflective mirror and audio system in compact, 1-piece unit
- Infrared remote control system
- Projection system can display a wide variety of input sources, including high-end graphics computers
- High contrast pictures unaffected by ambient light due to the design of the system's rear projection screen
- 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
- Black stripes coated on screen's lenticular front surface absorb ambient light and enhance contrast to prevent image "washout" under typical room lighting conditions
- Bright display of up to 150fL at peak white and 40fL all white
- Resolution 1280 x 1024 pixels (RGB input)
- Automatically adjusts for a wide variety of computer sync signals
- Compatible with new high quality video formats, including HDTV (High Definition Television) and IDTV (Improved Definition Television)
- Provides Y/C and video inputs, plus input ports for optional IFB-series interface boards
- Wired or wireless operation 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

\$30,450.00



- IFB-30 Interface board for digital RGB input (D sub 9-pin, male) and audio input **\$535.00**
- IFB-20 Interface board for analog RGB input (D sub 9-pin, male) and audio input **490.00**
- IFB-11 Interface board for analog RGB input (BNCx5) and audio input **390.00**
- IFB-1000 Interface board for composite video input/output, Y/C input/output and audio input **390.00**



DSC-1024 Digital Scan Converter

- Functions as a scan frequency converter
- Transcodes to and from composite, Y/C, RGB and component format signals
- Standard converter from NTSC to PAL and vice versa
- Converts to a wide range of aspect ratios (4:3, 16:9, 2:1, 1:8.5, 1:66, etc.)
- On-screen aspect ratio display shows exactly what aspect ratio user is viewing
- Line doubles horizontal scanning frequencies of NTSC and PAL sources
- Functions as a signal processor for up to 4 x 4 videowall systems
- 3-line digital comb filter
- Freeze and still frame
- Doubles horizontal scanning frequencies
- Input range covers horizontal 15.6-70kHz, vertical 50-120Hz and outputs at 15.6/31.5/37/48/64kHz **\$4,990.00**



RVP-4015Q MultiScan Rear Projector

- Projector head, rear projection screen, reflective mirrors and speakers combined in a single unit
- 3-tube, 3-lens horizontal inline rear projection system
- 40" (diagonal), black stripe, 3-layered screen
- Totally flat screen reduces reflection of light on screen
- NTSC, PAL, SECAM, NTSC 4.43 automatically selected
- 40MHz RGB bandwidth
- Optical coupling CRT for light output efficiency
- 100fL (peak white)/25fL (all white)
- 800 x 800 dots resolution
- Accepts input signals with scanning frequencies from 15 to 85kHz **\$11,990.00**

Peripheral Accessories for RVP-4015Q

- IFB-3000 Interface board for double scanning, composite video input (3X), Y/C input (3X), component input (Y/R-Y/B-Y) (3X), and audio input **\$3,580.00**
- PC-1271 Signal interface switcher **2,840.00**
- IFU-1271 Interface unit; 1 IFB slot unit when 2 outputs (5 BNCx2), converts digital signal level to analog signal level; separate/composite sync selectable **1,270.00**
- IFB-1200 Interface board for component (Y/R-Y/B-Y) input and audio input **820.00**
- IFB-101 Interface board for index number selection for max. 100 projectors and AC power on/delayed AC power on function **555.00**

MPU-F100A Frame Memory/ Frame Synchronizer

- Accepts asynchronous video signals, locks them with the house sync and outputs synchronous video signals
- 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
- Eliminates the show of video signal muting during the transition of the head movement from 1 picture to another by storing a picture in the frame memory
- Lap Dissolve function allows 1 picture to switch over to another with 1.2 seconds of transition time
- MPU-F100A and a ProMavica recorder/player should be connected via an optional interface cable, IFC-100 (2m)
- Equipped with an external genlock input connector for composite video or blackburst input
- 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 external computer control. **\$5,940.00**

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





UP-7200 Color Video Printer

▪ 52 signal frequency presets for automatic signal detection ▪ 4 BNC connectors for a 525-line analog RGB system, a DIN 4-pin connector for S-Video (Y/C), and a BNC connector for NTSC composite signal are provided ▪ An analog RGB high scan signal and HDVS signal can also be input via the DIN 50-pin multiple connector ▪ Up to 7¼" x 9½" size full-color images (525 NTSC video) can be reproduced using the optional UPC-7011 letter sized print media ▪ High scan (Macintosh II) full-color images can be printed at high print speed in approximately 125 seconds ▪ In addition to the full-sized print mode, 2, 4, 6, 8 or 16 different or duplicated 525-line video images can be captured and printed simultaneously on 1 page. \$8995.00

UP-5500 Color Video Printer

▪ Dye transfer sublimation thermal printer provides both an analog and digital interface for use in business applications, video post production, computer graphic design and photography studios ▪ 300 dpi thermal head with 2048 elements prints in 30 seconds ▪ Comes standard with RGB, S-Video and composite interfaces ▪ A5, 5¼" x 8¾" sized high-speed printing ▪ Loopthrough output for system power saving ▪ 4 frame memories capable of storing 4 full images \$6270.00



**UP-930 B/W MultiScan
Video Graphics Printer**

▪ High line: 525 to 1125 vertical scan lines ▪ 7-bit (128 gray gradations) ▪ Hard copy prints in approximately 19 seconds ▪ Full page print ▪ 1, 2, 4 or 8 prints per page ▪ Scanning rate of approximately 15-50kHz \$7040.00

UP-910 B/W Video Graphics Printer

▪ Large print size: 6" x 8" (wide mode) ▪ 128 shades of gray ▪ High resolution, high density 768 x 508 dot pattern ▪ Hard copy prints in approximately 25 seconds ▪ Automatic selection of EIA (525 lines) or CCIR (625 lines) standards ▪ 3:4 or 1:1 selectable aspect ratios ▪ Selectable normal or wide scan modes ▪ Loopthrough BNC video input and output with 75 ohm termination \$2700.00

UP-1200R Color Video Printer

▪ Specially designed for enhanced gamma (image quality) for transfer media automatically selected in mirror image mode ▪ Ability to print 2 different images on 1 sheet ▪ Trimming mode gives user option of selecting a heart-shaped or oval-shaped image area ▪ Mirror image print

capability ▪ Over 500 TV lines horizontal resolution ▪ Accepts composite or Y/C video inputs ▪ Video loopthrough on power off mode ▪ Fast print time—60 seconds per print ▪ Accepts simple remote print operation via optional FS-20 switch or RM-91 remote print button ▪ 100-sheet capacity ▪ 3 print sizes (narrow, normal, wide) \$2145.00

UP-1800 Color Video Printer

▪ Same as the UP-1200R plus: 4 or 16 strobe images print ▪ 2, 4 or 16 pickup print ▪ Selectable image size ▪ Genlock print. \$2865.00

UP-1200A/1 Color Video Printer

▪ Dye transfer sublimation thermal printing (yellow/magenta/cyan 3 channels) ▪ Thermal head: 512 elements (5.6 dots/mm) ▪ Printing paper size: 5¼" x 4" ▪ Picture elements: max. 772 (H) x 488 (V) (full-sized print at wide scan mode) ▪ Printed picture size: maximum 119.2mm x 87.1mm (full-sized print at wide scan mode) ▪ Gradations: 256 levels process over 16.7 million colors per pixel ▪ Picture memory: 8 bits, 1 frame memory (RGB 3-color process) ▪ Printing time: 60 seconds ▪ 2, 4 or 16 duplicate image picture print ▪ 4- or 16-split memory print \$1800.00

UP-880 B/W Video Printer

▪ A6 size ▪ 10.2 dots per mm (259 dpi) with a fast print time of 4 seconds per screen (normal print mode) ▪ Accepts either EIA or CCIR signals with 256 gray levels for good tone reproduction ▪ Prints in either normal or side mode ▪ 1.5, 2.0X zoom, large mode or side-by-side prints. \$1675.00

UP-D8800 Digital Color Printer

▪ High speed printing at approximately 80 seconds at 300 dpi, or approximately 55 seconds at 150 dpi resolution ▪ SCSI or Centronics interface ▪ PostScript® level 2 interface (Pipeline PowerPage®) ▪ Energy star compliant ▪ Large print size providing a full 8" x 10" image on standard letter size paper ▪ Includes software drivers for PC Windows and Macintosh plug-ins for Adobe Photoshop

UP-D8800 Package Configurations

- UP-D8800PS/1 Print engine with TMax™ P891 PostScript board (32M bytes) \$8995.00
- UP-D8800A Print engine with 30M byte SCSI and Centronics interface board \$8800.00

UP-D5500 Digital Color Printer

▪ 300 dpi resolution ▪ Support for both SCSI and Bi-Centronics interfaces ▪ Large print size providing a 5¼" x 7" image on A5 paper ▪ 200 sheets print capacity ▪ Includes driver software for PC Windows® 95 and Macintosh® plug-ins for Adobe® Photoshop® ▪ High speed printing in under 40 seconds ▪ Front load operation \$4950.00

UP-D1500CN/2 Digital Color Printer

▪ Dye transfer sublimation thermal printing technology provides near-photographic quality prints with over 16 million colors ▪ 664 x 512 square pixels capable of handling VGA images with an effective area of 640 x 480 ▪ A6 size digital color prints ▪ 60-second print time \$2025.00

UP-D890 Digital Graphic Printer

▪ High speed printing at approximately 5.5 seconds/print (standard size) ▪ Bi-Centronics interface (IEEE1284) ▪ 256 gray levels provide photo realistic black-and-white prints ▪ 100mm x 100mm standard print picture size ▪ Windows 3.1 and Windows 95 driver software included ▪ 500mm x 100mm panoramic print capability with optional 4M bytes memory ▪ User-selectable print modes \$1925.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



PCM-7010 Time Code DAT Recorder/Reproducer

■ In addition to 44.1kHz and 48kHz, can record and play back the digital audio data sampled at 32kHz ■ Can play tapes recorded in the long play mode of consumer DAT recorders ■ 32kHz capability and memory start/high-speed search functions ■ Well-suited to program transmission at broadcasting stations ■ Wide compatibility and superior sound quality make it ideal for recording/playback applications. **\$4525.00**

PCM-7010F

■ Includes a configured PCM-7010 Recorder with DABK-7010 time code reader/generator, DABK-7011B Digital I/O and DABK-7012 Memory Start installed as standard **\$7300.00**

Options and Accessories

RM-D7300 Editing Remote Controller ■ Provides comprehensive control over editing operations via Sony 9-pin serial interface ■ Makes it easy to input time code address, various ID codes and program numbers ■ Enables gain control of both analog and digital inputs in the digital domain when used with PCM-7040. **\$4950.00**

RM-D7200 Dual Remote Controller ■ Provides remote control of 2 recorder transports. **\$2585.00**

RM-D7100 Remote Controller ■ Provides remote control of recorder transport functions of PCM-7010 via 37-pin parallel interface **\$720.00**

DABK-7010 Time Code Reader/Generator ■ Provides capability of reading and generating SMPTE/EBU time code ■ Enables recorder to operate in synchronization with an external video sync signal. **\$1275.00**

DABK-7011B Digital I/O ■ Conforms to the AES/EBU format (all models); offers unbalanced (IEC-958) digital I/O (DABK-7011A/7011B) and Sony SDIF-2 interface (DABK-7011B) ■ Allows recorder to lock to an external word sync signal. **\$700.00**

DABK-7012 Memory Start ■ Uses 4Mb digital memory to give an instant start playback facility to PCM-7010 **\$1150.00**

DABK-7013 Computer Interface (RS-232C) ■ Enables recorder to be controlled from a computer RS-232C port ■ Useful for building up a sound effects library or a programmed playback system. **\$580.00**

DABK-7014 Remote Interface ■ Optional interface board for the PCM-7010, including serial remote interface connectors ■ Enables connection between the PCM-7010 and the RM-D7300 . . . **\$400.00**

PCM-2800 DAT Recorder/Player

■ 4-head DAT recorder with 4 direct-drive motors in the mechanical deck ■ Mechanical deck eliminates need for drive belts and improves accuracy, stability and durability of tape transport ■ SBM recording functions with 20-bit resolution ■ Parallel remote port for effective feeder starts ■ Interface options for professional and personal use—digital AES/EBU, IEC 958 Type 1/2; analog balanced (XLR) and unbalanced (RCA pin) **\$2695.00**

PCM-R500 Professional DAT Recorder/Player

■ Rugged professional DAT recorder offering balanced XLR analog and AES/EBU and SPDIF digital I/O ■ Employs a durable, 4 direct-drive motor tape transport for reliability and Super Bit Mapping® digital processing ■ Includes a jog/shuttle knob **\$1695.00**



DTC-A8 DAT Recorder

■ Super bit mapping technology for recording quality equivalent to 20-bit resolution ■ 2-head, 4 motor tape transport ■ Analog input 44.1kHz recording ■ 4D.D motor mechanism ■ Roll-back REC function ■ Superior sound—for professional quality mastering applications ■ Remote foot-switch control ■ Comprehensive set of terminals for easy setup in any system ■ 19" rackmountable ■ Sub-code function ■ Wireless remote ■ Date function ■ Absolute time recording ■ Unbalanced analog inputs/outputs (RCA) and phone **\$1345.00**

DTC-A6 DAT Recorder

■ Capable of recording analog sources in 44.1kHz ■ Works for coaxial and optical digital interface systems ■ Supplied rackmount adaptor and wireless remote control ■ Compatible with Serial Copy Management System ■ Digital input/output: IEC 958 Type 2 ■ Unbalanced analog input/output **\$995.00**

TCD-D8 DAT Walkman® Player/Recorder

■ 48kHz sampling and 16-bit linear quantization ■ 48kHz/44.1kHz/32kHz sampling frequencies selectable for digital and analog recording ■ Long play mode for up to 4 hours of recording and playback ■ Automatic date function ■ Automatic and manual recording level ■ Anti-shock mechanism for recording and playback ■ Large back lit display with 4-segment battery indicator ■ Automatic/manual subcode ■ 100X high-speed AMS ■ 2-speed cue/review ■ Digital input and output **\$799.95**

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



DIGITAL MIXER/ CD/MINIDISC PLAYERS/RECORDER



SONY®

Business and Professional Group



DMX-E3000 16-Channel Digital Audio Console

- Fully digital audio console designed for DVTR based video post-production
- 16 into 4 configuration with additional 32 x 16 input router
- Control surface and signal processing matched the style of video switchers
- AES/EBU I/O ports, direct connection to DVTRs, PCM-3402, DAT etc.
- Video style monitoring with 4 internal preview buses and analog outputs via 20-bit D/A converters
- Optional EQ processing (3-band with HP and LP filters)
- Phase inversion and programmable delay (0-9.9 frames)
- Editor, auto and manual crossfade modes
- Assignable audio insert send and return
- Supports 48kHz (DVTR audio), 47.998kHz (HDVS transfer), 44.1kHz (CD) sample rates
- Video, word, DI inputs and word output sync
- Serial video edit controller interface (Sony Serial and ESAM II)
- Parallel interface for GPIs and remote control
- Snapshot automation with 99 audio registers

Supplied Accessories

- 30m connecting cable (control panel/processor)
- 10m connecting cable (control panel/meter bridge)
- Rackmount kit
- Meter housing installation kit
- Operation and maintenance manual . . . **\$22,500.00**

Optional Accessory

DMBK-3000 Equalizer/Filter Unit

Equipped with the DMBK-3000, the DMX-E3000 provides assignable control of equalizer along with low/high cut filters **\$3,100.00**

CDP-3100 CD Player/CDS-3100 Remote

- 18-bit D/A conversion system with 8X oversampling
- Linear power supply
- Remote control operation
- Jog search function
- Preview "end" and "begin" functions
- 3 timer modes selectable
- Variable speed playback from ±12.5% in 0.1% steps
- AMS function enables rapid start from point where modulation is detected on track
- Cue point memory
- Last cue memory



- Fader start
- Excellent system expandability—DABK-3101 memory board, DABK-3102/DABK-3103 interface boards
- Channel origin data
- Selectable player modes
- End alarm
- Single play and index modes
- Compact size
- Accommodates 3" and 5" CDs
- AES/EBU digital output

CDP-3100 Pro compact disc player **\$3,650.00**

CDS-3100 Pro CD remote **1,875.00**

Options

DABK-3102 Interface Board

Allows control from a digital mixer or video editor via a 9-pin serial remote connector. AES/EBU digital output, reference video sync

input, word sync input, D-1 sync input and time code signals are provided. **\$1,400.00**

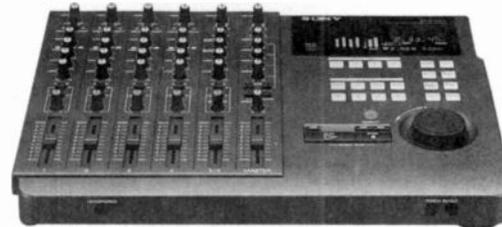
DABK-3101 Memory Board

Provides instant memory start and a memory jog function with an accuracy of 1 CD frame **\$610.00**

MDS-B5/B6P Professional MiniDisc Recorder/Player

- Includes IBM® PC keyboard interface for full-sized remote control
- Multi-access memory start for 10 tracks of instant start
- High-speed disc copy allows safety copy of disc including text
- Supplied accessories: RM-DC2 wired remote control, duplication interface cable, AC power cord and 2 PC keyboard overlays **\$3,295.00**

MDS-B6P Player only **2,300.00**



MDM-X4 MiniDisc Multitrack Recorder

- 4-track recording
- Offers 37 minutes per track of 4-track recording
- Song, partial song and individual track editing
- MIDI in/out/through and MMC
- 10-input analog mixer. **\$1,250.00**

MDS-B3 Portable MiniDisc Recorder

- Features stereo and mono record modes, built-in mic and speaker, on-the-fly track number insert **\$899.95**

MZ-R3 Portable Stereo MiniDisc Digital Recorder

- Ultracompact design
- 10-second shock resistant memory
- Disc/track titling with easy character input, easy editing
- Large LCD shows disc and track names
- Digital optical line in
- 7 hours of recording with 2 "AA" batteries and LIP-12 rechargeable battery
- Supplied accessories: stereo headphone with remote control, AC adaptor, dry battery case, carrying case. **\$549.95**

CDP-C910 10-Disc CD Changer

- 45MHz high density linear converter™ D/A system
- 8X oversampling, 45-bit digital filter
- 10-key Direct Access™ track selection
- Custom File™ memory for 184 discs
- Remote Commander® wireless remote control
- Direct Digital Sync™ circuitry minimizes time base errors called jitter
- Optical digital output
- Custom File™ memory
- Dot matrix fluorescent display
- Multidisc 32-track programming
- 7 play modes and 7 repeat modes. **\$600.00**

CDP-D500 Professional CD Player

- Designed to fit into production applications with features such as a jog/shuttle knob and cue standby for precise cueing
- External word sync input
- Front panel direct rack access
- AES/EBU and SPDIF digital out. **\$1,595.00**

CDP-L3 Professional CD Player

- Balanced XLR analog outputs
- Direct 20-key button access
- Auto cue/pause
- Repeat and A-B modes **\$750.00**

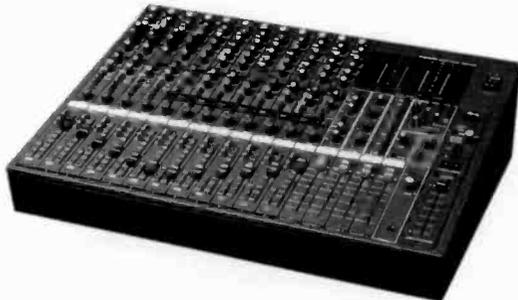
ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



TCD-D10 PROII 2-Channel Digital Audio Recorder

- Portable DAT recorder of extremely compact dimensions
- Easy to read LCD multifunction display
- Absolute time recording
- Balanced, switchable mic/line inputs
- Built-in hours meter, microphone low cut filter and microphone attenuator/limiter
- AES/EBU type digital I/O
- High-speed search using the ID recorded in subcode area
- Built-in speaker
- AC/DC operation: 100VAC-240V with ACP-88 AC adaptor; 6VDC with NP-22H rechargeable battery pack

\$4000.00



MXP-S390/P390 12-Channel Audio Mixers

- Designed for enhanced audio-follow-video editing
- Capable of accepting up to 4 monaural and 8 stereo inputs
- Provides 4-channel operation to support VTRs with a 4-channel audio recording/playback capability

MXP-S390 Serial Version ▪ Incorporates a D-sub 9-pin remote interface, which conforms to the industry standard ESAM II extended protocol ▪ Comprehensive external control from a wide range of video editors, such as the BVE-2000/9100 systems (with appropriate optional boards installed) **\$8300.00**

MXP-P390 Parallel Version ▪ Provides Sony standard parallel remote interfaces for flexible control from appropriate Sony editing equipment **7300.00**



MXP-290 8-Channel Audio Mixer

- 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-910 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
- 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

\$4525.00

MXBK-201 Optional arm rest kit for the MXP-290/210 . . . 300.00

MXBK-200 Optional rackmount adaptor for the MXP-290/210 **118.00**

MXP-210 8-Channel Audio Mixer

- 8 channel inputs and 2 channel outputs
- Improved channel crosstalk (more than 70dB at 10kHz)
- 2 individual master faders for CH-1 and CH-2 PGM outputs
- Balanced line inputs
- Balanced monitor input (changed from unbalanced type of the MXP-21)
- Built-in 3-band graphic equalizer and low cut filter **\$2525.00**

MXBK-200 Optional rackmount adaptor for the MXP-290/210 **118.00**

MXBK-201 Optional arm rest kit for the MXP-290/210 . . . 300.00



DPS-V77 Stereo Multi-Effects Processor

- Digital delay, reverberation, modulation and filtering processing functions
- AES/EBU and IEC 958 Type II signal formats supported, allowing direct connection with DAT and DTRS machines
- 2 effects blocks
- Large LCD panel, function keys, jog/shuttle knob and numeric keypad
- Assignable parameter function
- Morphing function crossfades between effects
- 198 preset memories
- 198 user memories
- Full MIDI support **\$1775.00**

HR-GP5 Guitar Effects Processor

- Up to 7 effects at the same time
- Twin 18-bit A/D and D/A converters
- 4 amp simulators and 4 microphone positions
- Intelligent pitch shifter
- Built-in guitar tuner
- Graphic display and jog/shuttle encoder
- 100 preset effects and 100 user memory settings
- MIDI interface
- Footswitch control for live performances
- High-speed 48-bit digital signal processing
- Frequency response: 20Hz-22kHz, +0dB/-3dB
- S/N: more than 90dB **\$595.00**

HR-MP5 Multi-Effects Processor

- 51 effects with high sound quality
- Twin effect block construction
- High speed stereo processing
- Intelligent pitch shifter
- Built-in tuner for musical instruments
- Graphic display and jog/shuttle
- 100 preset effects and 100 user memory settings
- MIDI interface
- Footswitch control for live performances
- Frequency response: 20Hz-22kHz, +0dB/-3dB
- S/N: more than 92dB **\$595.00**

HR-RC5 8-Pedal MIDI Foot Controller

- MIDI output controller enables control of external MIDI equipment (with optional AC adaptor)
- Pedal connectors
- Dimensions: 2"H x 12"W x 9 1/2"D
- Weight: 2 lbs., 1 oz. **\$150.00**

MDR-7502 Professional Headphone

- Dynamic headphone with 30mm driver unit for clear, high quality sound reproduction
- Closed ear design
- Stereo unimatch plug, 1/4" and 3/8" applications
- Gold connectors and OFC cord
- 60Hz to 16kHz frequency response. **\$74.00**

MDR-7504 Professional Headphone

- Dynamic headphone with folding construction
- Gold connectors and OFC cord
- Stereo unimatch plug, 1/4" and 3/8" applications
- Closed ear design
- 30mm driver unit
- 15Hz to 18kHz frequency response
- Soft carrying case **\$128.00**

MDR-7506 Professional Headphone

- Dynamic headphone with rugged design
- Folding construction
- 40mm driver unit
- Closed ear design
- Gold connectors and OFC cord
- 10Hz to 20kHz frequency response
- Soft carrying case
- Stereo unimatch plug, 1/4" and 3/8" applications **\$170.00**

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



WIRELESS MICROPHONE SYSTEMS



SONY®

Business and Professional Group

UHF Synthesized Wireless Microphone System

- 800MHz UHF band operation
- PLL synthesized wireless microphone system
- Space diversity reception system
- Preprogrammed channel plans
- LCD display for multiple information

UHF COMPONENTS

Transmitters

WRT-860A68 M66	Body-pack transmitter with ECM-66BC unidirectional condenser lavalier microphone	\$2225.00
WRT-860A68 M77F	Body-pack transmitter with ECM-77FC omnidirectional lavalier microphone	2000.00
WRT-860A (CH)*	Miniature body-pack transmitter with 20mW power, detachable antenna and running battery life meter	2000.00
WRT-860A68 M77	Body-pack transmitter with ECM-77BC omnidirectional lavalier microphone	1975.00
WRT-860A68 M55	Body-pack transmitter with ECM-55BC omnidirectional electret condenser lavalier microphone	1925.00
WRT-860A68 M44	Body-pack transmitter with ECM-44BC omnidirectional electret condenser lavalier microphone	1850.00
WRT-860A68 M166	Body-pack transmitter with ECM-166BC unidirectional electret condenser lavalier microphone	1800.00
WRT-860A68 C15F	WRT-860A68 UHF synthesized body-pack transmitter	1750.00
WRT-860A68 K116	Body-pack transmitter with ECM-166BC unidirectional electret condenser lavalier microphone	1750.00
WRT-867A68	Handheld transmitter with dynamic wireless microphone and robust helical antenna	1500.00
WRT-830A68	Condenser TX	1350.00
WRT-820A (CH) M77F*	UHF with flesh colored lavalier mic	1325.00
WRT-820A (CH) M77*	Body-pack transmitter with ECM-77BC omnidirectional electret condenser lavalier microphone	1200.00
WRT-820A (CH) M66*	Body-pack transmitter with ECM-66BC unidirectional electret condenser lavalier microphone	1150.00
WRT-820A (CH) M55*	Body-pack transmitter with ECM-55BC omnidirectional electret condenser lavalier microphone	1150.00
WRT-820A (CH) M44*	Body-pack transmitter with ECM-44BC omnidirectional lavalier microphone	1050.00

WRT-810A (CH)*

Handheld microphone transmitter with dynamic capsule **\$990.00**



WRT-820A (CH) K116*

Body-pack transmitter with K-1161 guitar adaptor **\$990.00**

WRT-820A (CH) M166*

Body-pack transmitter with ECM-166BC unidirectional electret condenser lavalier microphone **\$990.00**



WRT-820A (CH)*

UHF synthesized body-pack transmitter **\$980.00**

WRT-820A (CH) C15F*

820A (CH) with EC1.5CF **\$980.00**

WRT-800A68
WRT-805A68

UHF synthesized wireless handheld mic. **449.95**
UHF synthesized body-pack transmitter. **449.95**

Receivers

WRR-850A (CH)*	High quality, dual diversity 800 wireless receiver	\$5000.00
WRR-840A (CH)*	Dual diversity receiver, 19" rackmount (1 space)	2400.00



WRR-820A (CH)*

Single diversity receiver, 19" rackmount (1 space) **1600.00**

Tuners

WRR-855A68	UHF synthesized diversity portable tuner for camcorder use	\$2600.00
WRR-810A (CH)*	Nondiversity UHF synthesized tuner with 6 preprogrammed channel plans which are factory preset for use in a multichannel operation at 1 location; LCD display; monitor jack; compander system for wide dynamic range and low noise	1325.00
WRR-860A68	Diversity version of the WRR-810A(CH)	5950.00

Antenna Systems

WD-880A	Wireless channel multiplier provides up to 42 simultaneous channels of operation	\$4500.00
WD-820A	Antenna divider, rackmount (1 space)	1450.00
AN-820A	Active antenna	183.00

*Note: (CH) stands for the 2-character channel number. At the present time, Channel 68 is the only available channel; however, more channels are expected to be added in the future.

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





ECM-M55 Electret Condenser Stereo Microphone

- Frequency response: 70Hz-20,000Hz
- Sensitivity: -40dB ■ S/N: 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-M55 \$1450.00
- ECM-M55 PAC A Stereo mic package 1950.00
- ECM-M55 PAC B Stereo mic 2475.00



ECM-77B Omnidirectional Lavalier Microphone

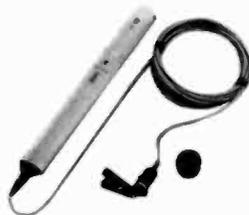
- Fingernail-sized—5.6mm ■ Frequency response: 40Hz-20,000Hz
- Enables unobtrusive miking, reduces glare ■ Permits intelligible voice reproduction even if the microphone is hidden inside a costume

- ECM-77B Black anodized finish \$465.00
- ECM-77BC ECM-77B type mic head 345.00
- ECM-77BPT ECM-77B type pigtail mic 350.00
- ECM-77F Flesh colored finish 480.00
- ECM-77FPT Flesh colored pigtail mic 375.00

ECM-66B Unidirectional Lavalier Electret Microphone

- Wide-range, unidirectional back electret capsule ■ Clean, natural reproduction of musical instruments ■ Excellent isolation from the acoustic environment ■ Power supply includes a battery on/off switch
- LED battery condition indicator
- Frequency response: 70Hz-14,000Hz

- ECM-66B Black anodized finish \$465.00
- ECM-66BC ECM-66B type mic head 345.00
- ECM-66BPT ECM-66B type pigtail mic 325.00



ECM-55B Omnidirectional Lavalier Electret Condenser Microphone

- Omnidirectional electret condenser design ■ Designed for miking musical instruments and voice pickup ■ Frequency response: 30Hz-18,000Hz

- ECM-55B Black anodized finish \$405.00
- ECM-55BC ECM-55B type mic head 270.00
- ECM-55BPT ECM-55B type pigtail mic 270.00

ECM-44B Omnidirectional Lavalier Electret Condenser Microphone

- Miniature 1/2" x 1/2", 0.07 oz. microphone head ■ Operates on 1 "AA" size battery ■ Supplied holder clip and urethane windscreen

- ECM-44B Black anodized finish \$265.00
- ECM-44BC ECM-44B type mic head 160.00
- ECM-44BPT ECM-44B type pigtail mic 135.00

ECM-672 Unidirectional Back Electret Condenser Microphone

- Frequency response: 50Hz-16,000Hz ■ Operates on 1 "AA" size battery for 3000 hours ■ LED battery condition indicator ■ Built-in low cut filter operated by on/off switch ■ Supplied urethane windscreen has a stopper to prevent it from falling off the microphone \$630.00

ECM-670 Electret Condenser Microphone

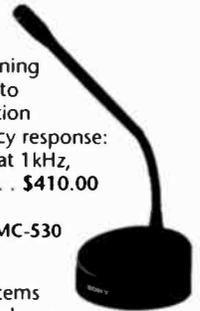
- Compact and lightweight ■ High-performance electret condenser microphone with super cardioid characteristic ■ External power supply (12-48VDC) via XLR connector ■ Low cut switch provides low frequency roll-off \$530.00

ECM-510 Electret Condenser Microphone

- Designed primarily for interviews ■ Ultraslim and lightweight body
- Eliminates handling noise ■ Operates for approximately 8,000 hours consecutively from 1 "AA" size alkaline battery ■ Can be operated from a portable A/V recorder or camcorder (with 12DC to 48V power)
- Optimum voice pickup ■ Windscreen \$455.00

ECM-530 Electret Condenser Microphone

- Gooseneck, extendable stem improves mic positioning
- LED power indicator ■ Designed for small theaters to large business conferences ■ Enhanced noise protection
- 2-way powering ■ Inconspicuous wiring ■ Frequency response: 70Hz to 18,000Hz ■ Output impedance: 150 ohms at 1kHz, balanced ■ S/N: >63dB \$410.00



ECM-531 Electret Condenser Microphone

- Designed for voice pickup and recording in PA systems
- Gooseneck and extendable stem for flexible microphone positioning ■ Slim, elegant design ■ Low cut switch for enhanced sound intelligibility ■ LED power indicator ■ Frequency response: 70Hz-18,000Hz ■ Sensitivity: -49dB ■ S/N: 64dB \$365.00

EMC-530

ECM-166BC Unidirectional Electret Condenser Microphone

- External power supply operation ■ Supplied urethane windscreen and holder clip ■ Microphone head: ø12.5mm x 23.5mm
- ECM-166BC \$135.00

C-48 3-Directive Condenser Microphone

- Large, gold-coated diaphragm suitable for high performance recording ■ 3 directivities (unidirectional, bidirectional, or omnidirectional) selectable ■ 2-way powering system (battery operation or external power supply) ■ Flexible and versatile facilities: 10dB pad switch, 2-position low cut switch ■ Frequency response: 30Hz-16,000Hz ■ S/N: More than 72dB ■ Output impedance: 150 ohms \$1150.00

C-76/C-74 Super Unidirectional Gun-Type Condenser Microphones

- For use in theaters, on sound stages, in large halls, television studios and even outdoors
- Simply aim 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-76 \$1325.00
- C-74 1200.00



Dynamic Microphones

- F-780 For concerts and TV production ■ Rugged capsule ■ High quality Copper Clad Aluminum Wire (CCAW) ■ Robust mic holders ■ AlNiCo magnet \$350.00
- F-740 For vocal/instrumental pickup ■ Rugged capsule ■ AlNiCo magnet ■ CCAW voice coil ■ Robust mic holders 245.00
- F-730 For on-stage interviews and TV programs ■ 1-piece capsule shock mount ■ Talk switch 165.00
- F-720 For schools, halls, churches, etc. ■ Talk switch ■ 1-piece capsule shock mount 165.00
- F-710 Suitable for voice pickup and sound reinforcement ■ Built-in talk switch ■ Neodymium magnet 95.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



VIDEO/AUDIO TAPES



SONY®

PROFESSIONAL MEDIA



Master Model	Carton Qty.	Price Each	Master Model	Carton Qty.	Price Each
Professional Grade MiniDisc			D-2 Digital Video Master Cassettes		
PRMD-74	100	\$21.50	D2S-6M Sm. Shell	10	\$ 42.86
NT Cassettes			D2S-12M Sm. Shell	10	76.14
NTC-60	100	\$ 9.95	D2S-22M Sm. Shell	10	102.31
NTC-90	100	13.95	D2S-32M Sm. Shell	10	134.63
NTC-120	100	16.95	D2M-6M Med. Shell	10	42.86
DVCAM Digital Video Cassettes			D2M-12M Med. Shell	10	76.14
PDV-M12ME	50	\$23.95	D2M-22M Med. Shell	10	102.31
PDV-M22ME	50	26.34	D2M-34M Med. Shell	10	134.63
PDV-M32ME	50	28.74	D2M-64M Med. Shell	10	196.24
PDV-M40ME	50	29.95	D2M-94M Med. Shell	10	296.55
PDV-64ME	50	39.52	D2L-105M Lg. Shell	15	344.23
PDV-94ME	50	44.30	D2L-126M Lg. Shell	15	409.55
PDV-124ME	50	50.30	D2L-156M Lg. Shell	15	484.90
PDV-184ME	50	59.99	D2L-188M Lg. Shell	15	606.22
DARS MP Series Digital Audio Master Cassettes			D2L-208M Lg. Shell	15	652.20
DARS-30MP	50	\$17.13	Betacam Oxide Series		
DARS-60MP	50	24.50	BCT-5G	50	\$12.20
DARS-113MP	50	33.16	BCT-10G	50	14.41
1" High Band V1-KQ Series Cardboard Box			BCT-20G	50	18.36
V1-K-34AA	5	\$ 83.51	BCT-20GSC Shipper	50	18.36
V1-K-66AA	5	122.55	BCT-30G	50	23.36
V1-K-96AA	5	186.52	BCT-30GSC Shipper	50	23.36
V1-K-126AA	4	258.01	BCT-30GL Lg. Shell	10	32.14
1" High Band V1-KQ Series Flame Retardant Shipper			BCT-60GL Lg. Shell	10	58.91
V1-K-34SPA	5	\$ 96.16	BCT-90GL Lg. Shell	10	77.73
V1-K-66SPA	5	134.78	Betacam Oxide Bulk Cassettes		
V1-K-96SPA	5	203.67	BCT-5GNP	50	\$10.55
V1-K-105SPA	5	234.91	BCT-10GNP	50	13.93
V1-K-126SPA	5	281.27	BCT-20GNP	50	17.50
V1-K-156SPA	5	333.03	Betacam Metal Particle Professional Series		
V1-K-188SPA	5	433.01	UVWT-10MA	50	\$ 40.61
1" Digital High Definition HD-1D Series			UVWT-20MA	50	45.11
HD-1D-33SP	5	\$1544.54	UVWT-30MA	50	49.63
HD-1D-63SP	4	2944.66	UVWT-60MLA	10	70.39
UNIH1 ½" High Definition Cassette			UVWT-90MLA	10	110.32
HCT-63	10	\$769.28	Betacam Metal Particle Broadcast Bulk Cassettes		
D-1 Digital Video Master Cassettes			BCT-5MNPA	50	\$41.50
D1S-6A	10	\$ 63.05	BCT-10MNPA	50	46.71
D1M-8A	10	100.00	BCT-20MNPA	50	51.91
D1M-12A	10	108.39	BCT-30MNPA	50	57.09
D1M-22A	10	151.50	Betacam Metal Particle Broadcast Master Series		
D1M-34A	10	190.48	BCT-5MA	50	\$ 44.16
D1L-76A	5	328.07	BCT-10MA	50	47.77
D1L-94A	5	415.64	BCT-20MA	50	53.07
D-2 Digital Video Bulk Cassettes			BCT-20MSCA Shipper	50	53.07
D2S-3MNP Sm. Shell	20	\$ 29.78	BCT-30MA	50	58.39
D2S-6MNP Sm. Shell	20	39.46	BCT-30MSCA Shipper	50	58.39
			BCT-30MLA Lg. Shell	10	58.39
			BCT-60MLA Lg. Shell	10	82.82
			BCT-90MLA Lg. Shell	10	129.80
			Master Model		
			Carton Qty.		
			Price Each		
			Digital Betacam Cassettes		
			BCT-D6	40	\$ 66.24
			BCT-D12	40	71.66
			BCT-D22	40	79.61
			BCT-D32	40	87.59
			BCT-D40	40	92.15
			BCT-D34L	10	87.59
			BCT-D64L	10	124.23
			BCT-D94L	10	194.70
			BCT-D124L	10	248.30
			Betacam SX Digital Video Cassettes		
			BCT-125X	50	\$23.06
			BCT-225X	50	25.95
			BCT-325X	50	28.82
			BCT-605X	50	40.37
			BCT-645XL	10	54.78
			BCT-945XL	10	61.99
			BCT-1245XL	10	69.22
			BCT-1945XL	10	86.50
			Betamax Bulk Cassettes		
			LSB-435	50	\$6.62
			LSB-530	50	7.08
			U-matic SP Series		
			KSP-S10 Mini	10	\$23.44
			KSP-S20 Mini	10	27.10
			KSP-10	10	24.62
			KSP-20	10	28.28
			KSP-30	10	31.81
			KSP-60	10	41.70
			U-matic XBR Series		
			KCS-10XBR Mini	10	\$21.79
			KCS-20XBR Mini	10	25.21
			KCA-10XBR	10	22.87
			KCA-20XBR	10	26.29
			KCA-30XBR	10	29.57
			KCA-60XBR	10	38.77
			U-matic BRS Series		
			KCS-10BRS Mini	10	\$20.44
			KCS-20BRS Mini	10	22.31
			KCA-5BRS	10	19.93
			KCA-10BRS	10	20.18
			KCA-20BRS	10	21.44
			KCA-30BRS	10	23.90
			KCA-60BRS	10	33.26

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

See Our Ads on Pages 9-11

REFERENCE



Model	Master Carton Qty.	Price Each
U-matic Bulk Cassettes—Tabs In		
KSA-5BRST	20	\$13.68
KSA-10BRST	20	14.75
KSA-15BRST	20	15.82
KSA-20BRST	20	16.93
KSA-30BRST	20	19.14
KSA-60BRST	20	27.89
Professional S-VHS Cassettes—Album Case		
MQST-30	40	\$18.41
MQST-60	40	19.89
MQST-120	40	20.95
MQST-126/NP	50	18.37
Broadcast-Grade Professional VHS Cassettes—Album Case		
T-30BA	40	\$ 8.65
T-60BA	40	9.98
T-120BA	40	11.90
Premier-Grade Series Professional VHS Cassettes—Album Case		
T-30PM	50	\$ 8.65
T-60PM	50	9.98
T-120PM	50	11.90
Professional-Grade VHS Cassettes—Sleeve		
T-30PR	50	\$5.74
T-60PR	50	6.41
T-120PR	50	6.77
VHS Bulk Cassettes		
TS-15L*	50	\$3.45
TS-30L*	50	3.88
TS-45L*	50	4.47
TS-60L*	50	4.99
TS-90	50	5.74
TS-105	50	6.12
TS-120*	50	6.50
TS-127	50	6.78
TS-160	50	6.81
*Also available in "tabs in" configuration. When placing orders for "tabs in" models, please add a "T" at the end of the model number.		
Hi8 Professional Packaged Cassettes—Album Case		
P6-30HMPX	50	\$14.28
P6-60HMPX	50	20.42
P6-120HMPX	50	27.63
P6-120HMPX/NP* 100		27.63
* Bulk packaged model.		
Hi8 Metal Evaporated With DLCTM Technology Professional—Album Case Packaged Cassettes		
E6-30HMEAD	50	\$26.03

Model	Master Carton Qty.	Price Each
Hi8 Metal Evaporated With DLC Technology Professional—Album Case Packaged Cassettes (cont'd)		
E6-60HMEAD	50	\$37.23
E6-120HMEAD	50	50.38
Hi8 Metal Evaporated Professional Packaged Cassettes—Album Case		
E6-30HMEX	50	\$20.02
E6-60HMEX	50	28.64
E6-120HMEX	50	38.75
8mm Bulk Cassettes		
P6-15PHB	100	\$ 5.19
P6-30PHB	100	5.78
P6-60PHB	100	7.38
P6-90PHB	100	8.83
P6-105PHB	100	9.55
P6-120PHB	100	10.13
P6-135PHB	100	10.93
P6-150PHB	100	13.47
100EVP-CASE	100	.43
Professional DAT Digital Audio Cassettes		
PDP-15	50	\$10.29
PDP-34	50	12.03
PDP-48	50	13.80
PDP-64	50	15.73
PDP-94	50	19.13
PDP-124	50	22.50
Professional DAT Digital Audio Cassette Album Packs (Includes 1 Tape)		
PDP-34A	50	\$13.93
PDP-64A	50	18.05
PDP-124A	50	24.43
Professional Digital Audio Master Cassettes for ADAT		
DASV-40	40	\$20.53
DASV-60	40	33.16
¾" Digital Audio Cassettes		
MDU-30	10	\$32.50
MDU-60	10	45.00
MDU-75	10	57.50
¾" Open Reel Digital Audio Tape for DASH		
D-¾-730	20	\$ 41.25
D-¾-1460	10	67.50
D-¾-2190	10	125.63
½" Open Reel Digital Audio Tape for DASH		
D-½-1460	5	\$131.25
D-½-2920	5	262.50

Model	Master Carton Qty.	Price Each
Professional Digital Audio Cassettes for DTRS		
DARS-116	50	\$44.43
DAT Digital Audio Cleaning Cassette		
DT-10CLA	50	\$10.99
¼" Digital Audio Empty Reels		
R-¼-7DA	10	\$16.88
R-¼-10DA	10	24.38
R-¼-12DA	10	31.88
½" Digital Audio Empty Reels		
RH-10DA	5	\$62.50
RH-14DA	5	87.50
Video Accessories		
CL-1-SPS	1" Tape Shipper Case (9")	10 \$ 40.55
CL-1-SPL	1" Tape Shipper Case (14")	10 44.77
KCS-5CL	U-matic Cleaning Cassette	10 24.98
HCT-12CL	½" HD Cleaning Cassette	1 125.00
BCT-5CLN	Betacam Cleaning Cassette	5 18.07
BCT-D12CL	Digital Betacam Cleaning Cassette	5 31.25
V-25CLN	VHS Cleaning Cassette	10 8.99
V-8-25CLH	8mm Cleaning Cassette	50 9.99
D1M12	D-1 Digital Master Video	5 129.00
D2M-12CL	D-2 Digital Video Cleaning Cassette (Medium)	10 109.00
D2S-12CL	D-2 Digital Video Cleaning Cassette (Small)	10 109.00
RI-9V	1" Empty Reel	5 49.50
RI-11V	1" Empty Reel (11.75")	2 84.18
RI-14V	1" Empty Reel (14")	2 113.71

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



MIXING CONSOLES/ MONITOR SYSTEM



Delta DLX Mixing Consoles

- Individual output connectors
- 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
- Patented active panpot design, which generates precise stereo imaging and allows the safe use of group outputs as individual mono sends
- Advanced EQ on the deluxe input modules include HF (12kHz) and LF (60Hz hybrid peak/shelf) sections
- Sweepable High-Mid and Low-Mid sections give precise control over the vital mid-range bands, together covering 150Hz to 10kHz



32-input console	..... \$12,595.00
24-input console	..... 9,595.00
16-input console	..... 7,295.00
8-input rackmount console	..... 4,995.00
8-input console	..... 4,995.00

SPIRIT By Soundcraft

Spirit 8 8-Bus Mixing Console

- 40 channels
- Each channel can be soloed pre-fader, post-EQ to check gain levels
- Custom-built 100mm long-throw linear faders provide 10dB of extra gain above the 0 mark
- Features the extra control of 8 discrete subgroups
- Up to 40 UltraMic Plus™ mic inputs handle up to +28dBu of input level, combined with high CMRR and an EIN figure
- 20Hz-20kHz noise bandwidth
- 32 mono and 4 stereo inputs routed to mix
- Mic and line inputs offer 66dB gain range
- +48V phantom power
- 10 x 2 matrix section provides extra side-fills (derived from the 8 groups and the mix buses)
- 4 true mute groups
- Up to 4 pre-fade auxes plus 2 auxes for effect
- 6 aux sends allow the choice of either monitor or effects oriented mixes
- 4-band equalizer section with 2 swept mids



Spirit 8 40-channel	..... \$8,299.95
Spirit 8 32-channel	..... 6,399.95
Spirit 8 24-channel	..... 5,299.95
Spirit 8 16-channel	..... 4,299.95

Spirit Series Mixing Consoles

- When recording, the console has total input gain control, 2 foldback sends and a 4-band swept EQ
- Spirit Live 4² is ideal for demanding PA requirements
- Spirit Monitor is a stage monitor with 8 monitor outputs, 16-segment bargraph metering and swept high-pass filters
- Spirit Folio professional portable mixer features 60mm linear faders on every input and master outs; comprehensive 3-band EQ with swept mid frequency on mono inputs; high-pass filter on all mono inputs and 2 stereo inputs with 2-band EQ



Spirit Live 4 ² Bus Mixing Consoles	
40 mono, 4 stereo, 4 subgroups, stereo (mute group)	..... \$7,299.95
32 mono, 4 stereo, 4 subgroups, stereo (mute group)	..... 5,399.95
24 mono, 4 stereo, 4 subgroups, stereo (mute group)	..... 4,199.95
16 mono, 4 stereo, 4 subgroups, stereo (mute group)	..... 3,199.95
12 mono, 2 stereo, 4 subgroups, stereo (mute group)	..... 2,399.95

Spirit Live 3² Mixing Consoles

24 mic/line inputs, L/R and mono outputs	..... \$3,399.95
16 mic/line inputs, L/R and mono outputs	..... 2,399.95
12 mic/line inputs, L/R and mono outputs	..... 1,899.95
8 mic/line inputs, L/R and mono outputs	..... 1,299.95

Spirit Powerstation

8 mono + 2 stereo 300W per side, Lexicon Processor \$1,599.95
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Spirit pro Tracker Recording Mixer

8-channel inline recording mixer, 4RU \$1,199.95
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Spirit Folio Rac Pac

10 mono + 4 stereo + 4 subgroups \$1,199.95
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Spirit Live Absolute²

Studio monitor (pair) 6.5" cast frame woofer, 1" soft dome tweeter	.. \$499.95
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LX7 Live Mixing Console

- 24 channels
- Maximum of 32 inputs and 29 outputs
- 7 separate bus outputs (mix left and right, 4 groups and a dedicated mono bus)
- Direct outs on the first 16 mono inputs, individually pre/post-fader switchable
- 6 auxiliary buses
- Balanced mic provides 60dB gain range, 22dBu headroom
- British 4-band EQ with 2 sweepable mids
- EQ In/Out switches
- 18dB/octave high pass
- 6 auxiliary sends pre/post-switchable in pairs from each channel, providing a maximum of four pre- and six post-fader
- 100mm fader throughput
- PFL
- Full routing to all buses available from each channel
- Group section houses 2 additional stereo inputs with EQ, auxes and FX returns
- All 4 groups routable to mix (or mono bus) and include 12-segment bargraph metering and inserts
- AFI soloing
- Talkback (to all pre-fade auxes and mix)
- Global phantom power
- Two-track return for pre-show music

Folio SX Portable Mixer

- 20 inputs
- 18 outputs including auxes and direct outs
- 12 mono channels with high quality UltraMic™ mic input on each that provides 60dB gain range
- 4 stereo inputs
- 4-bus structure with real subgroup routable to mix
- Direct outputs from channels 1-8 for multitrack recording
- 3 auxes with up to 2 pre/post-faders for foldback or effects
- 100mm Alps faders with 10dB of gain above its 0dB mark for fine control of mixdown
- 2 stereo input strips contain 2 pairs of inputs each
- 1/2" impedance-balanced jack provides an extra mono output
- 4 impedance-balanced jacks control the mix outputs and sub-mix outputs
- Separate mono output with level control

Folio SX	..... \$799.95
Rack Kit	..... 49.95

Folio Notepad Compact Multimedia Mixer

- Equipped with mic preamps that accept up to 16dBu of input level and 50dB of gain range on every mic input
- 10 inputs, including 4 mic inputs and 2 stereo inputs
- 2-band EQ on every mono input
- Stereo inputs equipped with switchable RIAA preamps for turntables
- 2-track return for playback of masters
- Separate mix and monitor outputs
- Peak and VU metering
- Headphone output

 \$279.95
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Folio Powerpad Compact Powered Mixer

- Identical to Folio Notepad except offers a 2 x 30WRMS power amplifier section (into 4W) with overload and thermal protection
- May also be operated like a normal unpowered mixer by using its Master Mix Out sockets, which can be used for recording or for feeding a larger power amplifier

 \$399.95
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Absolute Zero Near-Field Studio Monitor System

- Compact, professional near-field monitor system
- Custom designed drivers
- CAD optimized low loss crossover
- High definition linear phase design
- Gold plated terminals
- Flat on- and off-axis frequency response
- Rear vented cabinet
- 55Hz-18kHz, 95WRMS

6.5" bass driver	..... \$59.95
1" tweeter	..... 44.95

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





DIGITAL AUDIO WORKSTATION/ SOFTWARE

Prisma™ Digital Audio Workstation

- A complete professional workstation on a single board that plugs into a PC
- Dedicated SCSI controller
- DSP and RAM on the board
- Built-in locking and resolving to all professional time code and reference signals including SMPTE, MTC, blackburst and AES
- Network together multiple systems for shared access of projects and audio
- Synchronize multiple units or lock to external recorders to increase tracks available

Prisma \$2995.00

StudioTracks™ XP Software for Prisma

- Full-featured multitrack editor
- Ideal for sound directors and post-production work
- XP stands for cross platform; StudioTracks runs on both Prisma and AudioEngine hardware
- Recording and playing of audio can be scheduled onto 96 time-aligned tracks
- Multitrack windows shows as many as 24 of these tracks at once
- Audio is represented as blocks, like strips of tape and can be positioned anywhere in time on any track
- Play and record simultaneous and discrete audio on any 12 of its 96 tracks
- Real time mixer with 2 parametric EQs per channel, 2 sends per channel and 2 returns
- AutoTrace preview displays the next several seconds of levels for each fader

Specifications

- Digital I/O: 2 channels AES-S/PDIF, 8 channels SMDAI
- Sample rates of 32,000; 44,056; 44,100, 48,000 and custom
- SMPTE LTC, SMPTE VITC, MTC, blackburst and AES synchronization
- 96 EDLs (virtual tracks); 12 tracks can play or record simultaneously
- Integrated digital patch bay
- 12 channels in, 12 direct outs, 2 aux sends, 2 returns, left and right master out, peak I/O metering and 2 parametric EQs per channel, AutoTrace automation preview
- Up to 4 SCSI fixed or removable recording media
- Up to 3 SCSI back-up devices—4mm DDS, 8mm Exabyte or Magneto optical back-up media

System Requirements

- 66MHz or faster
- 486 or higher PC, compatible with 1024 x 768 or better resolution video
- 8M bytes RAM
- 30M bytes of disk space on local drive
- Microsoft Windows 3.1 or higher, MS-DOS 5.x or higher
- Mouse
- Board requires 1 available 16-bit ISA slot
- The Prisma includes its own SCSI controller and requires 1 to 4 high-speed SCSI devices for recording

StudioTracks \$895.00

Producer™ Software for Prisma

- Designed and optimized for the audio production engineer
- Full-screen panels emulate the layout and function of high-end studio gear
- Transport Bar contains all transport, auto locating and time code locking controls plus selection buttons to instantly access each of Producer's full-screen control panels
- 8 active audio tracks are displayed as numbers 1-8, and any of 99 virtual tracks can be switched into active position instantly with the Track Manager
- All tracks are actually 4 layers deep; cut out a region of one layer to let the layers beneath play
- Crossfade Editor lets user visually adjust and audition fades in real time
- Snap Manager lets user snap to bars/beats, markers and other sounds
- Built-in Hot Key palette provides instant nonmouse access to most commands
- Mixer panel



- Edit Express panel gives the user access to most frequently accessed editing jobs
- Hot Key palette provides instant nonmouse access to most commands

- with 2 parametric EQs and precision metering on every channel recreates the console look and function used on recording studios
- Instantly updatable mix automation features AutoTrace™ which shows fader movements in advance
- Patch Panel, an integrated digital patch bay, lets user route signals digitally from any discrete mix channel, any system input, any of the 4 automated mixer sends or the stereo mix master outputs, any discrete mix channel input, any of the 4 mixer returns or any system output
- External digital effects can be patched into the mix and tracks can be bounced internally without any analog conversion steps

Specifications

- Digital I/O: 2 channels of AES or S/PDIF, 8 channels SMDAI
- Sample rates of 32,000; 44,056; 44,100; 48,000 or custom
- SMPTE, MTC, blackburst or AES synchronization
- 99 tracks, 4 layers deep, with any 8 audio tracks simultaneously in record or play while 2 additional remix tracks can record the 8-channel mix-down
- Integrated digital patch bay
- 8 channels in, 8 direct outs, 4 aux sends, 4 returns, left and right master out, peak I/O metering and 2 parametric EQs per channel can record the 8-channel mix-down
- Up to 4 SCSI fixed or removable recording media
- 4mm DDS, 8mm Exabyte and Magneto optical back-up media

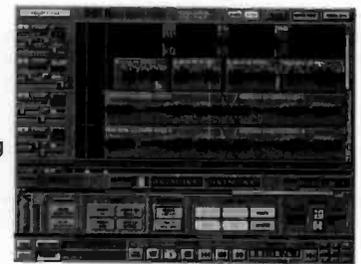
System Requirements

- 66MHz or faster
- 486 or higher (Pentium recommended) PC compatible with 1024 x 768 by 256 colors or better resolution video
- 16M bytes RAM
- 30M bytes of disk space on local drive
- Microsoft Windows 3.1 or higher, MS-DOS 5.x or higher
- Mouse
- Board requires 1 available 16-bit ISA slot
- The Prisma includes its own SCSI controller and requires 1 to 4 high-speed SCSI devices for recording

Producer for Prisma \$795.00

Express™ Software for Prisma

- Ideal for radio broadcast production, news editing, lecture or books-on-tape editing
- Easy to use, featuring a panel with large, clearly marked buttons rather than layers of pull-down menus
- Transport Bar features all transport and system controls and works like common tape machines
- Edit Express panel gives the user access to most frequently accessed editing jobs
- Hot Key palette provides instant nonmouse access to most commands



Specifications (with Prisma hardware)

- Digital I/O: 2 channels AES or S/PDIF; 8 channels Spectral Multichannel Digital Audio Interface (SMDAI)
- Sample rates of 32,000; 44,056; 44,100; 48,000 and custom
- AES synchronization
- 8 audio tracks can record or play simultaneously while 2 additional remix tracks can record the 8-channel mix-down
- Level, pan and metering on each channel and on masters

System Requirements

- 66MHz or faster
- 486 or higher (Pentium recommended) PC compatible computer with 1024 x 768 by 256 colors or better resolution video
- 16M bytes RAM
- 30M bytes disk space on local drive
- Microsoft Windows 3.1 or higher, MS-DOS 5.x or higher
- Mouse
- Prisma board requires 1 available 16-bit ISA slot
- The Prisma includes its own SCSI controller and requires 1 to 4 high-speed SCSI devices for recording

Express for Prisma \$395.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



CONSOLES



Stantron

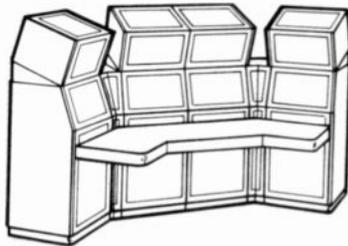
A ZERO Corporation Company

Sloping Consoles

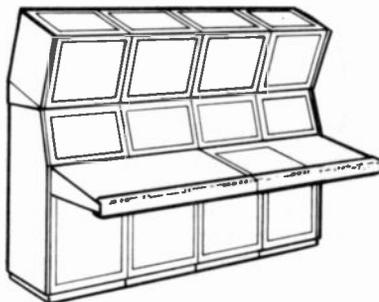
- Heavy-duty welded steel frame
- Interchangeable modular components for expandability
- 6 sloping frames available in both 19" and 24" widths with 26" and 30" depths
- Models available with 19°, 30° and 45° sloping panel spaces
- 2 pair 10-32 tapped mounting angles
- Writing surfaces custom designed for each application
- 30°, 45° and 90° wedges available for multibays applications



Ask about our new cabinet design software—CabCAD 2.0.



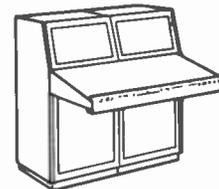
VCAS6025		\$5322.00
Catalog Number	Quantity	Description
SF30025	4	Cabinets
SFW34525	2	Wedge
SS30025	1/1	Side panels
P38L	4	Louvered rear panels
P21	4	Front panels
P3	4	Front panels
SB30025	4	Sloping bases
IC3002510	2	Cabinet assemblies
SSIC3002510	2	Sides
B25C1101	4	Caster base
WD4451925	1	Writing Desk
P17	4	Top panels



VCAS6037		\$4006.00
Catalog Number	Quantity	Description
SF30025	4	Sloping cabinet
SS30025	1/1	Side panels
P21	4	Lower panels
IC3002517	4	Cabinet assemblies
SSIC3002517	2	Side panels
SB30025	4	Sloping bases
B25	2	Pontoon bases
WD41925	2	Writing desks
P17	4	Top panels



VCAS5023		\$2354.00
Catalog Number	Quantity	Description
SF30025	2	Cabinets
SS30025	1/1	Side panels
P36L	2	Louvered rear panels
P24	2	Lower front panels
WD21925	1	Flat editor desk
SB30025	2	Sloping bases
IC3002510	2	Cabinet assembly
SSIC3002510	2	Side panels
SZSC1101	2	Caster base
P17	2	Top panels



VCAS6019		\$1614.00
Catalog Number	Quantity	Description
SF30025	2	Sloping cabinet
SS30025	1/1	Side panels
P17	2	Top panel
P21	2	Bottom panel
WD21925	1	Editor desk
B25	2	Bases

Accessories

Shelves

- For monitors, VCRs, computers and other accessories
- Stationary, sliding, cantilevered and vented

Power Strips and Plugmolds

- Vertical and horizontal rackmount

Panels

- Flat, formed, vented, perforated, aluminum and steel

Drawers

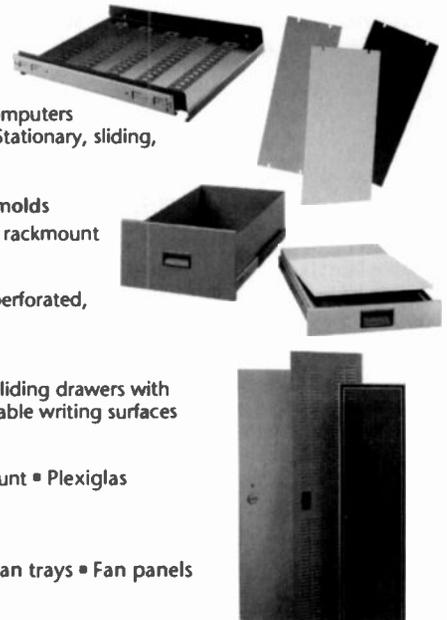
- Equipment drawers
- Sliding drawers with writing surface
- Retractable writing surfaces

Doors

- Face mount
- Flushmount
- Plexiglas
- Louvered

Cooling

- Packaged blowers
- Fan trays
- Fan panels



ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

REFERENCE CATALOG 97-98



Stantron

A ZERO Corporation Company



CABINETS/CONSOLES

Series 200 Vertical Cabinets

- 8 standard heights: 21" to 78" ▪ 2 standard depths: 25" and 30" ▪ 2 standard widths: 19" and 24" ▪ 2 pair 10-32 tapped mounting angles
- 14 gauge heavy-duty welded steel frame supports over 3000 lbs. ▪ Modular design
- Ships completely assembled ▪ Removable "security" side panels ▪ Open bottom for ventilation and cable access ▪ Raised pontoon base ▪ 21 standard colors available ▪ Solid removable top included



Model Number	Outside Depth	Panel Space	Outside Height	Outside Width	Rack Units	Price
SF2007830	30.88"	78"	87.25"	23.28"	78RU	\$940.00
SF2007030	30.88"	70"	78.50"	23.28"	70RU	880.00
SF2007825	25.63"	78"	87.25"	23.28"	45RU	864.00
SF2006130	30.88"	61"	69.75"	23.28"	61RU	820.00
SF2007025	25.63"	70"	78.50"	23.28"	40RU	794.00
SF2005230	30.88"	52"	61.00"	23.28"	52RU	760.00
SF2006125	25.63"	61"	69.75"	23.28"	35RU	734.00
SF2004330	30.88"	43"	52.25"	23.28"	43RU	710.00
SF2005225	25.63"	52"	61.00"	23.28"	30RU	684.00
SF2003530	30.88"	35"	43.50"	23.28"	35RU	660.00
SF2004325	25.63"	43"	52.25"	23.28"	24RU	634.00
SF2002830	30.88"	28"	36.50"	23.28"	28RU	610.00
SF2003525	25.63"	35"	43.50"	23.28"	20RU	594.00
SF2002130	30.88"	21"	29.50"	23.28"	21RU	560.00
SF2002825	25.63"	28"	38.50"	23.28"	16RU	544.00
SF2002125	25.63"	21"	29.50"	23.28"	12RU	494.00

Optional Accessories

Model Number	Fits Panel Space	Price
Steel Plexiglas Door		
D60078PDLH	78.75"	\$325.00
D60070PDLH	70"	320.00
D60061PDLH	61.25"	295.00
D60052PDLH	52.50"	285.00
D60043PDLH	43.75"	265.00
D60035PDLH	35"	245.00
D60028PDLH	28"	220.00
D60021PDLH	21"	205.00
Front Steel Door		
D60078LH	78.75"	\$175.00
D60070LH	70"	165.00
D60061LH	61.25"	155.00
D60052LH	52.50"	150.00
D60043LH	43.75"	135.00
D60035LH	35"	125.00

Optional Accessories - Continued

Model Number	Fits Panel Space	Price
D60028LH	28"	\$110.00
D60021LH	21"	100.00
Power Strips		
Horizontal Power Strips		
PW19	19"	\$151.00
PS19	19"	130.00
Vertical Power Strips		
PM4051C	6'	\$115.00
PM4050C	3'	98.00
Sliding Shelves		
Ventilated Shelves		
SL90030V	19"	\$95.00
SL90025V	19"	90.00
Solid Shelves		
SL90030A	19"	\$85.00
SL90025A	19"	80.00
Stationary Shelves		
Ventilated Shelves		
ES120030V	19"	\$55.00
ES120025V	19"	51.00
Solid Shelves		
ES120030	19"	\$40.00
ES120025	19"	36.00
Casters (if required) Load Capacity Price		
C1101LK	225 lbs.	\$16.00
C1101	225 lbs.	16.00
C1100LK	200 lbs.	15.00
C1100	200 lbs.	15.00

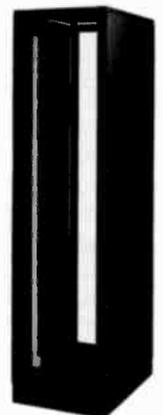


Seismic Racks

- Designed to meet the requirements of Belcore Zone 4 ▪ Independent testing conducted to GR-63-CORE earthquake waveform ▪ Cost efficient design ▪ Extra wide frame for cable management ▪ Heavy-duty welded steel frame
- 2 pair 10-32 tapped mounting angles

Broadcast Racks

- Fully welded, 11 gauge steel heavy-duty construction ▪ 22" overall width ▪ Design allows equipment panels to mount flush to front of frame
- Integrated cable lacing bars ▪ 1-5 bay plenum bases for bottom cable management
- 2 pair 10-32 tapped mounting angles
- Modular design ▪ Immediate delivery



ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



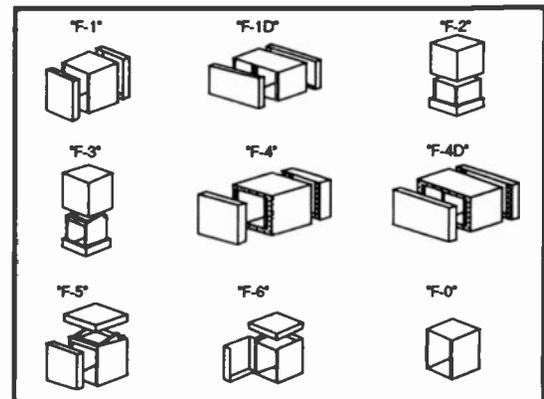
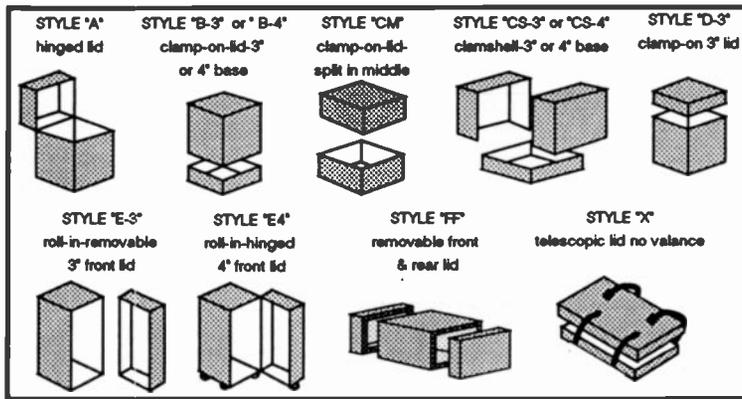
Star Cases

Star Case 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 Star Case types. Be sure to ask about the new Lightweight industry standard—Star Light. Available as Carry Light with surface mounted hardware or Star Light with recessed hardware, this new case line saves money in both the cost of your case and the expense of transporting your case.



CLOSURE STYLES

RACK STYLES



STARCASE TYPE	WALL THICKNESS	MEANS OF TRANSPORT	STYLES AVAILABLE	ATA* COMPLIANCE	COLOR CHOICES**
ULTRA STAR	1/2"	AIR & SURFACE	All closure & rack-mount styles shown	YES	1-10
SUPER STAR	1/4"	AIR & SURFACE	All closure & rack-mount styles shown	YES	1-10
ATA STAR (3/8")	3/8"	AIR & SURFACE	All closure & rack-mount styles shown	YES	1-3
ATA STAR (1/2")	1/2"	AIR & SURFACE	All closure & rack-mount styles shown	YES	1-10
CARRY STAR	1/8"	SURFACE	All closure & rack-mount styles shown	NO	1-4
CARRY LIGHT (1/2")	1/2"	SURFACE	All closure styles	NO	Black only
STAR LIGHT (1/4")	1/4"	LIGHT AIR & SURFACE	All closure styles	NO	Black only

* Air Transport Association of America

** 1) Black, 2) Blue-PMS 294, 3) Light Gray-PMS 421, 4) Dark Gray-PMS 431, 5) Bourdeaux-PMS 209, 6) Red-PMS 201, 7) White, 8) Orange-PMS 137, 9) Yellow-PMS 108, 10) Green-PMS 348, 11) 2-Tone

Call For Pricing

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





SCREEN PROJECTION MATERIALS

Front Projection Surfaces

StudioTek 130 ■ 1.3 gain ■ 30% brighter than standard ■ Ideal for most CRT projection systems ■ Designed to reduce hot-spotting

Ultramatte 150 ■ 1.5 gain ■ 50% brighter than standard ■ Ideal for multi-image cinemas and data graphic projection

Videomatte 200/Ultramatte 200 ■ 2.0 gain ■ Color corrected for CRT projectors ■ Good for slide/LCD/film projectors ■ Ideal for large screen

Silver 400 ■ Specialized silver screen for passive 3-D use

Rear Projection Surfaces

Lumiflex 130 ■ 1.3 gain ■ Ideal for film/slide/video projection where ambient lighting is controllable ■ Provides wide viewing angle

Lumiflex 180 ■ 1.8 gain ■ Used when ambient lighting can be controlled ■ Excellent color reproduction and anti-hot-spot formation

FilmScreen 150 ■ 1.5 gain ■ Dark tint for additional contrast ■ Ideal for rooms where high ambient light is a concern

FilmScreen 200 ■ 2.0 gain ■ Ideal for high ambient light conditions ■ Designed for film/video when moderate viewing angles are required

SPECIALIZED ELECTRIC ROLLER SCREENS

Trap Door Electric Roller Screens

■ Motorized aluminum trap door closes when screen not in use ■ Screen and trap door use in-tube motor with 34V control circuit ■ Hidden alignment ring around box perimeter for flush mount applications ■ Made with aluminum and fire-retardant Sintra® ■ Choice of front projection material: StudioTek 130, Ultramatte 150, Videomatte 200 ■ Tab-Guy tensioning and black masking borders at sides ■ For custom sizes up to 15' x 20'

Model #	Image Height	Image Width	Weight	Price
ABT6240-VID	144"	192"	400 lbs.	\$9550.00
ABT6210-VID	126"	168"	330 lbs.	8570.00
ABT4180-VID	108"	144"	300 lbs.	6140.00
ABT4150-VID	90"	120"	250 lbs.	5380.00
ABT4120-VID	72"	96"	230 lbs.	4680.00
ABT4100-VID	60"	80"	200 lbs.	4270.00
ABT490-VID	54"	72"	180 lbs.	4070.00
ABT484-VID	50"	67"	175 lbs.	3955.00
ABT472-VID	43"	57"	165 lbs.	3735.00

DUAL ASPECT RATIO PROJECTION SCREENS

ElectriMask Electriscreen

■ With Electric Masking System ■ Seamless front projection screen ■ Tab-Guy tensioning, black masking borders at sides ■ Operates on standard voltage ■ Includes 12V trigger interface controls for screen and masking panels ■ Mounting features include Doctor Brackets ■ Also available in microperforation surfaces

HDTV Format (9:16/1.77:1 Aspect Ratio)

Model #	HDTV		Weight	Price
	Image Size	NTSC Image Size		
EM135-HD	66" x 118"	66" x 88"	134 lbs.	\$4855.00
EM123-HD	60" x 107"	60" x 80"	118 lbs.	4645.00
EM110-HD	54" x 96"	54" x 72"	110 lbs.	4295.00
EM100-HD	49" x 87"	49" x 65"	102 lbs.	3975.00

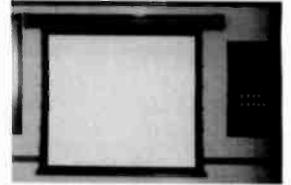
Widescreen Format (1.85:1 Aspect Ratio)

Model #	Widescreen		Weight	Price
	Image Size	NTSC Image Size		
EM138-WS	66" x 122"	66" x 88"	134 lbs.	\$5065.00
EM126-WS	60" x 111"	60" x 80"	118 lbs.	4750.00
EM114-WS	54" x 100"	54" x 72"	110 lbs.	4395.00
EM100-WS	48" x 89"	48" x 64"	102 lbs.	3935.00

ELECTRIC ROLLER SCREENS

SR-1 Screening Room Series Electriscreens

■ Seamless projection screen surface with Tab-Guy tensioning ■ Black overscan borders at sides and bottom ■ 12" black drop above the image area ■ Stealth roller tube system for quiet operation ■ Studio Tek 130, Ultramatte 150 or Videomatte 200 materials ■ Also available in microperforation surfaces



Video Format (3:4/1.33:1 Aspect Ratio)

Model #	Image Diagonal	Image Height	Image Width	Weight	Price
SR120-VID	120"	72"	96"	64 lbs.	\$2935.00
SR100-VID	100"	60"	80"	55 lbs.	2695.00
SR90-VID	90"	54"	72"	48 lbs.	2510.00
SR84-VID	84"	50"	67"	43 lbs.	2475.00
SR72-VID	72"	43"	57"	39 lbs.	2195.00

FLEXIBLE FIXED SCREENS

Luxus Snapper Screenwalls

■ Matte black 1.5" square aluminum tube acts as frame and projection overscan border ■ StudioTek 130, Ultramatte 150 or Videomatte 200 materials

Video Format (3:4/1.33:1 Aspect Ratio)

Model #	Image Diagonal	Image Height	Image Width	Weight	Price
SN150-VID	150"	90"	120"	40 lbs.	\$1840.00
SN120-VID	120"	72"	96"	34 lbs.	1295.00
SN100-VID	100"	60"	80"	28 lbs.	1025.00
SN90-VID	90"	54"	72"	25 lbs.	875.00
SN84-VID	84"	50"	67"	23 lbs.	795.00
SN72-VID	72"	43"	57"	21 lbs.	655.00

MANUAL PULL-DOWN SCREENS

Luxus Communicator Series

■ Original Tab-Guy tensioning system ■ Choice of Luxus black or Eurostyle/off-white housings ■ Black screen masking on all 4 sides ■ StudioTek 130, Ultramatte 150 or Videomatte 200 materials

Video Format (3:4/1.33:1 Aspect Ratio)

Model #	Image Diagonal	Image Height	Image Width	Weight	Price
COM100-VID	100"	60"	80"	21.0 lbs.	\$1295.00
COM90-VID	90"	54"	72"	18.5 lbs.	1165.00
COM84-VID	84"	50"	67"	17.5 lbs.	1055.00
COM72-VID	72"	43"	57"	14.5 lbs.	865.00

VIDEO PROJECTOR LIFTS

■ Accommodates most video projectors ■ All metal construction ■ Built-in convenience outlet ■ 24V switch (standard) or 12V interface control ■ Standard lifts fit in ceiling openings 30"W x 39"D and have a maximum platform travel of 16" or 20" ■ Adjustable up/down position stops electrically operated with 24V remote control line switching ■ Projector platform bottoms can be finished by contractor to conform with room decor ■ For custom travel distances or unit finished sizes, consult factory

JVPL-20	Jumbo video projector lift with larger platform for larger projection systems, with maximum platform travel distance	\$5560.00
PLE	Optional Plenum sides on projector platform for VPL-16/20. Contact factory for custom pricing on JVPL-20.	4520.00
VPL-16	Standard lift for most projection systems with maximum platform travel distance of 16"	3985.00
VPL-20	Same as above except with maximum platform travel distance of 20"	3985.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

PORTABLE LIGHTING KITS



PORTABLE LIGHTING KITS

- Selection of luminaires and accessories in tough, durable cases
- Developed specifically for ENG, video and motion picture production vehicles
- A choice of 5 kits with lamps
- Lightweight and varied assortment to meet any requirement
- Designed for speedy setup and knock-down
- Can be used for 220V operation
- Kits can be customized to suit individual requirements utilizing the full range of portable units

LAMPS

Pulsar™

- Lightweight and compact open-faced floodlight with wire guard
- Designed for portable and video lighting
- Variable beam from 21° to 71°
- Cool heat-resistant polyester/glass fiber fixture with red/orange finish housing
- Supplied with 13' power cable with inline switch and molded GR connector

Bambino™ 1K

- Powerful "baby" sized 1000W fresnel
- Specifically designed for location lighting, rental applications and for situations where physical size is a problem
- Black with wire guard, mounting yoke fitted with dual purpose 3/8" male spigot with 3/8" female receiver, 23' power cable with inline switch and molded GR connector

lanebeam™ Redhead

- Lightweight and compact open-faced floodlights
- Ideal for location and video lighting
- Quick and easy to use focus control
- Heat-resistant polyester/glass fiber fixture housing
- Yoke has 3/8" female socket for stand mounting or optional C-clamp
- Orange finish with 13' power cable with inline switch and molded GR connector

lanebeam Blonde

- Lightweight, high powered variable beam floodlight
- Widely used for ENG, outside broadcast and location lighting
- Reflector focus control improves lamp life
- Yoke has 3/8" female socket for stand mounting or optional C-clamp
- Yellow finish with 16' power cable with inline switch and molded GR connector

KITS

Bambino 650/3 Kit (23276)

- Contains 3 Bambino 650W fresnels, 3 barndoors, 3 color frames, 1 scrim set (1 each: full double, full single, half double and half single), 3 lightweight kit stands, 3 FRK 650W lamps and a deluxe carrying case



lanebeam 1000/3 Kit (23036)

- Contains 3 lanebeam Redheads, 3 accessory holders, 3 barndoors, 1 scrim set (1 each: full double, full single, half double and half single), 3 lightweight kit stands, 3 DXW 1000W lamps and a deluxe carrying case

lanebeam 1000/4 Kit (23046)

- Contains 4 lanebeam Redheads, 4 accessory holders, 4 barndoors, 1 scrim set (1 each: full double, full single, half double and half single), 4 lightweight kit stands, 4 DXW 1000W lamps and a deluxe carrying case

lanebeam 2000/2 Kit (23026)

- Contains 2 lanebeam 2000W Blondes, 2 barndoors, 1 scrim set (1 each: full double, full single, half double and half single), 2 large kit stands, 2 FEY 2000W lamps and a deluxe carrying case

Pulsar 600/3 Kit (23116)

- Contains 3 Pulsars, 3 barndoors, 1 scrim set (1 each: full double, full single, half double and half single), 3 kit stands, 3 DYS 600W lamps and a deluxe carrying case

Portable Kit Cases

- 95977 Additional small kit case
- 95978 Additional large kit case
- 95979* Additional large kit case
- 95976 Set of casters for large kit cases

*For 23026 only.

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ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

REFERENCE
CATALOG



CD80™ Dimmer Packs With Digital Control

- Rugged dimmer packs for portable and permanent applications
- Full range of capacities: 24–1.2kW, 12–2.4kW, 6–6kW or 6–12kW
- Full range of output connectors: pin connectors, twist locks and parallel blades or terminal strip output for permanent installations
- Plug-in digital command module
- Automatic multiple protocols—automatically selects for DMX 512, AMX 192 and Fiber Optic (DMX 512) with active protocol LED display
- Overlapping simultaneous 0 to +10V analog control output
- Illuminated pushbuttons for local control (full/normal) plus “panic” feature for instant on
- Input and output XLR connectors for daisy-chaining packs
- RS-232C serial port for interfacing capability
- Entire pack UL and CSA approved as an assembly and appropriately labelled
- Simple phase change from single-phase 3-wire to 3-phase 4-wire
- Toroidal chokes for high quality filtering



CD80 Digital Pack 1.2kW

Digital dimmer pack with twenty-four 1.2kW dimmers. Includes low noise cooling fan and primary circuit breakers.

- 73200** CD80 1.2kW pack, 24 dimmers, primary circuit breakers, one 20A GTL connector per dimmer
- 73201** CD80 1.2kW pack, 24 dimmers, primary circuit breakers, one 20A GP connector per dimmer
- 73202** CD80 1.2kW pack, 24 dimmers, primary circuit breakers, one 20A GR connector per dimmer
- 73204** CD80 1.2kW pack, 24 dimmers, primary circuit breakers, terminal strip output

CD80 Digital Pack 2.4kW

Digital dimmer pack with twelve 2.4kW dimmers. Includes low noise cooling fan and primary circuit breakers.

- 73210** CD80 2.4kW pack, 12 dimmers, primary circuit breakers, two 20A GTL connectors per dimmer
- 73211** CD80 2.4kW pack, 12 dimmers, primary circuit breakers, two 20A GP connectors per dimmer
- 73212** CD80 2.4kW pack, 12 dimmers, primary circuit breakers, two 20A GR connectors per dimmer
- 73214** CD80 2.4kW pack, 12 dimmers, primary circuit breakers, terminal strip output
- 73205** CD80 2.4kW pack, 12 dimmers, primary circuit breakers, GP and Socapex sockets
- 73240** CD80 2.4kW pack, 24 dimmers, primary circuit breakers, one 20A GTL connector per dimmer
- 73241** CD80 2.4kW pack, 24 dimmers, primary circuit breakers, one 20A GP connector per dimmer
- 73244** CD80 2.4kW pack, 24 dimmers, primary circuit breakers, terminal strip output

CD80 Digital Pack 6kW

Digital dimmer pack with six 6kW dimmers. Includes low noise cooling fan and primary circuit breakers.

- 73220** CD80 6kW pack, 6 dimmers, primary circuit breakers, one 60A GTL connector per dimmer
- 73221** CD80 6kW pack, 6 dimmers, primary circuit breakers, one 60A GP connector per dimmer
- 73224** CD80 6kW pack, 6 dimmers, primary circuit breakers, terminal strip output

CD80 Digital Pack 12kW

Digital dimmer pack with six 12kW dimmers. Includes low noise cooling fan and primary circuit breakers. Choice of portable pack with one 100A Cam-Lok/GP connector per dimmer or wall mounted pack with terminal strip for wiring.

- 73230** CD80 12kW pack, 6 dimmers, primary circuit breakers, one 100A Cam-lok/GP connector per dimmer
- 73234** CD80 12kW pack, 6 dimmers, primary circuit breakers, terminal strip output

Accessories

- 76470** Digital pack controller for 24–1.2kW CD80 dimmer packs
- 76471** Digital pack controller, to retrofit analog 2.4kW, 6kW, and 12kW CD80 dimmer packs or as a spare

LD90™ 24—2.5kW

A standard rack configuration comprising three 220V power blocks, each with eight 2.5kW dimmers and a choice of MCB/terminal configurations. NDT version has Neutral Disconnect Terminal blocks for circuit checking using high voltage testers; SPN is fitted with Neutral Switch MCBs, which give double-pole isolation from the AC supply, but trip only on phase overload.

- 74102** LD90 24—2.5kW, single-pole MCB
- 74104** LD90 24—2.5kW, single-pole MCB (NDT)
- 74105** LD90 24—2.5kW, SPN MCB

LD90 12—5kW

A standard rack configuration comprising three 220V power blocks, each with four 5kW dimmers and a choice of either single- or double-pole MCBs. Accessories include RCD kit (1 required per power block), additional DMX signal input, larger cable termination and single-phase operation.

- 74103** LD90 12—5kW, single-pole MCB
- 74106** LD90 12—5kW, double-pole MCB

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ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

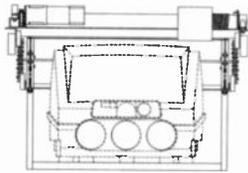


PROJECTOR LIFTS/ VIDEO CART



SVS 7HSE/12HSE Lift Series

For larger projectors requiring additional size and weight accommodations. Automatic cable retractor(s). Removable platform. 7HSE lift capacity: 700 lbs. 12HSE lift capacity: 900 lbs. 7HSE standard lowering distance: 9'. 12HSE standard lowering distance: 24'9". 7HSE optional lowering distance: 22'6". 12HSE optional lowering distance: 33'8". SVS 7HSE dimensions: 31.5"H x 43.25"W x 68"D. SVS 12HSE dimensions: 44"H x 44.25"W x 68"D = 110VAC, 110/220V, 50/60Hz. Low voltage: 24VAC. Current draw: 2.3A/1.2A. Steel construction.



SVS 7HSE-9

Cable Retractor Included in Price

SVS 7HSE-13	13'6" lowering distance	\$7,724.00
SVS 7HSE-11	11'3" lowering distance	7,343.00
SVS 7HSE-9	9' lowering distance	6,962.00

Heavy-Duty Motor and Dual Cable Retractor Included in Price

SVS 12HSE-33	33'8" lowering distance	\$13,215.00
SVS 12HSE-29	29'3" lowering distance	12,855.00
SVS 12HSE-24	24'9" lowering distance	12,474.00
SVS 7HSE-22	22'6" lowering distance	10,518.00
SVS 7HSE-20	20'3" lowering distance	10,137.00
SVS 7HSE-18	18' lowering distance	9,126.00
SVS 7HSE-15	15'9" lowering distance	8,236.00

SVS 12EX Projector Lift Series

For all projectors up to 32.5" wide. Provides longest lowering distance. Heavy-duty motor. Automatic dual cable retractor included. Lift capacity: 700 lbs. Standard lowering distance: 24'9". Optional lowering distance: 33'8". 28.5"H x 44.25"W x 47.5"D. 6' cord supplied. 110VAC, 110/220V, 50/60Hz. Low voltage: 24VAC. Current draw: 2.3A/1.2A. Steel construction.

SVS 12EX-33	33'8" max. lowering distance	\$11,918.00
SVS 12EX-29	29'3" max. lowering distance	11,155.00
SVS 12EX-24	24'9" max. lowering distance	10,462.00

SVS 7 Side-By-Side Lift Series

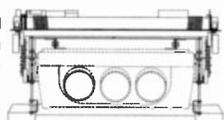
Mounts 2 projectors side-by-side. Standard lift capacity: 700 lbs. Optional lift capacity: 900 lbs. Standard lowering distance: 9'. Optional lowering distance: 18". 20"H x 77"W x 47.5"D. 110VAC, 110/220V, 50/60Hz. Low voltage: 24VAC. Current draw: 2.3A/1.2A. Steel construction. Heavy-duty motor and dual cable retractor included.

SVS 7SBS-18	18' lowering distance	\$10,375.00
SVS 7SBS-15	15'9" lowering distance	9,683.00
SVS 7SBS-13	13'6" lowering distance	8,991.00
SVS 7SBS-11	11'3" lowering distance	8,299.00
SVS 7SBS-9	9' lowering distance	7,607.00

Optional extra heavy-duty motor. PORT

SVS 7/7EX Projector Lift Series

Provides longer lowering distance. Low ceiling clearance. Projector/equipment mounts between scissors with lift needing only 5.5" of space above projector mount. Lift capacity: 700 lbs. Standard lowering distance: 9'. Optional lowering distance: 22'6". SVS 7 dimensions: 16"H x 37"W x 42"D. SVS 7EX dimensions: 16"H x 43.25"W x 42"D. 6' power cord supplied. 100VAC, 110/220V, 50/60Hz. Low voltage: 24VAC. Current draw: 2.3A/1.2A. Steel construction.



SVS 7EX

SVS 7 SERIES - FOR PROJECTORS 26" WIDE OR LESS

SVS 7-13	13'6" max. lowering distance	\$6,165.00
SVS 7-11	11'3" max. lowering distance	5,783.00
SVS 7-9	9' max. lowering distance	5,402.00

Cable Retractor Included in Price

SVS 7-22	22'6" max. lowering distance	\$8,375.00
SVS 7-20	20'3" max. lowering distance	7,994.00
SVS 7-18	18' max. lowering distance	7,613.00
SVS 7-15	15'9" max. lowering distance	7,185.00

SVS 7EX SERIES - FOR PROJECTORS 26" TO 32.5" WIDE

SVS 7EX-13	13'6" max. lowering distance	\$6,165.00
SVS 7EX-11	11'3" max. lowering distance	5,783.00
SVS 7EX-9	9' max. lowering distance	5,402.00

Cable Retractor Included in Price

SVS 7EX-22	22'6" max. lowering distance	\$8,375.00
SVS 7EX-20	20'3" max. lowering distance	7,994.00
SVS 7EX-18	18' max. lowering distance	7,613.00
SVS 7EX-15	15'9" max. lowering distance	7,185.00

SVS Mini 7/7EX Lift Series

Provides lowest ceiling clearance. Projector/equipment mounts between scissors with lift needing only 3" to 4" of space above projector mount. Lift capacity: 400 lbs. Standard lowering distance: 4'9". Optional lowering distance: 7". Mini 7 top frame dimensions: 16"H x 41.25"W x 31"D. Mini 7 bottom frame dimensions: 16"H x 33"W x 31"D. Mini 7EX top frame dimensions: 16"H x 47.25"W x 31"D. Mini 7EX bottom frame dimensions: 16"H x 39"W x 31"D. 6' power cord supplied. 100VAC, 110/220V, 50/60Hz. Low voltage: 24VAC. Current draw: 2.3A/1.2A. Steel construction.

SVS Mini 7-7	7' max. lowering distance. For projectors 26" wide or less	\$6,165.00
SVS Mini 7EX-7	7' max. lowering distance. For projectors 26" to 32.5" wide	6,165.00
SVS Mini 7-6	6' max. lowering distance. For projectors 26" wide or less	5,783.00
SVS Mini 7EX-6	6' max. lowering distance. For projectors 26" to 32.5" wide	5,783.00
SVS Mini 7-4	4'9" max. lowering distance. For projectors 26" wide or less	5,402.00
SVS Mini 7EX-4	4'9" max. lowering distance. For projectors 26" to 32.5" wide	5,402.00

SVS 4 Lift Series

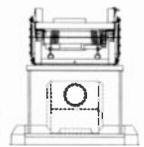
Ideal for most projectors and A/V equipment. Lift capacity: 400 lbs. Standard lowering distance: 5'6". Optional lowering distance: 10". 11.5"H x 24"W x 31"D. 6' power cord supplied. 110VAC, 110/220V, 50/60Hz. Low voltage: 24VAC. Current draw: 2.3A/1.2A. Steel construction.

SVS 4-10	10' max. lowering distance	\$4,948.00
SVS 4-8	8'6" max. lowering distance	4,566.00
SVS 4-7	7' max. lowering distance	4,185.00
SVS 4-5	5'6" max. lowering distance	3,804.00

SVS Mini 4 Lift Series

Small footprint ideal for slides, speakers, LCD projectors. Lift capacity: 400 lbs. Standard lowering distance: 3'6". Optional lowering distance: 6". 12"H x 18"W x 20.5"D. 6' power cord supplied. 24VAC. Current draw: 2.3A/1.2A. 110VAC, 110/220V, 50/60Hz. Steel construction.

SVS Mini 4-6	6' max. lowering distance	\$4,243.00
SVS Mini 4-5	4'9" max. lowering distance	3,862.00
SVS Mini 4-3	3'6" max. lowering distance	3,481.00



SVS Mini 4-3

SVS Universal Video Cart

Motorized platform with 2' to 10' height flexibility in placement/application of projection equipment. Electrical motor raises/lowers platform. Handles up to 800 lbs. Built-in stabilizers safely secure cart on most surfaces. For heights over 6', optional 3' stabilizing outriggers recommended. Tilting mounting base allows ±20° tilt. 4-wheel locks. Heavy-duty construction of high quality steel/aluminum. Low voltage control yields easy 1-person operation. Low profile transport characteristics (ability to compact to 28"H, roll through standard 36" door openings).

SVS UVC 10	Includes outrigger stabilizers and rigid cross support. Standard lifting height of 10'	\$8,800.00
SVS UVC 6	Standard lifting height of 6'	6,800.00

† Price On Request

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





610 Broadcast Audio Delay

▪ Automatic build-up of 7.5 sec. delay time ▪ Cough feature edits the program without dead air ▪ Stereo, 15kHz bandwidth ▪ Remote control of all functions ▪ UL listed \$2695.00

620 20-Bit A/D Converter

▪ 20-bit quantization ▪ Selectable dither and noise shape ▪ Selectable output word size ▪ AES/EBU and S/P DIF in/out ▪ Real time sample rate conversion from 44.1 to 22.05 for multimedia \$995.00

606 Delay F/x Machine

▪ Two separate delay lines allow for signal processing in stereo, dual mono, or series mode ▪ Six modulation sources can be assigned to affect practically any 606 parameter ▪ Six choices of modulation type for each modulator ▪ Room Simulation places the signal source in a 3-D room where the acoustics of the environment are under user control ▪ MIDI and MIDI Clock Sync ▪ Tap Tempo Control ▪ Filter provides classic multimode synthesizer effects \$599.00



572/571

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 I/O connections on #6 barrier . . . \$849.00
571S SPL computer slave 349.00

572 SPL Computer

▪ Senses ambient noise, automatically adjusts levels ▪ Uses system's loudspeakers as input transducers for ambient noise sensing ▪ Page mic XLR ▪ Balanced/unbalanced I/O connections on #6 barrier \$699.00

528E Voice Processor

▪ Performs 6 separate functions: microphone preamplification, de-essing, compression/limiting, downward expansion, parametric EQ and voice symmetry alignment ▪ Mic preamp gain is variable up to 60dB and 48V phantom power for condenser mics ▪ Enhances vocal intelligibility ▪ Increases perceived loudness and "presence" ▪ Works with any microphone (or line input) \$699.00

532E/531E Graphic Equalizers

▪ 31 filter bands per channel on ISO 1/3-octave centers ▪ Using a global range switch, each band delivers either ±6dB or ±12dB of cut or boost ▪ 12dB per octave High Cut and Low Cut filters ▪ Proprietary topology delivers extremely low noise and distortion ▪ Servo balanced output eliminates DC offset ▪ Direct coupled inputs and outputs ▪ Internal power supply
532E Dual-channel graphic equalizer \$699.00
531E Graphic equalizer 579.00

551E 5-Band Parametric EQ

▪ Each EQ band is identical—each delivers up to 12dB of boost and 20dB of cut, has an adjustable bandwidth control (from .05 octaves to 2 octaves) and a frequency control range from 10Hz to 20kHz ▪ Proprietary topology delivers extremely low noise and distortion ▪ High and low cut filters ▪ Servo balanced output eliminates DC offset ▪ Direct coupled inputs and outputs deliver superb low frequency response ▪ Internal power supply with detachable cord ▪ Gold plated XLR connectors, bypass relay and high precision components ensure accuracy and reliability \$449.00

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" \$379.00
501-01 Transformer coupled output 419.00

402 Dual Output Delay

▪ Dual outputs ▪ Front panel security lockout ▪ Barrier XLR and 1/4" connectors ▪ UL listing ▪ Maximum delay of 884ms per output (999") ▪ 19-bit A/D, 18-bit D/As for >100dB dynamic range ▪ 12-segment LED headroom indicator ▪ Delay settings store in nonvolatile memory, no batteries ▪ 1ms minimum delay increments \$729.00

450 Dual-Zone Priority Mixer

▪ Ideal for paging mic and mono/stereo line mixing anywhere multiple audio inputs must be combined and distributed ▪ Each input can be assigned to a stereo output zone, a mono output zone, or both ▪ Accepts audio inputs from any type of audio source ▪ 1RU ▪ 2 low impedance, balanced mic/line inputs with +48V phantom power and low frequency filters ▪ 4 stereo line inputs that can be used as mono ▪ Separate stereo and mono output zones ▪ 3 inputs have priority override capability ▪ Remote volume control capability ▪ XLR, 1/4" tip-ring sleeve and RCA-phono inputs ▪ 1/4" tip-ring sleeve outputs ▪ 15W maximum power consumption \$629.00

422 Stereo AGC/Leveler

▪ Target level control makes setup simple and quick ▪ Peak limiter prevents system overload or tape distortion ▪ Parallel I/O metering ▪ Remote bypass port ▪ UL listed \$595.00

421m AGC-Leveler

▪ Smart gated release true AGC-Leveler with peak limiting, speech filtering and intelligent downward expansion ▪ For use in PA, post, duplication, studio and broadcast environments ▪ Perfect for gain riding microphones used for on-air talent ▪ Features mic preamp \$569.00

425 Stereo Compressor/Limiter

▪ Independent downward expander, compressor, limiter ▪ Individual LED meters for each processing section ▪ Stereo or dual-mono operation ▪ Balanced/unbalanced XLR ▪ Balanced/unbalanced 1/4" connectors ▪ Soft-knee compression curve \$579.00

488 DYNA-Squeeze™ 8-Channel Compressor/Interface

▪ Allows the user to optimize recording levels and "push" more information into the recorder's dynamic acceptance window, while providing 8 channels of level matching interface (+4dBu to -10dBu) ▪ Helps prevent the A/D converters from clipping by controlling levels that are too high, allowing for more signal to be "pushed" toward the recorder for optimum recording volume ▪ Levels that are too low fall into the digital noise range and can be recorded with resolutions as low as 4 bits ▪ This combination of compression and level matching allows the console to be run at higher than average levels, providing the digital recorder with a higher quality signal \$579.00

420 Stereo Amplifier

▪ Offers 20W (4 or 8 ohms) and 40W bridged mono (8 ohms) in a 1 rack space chassis ▪ XLR and 1/4" inputs ▪ Barrier strip outputs ▪ Front panel headphone jack ▪ Dual tracking mode for accurate L-R balance ▪ Front panel speaker-mute button disengages the main outputs for altering between headphone and speaker monitoring and a mono mode for testing the mono compatibility \$399.00

SX204 Headphone Amplifier

▪ 4 channels ▪ Stereo operation ▪ All headphone impedance ▪ Balanced/unbalanced in TRS 1/4" ▪ Outputs TS 1/4" \$319.00

SX202 Dual Microphone Preamplifier

▪ Variable gain with 15dB pad ▪ Polarity switch on 1 channel ▪ +48V phantom power ▪ Inputs XLR ▪ Outputs TRS 1/4" \$319.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



RECORDER/ REPRODUCERS/ MIXERS



TASCAM

TEAC Professional Division

M-5000 Series Mixing Consoles

- 24 bus I/O production console
- Compact size 32 input channels in a 40-input channel frame with 24-group routing and an integral patchbay
- An additional 8 channels may be configured with either standard input modules or dual stereo input modules



Designed for the audio for video post-production environment. A mix can be made while tracking is simultaneously taking place. I/O configuration has 2 independent signal paths, channel and monitor within each I/O channel. Extremely versatile EQ because both the channels and the monitor signal path have 2-band shelving with adjustable shelving of 8kHz and 12kHz on the high band and 80Hz and 120Hz on the low band plus EQ bypass. 2-band sweep EQ can be assigned to either signal patch. 8 aux sends with cut available (3 cut groups can be made)

M-5000/32FA	40 in-frame with 32 mono inputs installed (automated)	\$36,299.00
M-5000/32	40 in-frame with 32 mono inputs installed with patch bays	29,999.00

M-3700 Series Mixing Consoles

- Snapshot mode provides 99 scenes per file; up to 63 files per disc
- Real time mode provides up to 6 mixes containing a total of 30,000 events per mix
- 8-bit/256-step VCA resolution
- Inline monitor format with linear faders
- Input channels provide 6 aux sends with 4 send level controls, PFL or stereo in-place solo facilities and mute switches for channel, monitor and AUX 5 and 6
- 8 bargraph meters with select switches for group/tape return monitoring, plus 2 VU meters on stereo returns
- Talkback facility
- Balanced XLR stereo outputs and 2 TR inputs
- Built-in 5-frequency oscillators
- Insertion point on each channel, stereo and group bus
- Control room section provides monitor select switches, solo switch, dim switch, mono switch and level control
- Studio section provides control room or stereo monitor select switches, mono switch, on/off switch and independent phones and studio level controls
- Onboard computer provides precise automation of VCA fader level, channel mute, auxiliary mute, monitor mute and EQ on and off
- Data can be saved to the internal disc drive in both real time and snapshot mode
- Onboard SMPTE reader/generator as well as MIDI in, out and through ports allow easy integration in any system

M-3700/32	32 x 8, 32 mono inputs, 8 progressive outputs, automated	\$16,999.00
M-3700/24	24 x 8, 24 mono inputs, 8 progressive outputs, automated	14,999.00

M-2600 Series Recording Mixing Consoles

- Balanced and unbalanced tape in/out
- 48V phantom power
- Direct group out switching and advanced signal routing means no repatching
- Absolute South Transparency™
- Double reinforced dual-ground system
- Bidirectional semi-parametric split EQ on each

- channel = 6 auxes
- Semi-modular construction
- Comprehensive monitor matrix allows 2 separate stereo mixes
- Optional high intensity, multifunction meter bridge
- Direct/group switching
- Talkback mic

M-2600 32MKII	\$4,999.00
M-2600 24MKII	3,999.00
M-2600 16MKII	3,199.00

Meter Bridges

MU 2632	\$1,119.00
MU 2624	999.00
MU 2616	849.00

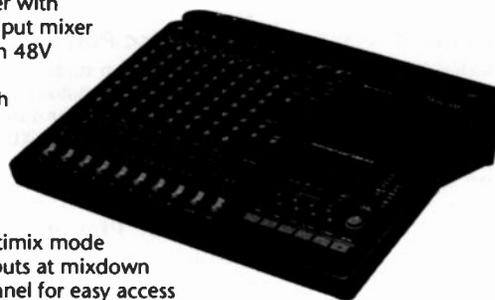
BR-20/20T 1/4" 2-Track Recorder/Reproducers

- Specially designed for use in radio broadcast production facilities
 - +4dBm XLR balanced half-track, equipped with built-in rackmounts
 - Has a highly functional shuttle control by using a combination of Edit and FFWD/REW ("Quick Cue") that provides for smooth and accurate cue and review . . \$3,149.00
- | | | |
|--------|--|----------|
| BR-20T | Same as BR-20, plus center track time code | 3,799.00 |
| MA-20 | Mic amp kit | 100.00 |
| SP-20 | Internal speaker kit | 75.00 |



488 MKII Portastudio Cassette Recorder/Mixer

- 8-track recorder with 8-channel, 12-input mixer
 - XLR inputs with 48V phantom power
 - 3-band EQ with sweepable mids
 - Auto punch in/out with rehearsal
 - 2 independent aux sends
 - Multimix mode allows for 20 inputs at mixdown
 - Sloped back panel for easy access
 - Multifunction, fluorescent meter display
 - dbx noise reduction
- \$1,499.00



424 MKII Portastudio Cassette Recorder/Mixer

- 4-track recorder with 8-input mixer
 - 3-band EQ with sweepable MID
 - 2 tape speeds
 - Sync in/out jack and tape pitch control
 - Balanced XLR inputs
 - Auto punch in/out with rehearsal
 - 2 dedicated aux sends
 - 4-track simultaneous recording
- \$599.00

Porta 03 MKII Mini Studio Mixer/Recorder

- 4-track recorder with integrated mixer
 - 2 mic/line inputs with trim control
 - Extended dynamic range with Dolby B noise reduction
 - Headphone jack
 - RCA out jacks for mixdown to cassette
 - 3-digit tape counter
- \$259.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





CD-701 Compact Disc Player/ RC-701 Multiplayer Control Unit

■ Features an auto cue function, event play and link play ■ RAM buffer enables continuous looping between any 2 points ■ Controls up to 4 CD player units and features ±6% pitch control with frame-accurate search

CD-701	Compact disc player	\$2499.00
RC-701	Multiplayer control unit.....	1599.00
RC-7	Remote control unit	225.00
BU-1	RAM buffer	525.00

CD-601 Compact Disc Player/ RC-601 Multiplayer Control Unit

■ Auto cue and End Check functions ■ Integral, frame-accurate jog wheel for fast, repeatable searching ■ Front-panel variable pitch and 12-position LED readout ■ Audio output is via both balanced XLR jacks and unbalanced RCA jacks ■ XLR digital output ■ RS-232 port for external computer control, off-line monitoring, cue return and display of elapsed time, track remain time, total remain time or total disc time

CD-601	Compact Disc Player	\$1799.00
RC-601	Multiplayer control unit.....	899.00
IF-601	AES/EBU kit	225.00
BU-2	RAM buffer	350.00

CD-401 MKII Compact Disc Player

■ Ideal for professional recording production studio or broadcast environment ■ Rackmountable ■ Fader start ■ Auto cue ■ Pitch control ■ Single play ■ Digital out ■ 20-selection calendar ■ 4-mode time counter ■ 4-mode repeat ■ Index search ■ Auto space ■ Both XLR balanced and RCA unbalanced outputs

RC-401	Remote control	\$1049.00
		90.00

CD301 MKII 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 ■ Rackmountable ■ Ideal for use in studio, radio and mobile DJ environments

		\$739.00
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DA-60 MKII Time Code Digital Audio Recorder

■ Improved version of the DA-60 ■ 4 heads for off-tape "confidence" monitoring ■ 64X oversampling 1-bit delta-sigma A/D converter ■ 8X oversampling 20-bit sign-magnitude D/A converter

		\$6499.00
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DA-88 8-Track Digital Audio Recorder

■ 8mm cassette transport records on Hi8 tape ■ Capability of recording up to 100 minutes on a standard 120 tape ■ Records at both 44.1kHz or 48kHz with a variable pitch of 6% at each sampling rate ■ Word sync I/O utilizes 2 BNC connectors ■ Digital I/O uses a 25-pin D-sub connector ■ Digital I/O port supports both external AES/EBU and S/DIF II digital interfaces

RC-848	Remote controller for the DA-88, can directly control up to 6 units (48 total tracks)	1599.00
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RC-808	Single unit remote control	225.00
SY-88	Chase synchronizer board	849.00
MU-8824	24-track remote meter unit	999.00
IF-88AE	AES/SPDIF digital interface	1149.00
IF-88SD	SDIF digital interface	1399.00

MD-801R 2-Track MiniDisc Recorder/Player

■ Allows 148 minutes of monaural recording or 74 minutes of conventional stereo recording onto compact re-recordable MiniDiscs ■ Up to 12-track instant playback functions can be programmed in any order ■ Durable brushless spindle motor

MD-801P	Playback only version of MD-801R	2399.00
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DA-30 MKII Digital Audio Recorder

■ Analog-to-digital converters use delta-sigma modulation and 64X oversampling ■ S/N ratio in excess of 94dB ■ AES/EBU digital I/O ■ +4dBm balanced and -10dBV unbalanced inputs and outputs ■ AES/EBU interface ■ 48kHz, 44.1kHz and 32kHz sampling frequencies



RC-D30	Remote control	90.00
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122 MKIII 4-Track/2-Channel Stereo Cassette Deck

■ 3-head design ■ Cobalt amorphous record and playback heads ■ Both +4 XLR balanced inputs/outputs and -10 unbalanced RCA inputs/outputs on the back panel, plus ¼" unbalanced phone jacks on the front panel so input is switchable

		\$1349.00
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112R MKII Bidirectional Stereo Cassette Deck

■ 3-head design ■ Bidirectional transport with Super Acculign rotating head ■ Dolby HX Pro, B and C noise reduction ■ Audible cue and review ■ 25-pin D sub-connector parallel ■ RCA connectors on the rear and ¼" phone on the front

LA-112	Balance kit	100.00
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112 MKII 4-Track/2-Channel Stereo Cassette Deck

■ 2-head design ■ Dolby HX Pro, B and C noise reduction ■ Audible cue and review ■ Precision VU meters with peak LEDs ■ Real time tape counter ■ 3 locate points (zero, memo 1, memo 2) ■ 25-pin D sub-connector parallel port ■ RCA connectors on rear panel and ¼" phone on front panel ■ 19" rackmountable

LA-112	Balance kit	100.00
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302 Dual Auto Reverse Cassette Deck

■ Contains 2 true independent cassette decks in a single 3-space rackmount package ■ Each deck (1 and 2) is capable of recording individually ■ High-speed dubbing ■ Continuous recording and playback between the 2 decks ■ Control I/O and cascade out functions allow connection of up to 10 machines, which can be used for multiple dubbing and extended time recording and playback applications

		\$699.00
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103/102 MKII Stereo Mastering Cassette Decks

■ Dolby HX Pro, B and C noise reduction ■ Auto tape type automatically adjusts recording electronics to any standard tape formulation

103	3-head design	\$569.00
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102 MKII	2-head design	369.00
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202 MKIII Dual Record Dubbing Deck

■ 3U rackmountable housing ■ Double deck record capability ■ Bidirectional double deck continuous playback capability ■ 2-head recorder per each deck incorporating both Dolby B and C noise reduction ■ Dolby HX PRO headroom extension circuitry ■ Visual feedback provided by L/R independent peak program level meters with peak hold ■ CD synchronous dubbing ■ Auto reverse ■ Repeat playback

		\$529.00
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ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

INSIGHT™

InSight Display, Keyboard and Mouse Sharing System

InSight allows instructors to monitor student progress, interact with individuals or groups through their computers, foster group cooperation, enhance the learning environment and increase retention with efficient, well-paced instruction.



InSight features a touch-sensitive LCD instructor control console for flexible instructor control. Instructors can monitor and interact directly with students via their computers, turn on the lights, activate a projector or remote VCR and adjust the classroom volume. From their own on-screen display interfaces, students can ask and respond to questions, interact within groups, and communicate directly with the instructor. InSight can control and distribute any analog RGB format, making it compatible with most computer platforms including PC, Macintosh, Sun and SGI workstations. It requires no memory or disk space, so it doesn't sacrifice the speed of the computer it controls. Nearly instantaneous video switching at high resolutions is limited only by the graphics capabilities of your computers. InSight works with most software packages running under most operating systems.

Demonstrate and Monitor

- Dynamic screen, keyboard and mouse sharing—instructor to student, student to instructor and student to student
- Room scanning and student monitoring
- Screen blanking with automatic keyboard and mouse lockout
- Student team pairing and grouping

Communicate

- Fully integrated stereo intercom
- Corporate or lab style headsets

Expand

- Supports up to 75 students in a single classroom
- Distance learning feature controls multiple remote sites simultaneously
- Video and data bus configuration
- High-resolution/CAD compatible
- Large screen projector output
- Supports multiple instructor consoles for split classrooms
- Connects multiple classrooms
- Interfaces with Sony Language Labs

Touch-Screen LCD Instructor Control Console

- Instant visual feedback to commands
- Text based or icon based display
- Multilayered screens with custom configuration flexibility
- Student name display
- Password control
- Room environmental control

On-Screen Display Student Control Interface

- Team and group screen sharing, keyboard and mouse control and audio join
- Question and answer
- Student disconnect

TECH COMMANDER Series 300



Tech Commander Series 300 Control and Display Routing System

The Tech Commander Series 300 is a cost-effective computer classroom control system. By improving classroom communication, it creates a learning environment that fosters group learning and interaction. Simple and easy to use, it gives instructors complete control of the computer classroom. The Tech Commander is extremely fast and reliable, can be used with most software or operating systems, is compatible with most computer platforms and requires no memory or disk space.

Demonstrate and Monitor

- Dynamic screen, keyboard and mouse sharing—instructor to student, student to instructor and student to student
- Room scanning and student monitoring
- Screen blanking with automatic keyboard and mouse lockout

Communicate

- Fully integrated stereo intercom
- Corporate or lab style headsets

Expand

- Supports up to 75 students in a single classroom
- Video and data bus configuration
- High-resolution/CAD compatible
- Large screen projector output
- Supports multiple instructor consoles for split classrooms
- Connects multiple classrooms
- Interfaces with Sony Language Labs

Instructor Control Console

- Instant visual feedback to commands
- Back lit LCD display shows system status
- Audible tone and message display alert the instructor to a student request for help

Instructor Call Button

- Allows students to ask questions without drawing attention to themselves

Note: Expandable systems. Please call for a quotation.

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



The Educator v. 3.0 Media Retrieval System

The Educator Media Retrieval System is a system for scheduling, dispersing and retrieving electronic information in a classroom environment. A private cable system is created within the school, and media devices such as VCRs, laserdisc players and CD-i players are stored in a central location. A teacher simply requests a media title and access to the appropriate media device at a given time. Both the media and device are then committed to the teacher through a software interface. At the scheduled time, the TV in the classroom is automatically turned on and tuned to the appropriate channel. With the touch of a button, the teacher has full control over the media through a simple handheld remote control.

Expanded Resources

Since The Educator makes use of a school's broadband distribution system, many different resources can be integrated. Cable programs, satellite fed distance learning and remote video broadcasts can be used in conjunction with prerecorded materials.

Easy Scheduling

The Educator creates a media database which contains all of the available programs by title, ID number and/or description. Instructors review the data base, choose programs and play times and advise the media center of their selections. Media center staff input the time, date, classroom and device. At the appropriate time, the center is prompted to load the device, and The Educator handles the rest. The same database later serves as a reference for media usage.

Scheduling can be programmed at your convenience—daily, weekly, even months in advance. The software notifies the user of scheduling conflicts, and access to media devices can be given at a moment's notice. At the end of each scheduled time period, the media device is automatically available for use in another classroom. The Educator can also be programmed for continuous, unattended record and playback.

Easy Management

The Educator keeps media titles and media devices together for easy management. The media devices mounted in equipment racks in the media center are secure and protected from theft and damage. Resources are easily shared throughout the school without carting equipment to the classroom.



FEATURES AND BENEFITS

Video All-Call

The Educator has an audio/video override or all-call feature for announcements, video broadcasts, live video feeds or emergency messages. The optional video bulletin board enables the creation and distribution of video/graphic schedules and announcements.

Control in the Classroom

The Educator intuitively controls the TV in the classroom by turning it on and tuning in to the appropriate channel. In the event of an emergency or special announcement, all of the TVs or predetermined groups are turned on and tuned into the broadcast.

Cost-Effective

The Educator uses the broadband distribution network that most schools already have in place and employs a school's existing resources wherever possible, thus reducing the costs associated with the implementation of media retrieval.

Easy to Use and Expandable

Not only is the scheduling software easy to use, but teachers use their own handheld remote from the classroom to control a number of media devices. Additional classrooms and devices are easily added with future growth.

System Specifications

- Audio and video distribution over broadband coaxial cable
- Control via infrared transceiver over twisted pair cable
- Supports up to 256 classrooms
- Supports up to 32 devices
- Compatible with most infrared controlled media devices
- Compatible with most infrared controlled televisions/receivers
- Compatible with most infrared barcode readers

Note: Expandable systems. Please call for a quotation.

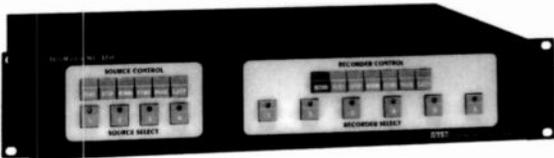
ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





DUBMASTER Series For Video Duplication

The DubMaster Series is engineered as a "building block" system. This modular design allows for maximum flexibility in system design and provides for unlimited expansion possibilities. The complete DubMaster Series consists of the MC-460 and MC-110 remote controllers, RS 4 x 6 video and audio signal routing switcher and the DVA-12 video and audio distribution amplifier. Breakout boxes and control cables are used to provide connection to the VCRs.



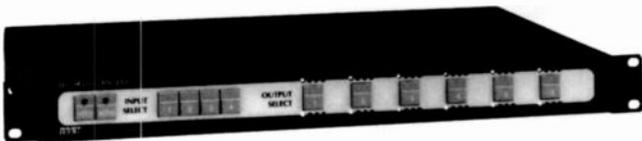
DUBMASTER MC-460

The DubMaster MC-460 provides selectable source and recorder control for duplication systems with multiple source and multiple recorder groups. This allows independent transport control of up to 4 source decks and up to 6 banks of recorders. Control functions include: record, play, stop, rewind, fast forward, pause and eject.

- Remote control of most industrial VTR source decks, including Betacam and 1" formats
- Remote control of most industrial recorders, including serial and infrared types
- Individual selection and control of up to 4 source decks and up to 6 recorder banks of any size
- Engineered to allow for virtually unlimited expansion of recorders
- Ability to intermix parallel, serial or infrared control formats **\$1850.00**

DUBMASTER MC-110

- Provides full transport control, but designed for systems requiring only a single source deck and 1 bank of recorders
- The bank of recorders may contain any combination of serial, parallel and infrared control formats. **\$895.00**



AUDIO AND VIDEO ROUTING AND DISTRIBUTION RS 4 X 6 Routing Switcher

- Designed as a stand-alone front panel control routing switcher
- 4 sources (stereo audio and video) can be routed to any 1 or all of the 6 outputs
- Audio and video can be routed together or separately, making the RS 4 X 6 a true 2-level routing switcher
- Video connectors are BNC, and the audio (unbalanced) connectors are RCA **\$1495.00**



DVA-12 Audio and Video Distribution Amplifier

- 1-in, 12-out video and stereo audio DA
- Connectors are BNC and RCA
- Looping outputs provided
- Front mounted trim pots for individual level adjustments of video and each audio channel are provided **\$699.00**

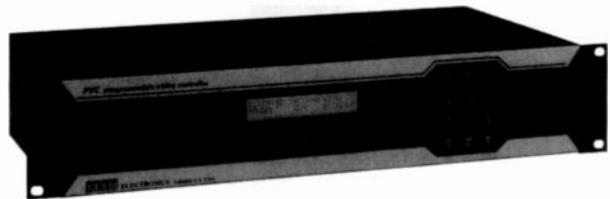
PVC Family® of Automated VCR Controllers

The PVC family is microprocessor based and can be programmed for up to 1000 events on a 7-day basis, providing complete unattended automated operation. Video and audio are always present at the outputs due to constant valid video detection. Manual override is available at all times from the front panel or by computer via RS-232 link.

The RS-232 interface port allows complete function and programming control through use of a Windows®-based PC, either by direct connection or through a modem link. Program composition is done on the computer and then downloaded to the controller as needed. As with most Windows programs, a dedicated PC is not required. Programmable preroll can be specified in seconds for up to 99 minutes and is individually entered for each input. This eliminates the need to queue up tapes for playback.

Each model of the PVC family can be programmed for 1-, 2- or 3-channel operation. Any input source can be switched to any of outputs A, B or C in a true matrix. All inputs, including the default inputs, have unbalanced stereo audio follow, making the PVC family compatible with stereo TV or bilingual applications that utilize separate audio tracks for different languages.

Two special default inputs that can be assigned to outputs A and B are provided on all models. These default inputs are typically used for character generators or computer generated video that is switched to output between programmed playback times. Default switching can be defeated on any particular playback, if desired, through programmed commands.



PVC-2/4/8

WinPVC Scheduling Software

- With WinPVC Scheduling Software, programming a daily or weekly program schedule has never been easier
- Each movie or infomercial title may be assigned an individual tape ID number and then stored in the Tape Library for future use
- All program schedules and information stored in the Tape Library may be printed for verification or distribution
- All playback schedules may be completed off-line and saved as individual files

- PVC-8 8 input sources, 2 defaults, 3 output channels **\$3830.00**
- PVC-4 4 input sources, 2 defaults, 3 output channels **2600.00**
- PVC-2 2 input sources, 2 defaults, 3 output channels **1580.00**
- Expander-8 8 additional input sources **3075.00**
- Expander-4 4 additional input sources **1840.00**

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





VIDEO CONNECTORS

B-CRIMP

BNC Male for
RG-59/u Cable, Crimp
Type \$2.49



B-CRIMP-S

BNC Male for
RG-59/u Crimp Type.
3-Piece \$2.89



B-75TM

BNC Male 75ohm
Terminator \$3.49



BFCM

BNC Female Chassis
Mount for RG-59/u
Cable \$2.29



RE-BFBL

TecNec Recessed
Panel Mount BNC
(Barrel) \$6.99



RE-BFCM

TecNec Recessed
Panel Mount BNC
(Solder) \$6.99



F-CRIMP

F Male Crimp-On
Type \$3.30



P-CRIMP

Phono (RCA) Male
Crimp Type \$0.89



RE-PFBL

TecNec Recessed
Panel Mount RCA Jack
(Barrel) \$6.99



RE-PFCM

TecNec Recessed
Chassis Mount RCA
Female \$4.99



PFCM

Phono (RCA) Female
Chassis Mount . . . \$0.79



SVHS-7M

S-VHS 7-Pin Male
Connector \$15.99



SVHS-7MCM

S-VHS 7-Pin Male
Chassis Mt. \$9.95



SVHS-4M

S-VHS 4-Pin Male
Cable End \$2.49



SVHS-4F

S-VHS 4-Pin Female
Cable End \$2.59



SVHS-4FCM

S-VHS 4-Pin Female
Chassis Mt \$1.69



TCS7848

S-VHS 4-Pin Female
Chassis Mt \$4.99



E10M

EIAJ Circular 10-Pin
Male Connector &
Cable End \$17.95



E14M

EIAJ Circular 14-Pin
Male Cable End
Connector \$34.95



E14F

EIAJ Circular 14-Pin
Female Cable End
Connector \$34.95



E14FCM

EIAJ Circular 14-Pin
Female Chassis
Mount \$19.95



E26M

EIAJ Circular 26-Pin
Male Cable End
Connector \$59.95



E26F

EIAJ Circular 26-Pin
Female Cable
End \$59.95



E26FCM

EIAJ Circular 26-Pin
Female Chassis
Mount \$29.95



E8M

EIAJ Rectangular 8-Pin
Male Cable
End \$9.95



E8FCM

EIAJ Rectangular
8-Pin Female Chassis
Mount \$6.95



E20M

EIAJ Rectangular
20-Pin Male Cable
End \$14.95



E34M

EIAJ Rectangular 34-Pin
Male Cable
End \$19.95



VIDEO ADAPTORS

SV-4B

S-VHS 4-Pin Female to
Female (Barrel) .. \$5.99



SV-4BCM

TecNec S-VHS 4-Pin
Female Chassis Mt.
(Barrel) \$11.99



BF-BF

BNC Female to
BNC Female
(Barrel) \$3.99



BF-BFCM

BNC Female to
BNC Female Chassis
Mount \$4.99



ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



VIDEO/AUDIO CONNECTORS/ADAPTORS



TecNec[®]
TECHNICAL NECESSITIES

VIDEO ADAPTORS (cont'd)

B-2BF
BNC Male to 2 BNC
Females (T) \$4.99



BF-T
BNC Female to BNC
Female to BNC Female
(T) \$4.99



FJ-FJ
F Female to F Female
(Barrel) \$1.99



B-FJ
BNC Male to F
Female \$3.99



F-BF
F Male to BNC
Female \$2.99



FJ-BF
F Female to BNC
Female \$2.99



PF-PF
Phono (RCA) Female
to Phono Female
(Barrel) \$1.49



B-PF
BNC Male to RCA
Female \$2.99



PF-FJ
Phono (RCA) Female
to F Female \$1.99



F-PF
F Male to RCA
Female \$1.99



PF-PFCM
RCA Female to RCA
Female Chassis
Mount \$3.49



P-BF
Phono (RCA) Male to
BNC Female . . . \$2.99



P-FJ
Phono (RCA) Male to F
Female \$1.99



AUDIO CONNECTOR
M-3.5
Mini Phone Male
Cable End \$1.19



P-Solder
Phono (RCA) Male
Cable End \$1.19



PF
RCA Female Cable
End \$1.99



SP
¼" Phone Male Cable
End \$1.49



SP-S
¼" Phone Plug Male
Stereo Cable
End \$2.49



SPF
¼" Phone Female Cable
End \$1.99



AUDIO ADAPTORS
M-PF
Mini Phone Male
to Phono (RCA)
Female \$1.49



M-SPF
Mini Phone Male
to ¼" Phone
Female \$1.49



P-2PF
Phono (RCA) Male
to 2 Phono Females
(T) \$3.49



P-MF
Phono (RCA) Male
to Mini Phone
Female \$1.49



P-SPF
Phono (RCA) Male
to ¼" Phone
Female \$1.99



SPF-SPF
¼" Phone Female
to ¼" Female
(Barrel) \$2.99



SP-PF
¼" Phone Male to RCA
Female \$1.99



XLF-SP
3-Pin XLR Female to ¼"
Male \$9.99



XLM-SP
3-Pin XLR Male to ¼"
Phone \$9.99



XLF-PF
3-Pin XLR Female to
RCA Female . . . \$9.99



XLM-PF
3-Pin XLR Male
to Phono (RCA)
Female \$9.99



XLF-XLF
3-Pin XLR Female to
3-Pin XLR Female
(Barrel) \$9.99



XLM-XLM
3-Pin XLR Male to
3-Pin XLR Male
(Barrel) \$9.99



ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





SIGNAL DISTRIBUTION

TecNec 1x20 Video & Stereo Audio Distribution Amplifier

- Broadcast bandwidth amplifier ideally suited for video and audio signal distribution to several VCRs, monitors, switching devices or other video peripherals
- For broadcast, duplication or in-house video distribution
- Looping inputs for both audio and video provide daisy-chaining of multiple units for "mass feed" systems
- Front panel frequency and signal level adjustments
- Buffered audio and video front panel test points
- Operates up to 30MHz
- Quality BNC (video) & RCA (audio) connectors

MDA-20S \$825.00
MDA-20M Mono audio and RCA video connectors 450.00

TecNec 1x6 Video & Stereo Audio Distribution Amplifier

- High performance unit delivering broadcast quality signals with a bandwidth of 10MHz or better
- Superb isolation makes it ideal for distributing any composite video signal accompanied by a mono or stereo audio signal
- 6 outputs and looping input
- Video: Gain: -3dB to +3dB; Bottom panel access
- Output noise: Better than 65dB <1V p-p
- Audio input: Unbalanced Hi-Z
- Stereo crosstalk: Greater than 110dB
- Gain: -3dB to +3dB
- S/N: 85dB, 20Hz-20kHz

MDA-6 \$395.00
MDA-6M Mono available 350.00

TecNec 1x6 Video Distribution Amplifier

- True broadcast quality signal amplifier with a bandwidth of 10MHz or better
- Excellent hum isolation perfect for room to room feeds where ground-loop hum problems are prevalent
- Daisy-chaining ability
- Input and outputs: 75 ohms, BNC 1V p-p, differential (balanced)
- Gain: -3dB to +3dB; Bottom panel access
- Output noise: Better than 65dB <1V p-p

VDA-6 \$295.00
VDA-6SV S-VHS model 399.00

TecNec 1x4 S-VHS Distribution Amplifier

- 4 output distribution amplifier for broadcast, video production and multimedia
- Route S-Video signals to monitors, VCRs or switching devices without the loss of sharp picture quality
- Gain: -4.5dB to +3dB both Y & C
- Impedance: 75 ohms
- Y/C delay: 2ns
- Output: Y-channel 1V p-p, C-channel 0.8V p-p

SVDA-1 \$139.95



VB-4X4VI

SIGNAL SWITCHERS

TecNec Video/Stereo Audio Matrix Switcher

- Vertical interval switching
- Serial RS-232 control including software
- 70MHz unity bandwidth
- PAL/SECAM/NTSC compatible
- Top quality BNC (Video) and RCA (audio) connectors
- 220V available
- 5-year warranty

VB-4X4VI \$695.00
VB-4X4YC S-VHS model with stereo audio 800.00

TecNec 6x1 Video & Stereo Audio Passive Switcher

- General purpose routing switcher designed to fit the needs of facilities where "signal sniffing" is needed
- Large visible lockout mechanical switches
- High performance BNC (video) and RCA (audio) connectors provide virtually no signal loss
- S-Video version also available

PSW-6 \$195.00
PSW-6SV S-VHS model with stereo audio 295.00

PATCH BAYS

TecNec Digital Audio Patch Bays

- Digital XLR to XLR Bays
- Built with Neutrik black and gold XLR connectors and wired with Canare DA-206 110 ohm digital audio cables \$349.00

	Front Panel	Rear Panel
DPBXL-1	12 Female XLR	12 Male XLR
DPBXL-2	12 Female XLR	12 Female XLR
DPBXL-3	12 Female XLR	6 Male & 6 Female XLR

TecNec XLR Patch Bays

- XLR to XLR patch bays to systemize your audio gear
- Featuring 12 high quality Neutrik XLR connectors wired inline all housed in a rugged single rack space, 6" deep steel chassis

PBXLR-1 12 Female on front; 12 Male on rear \$299.00
PBXLR-2 12 Female on front; 12 Female on rear 299.00
PBXLR-3 12 Female on front; 6 Male/6 Female on rear 299.00



TecNec S-VHS Patch Bays

- Bays feature S-VHS female to female inline connectors mounted on heavy-duty 19" EIA rack panels
- 8- or 16-patch points
- Recessed version available

16XS 16-port S-VHS bay \$249.99
8XS 8-port S-VHS bay 149.99

TecNec BNC Cable Hook-Up Panels

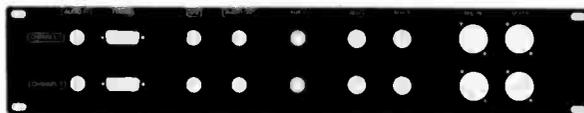
- Organize and route video cables quickly and easily with TecNec's "straight-thru" panels
- Features isolated BNC to BNC female barrels mounted on a 19" wide rack panel
- 16 or 32 patch points

32XB 32 patch points on a double space 19" panel \$199.00
16XB 16 patch points on a single space 19" panel 129.00
PATCH-B 6-pack of 3' BNC cables, black 59.95

Combo XLR + 1/4" Input Patch Bay With Hardwire Output

- Unique unit features XLR + 1/4" input in one connector
- Neutrik connector technology saves space and assures extra positive connections in a one-piece integral design
- Outputs are sizable rear solder points, ready to be wired into your system

PB16-XLQ 16-point combo bay \$149.99
PB8-XLQ 8-point combo bay 79.99



Custom Punched Patch Panels

- 1, 2 or 3 rack space steel (or aluminum) panels for mounting in any standard EIA 19" rack
- Each panel is supplied with up to 6 standard connector punch-outs on each panel (Add \$5.00 for each additional punch-out)

Prices start at \$49.00 for single and double rack space panels.

Custom Stainless Steel Wall Plates

- A complete line of stock and customized stainless steel wall plates
- Complete your installation with sharp looking wall plates that complement any room or studio's decor
- Single, double and triple gang wall plates punched and loaded with XLR, BNC, 1/4" phone, DB9, DB25, etc.

Custom Stainless Steel Wall Plates POR*

*Price On Request

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



TESTER/AUDIO/ VIDEO CABLES



Pro Cable Tester

- Tests any combination of S-VHS, BNC, RCA, F, XLR, 1/8" or 3.5mm
- LED glows with cable status
- 9V battery operation

CT-Y/C \$99.99

6KIT Kit with 200 'F'

Video connectors for coax..... \$100.00



S-VHS Cables

Heavy-duty, high quality, professional-grade S-VHS cables designed for all Y/C component applications.

4-Pin Male to 4-Pin Male Cables

SV4-SV4-100	100'	\$89.95
SV4-SV4-75	75'	69.95
SV4-SV4-50	50'	49.95
SV4-SV4-25	25'	34.95
SV4-SV4-15	15'	29.95
SV4-SV4-10	10'	24.95
SV4-SV4-6	6'	19.99
SV4-SV4-3	3'	14.99

7-Pin Male to 7-Pin Female Cables

S7M-S7F-50	50'	\$79.95
S7M-S7F-25	25'	54.95
S7M-S7F-17	17' (5m)	47.95
S7M-S7F-10	10'	39.95
S7M-S7F-7	7' (2m)	36.95
S7M-S7F-3	3'	32.95

4-Pin Male to 7-Pin Male Cables

SV4-7M-25	25'	\$49.95
SV4-7M-15	15'	39.95
SV4-7M-10	10'	34.95
SV4-7M-6	6'	29.95
SV4-7M-3	3'	25.95

4-Pin Male to 7-Pin Female Cables

SV4-7F-25	25'	\$49.95
SV4-7F-15	15'	39.95
SV4-7F-10	10'	34.95
SV4-7F-6	6'	29.95
SV4-7F-3	3'	25.95

Audio Cables

XLR Male to XLR Female

XLM-XLF-100	100'	\$74.95
XLM-XLF-75	75'	59.95
XLM-XLF-50	50'	49.95
XLM-XLF-25	25'	39.95
XLM-XLF-15	15'	29.95
XLM-XLF-10	10'	24.95
XLM-XLF-6	6'	19.95
XLM-XLF-3	3'	17.95

Gold Dubbing Cables With 2 Channel Phono (RCA)

Audio 1 S-VHS 4-pin Video

G2PS-2PS-25	25'	\$64.95
G2PS-2PS-15	15'	44.95
G2PS-2PS-10	10'	29.95
G2PS-2PS-6	6'	24.95
G2PS-2PS-3	3'	19.95

Audio 1 BNC Video

G2PB-2PB-25	25'	\$59.95
G2PB-2PB-15	15'	39.95
G2PB-2PB-10	10'	24.95
G2PB-2PB-6	6'	19.95
G2PB-2PB-3	3'	17.95

Audio 1 Phono (RCA) Video

3PG-3PG-10	10'	\$24.95
3PG-3PG-6	6'	19.95
3PG-3PG-3	3'	17.95

Video Cables

- TecNec true 75ohm design
- Broadcast quality video cables
- Machined brass shell = Gold plated center pin and integrally molded band and strain relief boot = Stranded center conductor for amazing flexibility



BNC Male to Male Cables

B-B-100	100'	\$44.99
B-B-75	75'	34.99
B-B-50	50'	24.99
B-B-25	25'	17.99
B-B-15	15'	15.99
B-B-10	10'	14.99
B-B-6	6'	13.99
B-B-3	3'	10.99
B-B-1.5	1.5'	9.99

TecNec Multiconductor Camera, CCU and VTR Cables

- All cables meet or exceed standards specified by Sony, JVC, Panasonic, Toshiba, Hitachi and Ikegami = Available in lengths from 7' (2m) to 328' (100m) to custom lengths in any size

EIAJ 26-Pin Male to EIAJ 26-Pin Female Cables

Camera to CCU cables equivalent to Sony CCZ-A and CCZ-M; JVC VC-P454B, VC-P110/VC-P114; Panasonic WVCA26V30 and WVCA26T20

EIAJ 26-Pin Male to EIAJ 26-Pin Female Cables

Camera to VTR cables equivalent to Sony CCZ; JVC VC-P454BU.

EIAJ 8-Pin Male to 8-Pin Male Cables

VTR to monitor cables equivalent to Sony VMC-P; Panasonic NV-C15; JVC VC-202U

EIAJ 14-Pin Male to EIAJ 14-Pin Female Cables

Camera to CCU and VTR cables equivalent to Sony CCQ-AM/BRS/ARS/AR; JVC VC-P630U, VC-512, VC-589, VC-513/514/515/516, VC-P434/432; Panasonic WV-CA14

Sony Betacam Dub Cables EIAJ 12-Pin Male to 12-Pin Female Cables

Dubbing cables equivalent to Sony VDC-C

Patchadap Multiconductor Breakout Boxes

Coupler 26 & Coupler 14 Coupling adaptors for mating and extending all 26-pin and 14-pin cables.

BB-26VA EIAJ 26-Pin Male & Female Breakouts to video and audio ins and outs

BB-26 RGB EIAJ 26-Pin Breakouts to Component Y, R-Y, B-Y

SV4-YC S-VHS 4-pin Breakout to separate luminance (Y) and chrominance (C)

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



TURNKEY PROMPTING SYSTEMS

Companion 15" Prompting Package

- High resolution large format 15" studio prompter with integrated script creation and talent display
- Includes keyboard, solid-state script cartridge and 25' remote control
- Wide-angle hood/beamsplitter assembly
- 110VAC 60Hz, 220VAC 50Hz or 12VDC operation
- Auto locks onto NTSC or PAL video signals
- Accepts downloads from IBM or Macintosh laptops or notebooks
- Fast setup and takedown
- Complete with 30" rail and all mounting hardware for standard studio tripods rated for 60 lbs. or better

\$4895.00

Companion 12" Prompting Package

- Turnkey prompting system for field or studio
- Computer features: plug-in keyboard, serial port, auxiliary video input, handheld scrolling speed control
- Uses 12" rail style prompter head for added camera tilt flexibility
- Universal camera mount plate adapts to any EFP camera/lens combination
- Precision machined parts fit together using spin-on fasteners
- 12" black-and-white monitor operates on 110VAC, 60Hz or 12VDC via XLR-4 connector.

\$4895.00

Companion 9" Prompting Package

- Complete teleprompting system
- Removable computer module with plug-in keyboard, composite video output, built-in serial port for downloading from IBM, Mac or Amiga
- 909V prompter head with high brightness Ikegami 9" black-and-white monitor for outdoor readability
- Auxiliary video input for maximum production efficiency
- 12VDC power (power supply or BP 90 battery pack attachment available as options)
- 25' handheld remote speed control

\$4895.00

COMPUTER SCRIPT CONTROLLERS

Express

- Integrated computer will interface with Mac and IBM 3.5" floppy disks
- Load and prompt in seconds
- Attaches to the Anton/Bauer battery mount
- Operates on 12VDC
- Built-in vacuum, fluorescent operator display
- Simple remote control allows speaker to vary script speed
- NTSC, PAL or VGA video output
- Compact design, weighs less than 3 lbs.

\$4000.00

Script Manager

- Versatile teleprompting interface for IBM or Mac PC, laptop or notebook using Windows® 3.1 or better—including Windows 95
- External controller features NTSC or PAL video output, console speed control and 25' handheld remote control, inverse video
- 12VDC portability
- 2 serial connecting cables (9-pin to 9-pin, 9-pin to 25-pin)
- Windows "Drag n' Drop" application software provides simultaneous editing and prompting
- Please specify if Mac software and cabling are required when ordering

\$2295.00

FLAT PANEL PROMPTER HEAD

FP9 9" Diagonal Prompter Head

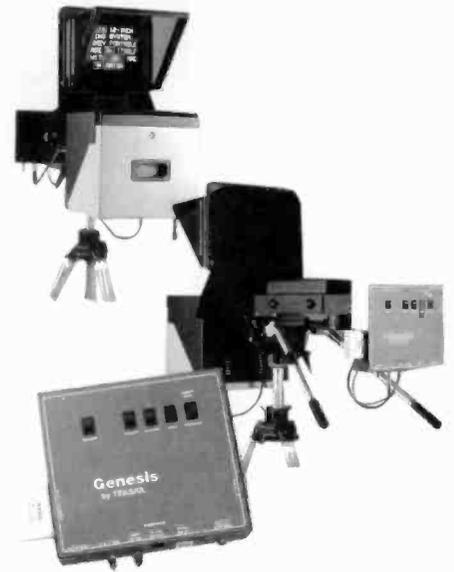
- Flat panel gas plasma display
- 12VDC operation
- Complete with hood, glass and rail
- Weighs only 9 lbs.

\$4500.00

CRT PROMPTER HEADS

15" Monitor Prompter Head

- Large format studio prompter with high resolution 800-line monitor
- 110VAC, 220VAC or 12VDC operation
- Counterbalance weights
- Fast setup and takedown
- Comes complete with 30" rail and all mounting hardware for standard studio tripods rated for 60 lbs. or better.



12" Monitor Prompter Head

- Perfect prompter for studio or field production
- High contrast, high resolution black-and-white monitor on 30" mounting rail and hardware
- Adjustable universal camera mount plate accommodates standard ENG/EFP camera and lens configurations
- 2-5 lb. counterweights
- 70/30 beamsplitter glass provides easy readability outdoors or under bright studio lights

\$2595.00

9" Monitor Prompter Head

- Black-and-white AC/DC monitor
- Sliding universal camera mounting plate
- 30" mounting rail with all hardware
- 1-5 lb. counterweight
- 20 lb. system weight

\$2259.00

909V Video Prompter

- Uniquely designed indoor/outdoor prompter puts monitor directly below the universal camera mount for quick setup
- Durable precision cast aluminum frame uses folded optics (surface reflectant mirror and 70/30 beamsplitter glass) to bring prompts in front of camera lens for consistent eye contact
- 50' BNC cable included
- Prompter does not include 9" monitor—use Panasonic TR-930 or equivalent.

\$2259.00

SPEECH PRESENTATION EQUIPMENT

Tekskil Speech Prompter

- Frees the speaker to concentrate on delivery, not memorization
- Unique design provides the speaker with 2 displays—eye level and floor level
- High resolution 17" presentation monitor
- Quick setup and takedown
- Can be used in combination with any Tekskil prompter/controller

\$2975.00



Tekskil Speech Prompter

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





1730D 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
- Parallel/serial digital inputs can be paraded side-by-side with an analog input
- Error Detection and Handling (EDH) operation

The 1730D offers an analog output derived from a precision 10-bit D-to-A converter (DAC). This full-time DAC output operates for the serial or parallel digital inputs and can be used as an alternative to other digital video equipment's DAC circuits.

The 1730D offers the additional benefit of digital video testing via serial composite digital inputs. These wideband, high return loss loopthroughs allow the instrument to "tap" and monitor a 143M bit/sec. (177M bit/sec. PAL) Serial Composite Digital link. The 1730D 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 "snapshots" 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.

1730D NTSC \$3895.00
 Option 74 Substitute P4 white phosphor on CRT 100.00

1710J Waveform Monitor

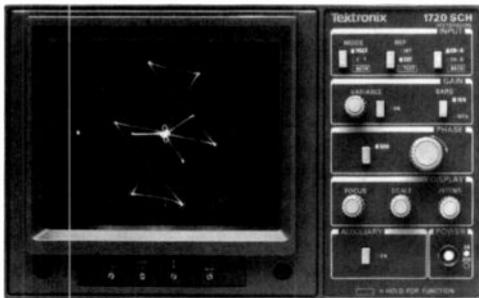
- Low power consumption ▪ Dual-filter display ▪ Half-rack width
- Bright CRT display ▪ Internal graticule ▪ Available in NTSC and PAL standards

The 1710J Waveform monitor provides all of the commonly used display modes. In addition, the 1710J 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 the existing system that uses half-rack width, 5¼" high waveform monitors.

Because of its extreme light weight and low power consumption, the 1710J is ideal for field production, mobile operations and any other application where space, power consumption and/or portability are prime considerations.

The dual filter display allows the user to view both the complete video signal and the luminance information at the same time using just 1 instrument. This eliminates the need for switching back and forth between filters and makes the instrument easier to operate. Ideal for camera setup.

1710J NTSC \$1795.00
 1711J PAL 1795.00
 Option 74 Substitute P4 white phosphor on CRT 100.00



1720 SCH

**1725/1720 SCH/1720 Vectorscopes
 1735/1730 Waveform Monitors**

- Complete line select ▪ Simultaneous Channel A and 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
- Remote control capability ▪ SCH capability with 1720 SCH
- Half-rack width ▪ Internal front panel presets

These versatile instruments' unique features make them even more powerful when operated in tandem. These instruments are ideal for camera control units and videotape recorders. Their light weight (about 9 lbs., including cabinet), low power consumption and compact size make these instruments well-suited for use on a portable production cart.

1725 Vectorscope (NTSC/PAL) \$3595.00
 1721 SCH Vectorscope (PAL) 3595.00
 1720 SCH Vectorscope/SCH (NTSC) 3595.00
 1721 Vectorscope (PAL) 2495.00
 1720 Vectorscope (NTSC) 2495.00
 1735 Waveform monitor (NTSC/PAL) 2895.00
 1731 Waveform monitor (PAL) 2495.00
 1730 Waveform monitor (NTSC) 2495.00
 Option 74 Substitute P4 white phosphor on CRT 100.00

Mounting Configurations

The 1710B, 1720, 1720 SCH, 1725, 1730, 1735 and 1730D are shipped without a case for mounting. The following mounting configurations are supported:

1700F05 For rackmounting. 2 half-rack products;
 dual rack adaptor \$260.00
 1700F02 For portable use with a single half-rack product;
 portable case with handle, feet and front cover 125.00
 1700F00 For custom mounting a single half-rack product;
 plain case 80.00

764 Digital Audio Monitor

- Combination phase and level meter and digital audio data monitor
- Easy to read display ▪ Auxiliary VGA output ▪ 2 AES/EBU input channels with loopthrough capability
- Audio amplitude measurement results displayed on up to 4 bar graphs
- Detection of digital clipping and muting and system errors
- Time code input and display
- Assesses timing relationships between digital and audio signals and a DARS reference signal
- Channel status and user data recovered and displayed in contiguous 24-byte blocks and decoded into text

A powerful and unique capability of the 764 is its ability to compile the statistics associated with a digital audio passage. The display of the statistics can be VITC or LTC time or actual running time. The logging mode time-stamps the occurrence of several important events. The audio view of the 764 provides bar graph indicators for audio level and a combination Lissajous and phase correlation meter. In this configuration, the 764 supports online monitoring of audio level and phase for editing and mixing sessions, master control monitoring and equipment lineup activities. Typical applications of the 764 include: consoles and workstations; DAT, D1, D2, D3, etc.; digital STL for radio; A/D testing and alignment; digital audio routers; signal processing; duplication and mastering.

764 \$4500.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





1780R Video Measurement Set

- Full bandwidth analog video processing
- Precision waveform and vector measurements
- Polar SCH presentation with calibration mode
- 4 loophrough 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
- Available for either NTSC or PAL standards



1780R	\$11,295.00
1781R	11,295.00
1780F02 Portable carrying case for 1780R series sets.	395.00
Option 74 P4 white CRT phosphor (2 CRTs)	200.00

1760/1750A/1740A Series Waveform/Vector Monitors

Common Features

- Composite or component waveform monitoring
- Straightforward interface
- 8 loophrough video inputs
- Composite vectorscope
- Picture monitor
- Stereo audio amplitude and phase
- Longitudinal time code
- Multiple display modes
- Easily configured for special monitoring applications, which may be stored in 1 of 9 user presets for easy recall
- Based on Application Specific Integrated Circuits (ASICs), a high performance analog video electronics system
- Audio frequency response is accurate to -3dB at 500kHz
- Phase match between left and right channels is better than 1° at 20kHz

8 Video inputs eliminate the need for external input selectors. All inputs are connected directly to the instrument. Signals may be paraded, overlaid or displayed in comparison modes not normally available with a simple external switcher.

Waveform monitoring is analog for maximum waveform fidelity. No digital processing of the displayed signal. Selected input may be displayed in 1- or 2-line or 1- or 2-field sweeps on a continuous basis, or identified lines of any field may be selected and displayed. Multiple inputs may be displayed at the same time, or multiple filters may be applied to 1 input for signal analysis. Time and voltage cursors may be activated and positioned for reference or measurement.

Composite vectorscope demodulates and displays the color components of the NTSC or PAL signal. A microprocessor-controlled phase shifter provides accurate vector positioning and eliminates readjustment when switching between internal and external reference modes. Phase and amplitude cursors with on-screen readout allow system setup to reproduce specific chroma values and colors when luminance is similarly set using the waveform display voltage cursors.

Picture monitor provides easy signal identification, which is useful when the instrument is used to monitor many sources. In waveform or vector line select mode, a line bright-up marker in the picture display identifies the selected line.

Stereo audio amplitude and phase is monitored using a calibrated X/Y Lissajous display. Correct phasing between 2 audio channels is quickly verified by the direction of the display; signal level is confirmed relative to the CRT graticule; and stereo separation is displayed in quadrature to the level display.

Longitudinal time code is monitored in a frame rate display to allow observation of amplitude, synchronization and phase with respect to reference vertical.

Subcarrier/horizontal phase and color framing (available only on the 1750A and 1760 with SCH option). Sync jitter over the field is displayed as a moving sync vector dot, or displayed as a timing error at a vertical rate to identify the relationship over the field time. Correct color framing is quickly verified by the position of the single sync vector dot relative to the color subcarrier vector when the monitor is externally referenced.

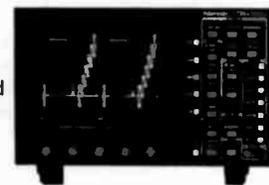
1740A Series

- Provides basic component waveform monitoring
- Serves as a platform for the enhanced 1750A/1760 series
- Ideal for portable applications where a single, small, lightweight monitor can speed equipment setup and adjustment
- Picture display may be used to verify the feed to the recorder or transmission link
- Perfect for many VTR bridge applications when SCH capability is not required
- Includes remote control and 90/100Hz sweeps for D-2 servo observation

1740A	\$4,595.00
1745A Dual-standard—NTSC/PAL version	4,895.00
1741A PAL	4,595.00

1750A Series

- Provides all 1740A features plus:
- Polar SCH display
- Color frame verification capabilities
- Ideal setup and maintenance tool
- Provides complete monitoring of the television signal in a single hand-carried package
- A natural for mobile production applications
- Full-sized display
- Permits observation of the video signal at up to 10X vertical and 25X horizontal magnification
- Portable carrying case available



1750A	\$5,995.00
1755A Dual-standard version	6,295.00
1751A PAL	5,995.00

1760 Series

- For mixed format component/composite applications
- Optional SCH available
- Deluxe composite/component monitor
- Provides all 1740A features for checking the input and output of the edit suite
- Lighting display for quick, accurate setup of component sources
- Bow tie mode allows precise timing measurements

1760	\$5,095.00
1765 Dual-standard version	5,395.00
1761 PAL	5,095.00
Options SC SCH/color framing (1760 and 1765 only) . . .	1,500.00
Option 74 White phosphor (for all models)	100.00

Mounting Configurations

The 1760, 1750A and 1740A are shipped without a case for mounting. The following mounting configurations are supported:

1700F05 For rackmounting 2 half-rack products; dual rack adaptor	\$260.00
1700F02 For portable use with a single half-rack product; portable case with handle, feet and front cover	125.00
1700F00 For custom mounting a single half-rack product; plain case	80.00

1700F07 Utility Drawer

- Provides a tidy solution for accessory storage needs
- Over 1/2 cubic foot storage space and fits in an unused side of the 1700F05 side-by-side rack adaptor
- Can keep tools, cables, patch cords, terminators or office supplies handy, but out of the way
- For installation in remote van
- Thumbscrew holds the drawer securely shut, preventing any untimely accidental openings

1700F07	\$165.00
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ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





TSG-170D Digital Composite Generator

- Digital and NTSC analog test signal outputs ▪ Digital and analog audio tone outputs ▪ RS-170A blackburst output for master SPG application ▪ Genlock with output timing offset ▪ 12-character identification ▪ Tape leader countdown \$5600.00
- Option 1S Serial digital output 950.00



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 \$5500.00
- Option 1S Serial video interface 950.00



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 \$5250.00
- Option 01 Adds separate SMPTE bars output with 12-character ID, audio tone output and tape leader countdown 1000.00

TSG-601 Serial Component Generator

- Provides a complement of 16 test signals selected for their utility in installation and maintenance applications in serial digital component environments ▪ Provides a 3-level approach to stress testing ▪ Embedded AES/ESW audio capability. \$2995.00

TSG-130A Multiformat Test Signal Generator



- Tailored for service applications ▪ Supports Betacam®, MII, S-VHS, Hi8, GBR and NTSC formats ▪ BNC and S-connector outputs ▪ High accuracy test signal generation ▪ 2 channels of audio tone with channel 1 identification ▪ Compact and lightweight ▪ Blackburst output (option) . . . \$2775.00
- TSG-131A PAL version. 2775.00
- Option 01 MII test signals N/C
- Option 02 Adds a dedicated blackburst output (-4V composite sync) 300.00
- Option 2J 0 IRE setup and blackburst (-4V composite sync) . . . 300.00
- Option 03 Sony PVW series service (includes blackburst; -4V composite sync) 300.00
- Option 04 Panasonic MII service (no blackburst) 300.00

TSG-200 Test Signal Generator

- Multiple blackburst outputs ▪ Character identification positionable within the active field ▪ Tape leader countdown with visual and auditory cues ▪ Stereo audio tone with channel 1 identification ▪ 12VDC input ▪ Remote control ▪ Applications: small production system SPG; bars/ID source for microwave links \$2150.00



TSG-120 Test Signal Generator

- Tailored to service applications ▪ Supports S-VHS, Hi8 and NTSC formats ▪ Y/C, NTSC and S-connector outputs ▪ 2 channels of audio tone with channel 1 identification ▪ Blackburst output (option) \$1975.00
- Option 01 Adds blackburst option 300.00
- Option 02 Cable signal set N/C

TSG-100 Test Signal Generator

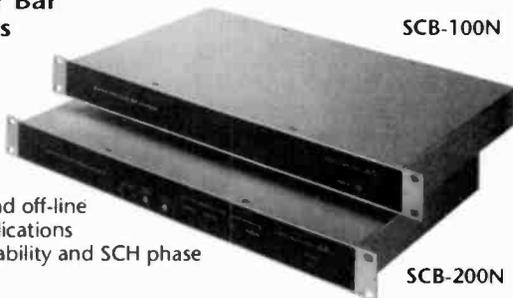
- Transmission test signal set (option 01) ▪ 8-bit digital generation ▪ Conforms to RS-170A timing specifications ▪ 1kHz audio tone ▪ H or V rate scope trigger signal ▪ 12VDC operation also provided. \$1300.00
- Option 01 Transmission test signal kit N/C
- TSG-111 PAL version 1575.00

TSG-95 Handheld PAL/NTSC Signal Generator

- Complement of 20 PAL and 16 NTSC test signals ▪ Designed for applications ranging from transmission line testing to production equipment setup to general maintenance and troubleshooting to calibration ▪ Equally useful in testing audio links, providing 13 discrete audio tones from 50Hz-20kHz plus a tone sweep that covers the same range ▪ Audio output level can be set to 0, +4 or +8dBu ▪ Output is via 2 balanced XLR connectors, and identification clicks can be selected to easily distinguish between audio channels 1 and 2. \$895.00

Grass Valley SCB-200N/SCB-100N Sync Color Bar Generators

- Quality and reliability are built into each self-contained 1RU frame
- Designed for professional and off-line broadcast applications
- Frequency stability and SCH phase accuracy



SCB-200N Genlockable Master/Source Sync/Color Bar Generator

- Accepts color black or video as a reference ▪ 1 output each is provided of sync, blanking and subcarrier, plus 4 outputs of color black, 1 of which may be user-defined as superblack and 2 of color bars ▪ 1kHz, low impedance balanced output stereo tone generator, locked to vertical timing ▪ Left channel identification is provided with 33ms bursts of increased amplitude ▪ V1 and encoded subcarrier outputs provide simple system integration \$1995.00

SCB-100N Stand-Alone Master Sync/Color Bar Generator

- Stand-alone NTSC master timing generator ▪ 4 outputs of color black, 2 each of sync, blanking and subcarrier ▪ V1 (Color Frame ID) pulse ▪ Monaural audio tone output ▪ Grass Valley's exclusive encoded subcarrier output allows use of STM-85N source timing module to simplify system design \$1295.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





SPG-422 Component Digital Sync Generator

- Designed to integrate digital islands into an analog facility or provide master sync generation in an all-digital facility
- Provides up to 6 independently timeable analog blackburst outputs, full-time serial digital bars and black outputs, and clock-locked AES/EBU digital audio outputs
- The AES/EBU audio may also be embedded in the serial digital video

The SPG-422 can operate in single-standard or dual-standard modes. In single-standard mode, blackburst outputs track the line and field rate selection for the digital outputs. Dual-standard mode provides the flexibility needed in a master sync generator for post houses working in 525 and 625 component digital and analog PAL and NTSC, with every digital and analog black output individually configurable for line rate or standard. With the addition of 4 optional blackburst outputs, a total of 6 independently timeable analog reference signals are available to simplify timing of complex systems.

SPG-422 \$3900.00



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 \$3475.00
 Option 01 SMPTE bars with ID and audio tone 1000.00

SPG-271 PAL Sync Generator

- Conforms to EBU statement D23 and D25
- Precise 12-bit digitally generated color bars and blackburst
- SCH phase accuracy guaranteed by use of a single DAC
- High stability internal reference for master sync system applications
- Reliable slave operation provided by digital genlock
- Separate genlock and sync timing controls with presets
- Character identification, audio tone option
- Flexible timing controls
- Remote selection of internal/external reference, ID preset, genlock and sync timing presets and tape leader countdown
- 1 rack unit high

SPG-271 \$3150.00
 Option 01 Adds output 635.00

ECO-422 Digital Sync Changeover

- Each of the ECO-422's 11 user-configurable channels consists of primary and back-up inputs and an output
- Amplitude detection is available on every channel, but can be disabled on individual channels when needed
- All channels are capable of handling serial digital video, AES/EBU digital audio and analog blackburst

The ECO-422 provides automatic and manual operating modes. In automatic, the ECO-422 monitors the primary sync source outputs and switches to the back-up should the primary fail. The manual mode allows the user to select the desired source in the unlikely event both

sources have faults. The manual mode also facilitates periodic testing of the changeover itself. Fault and operating indicators provided on the front panel make it easy to keep track of the unit's operational status.

ECO-422 \$2500.00



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 back-up sync generator operation.

ECO-170A \$2375.00

WFM90 Waveform/Vector/Picture/Audio Monitor

- Designed for audio and NTSC video monitoring in field production applications
- Combines the capabilities of 4 products: color picture monitor, waveform monitor, vectorscope and voltage vs. time audio monitor in a palm-top unit

Color Picture Monitor The WFM90's 4" color Thin Film Transistor (TFT) LCD provides a full-screen display of any of the 4 display modes, which are accessed through a simple keypad and menus. Additionally, the waveform, vector or audio displays can be cut into a corner of the color picture display.

Waveform Monitor To identify amplitude and timing problems, the WFM90's waveform monitor mode provides the functionality expected in a basic, single-input waveform monitor: 1X and 5X vertical gain; 1H, 2H and 2F sweep rates; vertical and horizontal positioning; and a luminance filter. To simplify identification of signals with excessive gain, an amplitude alarm changes the waveform's color above 100 IRE. System timing adjustments are made possible with an external reference input.

Vectorscope The vectorscope mode allows complete adjustment and evaluation of a video signal's color parameters. Simple on-screen menus provide access to the controls most commonly used on a vectorscope: 1X, 5X or variable gain; color bar amplitudes of 75% or 100%; and a 360° phase shifter.

Audio Monitor Audio setup and monitoring in the field is simplified by the WFM90's monaural audio display, which features variable reference level settings. A built-in headphone jack and an XLR input connector provide the capability to listen to program audio and to perform quick microphone checks.

WFM90 \$1995.00



ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



WFM601M Serial Component Measurement Set

- Addresses operational monitoring and technical test applications and installation and maintenance requirements
- Evaluates serial digital component signals from source to destination
- Accepts a serial component video signal data stream which is analyzed for conformity to standards
- Indicates data errors that occur during signal transmission



The WFM601M provides all the features of the WFM601E plus digital analysis capabilities important to those involved in the design, installation and maintenance of 270M byte digital component video systems. The WFM601M features a wideband, 32-word data waveform display with a 3-line data freeze/review mode to provide a comprehensive look at data. A real time, full-field analog CRT display enables technicians to view the video signal in analog format. A jitter demodulator with numeric jitter readout provides a documentable value along with a display relating jitter to time in the video field or line. A cable length readout in meters of coaxial cable provides a check of how close a system may be running to one important failure point.

WFM601M \$8495.00

WFM601E Serial Component Monitor

- Adds an eye pattern display for evaluating transmission path integrity
- Monitors the serial digital component signal for data, format and transmission errors to SMPTE RP165 standards (Tektronix EDH—error detection and handling)

Format and data errors are detected and clearly reported on 2 screens, the Status screen and the Format screen. The Status screen indicates: the presence or absence of video and embedded audio, whether the video is 8 or 10 bits, format errors, and full-field and active picture CRC errored seconds. The Format screen provides additional detail when the Status screen indicates a format error. Illegal data, start of active video (SAV) placement error, line and field too long, and ancillary data checking are all indicated by the WFM601E. An integral Eye Pattern display provides definitive indication of the digital signal channel's analog performance.

WFM601E \$6995.00

SDA601 Serial Digital Analyzer

- Analyzes the digital video signal for data errors and the presence and status of ancillary (ANC) data
 - Battery operated, handheld package
 - Convenient and practical tool for the critical task of stress testing digital transmission paths
- Analysis performed by the SDA601 performs 4 categories of analysis:

Video Format Analysis Detects and reports on signal parameters including line/field rate, clock rate, active picture resolution (8- or 10-bit) and embedded audio status.



Data Format Analysis Reports data errors, including line/field length, illegal vertical interval switch, EAV/SAV format, illegal data values, ANC packet format and missing data bits.

Transport Layer Analysis Reports on errors typically caused by degradations in transmission path quality. Reporting includes full-field and active picture EDH errors, EDH flags, full-field and active picture CRC changes and incoming signal strength.

Video Content Analysis Verifies that Y, B-Y and R-Y amplitudes are within headroom specifications and provides additional information about the blanking intervals. Report information is displayed on a built-in LCD screen or can be routed to an external monitor. Additionally, reports can be sent directly to a printer or personal computer. A watchdog mode automatically generates reports whenever errors occur.

SDA601 \$2695.00

AM70 Handheld Digital Audio Analyzer/Generator

- Designed for troubleshooting audio systems
- Simplified menus and keypad controls
- Compact display screen

The AM70 operates in 3 modes:

Generator Mode Lets the AM70 serve as a source of analog and digital test signals. The AM70 generates the signals by direct digital synthesis, using either its own internal clock or an external digital audio signals as a synchronization source.

Monitor Mode Lets the AM70 display important aspects of a digital signal. By connecting an optical or electronic signal, an operator can monitor states of validity, parity, channel status and user bits. The AM70's internal D/A converter makes the signal audible through an internal speaker or headphone jack. A user's option is for the AM70 to route signals to the instrument's balanced analog outputs or echo the digital input signal on the optical or electronic digital outputs.

Modify Mode Lets a user install the AM70 inline with a digital signal to perform real time editing of digital audio data. This capability lets the user edit status and user bits, validity and parity bits, the length of audio samples, and left/right audio signals.

Users will have the option of defining 4 "Quick Keys," or presets, for each operating mode. Each key can invoke a user-defined setup, simplifying routine calibration and troubleshooting tasks. The AM70 features balanced analog outputs, balanced and unbalanced digital inputs and outputs, optical inputs and outputs, an internal speaker and a headphone jack. It is battery powered and adaptable to AC.

AM70 \$1995.00



ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





Grass Valley DPM-700 Digital Picture Manipulator

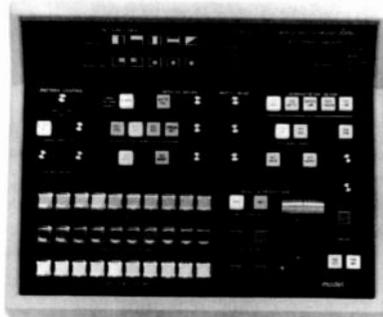
- 3-D rotation effects, variable perspective, spin, skew, size and many other transform effects with source, target or global space to provide multiple motion paths
- Nontransform effects include: solarization,



- posterization, mosaic, defocus, freeze frame, freeze field, forced monochrome, false coloring and more
- A and B inputs on each channel
- Easy Cube for quick effects setup
- Global channel provides a spatial frame of reference for the other 2 channels defining the location and shape of the 3-D space where the other channels operate
- Key-Layer™ mode lets your video key appear either upstream or downstream of the production switcher
- Multilayer keying effects include: key dissolve, fade-to-black, matte or external background, using either shaped or unshaped video for linear or luminance keying; key inputs can be inverted or matte-filled
- 5 matte generators: luminance and hue can be selected and key-framed for each matte generator
- E-MEM® Effects Memory System will store 100 effects
- Standard interfaces for Editor Peripheral, slave devices (such as Model 110); GPI integration and terminal interface provide a flexible system

DPM700CVS2SSYSA DPM-700 525/60 Component Analog System Package with second channel component analog NTSC, page turn effects generator and Trailblazer enhanced recursive memory **\$55,000.00**

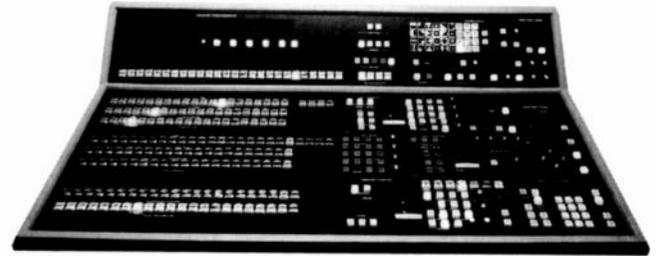
DPM-700SYSNA DPM-700 NTSC Composite Analog System Package with second channel composite analog NTSC, page turn effects generator and Trailblazer enhanced recursive memory **\$52,500.00**



Grass Valley 110 Analog Production Switcher

- 3-bus multilevel M/E system
- 8 video inputs, plus black and color background
- Program and preset buses
- Linear and luminance keying
- Look-ahead preview system that always shows the next effect
- 3 independently GPI-programmable auto transition systems
- 10 wipe patterns with modifiers
- Independent matte generators for key fill, background and pattern borders
- 10 E-MEM Effects Memory System registers available from the control panel
- Clean feed video output
- Independent frame rate fade-to-black
- Pulse processor re-inserts blanking from blackburst on program output
- DSK includes linear and luminance keying
- Integrates seamlessly with Grass Valley's DPM-700 digital effects system

110 **\$10,995.00**
110CV Component Video Switcher **18,950.00**



Grass Valley 200 Series Production Switchers

- Mix or wipe to a preset position and size using a single keyer
- "Over" function; switch keyer priority in each M/E
- Automatically selects preassigned key when fill source is selected
- Accumulative latch for key signals extends the capability of each keyer by combining 5 key sources in a single keyer
- 6 assignable external key source inputs
- 4 external key fills
- Standard key masking with the dedicated shutter (box) mask for each keyer, external key mask or either M/E wipe pattern in any keyer
- Mask invert and forced foreground
- Key memory recalls preset clip and gain for each key fill and each key mode, allowing you to cut between key sources
- Create hundreds of wipe patterns with these standard modifiers: horizontal and vertical multipliers; border, soft and symmetry (halo) controls; rate controlled positioner; normal, reverse and flip-flop wipe direction modes and 4 learn user wipe registers
- E-MEM provides storage and recall of 30 complete switcher setups
- All M/E keyers are full-function and capable of linear, luminance, preset pattern and chroma keys (with chroma key option)
- Background wash between background generator or to black
- Complete transition preview in the M/E

200-2N ▪ 20 primary inputs and 2 M/E with 5 full-function keyers
 There are 2 keyers in each M/E and 1 downstream ▪ You can use either M/E as a background for the downstream keyer, which also comes with fade-to-black and an output blanking processor

200-2N **\$49,500.00**

250-N ▪ For live applications ▪ Power of a Model 200-2N switcher with the additional flexibility of a program/preset mixer that lets you keep up with fast-paced news and sports action ▪ Integrates seamlessly with the DPM-700 Digital Picture Manipulator for automatic auxiliary bus control ▪ Expands to 6 auxiliary buses for multiple feeds ▪ Instant control of external devices via the Peripheral Interface II Bus

250-N **\$56,000.00**

200-1N ▪ Single M/E version is 3 keyers—2 in the M/E and 1 downstream ▪ Program/Preset mixer for live production ▪ M/E wipe system offers border width and edge softness, edge softness symmetry, aspect, rate controlled positioning, and vertical and horizontal multipliers

200-1N **\$29,000.00**

The Streamline™ Effects Controller

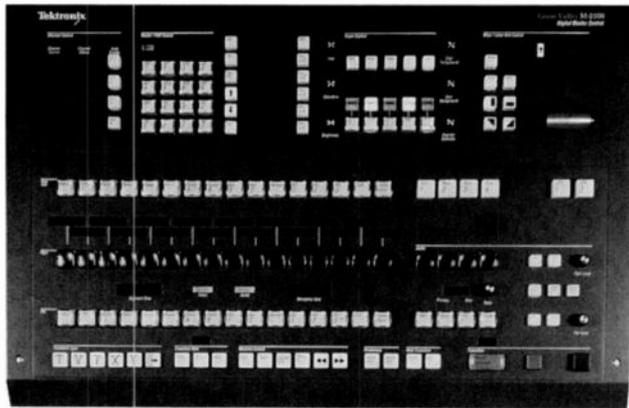
- Includes: ▪ Key frames
- Register attributes
- Timeline
- Personality programming M/E copy
- Lock protection

200-540 **\$6,000.00**

Please call for complete list of options.

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





Grass Valley M-2100 Digital Master Control System

- Completely configurable system for greater value and maximum compatibility
- Designed for the future with true multichannel, multipanel functionality
- Integrated SqueezeBack™ effects and Profile® PDR clip stacker
- Easy-to-use, familiar Grass Valley interface
- Unmatched digital audio capabilities
- Integrated audio/video/control processing frame
- Extensive, flexible keying functionality
- Routing system interface and control
- User-defined configuration
- SqueezeBack effects provide integrated DVE squeeze and tease effect, positioning and compressing pictures
- Profile clip stacker offers single point control for viewing, stacking, and playing-to-air of clips
- Grass Valley controls
- Color differentiated function areas, large LED displays, and traditional grouped function
- Audio processing is scalable from one AES3 digital stream to four AES/EBU 48kHz streams per A/V/C processing frame
- Integrated audio/video/control processing frame
- Hot pluggable/removable modules
- Extensive keying capabilities allow you to choose between dual luminance linear keyer with Borderline® and drop shadow functionality: up to 4 luminance linear keyers or chromakeyers with single luminance linear keyer
- Software-enabled options include wipe transitions, key borders, SqueezeBack, embedded audio processing, and transition logging
- Integration with Grass Valley Series 7000 routing system
- For proper transition logging, source names are carried from the Series 7000 assignments to the master control panel displays and on to the correct source name displays above the program bus
- Integrated machine control functionality
- RS-422 serial machine control of up to 30 dedicated or router linked VTRs
- Remote clock display provides greater flexibility and convenience by allowing viewing from locations around the control room
- Displays pre-transition, transition rate, and transition delay information in either seconds or frames
- 8-character LEDs above program bus crosspoints indicate configured crosspoint name and dedicated matte source
- Input non-sync detection and indication of all video sources alerts operators of potential problems for quick remedy
- Manual transition control of any audio or video transition
- 4 wipe patterns are optionally included with edge softness and pattern reverse modifiers
- As-aired transition logging, from an external PC compatible computer running Windows 95™
- Open automation protocol

M-2100 POR*

Ordering Information

For additional information on these products, please request the following literature:

- M-2100 Ordering Guide (2WW-9302)
- M-2100 Installation Planning Guide (2WW-9303)
- M-2100 Poster (2WW-9355)

Grass Valley Master 21™ Master Control Switcher

- Transition status display indicates time of day, transition time, elapsed time and preroll time
- 5 transition modes
- Programmable transitions: slow, medium or fast
- User-programmable preroll
- 16 video inputs plus 20 stereo audios
- Transfer of preset audio levels to program bus
- Audio and/or video breakaway
- 4 audio over/breakaway inputs for dedicated sources
- 4-input accumulative linear keyer and matte generator
- Built-in RS-232/422 control ports, clock, log printer port, terminal configuration port and input expansion capability
- 6RU frame
- Put affordable master control and production power right in your hands
- The only master control switcher that lets you key transition status data into a television control monitor
- Add more inputs for greater control
- Power to eliminate downtime and make your station's off-hours productive and profitable
- Consistent on-air look
- On-air graphic confirmation

The Master 21 system comes complete with video processor, stereo audio modules, control and tally modules and power supply in a 6RU frame.

EVS Event Stacker

Allows the Master 21 to perform complex break sequences without operator intervention to help ensure a consistent on-air look.

Sidecar and Tub

Half the size of the Master 21 panel, the sidecar houses optional panels like second audio program option, emergency bypass switcher, video effects or your own control panels.

Second Audio Program

The perfect solution for second language program transmissions. International transmissions of up to 4 languages.

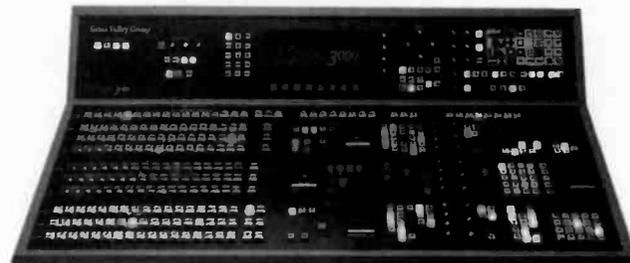
M-21N Master control switcher, NTSC with 15m cables \$23,950.00

*Price On Request

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



Model 4000-2B



Model 3000-2

Grass Valley Model 4000 Series Component Digital Production Switchers

- Component 4:2:2 digital video signal processing
- Independent timelines and time align editing functions
- Control panel provides familiar, easy-to-use interface
- 64 video and key source inputs
- 2 and 3 mix/effects (M/E) systems
- E-MEM® effects memory system
- Effects send within each M/E
- Lamina™ image layering mode on each M/E
- Framestore and Maskstore
- Chromatte™ chromakeyer
- Extensive library of wipe patterns
- Total digital effects integration

Model 4000-2A Live or Post

- Full-function control panel with 2 M/E systems
- Up to 24 video inputs can be controlled directly from the control panel plus another 24 shifted inputs
- Full-length program/preset mixer with mix and wipes and dual downstream keyer (DSK)
- Unlimited effects re-entry with Krystal™ digital effects system

Model 4000-2B Post-Production

- Compact control panel with 2 M/E systems
- Up to 16 video inputs can be controlled directly from the control panel plus another 16 shifted inputs
- Full-length program/preset mixer and DSK
- Unlimited effects re-entry with Krystal digital effects system

Model 4000-3 Live Broadcast

- Full-function control panel with 3 M/E systems
- Dedicated E-MEM and individual key buses for each M/E
- Direct access to up to 24 video inputs, plus another 24 shifted inputs
- Full-length program/preset mixer with DSK
- Unlimited effects re-entry

Model 4000-3T Remote Live Broadcast

- Provides the same features as the Model 4000-3, plus separate subpanels which fit easily into extremely tight spaces

Grass Valley Model 3000 Series Composite Digital Production Switchers

- A true multiformat compatible switcher
- Fine-line processing for near component quality results
- Independent timelines and time align editing functions
- Control panel provides familiar, easy-to-use interface
- E-MEM effects memory system
- Lamina image layering mode on each M/E
- Effects send within each M/E
- Automatic key framing and keystore
- Optional Chromatte chromakeyer

Model 3000-2 Production

- 2 M/E capability
- Ideal for post-production applications
- Direct access to up to 16 video inputs plus another 16 shifted inputs
- Compact control panel's look and feel are instantly familiar to anyone who has used a Model 300
- Comfortable and responsive user interface

Model 3000-3 Live Broadcast

- Designed for the most demanding live broadcast users
- Gives you the power of 3 M/E plus program preset
- The panel removes most of the delegated functions found in the 2 M/E panel of the Model 3000-2
- Gives you access to 24 crosspoints, plus a shift for a total of 48
- Each M/E has 2 separate key rows in addition to E-MEM controls

Model 3000-3T Remote Live Broadcast

- Designed for remote live broadcast use
- Same power and full range of functions as the Model 3000-3
- Provides the flexibility of separate subpanels which fit easily into extremely tight spaces

Call For Pricing

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



Grass Valley Krystal™ 4300 Digital Effects System

■ Gives users fast, precise, intuitive controls over a full spectrum of effects capabilities ■ Powered by Grass Valley 10-bit digital image processing and video enhancement technologies ■ Adaptable to a variety of multi-user, multichannel configurations ■ Delivers unsurpassed effects artistry and technical versatility

Great Effects and High Fidelity

■ Runs on powerful RISC technology with bicubic interpolation
■ Offers video processing that goes beyond older technology
■ Optional Krystal 43-XL incorporates our exclusive enhanced video technology with key processing for a higher level of quality and fidelity

Powerful Standard Effects

■ Other innovative system features include corner pinning, separate but mixable crop and mask patterns, mixed internal and external key processing and emboss, blur and modulated border mattes
■ Contains an extensive complement of luminance and chrominance pixel processing, including color mixing, contrast, posterization and color compensation

Optional Effects

■ Customize your system with Grass Valley patented Kurl effects generator for acrobatic nonlinear imaging ■ Add trails, mosaics, montages and other recursive effects to your creative repertoire with TrailBlazer ■ Take advantage of your agile new Defocus technology for real time control of rack-focus transitions or light source simulation option ■ Dual light source option adds realistic shading and lighting to 3-D transforms

Complete Creative Control

■ Partial keyframes and independent function timelines give you more resolution and control of special effects than any other digital effects system on the market ■ For ultimate versatility, including complex, multichannel moves, Krystal provides 2 global channels and a camera channel ■ It lets you manipulate each image in source, target or camera space ■ Its controls will be instantly familiar to Kaleidoscope™ users, and just as easy to learn and use for studio professionals who are migrating to Grass Valley products ■ With Krystal, each effects artist can operate in the way that's most comfortable and efficient, entering values via keypad, joystick or panel knob ■ The system's macro capability enables the artist to automate frequently used sequences, speeding operations and freeing up time for what's most important in digital effects: creativity

Configurations and Compatibility

■ Available in configurations of one to four channels, for one to two users, with up to 8 control points able to acquire channels via a standard Ethernet LAN ■ Krystal carries a full complement of video industry-standard interfaces for connection to other production and editing equipment ■ Aux bus control is standard with Tektronix's broad range of switchers ■ Model 2200-2i control panel provides control of both the Krystal channels and the production switcher ■ You can use the effects send loops of all listed switchers with Krystal to insert digital effects into a single keyer

Standard Features

- Multi-user, multichannel configurations
- 10-bit image processing
- RISC technology and bicubic interpolation
- Macro capability for automation of frequently used sequences
- Two global camera channels
- Image manipulation in source or target space
- Separate crop and mask pattern with mix capability
- Mixed internal and external key processing
- Emboss, blur and modulated mattes
- Keypad, joystick or panel knob interfaces
- One- to four-channel configuration
- One- or two-user control available

Options

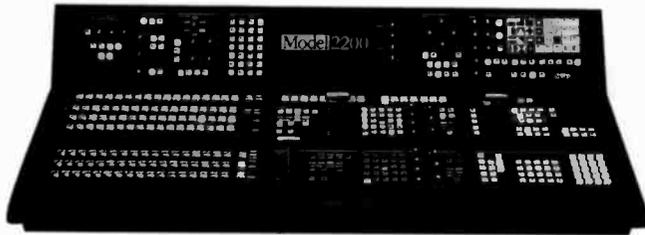
- Enhanced image fidelity
- Input recursive
- Output recursive
- Kurl nonlinear effects
- TrailBlazer recursive effects
- Defocus with glow in either video or key
- Light source provides two independent light sources per channel, positionable in 3-D space
- 2 x 2 combiner permits two foregrounds to be combined over background video
- Graphics display option for wire-frame channel representation with axis and source indicators

Fully Optioned Packages

Single and multichannel packages are available, loaded with all channel options and graphics options.

Call For Pricing

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



Grass Valley 2200 Component Digital Production Switcher

- CCIR 601 4:2:2 technology for unmatched video picture quality
- 1-button chromakey auto setup for near perfect chromakey
- Patented 10-bit processing for outstanding video transparency and fidelity
- Lamina™ Image Layering technology allows 4-layer compositing within each mix effect
- Virtually unlimited range of wipe patterns
- Effects send built into each M/E, allowing you to integrate digital effects devices within the bank
- Built-in menu display screen gives instant visual access to all the data needed for setup, diagnostics, and parameter adjustments
- Can be configured with up to 32 inputs for enormous range of access
- Switchable 525/625 formats and comes ready to support 270M byte 16 x 9 picture formats
- Its price puts it in the middle of the pack. Its power and performance put it way ahead
- High-end features and performance at a mid-range price
- Easy, intuitive controls that will be instantly familiar to seasoned video professionals
- Superb keying control and flexibility

Specifications

- 32 video inputs
- Switcher accepts serial digital inputs in groups of 8, which can be video or key
- Serial Digital Outputs: On Each M/E; Program Video; Program Key; Clean Feed
- Switched Preview; Mask; Aux Buses; Framestore
- Control Panel Dimensions: 13.8"H x 47"W x 23.5"D
- Electronics Frame Dimensions: 26.25"H x 19"W x 22.5"D
- Control Panel: Power: 300W maximum; Voltage: 110/220VAC nominal, 47/63Hz
- Electronics: 1200W typical; 1600W maximum; Voltage: 220VAC nominal, 47/63Hz

All Systems Include:

- 16 serial I/O
- 15m cable (longer cable requirements must be ordered separately)
- Effects send
- Secondary wipe generator
- Borderline generator, M/E 1 key 1/2
- Borderline generator, M/E 2 key 1/2
- Dual chromakeyer
- M/E 1

2200-2D	Component Digital Production Switcher Includes common features plus: 32 inputs Includes framestore <td>Serial I/P module, 2 each 16 inputs</td> <td>Analog O/P module (PGM/SW.PVW)</td> <td>Serial O/P module, Aux (3-5)</td> <td>Dual chromakeyer, M/E 2</td> <td>\$145,000.00</td>	Serial I/P module, 2 each 16 inputs	Analog O/P module (PGM/SW.PVW)	Serial O/P module, Aux (3-5)	Dual chromakeyer, M/E 2	\$145,000.00
2200-2C	Component Digital Production Switcher Includes common features plus: 32 inputs Includes framestore	Serial I/P module, 2 each 16 inputs	Analog O/P module (PGM/SW.PVW)			135,000.00
2200-2A	Component Digital Production Switcher Includes common features plus: 16 inputs Without framestore					115,000.00

Grass Valley 1200 Component Digital Production Switcher

- CCIR 601 4:2:2:4 technology for unmatched video picture quality
- Quick, auto chromakey setup and greater control over all key parameters
- Auto timing serial or parallel input/output with key input for every video input
- Patented Z-Key depth and 10-bit processor for outstanding video fidelity and transparency
- Total keying flexibility with 3 full-function keyers, including chromakey in the DSK
- Proc amp controls on every input will correct any input source errors in the switcher
- Effects send capability lets you splice an effects device into the path of any keyer
- Auto select 525/625 formats
- 16 inputs (analog or digital) you can assign as either video or key
- Fully compatible with the 16 x 9 picture formats of the future

Specifications

- Number of Primary Video Inputs: 16
- Number of External Key Inputs: 16 Video or Key
- Outputs: Program, preview, clean feed, aux buses, key
- Control Panel Dimensions: 10.54"H x 29"W x 17.42"D
- Electronics Frame Dimensions: 10.25"H x 19"W x 24.8"D
- Power Requirements: (FRAME) Power: 400W maximum .99 PFC; Voltage: 100-240VAC auto ranging; 50/60Hz; (PANEL) Power: 200W maximum; Voltage: 90-135VAC & 180-265VAC (Manual) 50/60Hz

1200	\$20,000.00
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1200 Options

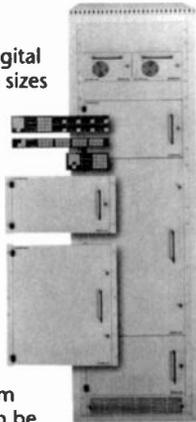
1200-600	Look-ahead preview mixer	\$6,000.00
1200-524	Borderline key edge generator, package of 3	6,000.00
1200-530	Chromatte 4:2:2 component chromakeyer	4,500.00
1200-500	Z-key depth key processor for program or preview video	4,000.00
1200-521	Borderline key edge generator for keyer 1 or keyer 2 or disk	2,500.00
1200-510	Second mix/effects keyer	2,500.00
1200-310	Analog YUV/RGB output: program video and/or preview	2,500.00
1200-302	Serial digital output: program video, program key	2,000.00
1200-202	Dual serial digital input module	2,000.00
1200-730	Satellite auxiliary bus control panel	1,500.00
1200-312	CAV analog input board	1,500.00
1200-301	Parallel digital output: program video, program key	1,000.00
1200-201	Dual parallel digital input module	1,000.00
PSWS-CNTCBL-100	100m control cable	700.00
PSWS-AUXCBL-100	Satellite auxiliary bus control cable, 100m	600.00
PSWS-AUXCBL-50	Satellite auxiliary bus control cable, 50m	400.00
PSWS-CNTCBL-50	50m control cable	300.00
PSWS-AUXCBL-25	Satellite auxiliary bus control cable, 25m	300.00
PSWS-CNTCBL-15	15m control cable	200.00
PSWS-AUXCBL-10	Satellite auxiliary bus control cable, 10m	200.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



Grass Valley Series 7000 Signal Management System

- True digital design supports multiple serial digital rates simultaneously
- Offers a variety of frame sizes from 16 x 16 to 128 x 128 with expansion up to 1024 x 1024
- AES/EBU digital audio matrices
- Data matrices
- Video and audio frames support either analog or digital modules in the same frame
- Full system integration with Grass Valley production switchers, video effects devices, master control equipment and editors
- Control panels feature: programmable 8-character names; relegendable buttons; chop and protect functions; simple coaxial connection to the panel bus
- A pull-down PC-based menu, graphical user interface enhances system configuration
- Visual Status Display applet can be loaded on other PCs connected on the controller ethernet LAN
- Comprehensive event-logging and alarm functions



Series 7000 Video Matrices

These compact video frames are ideal for remote vehicles, facilities changing over from patch panels, CAV applications and entry into serial digital. They may be used separately or as part of larger systems. Start with as few as 16 inputs x 16 outputs and build to frame capacity in 16 x 16 steps. Analog and digital modules can be mixed in the same frame, allowing access to any source at the push of a button. As digital needs increase, analog boards can be switched with digital boards without downtime or any frame disassembly. True digital design of the video circuit modules allows them to process all 4 serial digital rates simultaneously (143, 177, 270 and 360 Mbs).

Series 7000 Audio Matrices

The Series 7000 audio frames are ideal where space is a concern. 6RU analog and digital audio frames house quad 32 x 32, dual 64 x 64, and single 128 x 64 matrices. 128 x 128 audio is housed in 12RU. Both analog and digital audio use a 32 x 32 crosspoint board and are configurable from 32 x 32 to 1024 x 1024. The digital audio crosspoint board supports AES3-1992. The digital audio frames can be equipped with analog audio modules, making the analog to digital transition simple.

Audio output monitoring is provided standard on the audio matrix module. Analog audio I/O connections are made via removable screw terminal barrier strips. Digital audio frames are selectable with either 50-pin "D" connectors or BNC Interconnect/Break Out Panels (IBOPs). Frames using IBOPs include the cables connecting from the frame to the IBOPs. Audio-only systems require 6RU control frame.

Series 7000 Data Matrices ▪ Use a 6RU frame building block and IBOPs to construct systems from 32 x 32 to 256 x 256 ▪ IBOPs provide 9-pin "D" connectors for standard RS-485 and RS-422 connections ▪ 50-conductor cables are used to connect the data router matrix to the IBOP panels ▪ Supports EIA standard RS-485 revised April 1983; RS-422A revised December 1978

Grass Valley Series 6000 Compact Signal Management System

- Broadcast quality performance specifications
- Vertical interval switching
- Supports 8 levels with up to 4 breakaway
- Plug-in matrix and power supply modules for easy maintenance
- Back-up power supply capability in 2RU and 3RU frames

Video Systems

Analog Video (30MHz)

- Matrices available in 16 x 4, 16 x 16, and 32 x 32 configurations
- Terminating inputs for quality signal performance
- Each input jumper selectable for DC restored or DC coupled

Serial Digital Video

- Matrices available as 16 x 16 and 32 x 32
- Accommodates digital video data rates of 143, 177, 270 and 360 Mb/s
- Automatic cable equalization and reclocking on each input

Audio Systems

Analog Audio

- Matrices available in 16 x 4, 16 x 16, and 32 x 32 configurations
- Electronically balanced inputs and outputs
- Balanced signal paths to minimize crosstalk and switch clicks
- Supports spooling time code
- 50-pin "D" connectors carry 16 balanced signals

AES/EBU Audio

- Asynchronous switching for flexibility and low cost
- Supports mixed input sample rates of 32, 44.1 and 48 kHz
- Transformer coupled inputs and outputs for common mode and DC protection
- Reclocking on each input
- 50-pin "D" connectors carry 16 balanced signals



SMS-C16BPS

- Single destination remote panel (1RU) with button-per-source operation of 16 inputs
- Simple operation perfect for live applications
- Slide-in designation strip

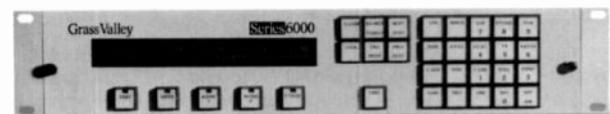
SMS-C32BPS

- A versatile remote panel featuring 32 button-per-source operation of up to 8 outputs
- 1RU with relegendable buttons and LED indications for easy use



SMS-CMXY

- Powerful mini-XY panel controls 16 sources for up to 16 destinations with breakaway in just 1RU
- Dual 7-segment display shows current destination number
- Slide in strip for labeling source/destination selection buttons
- Local panel version can be mounted in 1RU matrix frames for local control operation



SMS-CXY

- 2RU remote panel offering full XY control with 4 levels of breakaway
- 20-button keypad is used to build a source preset and the TAKE button initiates the switch
- Bright vacuum fluorescent display provides viewing of 6-character alphanumeric names

Call For Pricing

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



Grass Valley TEN-XL Compact Routing Switcher

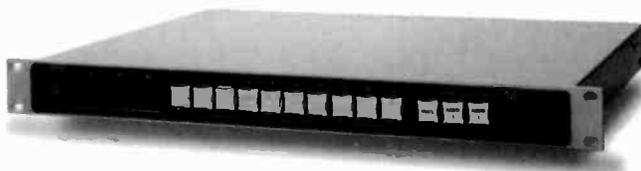
▪ 10 x 1 video/stereo audio switcher with local or remote control panel ▪ Optional RS-422/232 serial interface, relay module and back-up power supply ▪ Options can be added quickly and economically ▪ Switcher can be combined with a waveform/vector monitor by using the TEN-XTM, and you have an ideal input selector to VTR and video monitors

TEN-XLCV	Compact routing switcher with local control panel.	\$3475.00
TEN-XTM	10 x 1 video/stereo audio switcher with local control panel, packaged to be housed in Tektronix rack adaptor 1700 F05 (not supplied), with VU-peak meters and audio monitor	2350.00
TEN-XL	With local control panel	1695.00
TEN-XLRC	10 x 1 video/stereo audio switcher for remote control use (remote control panel optional)	1600.00

Grass Valley Performer Wide Bandwidth Compact Routing Switcher

▪ 10 x 1 video/dual audio switcher with full breakaway operation ▪ Standard RS-232/RS-422/RS-485 serial interface ▪ 30MHz bandwidth for graphics and future technology ▪ 3-level switching with LED display indicating current status of switcher ▪ "Protect" feature locks out the input selection switches ▪ For ease of installation audio connectors are removable screw type terminal blocks ▪ Built-in local control panel ▪ For remote control, a version is available with a blank panel ▪ Control compatible with TEN-XL and 20-TEN Series ▪ Options include: Remote serial control panel; tally module with a joystick override feature; loopthrough cable kit; rear support rackmount kit and service manual

PFR	. . . . .	\$1285.00
PFR-RC	10 x 1 video for remote use	1175.00



Grass Valley Performer-SD Serial Digital Compact Routing Switcher

Offers the same features as the analog Performer except: ▪ Accepts serial component or composite digital video and 2 AES/EBU digital audio stereo pairs ▪ It will switch audio and video together or break the audio stereo pairs away from the video ▪ Audio I/Os can be 75 ohm BNCs or 37-pin D connectors ▪ Both serial and parallel control interfaces are provided ▪ Uses same options as analog Performer

PFR-SD	. . . . .	\$3595.00
PFR-SDB	W/BNC audio I/Os	3595.00
PFR-SDRC	For remote use	3485.00

Grass Valley 8900 Series Serial Digital Distribution Amplifiers

▪ Mix and match analog and digital distribution amplifiers in the same frame ▪ Choose from 5 modules and 2 frame versions ▪ Built-in health monitor alerts you to any impending problems ▪ Passive loopthrough inputs provide enhanced flexibility in system design

8941 Component Digital Monitor Distribution Amplifier

▪ Ideal for applications requiring reclocking and analog video monitoring ▪ Passive loopthrough input for 4 serial component digital outputs ▪ Encoder for 4 NTSC/PAL monitoring outputs ▪ Auto equalization for up to 300 meters of Belden 8281 or equivalent cable (270MB)

8942 Composite Digital Monitor Distribution Amplifier

▪ For applications requiring reclocking and analog video monitoring ▪ Passive loopthrough inputs for 4 serial composite digital outputs ▪ Digital to analog converter for 4 NTSC/PAL monitoring outputs ▪ Auto equalization for up to 300 meters of Belden 8281 or equivalent cable (177MB)

8936 Autostandard Reclocking Distribution Amplifier

▪ For installations needing reclocking at all serial digital data rates and low jitter specifications ▪ 8-output DA ▪ Auto selection among 143MB, 177MB, 270MB and 360MB ▪ Auto equalization for up to 300 meters of Belden 8281 or equivalent cable (270MB) . . . \$550.00

8931 Fanout Distribution Amplifier

▪ Economical solution when reclocking is not required ▪ 8-output ▪ Auto equalization for up to 300 meters of Belden 8281 or equivalent cable (270MB)

8900 Series Trays And Power Supply

▪ Ideal in installations where analog DAs are required today, but anticipate conversion to digital at a later date ▪ Re-cabling is not necessary; just remove the analog DAs and replace with digital DAs ▪ 10-cell, 2RU frame accommodates 8500, 8800, and 8900 DAs ▪ Passive loopthrough BNCs ▪ Health monitor ▪ EDH loopthrough BNCs ▪ Meets FCC and EMI requirements

8900T2 Frame

▪ For use in installations not requiring forced-air cooling ▪ Features a vented front cover ▪ Optional control card to support SMPTE 269 alarms and an EDH network

8900T2-F Frame

▪ Recommended when the frame is fully loaded with digital DAs or when alarms and EDH reporting are required ▪ A fan on the front cover and control card to support SMPTE 269 and an EDH network are included

8900T2-F	2RU 10-cell frame with fan and frame controller	\$1200.00
8900T2	2RU 10-cell frame	995.00
8900PS	Back-up power supply for 8900 series trays	350.00
8900-CF	Front cover with fan and frame controller retrofit kit	225.00
8900-C	Controller module	175.00

There are many optional configurations available.

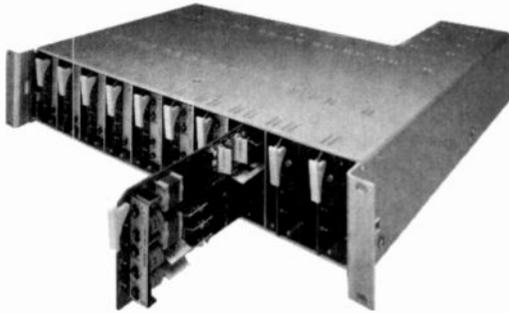
ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



VIDEO/AUDIO DISTRIBUTION AMPLIFIERS



Tektronix



Grass Valley 8500 Series Video and Pulse Distribution Amplifiers

▪ Differential looping input ▪ 6 outputs ▪ Low distortion ▪ Hybrid integrated circuits used throughout the line ▪ Input amplifiers, equalization stages, output amplifiers and voltage regulators have been hybridized to enhance product performance ▪ Troubleshooting done at the functional block rather than the component level, reducing service time dramatically ▪ All standard equalizing modules also employ precision hybridized networks for exceptional equalization curve accuracy ▪ Multistage circuitry ensures precise EQ tracking across the entire range of adjustment

8505	Field video DA for Belden 8281 cable	\$565.00
8504	Video delay DA for Belden 8281 cable	495.00
8511	Wideband video DA	465.00
8506	Video equalizing DA with clamp for Belden 8281 cable	435.00
8503	Precision video DA for Belden 8281 cable	425.00
8520	Pulse DA with equalizer for 0-50' Belden 8281 cable	375.00
8504-D800*	800ns video delay submodule (increases max. delay to 1.1µs)	275.00
8504-D500*	500ns video delay submodule (increases max. delay for 8504 to 870ns)	250.00
8504-D300*	300ns video delay submodule (increases max. delay of 8504 to 670ns)	200.00

*Plug-in module only. Does not include 8504 module.

Grass Valley 8800 Series 8 Output Video Distribution Amplifiers

▪ Offers the same performance as 8500 series with an additional 2 outputs per DA at no additional cost ▪ Compatible with 8500 series and 8800 series amplifiers may be mixed in any 8500T1/8500T2/8500T20 or 8800T20 mounting tray ▪ Equalizing modules employ Grass Valley's unique precision hybrid networks for exceptional curve accuracy ▪ Differential looping input ▪ 8 outputs

8802	Equalizing video DA for Belden 8281 cable	\$295.00
8801	Video DA	175.00
8800	Utility video DA	120.00

Note: Specifications apply when used in 8800T20 series trays. In 8500T2 trays, full specifications apply when 8800 or 8801 are switched to 6 output mode.

8500/8800 Series Trays, Power Supplies and Extenders

8500T2-DC48	2RU 8-cell video tray with 48VDC power supply	\$1300.00
8500PS-DC48	Back-up 48VDC power supply for 8500T2-DC48	750.00
8800T20-120	2RU 10-cell, 8-output/cell video tray with ranging power supply and U.S. line cord (90-250V)	950.00
8800PSV-120	Back-up power supply for 8800T20 Series tray, with U.S. line cord (90-250V)	325.00

8800T20-240	2RU 10-cell, 8-output/cell video tray with ranging power supply and untermi- nated mains cord (90-250V)	\$950.00
8800PSV-240	Back-up power supply for 8800T20 series tray untermi- nated mains cord (90-250V)	325.00

Cable Equalization Matrix for 8500/8800 Series DA's

Cables	Models
Belden 8281/8828/PSF1/2	8802, 8503, 8504, 8505, 8506, 8511, 8520
Belden 1694A	8802, 8503, 8504
RG59U/Belden 9259	8802, 8503, 8504, 8505, 8506, 8520
RG11/U, RG59B/U, Belden 8238, Belden 8263	8802, 8503, 8504, 8506
Belden 1505A/1506A, Gepco VPM-2000, Subner 6010	8802, 8504, 8505, 8506
Canare L-5C2VS	8802, 8503, 8504, 8506
PIK AF 0.6/3.7	8802, 8503, 8504, 8506
PIK AF 0.6/2.8	8802, 8503, 8504, 8506
PIK 1.0/6.6	8802, 8503, 8504, 8506
PSF1/3	8802, 8503, 8504, 8506

8550 Series Audio Distribution Amplifiers

▪ Quality and reliability ▪ Complements the 8500 Series video and pulse distribution equipment ▪ Both lines designed to provide the same high performance to price ratio ▪ Premium low noise components are used throughout

8552R	Remote gain monaural audio DA	\$395.00
8553	Monaural audio tone generator	295.00
8551	Monaural audio DA	265.00

8550 Series Trays, Power Supplies and Extenders

▪ 1RU trays accommodate a single power supply and 4 modules
▪ 2RU trays accommodate 2 power supplies and 8 modules

8550T2-120	2RU audio tray with 120V power supply	\$895.00
8550T1-120	1RU audio tray with 120V power supply	725.00
8550PS-120	Redundant 120V power supply for 8550T2	385.00
8500EX	Module extenders for all 8500/8800 series	95.00

8560 Series Stereo Audio Distribution Amplifiers

▪ Designed to facilitate the distribution of stereo audio signals
▪ Includes a stereo DA, submodules which plug into the stereo DA to improve certain applications and a metering module to simplify system setup and maintenance

8561-MFS	Stereo audio DA with multifunction submodule installed	\$845.00
8562	Metering module	785.00
8561-PCS	Stereo audio DA with channel switching and phase adjust submodule installed	695.00
8561	Stereo DA	495.00
8561SM-MFS	Multifunction submodule	350.00
8561SM-PCS	Channel switching/phase adjust submodule	200.00
8561-RCK	Remote control kit	95.00

8560T2 Tray and Power Supply

▪ Room for four 8560 series modules ▪ Comes with 1 power supply

8560T2-120	2RU mounting tray with 120V power supply	\$995.00
8550PS-120	Redundant power supply for 8560T2-120	385.00
8560EX	Module extender for 8561 and 8562	150.00

Note: All AC power supplies are suitable for 50/60Hz operation.

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



9510A	Reference synchronizing generator with 1RU frame	\$2830.00
9520A	Master reference synchronizing generator with 2RU frame	3460.00
9520A-HS	Master reference synchronizing generator, 2RU frame and ovenized crystal oscillator	3990.00
Dual 9510A	2 each 9510A systems and 9550A changeover switch	7660.00
Dual 9520A	2 each 9520A systems and 9550A changeover switch	8920.00
Dual 9520A-HS	2 each 9520A-HS systems and 9550A changeover switch	9970.00
9510-TSG	Test signal generator module. NTSC Test signals, with setup.	940.00
9510-SID	Source identification submodule. 9510-TSG required	310.00
9510-PPC	Phase preset control module for 9510A	395.00
9520-OXO	Ovenized crystal oscillator for 9520A	580.00
9500A-PSM	Redundant power supply, 105-125VAC or 210-250VAC, 50/60Hz	350.00

Grass Valley 9500 Series NTSC Reference Synchronizing Generators

- Represents the highest level of performance in moderately priced sync generator systems
- SPG Gate Array IC, designed exclusively for the 9500 Series, has made accuracy, stability and reliability in an affordable system
- With over 2100 logic gates in a 44-pin package, the SPG Gate Array contains all critical circuitry for exact SCH phase, regardless of external conditions
- Hybrid integrated circuits allow improved performance and reliability
- Troubleshooting is done at the functional block level, keeping servicing to a minimum
- Full range of options designed to fulfill most any requirement, including a test signal generator with optional source identification

All 9510/9520 sync generators use the same system level modules. The master video genlock module genlocks to video or encoded subcarrier. Protected video genlock allows a smooth transition back to free-run should the genlock video source fail. It drives the master sync pulse generator module which generates pulses, subcarrier, encoded subcarrier and color black, and includes all line drivers. A TCXO (temperature compensated crystal oscillator) is standard. 9520A-HS includes an ovenized crystal oscillator for enhanced frequency accuracy.

Grass Valley 9510A Reference Synchronizing Generator

- Designed for use when space requirements allow only a single rack unit, or where both horizontal and vertical drive outputs are required from a source sync generator
- 2 color black outputs are provided with 2 encoded subcarrier reference outputs
- Genlocks to video or encoded subcarrier
- Includes 7.5 IRE setup

Grass Valley 9520A Master Reference Synchronizing Generator

- 2RU master, provides 2 outputs each of pulse and subcarrier
- Genlocks to video or encoded subcarrier signals
- 2 color black outputs are provided with 2 encoded subcarrier reference outputs
- Includes 7.5 IRE setup



Grass Valley 9550A Automatic Changeover Switch

- Provides total signal transfer between 2 television synchronizing generators
- Switch mechanism composed of pulsed magnetic latching relays which have an expected life in excess of 100,000 operations and 65dB isolation at 900MHz
- Includes: 1RU frame, control logic module, power supply for 105-125VAC or 210-250VAC, 50/60Hz

9550A \$2100.00

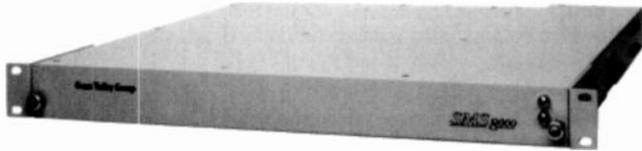
Grass Valley STM-85N Source Timing Module

- Powerful tool for NTSC television system timing
- Module plugs into any 8500/8800 Series Video DA Tray
- Decodes the encoded subcarrier signal output of Grass Valley 9500 Series or SCB Series of sync pulse generators and produces: discrete sync; blanking; subcarrier; V1 (color frame ID); color black
- Output phase is adjustable using front mounted controls
- Further adjustment of advance and delay is possible with internal DIP switch settings
- SCH phase is always correct

STM-85N \$895.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





Grass Valley SMS 8000 Serial Digital Systemization Products

- Ultracompact solution to format conversion and frame delay modules ▪ 1RU frame can house 4 SMS 8000 modules ▪ Frame is 1.75" tall x 19"W x 20.75"D ▪ Includes single power supply
- Optional redundant power supply ▪ Frame will operate from 90 to 260VAC and is auto ranging ▪ 2 front panel LEDs ▪ Over-temp conditions can be monitored externally with the polarized 5-pin connector ▪ Removable front cover ▪ Each module cell provides 6 BNC inputs or outputs ▪ An overlay is provided with each module, which can be positioned over each cell's BNC connectors for identification ▪ Modules can be inserted or removed from the front

SMS 8221-N Composite Digital to Component Digital Converter

- Converts serial composite NTSC digital video to serial component digital video ▪ Composite NTSC digital video is first decoded and then rate-converted to component digital video ▪ Grass Valley digital processing for maximum digital video processing \$4500.00

SMS 8122-N Component Digital to Composite Digital Converter

- Converts serial component digital video to serial composite digital video ▪ Component digital video is first rate-converted and then encoded into composite digital video ▪ Grass Valley digital processing for maximum digital video quality \$4000.00

SMS 8301 CAV to Component Digital Converter

- Converts component analog to serial component digital video signals ▪ Component analog input signals are selectable between RGB, EBU, N10, MII and Beta \$3750.00

SMS 8103 Component Digital to CAV Converter

- Converts serial component digital video signals to component analog ▪ Component analog outputs are selectable between RGB, EBU, N10, MII and Beta. \$3000.00

SMS 8301-K Analog Key to Component Digital Converter

- Converts an analog key signal to a serial component digital video signal ▪ Front panel selector supports nominal video input levels not including sync of 700mV p-p with no setup or 714mV p-p with setup ▪ Inputs without sync are supported by a jumper to select an external timing reference. \$2500.00

SMS 8104 Serial Component Digital Frame Delay

- 4 digital video outputs are provided for each module ▪ Delay is a minimum of less than 1 microsecond ▪ Delay is variable using front card edge switches ▪ Maximum delay of greater than 2 fields \$3400.00

SMS 8116 10-Bit Encoder

- Encodes component serial digital into composite analog NTSC or PAL ▪ Included frame store (2 fields) will autotime the analog output video with respect to an analog color black reference to provide a serial digital video input timing window of infinite size ▪ Will operate with nonsynchronous input signals ▪ User controls allow analog output timing adjustments with respect to reference timing
- Features serial EDH detection and vertical filtering and low pass filters in both luminance and chroma channels \$3500.00

SMS 8601 10-Bit Decoder

- Takes either NTSC or PAL composite analog video and converts it to serial component digital \$2500.00

SMS 8106-D Dual Version

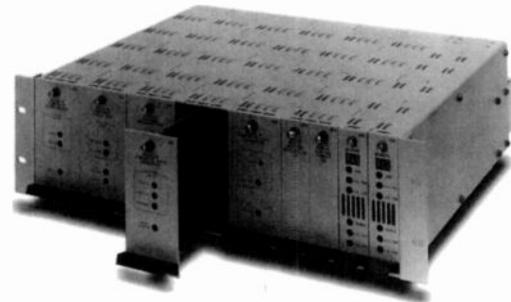
- Dual version of SMS 8106 ▪ Up to 8 encoders can fit in a single SMS 8000 frame \$2250.00

SMS 8106 8-Bit Encoder

- Takes serial component digital video and converts it to either NTSC or PAL composite analog or Y/C \$1500.00

SMS 8000 Series Options

- SMS 8000T1D 1RU frame with dual power supplies . . . \$1490.00
- SMS 8000T1S 1RU frame with single power supply 1200.00
- SMS 8000 PS Redundant power supply option 295.00
- SMS 8000 EXT Module extender 250.00



Grass Valley MAX 9000 Series Digital Systemization Products

- Family of modular systemization products ▪ Designed for digital video, AES/EBU audio and hybrid environments ▪ 3RU frame accepts 12 single-width or 6 double-width modules and a standard power supply ▪ MAX 9000 series supports both component and composite digital standards ▪ Frame accommodates an optional back-up power supply

M9102/M9202-N Serializers

- 10-bit parallel input ▪ 25-pin D connector ▪ Outputs serial digital on 4 BNCs
- M9202-N Serializer Converts parallel composite NTSC digital video to serial composite digital video \$950.00
- M9102 Serializer Converts parallel component digital video to serial component digital video \$800.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





Grass Valley MAX 9000 Series Digital Systemization Products (cont'd)

M9103/M9203-N Deserializers

Automatic cable equalization up to 1000' of 8281-type video cable

M9103 Deserializer Converts serial component digital video to parallel component digital video. \$1050.00

M9203-N Deserializer Converts serial composite digital NTSC video to parallel composite digital NTSC video. \$1050.00

M9104-A Component Serial Digital Line Delay

▪ Automatic cable equalization up to 1000' of Belden 8281-type cable
▪ Provides delays from less than 1 ms to 9 TV lines \$2000.00

M9105 Serial Component/Composite Multiplexer

▪ Combines AES/EBU digital audio with either serial component 4:2:2 or composite NTSC digital video ▪ Resulting serial digital data stream is output on a single coaxial cable and can be distributed and switched with other serial component or composite NTSC digital signals ▪ Auto selects the proper component or composite digital video format. \$2000.00

M9106 Serial Component/Composite Demultiplexer

▪ Extracts AES/EBU digital audio from either serial component 4:2:2 or composite NTSC digital video ▪ Allows digital video and digital audio signals to be distributed and switched separately ▪ Auto selects the proper component or composite digital video format. \$2000.00

M9125Q Fiber Optic Transmitter/M9521Q Fiber Optic Receiver

▪ Provides transmission over greater distances than coax cable without the need for costly repeaters or equalizers ▪ Fiber's immunity to noise, moisture and lightning interferences ensures delivery of cleaner signals

M9125Q Optical Transmitter ▪ Accepts 4 independent serial digital video signals at 142, 177, 270 or 360MB/s and transmits each over a separate single mode fiber ▪ Coupled with the M9105 Multiplexer or M9106 Demultiplexer, video and audio can be multiplexed for simultaneous transmission in the same MAX 9000 frame \$4800.00

M9521Q Optical Receiver ▪ Accepts up to 4 serial digital optical signals and outputs serial digital signals ▪ 4 channel receiver capable of operating either as 4 independent channels or as 2 pairs of receivers ▪ In the protection mode, when 1 channel's receiver loses either optical or electrical presencer, the system will automatically switch to the hot standby receiver \$3000.00

M9132 Reclocking Distribution Amplifier

▪ 1-in and 6-out ▪ Compact, single-width modules ▪ May be used for longer cable runs to 300 meters (1000') ▪ Can be set via internal jumpers for either serial component or serial composite digital signals. . . . \$695.00

M9136/M9136-D Multistandard Video Distribution Amplifiers

▪ Auto select operation at all serial digital data rates ▪ Compact, single-width modules ▪ Mix and match with existing MAX modules and frames
M9136 1 input, 8 outputs \$795.00
M9136-D 2 inputs, 4 outputs \$925.00

M9201-N Digital to Analog (D to A) Conversion Module

▪ Accepts a parallel or serial composite video signal and provides 4 NTSC analog outputs \$1700.00

M9221-N Analog to Serial Digital Video Converter (A to D)

▪ Accepts an NTSC analog input signal and provides 4 serial composite digital video outputs and 1 parallel composite digital video output \$2000.00

M9211-N Serial Composite Auto Timing (D to A) Converter

▪ 10-bit resolution ▪ Automatic timing compensation circuitry for simplified timing ▪ Equalization to 1000' using provided Belden 8281-type cable or equivalent ▪ Delay through the module is automatically adjusted over a range of 3 to 33 μ s ▪ Eliminates frequent readjustments ▪ A color black input is the reference for the output signal ▪ Front panel bar graph display for centering timing range ▪ 4 video outputs are continuously adjustable from 35 μ s advance to 27 μ s retard with respect to the external reference ▪ Front panel output timing adjustments include coarse H phase, fine H phase, coarse subcarrier phase and vernier subcarrier phase with a 30° range ▪ Vernier phase adjustment has a resolution of <0.2° \$2500.00

M9401/9402 AES/EBU Digital Audio Conversion Modules

M9401 Analog Audio to AES/EBU Digital Audio Converter (A to D)
▪ Accepts 4 balanced analog audio inputs and outputs 2 AES/EBU digital audio stereo pairs ▪ Sampling rate is 48 kHz \$1295.00

M9402 AES/EBU Digital Audio to Analog Audio Converter (D to A)
▪ Accepts 2 AES/EBU digital audio stereo pairs and outputs 4 balanced analog audio signals ▪ Supports 32 kHz, 44.056 kHz, 44.1 kHz and 48 kHz sampling rates \$995.00

M9401-B/9402-B AES/EBU Digital Audio Conversion Modules
▪ B versions of the basic M9401/9402 with 75 ohms BNC I/Os instead of 110 ohm ▪ BNC connectors allow longer cable lengths with video coaxial use of analog video distribution amplifiers and analog video routing switching, plus supports ease of interconnection to MAX 9000 Multiplexers and Demultiplexers

M9401-B A to D. \$1295.00
M9402-B D to A. 995.00

Trays and Options

MAX-EXT Module Extender \$125.00
MAX-SWB Single Width Blank Cover 13.50
MAX-DWB Double Width Blank Cover 16.50
M900PS Power Supply ▪ Auto ranging power supply ▪ Operates between 90-264 VAC at 50/60 Hz ▪ Front panel LEDs and rear alarm connectors indicate operational status of the power supply ▪ Fully shielded for safety ▪ Forced air cooling for reliability \$345.00

M9421-B 20-Bit Analog to Digital Converter

▪ 20-bit performance ▪ Designed for AES/EBU digital audio conversion applications in the most demanding environments ▪ 110 dB S/N ratio (A-weighted) ▪ 4 analog inputs, 2 AES/EBU outputs ▪ BNC digital I/O for longer distances \$2200.00

M9422-B 20-Bit Digital Audio to Analog Converter

▪ 20-bit performance ▪ Designed for AES/EBU digital audio conversion applications in the most demanding environments ▪ Greater than 110 dB S/N ratio ▪ 2 AES/EBU inputs, 4 analog outputs \$2100.00

M9900 Serial Component Digital Video and Audio Test Signal Generator

▪ Front panel select 10 test signals ▪ Add 1 kHz or 0 Hz audio tones to test signals ▪ Locks to either 525 or 625 formats ▪ Generates EDH signal to detect bit errors ▪ Greater than 1 full field of timing adjustment range
▪ Remote control ready ▪ Compact and modular, fits in all MAX frames
▪ Color black reference \$3000.00

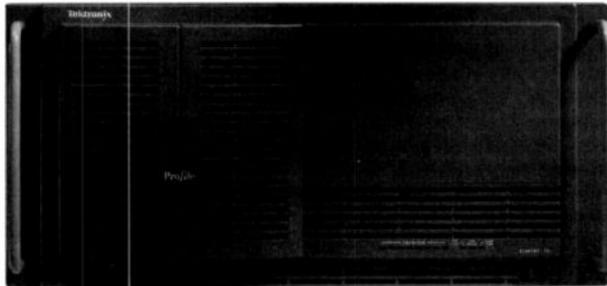
ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



PROFESSIONAL DISK RECORDER



Tektronix



Profile™ Professional Disk Recorder PDR 100

The PDR 100 Professional Disk Recorder provides broadcast quality video and audio manipulation and storage in a reliable system that has modular flexibility. The platform contains 4 independent disk recorder channels that can either play or record, and it provides random access to all stored information through any of the channels.

Product Description

The PDR 100 supports both 525/59.94 NTSC and 625/50 PAL systems. It contains a passive EISA motherboard with an integral 32 x 32 CCIR601 component digital video routing system. The EISA bus master is an off-the-shelf processor board used for running Windows NT applications. Storage of video is accomplished using motion JPEG compression and high performance off-the-shelf disk drives.

Profile Standard Configurations

- 17-slot EISA motherboard
- Processor card with integral RAM
- Hard disk drive
- 3.5" high density floppy disk drive
- Windows NT 3.5 operating system
- SCSI-2 disk controller with 2 video CODEC channels
- 16.8G bytes of video storage (four 4.2G byte drives)
- Reference genlock input and 4-channel LTC read/write
- 8-channel RS-422 interface card and breakout panel
- 32 x 32 component parallel video router (part of motherboard)
- System software
- Mouse and keyboard
- SVGA driver card
- RS-422 control protocols, including Profile protocol and other emulation protocol

Intelligent Compression™

Using high data rate motion JPEG with Tektronix Intelligent Compression, video quality is maintained and storage times are maximized. With video quality that starts at Betacam SP, VTR storage time is between 5 and 6 minutes per G byte of disk storage (using 2 channels of audio). Storage time can vary from approximately 45 minutes to over 3 hours. This may be expanded through a range of peripheral products.

PDR 100 Characteristics

Reference Genlock	Locks to nominal NTSC or PAL color black signal. Amplitude ±3dB from nominal and SCH phase within 40°
Time Code (Longitudinal)	Input impedance: 20K ohms; Input amp (min.) 0.1V p-p, differential input amp (max.) 2.5V p-p, differential
Storage Time	45 min. to greater than 3 hours with internal drives. Almost 10 hours with external expansion. Times vary depending on compression factor and size and number of disk drives.
SVGA Output	1024 x 768 for GUI display
Environmental Characteristics	Operating temperature: 0°C to +40°C Storage temperature: -40°C to +75°C Operating altitude: to 15,000' Storage altitude: to 50,000'
Power Supply	1184VA (750W)
Physical	Dimensions: 8.750"H x 18.986"W x 24.816"D; Weight: 65 lbs.
Warranty	1 year on parts and labor (includes both hardware and software)
PDR-100	\$43,500.00

PDR 100 Standard Options

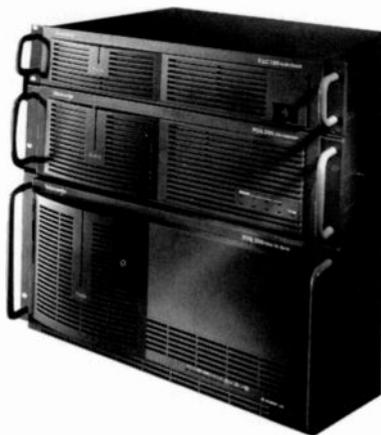
- Option 20 ▪ Adds 2 serial digital component video inputs/outputs and 8 channels of audio ▪ Provides 2 video channels with 16.8G bytes of video/audio storage. \$9,930.00
- Option 21 ▪ Same as Option 20, plus 4 more 4.2G byte hard drives ▪ 2 video channels with 33.6G bytes of video/audio storage. . . \$17,530.00
- Option 22 ▪ Adds 1 analog composite video input, 1 analog composite output and 1 time code output port for channel 4, and 8 channels of audio ▪ Provides 2 video channels with 16.8G bytes of video/audio storage \$15,530.00
- Option 23 ▪ Same as Option 22, plus 4 additional 4.2G byte hard drives ▪ 2 video channels with 33.6G bytes of video/audio storage. . . \$23,130.00
- Option 24 ▪ Same as Option 21, and adds 4 composite analog outputs (a fifth composite output provides a copy of output 4 with a time code burn-in window). Only 4 channels of analog I/O are provided instead of 8 ▪ Provides 2 video channels with 33.6G bytes of video/audio storage \$15,245.00
- Option 25 ▪ Same as Option 23, but includes 4 channels of analog audio I/O instead of 8 ▪ Provides 2 video channels with 33.6G bytes of video/audio storage. \$20,854.00
- Option 26 ▪ Same as Option 25, but adds 2 component serial digital inputs/outputs and deletes the dual standard composite analog input ▪ Provides 2 video channels with 33.6G bytes of video/audio storage \$18,700.00
- Option 40 ▪ Adds 4 component serial inputs/outputs and 16 channels of analog audio I/O, 2 additional disk recorders and 4 more 4.2G bytes hard drives ▪ Provides 4 video channels with 33.6G bytes of video/audio storage \$32,460.00
- Option 41 ▪ Adds 2 component serial digital inputs/outputs and 8 channels of analog audio I/O, 2 additional disk recorders, and 4 more 4.2G byte disk drives ▪ Provides 4 video channels with 33.6G bytes of video/audio storage. \$22,530.00
- Option 42 ▪ Adds 1 dual standard composite input, 4 composite analog outputs (a fifth composite output provides a copy of output 4 with a time code burn-in window), 16 channels of analog audio I/O, 2 additional disk recorders, and 4 more 4.2G byte disk drives ▪ Provides 4 video channels with 33.6G bytes of video/audio storage \$32,700.00
- Option 43 ▪ Same as Option 42, adds a second dual ▪ Provides 4 standard video channels (2 can be inputs) with 33.6G bytes of video/audio storage. \$40,200.00
- Option 44 ▪ Adds 2 component serial inputs and outputs, 8 channels of analog audio I/O, 4 composite analog outputs (a fifth composite output provides a copy of output 4 with a time code burn-in window), 2 more disk recorders, and 4 more 4.2G byte disk drives ▪ Provides 4 video channels with 33.6G bytes of video/audio storage \$25,990.00
- Option 45 ▪ Same as Option 42, but has 8 channels of analog audio I/O instead of 16 ▪ Provides 4 video channels with 33.6G bytes of video/audio storage. \$28,130.00
- Option 46 ▪ Adds 2 component serial digital inputs and outputs (each with 4 channels of embedded AES/EBU audio I/O), 2 additional disk recorders, and 4 more 4.2G byte disk drives ▪ 4 video channels with 33.6G bytes of video/audio storage. \$31,320.00

PDR 100 Accessories

PDR0F1M	17" SVGA monitor	\$1,400.00
XLR 100	Audio breakout and bypass unit. Converts the 25-pin D type audio connector onto 4 PDROF1As to 4 male (output) and 4 female (input) XLR connectors, a total of 16 inputs and outputs. Also capable of bypassing the input to outputs in the event of power failure or error in the PDR 100	\$1,700.00
PDX 103	Disk expansion unit; Option 01—8 drives onto 2 SCSI-2 channels.	6,500.00
Option 02	16 drives onto 2 SCSI-2 channels	30,400.00
Option 01	8 drives onto 2 SCSI-2 channels	15,200.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





PDR 200 Profile® Networked Video File Server

- Fibre channel networking with faster than real time data transfer
- 2 or 4 channels of broadcast/studio quality video
- Serial digital I/O, analog composite I/O, and analog component inputs
- AES/EBU, embedded serial digital or high quality analog audio
- Up to 96 hours of RAID protected storage
- 18 hours of low cost storage
- Modular design, easy upgrades
- Open systems platform

The Profile PDR 200 is a fully featured, network ready video file server. It can be used in any application that involves the recording, storage, manipulation, transfer, or playback of video. Profile disk recorder technology is transforming the broadcast industry through increased productivity, lower costs, greater reliability, and a better on-air look than VTR based systems.

The Profile PDR 200 networked video file server builds on the capabilities of the industry standard PDR 100. The PDR 200 features larger 9GB Ultra-SCSI disk drives, AES/EBU digital audio, 30MB/s internal bandwidth, increased external storage, and the ability to share digitally compressed data over a Fibre Channel network. The PDR 200 not only fits smoothly into existing PDR 100 applications, but opens up the benefits of tomorrow's digitally networked facilities.

Applications

- One or more channels of video information can be written to the disk array while other channels are reading
- Multi-tasking allows one PDR disk recorder to do the work of up to 4 VTRs
- Sharing video over a Fibre Channel network streamlines everyday operation and allows last second changes in commercial schedules, sports and news programs
- Able to work with and increase the productivity of existing equipment, even while it is delivering on the promise of a digitally networked studio

Fibre Channel Video Network

- A means to connect devices, provide for high speed transfer of large amounts of data, and separate the transported logical protocol from the physical interface
- Fibre channel connections allow the user to move compressed digitized video between Profile PDRs in different editing suites, or from one editing suite PDR to the play-to-air PDR in a control room, at faster than real time speeds
- 15-minute clip could be moved in 3 to 4 minutes
- Lets users create a virtual server where clips can be accessed by any PDR on the network without typing up Profile video and audio channels or the plant router

Digital Audio Standard

- 16 channels of digital audio are standard inside the PDR 200
- High quality analog audio is also available with an optional PAC208/PAC216 analog/digital interface chassis
- Can be configured to operate with analog, AES/EBU digital, or embedded audio
- PDR 200 has the ability to support all 3 audio formats without external conversion equipment
- Users can choose the required audio format per video channel, enabling analog audio on one channel, embedded on another, and AES/EBU on the rest

Options

- Profile Tool Box software enhances the easy integration of PDRs by solving many of the labor intensive operational problems that broadcasters face each day
- PDX208 Expansion Storage unit can expand the 6 hours of broadcast quality media storage to 18 hours
- PRS 200 RAID Storage system provides both increased storage (up to 96 hours) and data protection
- PLS 200 Data Tape Library System increases storage up to 1.6 terabytes

PDR 200 Specifications

System

133 MHz Pentium, 32MB memory, 800MB system disk, SVGA video, keyboard, mouse

Mainframe Bandwidth

30MB/s (approx.) bandwidth is dependent upon number of disk drives.

Network

Fibre Channel—1Gb/s, 10/100 BaseT Ethernet

Video Channels (CODECs)

2 or 4

Reference Genlock (standard)

Locks to nominal NTSC or PAL color black signal

Time Code I/O (standard)

Longitudinal (LTC)—4 separate read/write channels

Vertical Interval (VITC)—Each video input has a VITC reader and each output has a VITC inserter

RS-422 Ports (standard)

Eight RS-422 ports provided in a 1RU chassis. Four can be used to control the PDR using one of the supported protocols (Profile, BWW 75, Louth, Odetics). The remaining ports can be used by applications to control external devices.

Power Supply

1184VA (750W)

User Interface

VDR panel (standard)

Tool Box Software (optional)

Control Panels

LV5100, PRC100

Call For Pricing

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

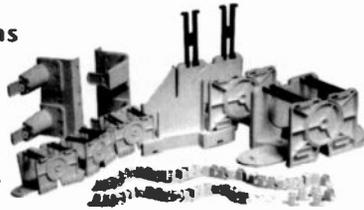
ROUTING SYSTEMS/ CABLE MANAGEMENT/ PATCHBAYS



Telect
CONNECTING THE FUTURE™

CableLinks™ Cable Management Systems

- Overhead cable management
 - Constructed with yellow UL 94V-0 fire retardant plastic
 - Mounted anywhere overhead cable trays are used to replace inflexible, rain gutter-like troughs
 - Single piece main units snap together to form cable routing channels of any length
 - Will hold 800 fiber cables or 144 coax cables
- CableLinks POR*



ROUTING/DISTRIBUTION/CONTROL

- For distribution, routing and control capabilities all in one unit
- Use for editing, processing and broadcasting audio and video signals
- Combines 10 different audio/video, routing, distribution, control and fiber conversion products for both analog and digital applications in one modular unit
- Modules have removable I/O cards for continuous working without disrupting backplane operations
- Ideal for routing, multiplexing, amplifying and distributing analog and digital signals
- IMMI bus allows 16 different systems to run on a single cable

Modular Analog Routing Systems

- Configurations from 8 x 8 to 72 x 128. Call for pricing on products not listed.
- 72 x 8 video router \$6235.00
 - 16 x 8 video and stereo audio router 4060.00
 - 72 x 8 mono audio router 3985.00
 - 16 x 16 video router 3635.00
 - 16 x 16 mono audio router 2635.00
 - 16 x 8 video router 2210.00

16 x 16 Serial Digital Video Router

- Provides high density routing in a space-saving module
 - Handles all current digital standards for NTSC/PAL, HDTV, and component signals
 - Has the capacity to handle digital growth in the future
 - Docks in VersaFrame™ 2000 for easy system configuration
- 3160 \$2995.00

Standard Audio Patchbays

These panels provide convenient wiring for any type of audio application. A pluggable connector allows connections from the back of the unit.

Bantam Jacks

- 2604 3.5" panel with 2 x 64 rows, normals strapped \$1540.00
- 2607-1 3.5" panel with 2 x 48 rows, normals strapped 1375.00
- 2607-2 3.5" panel with 2 x 48 rows, half-normalled 1155.00
- 2602 1.75" panel with 2 x 32 rows, normals strapped 950.00

Longframe Jacks

- 2606-1 3.5" panel with 2 x 24 rows, normals brought out... \$831.00
- 2605 1.75" panel with 2 x 24 rows, normals strapped 678.00
- 2606 3.5" panel with 2 x 24 rows, normals strapped 678.00
- 2606-2 3.5" panel with 2 x 24 rows, half-normalled 678.00

Alphanumeric Control Panel

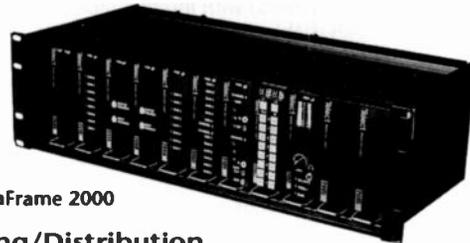
- Controls up to 8 levels and 16 systems with full breakaway
 - RS-232 and SMPTE 422 interface
 - Full battery back-up of memory
 - Security control
 - Programmable LCD
 - Relegendable back lit buttons
- 2356 \$1250.00

8 x 16 Video Routing Switcher

- Increased bandwidth to 150MHz allows diverse range of signal capabilities
 - Looping input allows modular expansion
 - Increased density provides high capacity in half the size
 - Features 16-system addressability, expands to 72 x 128 configuration
- 2115 \$ 750.00
- 2114 System sync signal option from external source or internally derived from input 0 1000.00

Serializer/De-Serializer

- 10-bit
 - Converts composite/component digital
 - Single width modular card, requires model 2000 rack and power supply
- 3154 Converts parallel digital to 4 serial outputs \$800.00
- 3155 Converts serial digital to 1 parallel and 4 serial outputs equalized and relocked 800.00



VersaFrame 2000

Routing/Distribution

- VersaFrame
- 2000 Modular 5.25" frame and power supply module \$785.00
 - 2104 8 x 8 video routing switcher—terminated module 900.00
 - 2108 4 x 4 video routing switcher—looping module 550.00
 - 2053 8 x 8 audio routing switcher—mono module 600.00
 - 2055 4 x 4 audio routing switcher—stereo module 600.00
 - 2109 15 x 1 video routing switcher—terminated module 350.00
 - 2056 15 x 1 audio routing switcher—mono module 400.00
 - 2006 Redundant power supply module 400.00
 - 2103 Video with equalization dual 1 x 6 and differential input 385.00
 - 2101 Video DA with equalization dual 1 x 6 module 360.00
 - 2050 Audio DA dual 1 x 6 module 330.00
 - 2052 8W audio power amp module 330.00
 - 2102 Video DA dual 1 x 6 and differential input 215.00
 - 2100 Video Distribution Amplifier dual 1 x 6 module 190.00
 - 2002 Looping router extender test module 90.00
 - 2003 Routing and DA extender test module 90.00
 - 3003 Digital extender test module 90.00
 - 2005 Blank module 20.00

Digital Distribution Amplifiers

- Serial video, 1 input/8 output
 - Used with both component/composite serial digital signals
 - Single width modular card, requires model 2000 frame and power supply
- 3157 Relocking version \$700.00
- 3156 Non-relocking version 325.00



Controllers

- 2354 Numeric X-Y controller. 8 levels, 16-system address \$600.00
 - 2351 8 x 8 remote X-Y controller with breakaway 500.00
 - 2352 15 x 1 remote X-Y controller with breakaway 500.00
 - 2353 4 x 4 remote X-Y controller with breakaway 500.00
 - 2150 8 x 8 local X-Y for modular with breakaway 200.00
 - 2151 15 x 1 local X-Y for modular with breakaway 200.00
 - 2152 4 x 4 local X-Y for modular with breakaway 200.00
- *Price On Request

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

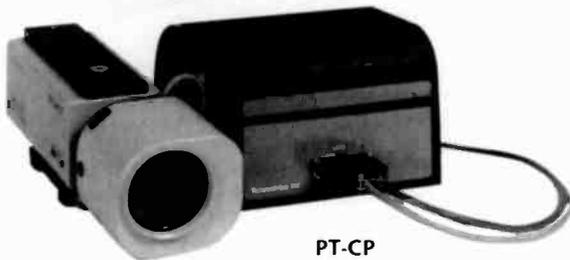
REFERENCE



High Performance Pan/Tilt System

▪ Smooth operating variable speed ▪ Lens connector for direct lens interface ▪ Adjustable end stops ▪ Heavy-duty cross roller bearings and precision Swiss motors ▪ Sound absorption and motor isolation mounts for quiet operation ▪ Threaded base ▪ Extended yoke option for ceiling mounting ▪ Extended arms option for vertical viewing (straight down) ▪ Positional feedback (PT-HP-P) for preset/motion control ▪ Serial interface (PT-HP-S) with internal receiver ▪ Pan travel: 360° (no end stops) ▪ Adjustable tilt travel and end stops

PT-HP	HP Pan/tilt head.	\$3500.00
TM-PTR	Third axis compact P/T rotator.	1800.00
TM-CR	Single axis camera rotator	1200.00
PTO-HP-S	Positional with internal serial receiver option	950.00
PTO-HP-P	Positional preset option	405.00
PTO-HP-EA	Extended arms option	220.00
PTO-HP-EY	Extended yoke option	140.00



PT-CP

Compact Pan/Tilt System

▪ Designed for compact, high performance cameras ▪ Smooth operating variable speed ▪ Lens connector for direct lens interface ▪ Electronic end stop adjustments ▪ Heavy-duty cross roller bearings and precision Swiss motors ▪ Motor isolation mounts for quiet operation ▪ Side or top camera mounting arm ▪ Threaded base for easy tripod or ceiling mounting ▪ Positional feedback for preset/motion control (PT-CP-P) ▪ Pedestal or ceiling mounting

PT-CP	CP Pan/tilt head.	\$2500.00
PTO-CP-P	Positional presets option	405.00
PTO-CP-T	Top mounting platform option	95.00
PTO-CP-S	Side mounting platform option	85.00
CP-SRD	Serial receiver driver.	1900.00

Double Joystick Serial Control Panels

▪ Camera select buttons 1-4 with proportional rate joysticks for pan/tilt and zoom/focus control ▪ Nonvolatile memory that allows 16 presettable "shots" P/T/Z/F for up to 4 cameras to be entered for later recall ▪ Preset accuracy: within $\pm 0.25^\circ$

CP-RMQ-S	Rackmount quad with serial transmitter.	\$3000.00
CPO-MC8	Motion control option	2000.00
CPO-C8	8-camera control option	245.00

Double Joystick Control Panels

▪ 2 proportional rate joysticks ▪ Simultaneous variable speed control of pan/tilt, zoom and focus ▪ Parallel and serial connected units available ▪ Parallel wired control panels are self-contained units with built-in low power voltage sources (24VDC) ▪ Serial units require power supply PS-RMS to power pan/tilt head ▪ Panels available in desktop or rackmounted with optional decorative wood housing

CP-DTS-P	Desktop single with power supply	\$1465.00
CP-RMD-P	Rackmount dual control panel with power supply	2500.00
CPO-TRC	Trolley/rotation control option.	100.00
CPO-IC	Iris control option	175.00

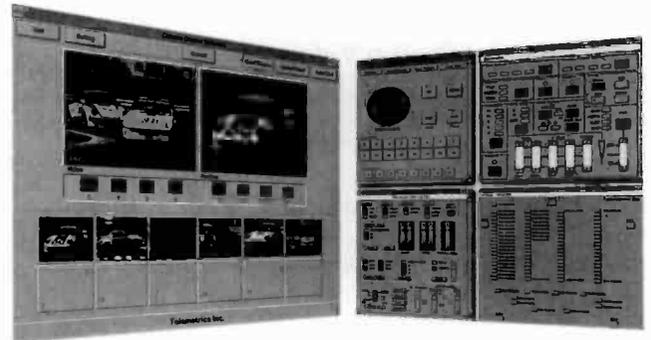
CP-RMR-S Quad Serial Control Receiver

▪ Rackmounted panel (3 1/2"H x 19 1/2"W x 5"D) ▪ Interconnects directly to 4 positional pan/tilt mounts with multiconductor cable ▪ PS-RMS power system required \$3600.00

TRO Series Trolley Systems

▪ Motorized or manual camera ▪ Pan/tilt head mounting platform for linear movement ▪ Designed for models PT-HP/PT-CP-M ▪ Provides straight line or "X-Y" camera positioning for teleconferencing, studio and medical applications ▪ Double rail guide with precise alignment ▪ Smooth operating variable speed ▪ Quad low friction linear bearings ▪ Companion cable track for cable looping (TRO-CT) ▪ Lightweight aluminum mounting plate for easy installation ▪ Straight line or "H" layout configuration; motorized or manual (TRO-MA) ▪ Upright mounting or upside down (overhead ceiling mounted) ▪ Adjustable end stops ▪ Speed: 1 ft./sec. ▪ Custom lengths available

TRO-MA	. . . . .	\$1075.00
TRO-MO	Motorized option	1460.00
TRO-MO-IN	Trolley incline motor option	1900.00
TRO-MO-V	Vertical motor option	1900.00
TRO-CT	Cable track (foot)	10.00
TRK-MA	Track (meter)	300.00
TRK-MO	Track motorized option	100.00
TRK-MO-V	Track motorized vertical option	150.00



TM-CPS Robotic Control Panel Software

▪ Program and Preview video displayed in real time NTSC/PAL (composite, component and RGB) formats ▪ Integral video frame grabber allows camera position presets to be displayed on-screen for instant verification and reference ▪ Video switching interface provides integrated remote control of video switchers including Telemetric's TM-VIS ▪ Provides complete access to all camera setup and control functions ▪ Pan/tilt, zoom and focus setting can all be preset on TM-CPS and used in conjunction with the joystick control panel ▪ System can be easily operated via touch-screen PC monitor, mouse or joystick ▪ Controls a variety of serially controlled devices required for studio camera control as well as teleconferencing applications ▪ Robotics control display ▪ Set/preset display ▪ Camera control display ▪ System Schematic \$500.00

PS-RM-1 Single Power Supply

▪ Rackmount single power supply ▪ 1 1/4"H x 19 1/2"W x 15"D ▪ Single, dual, triple or quad available \$960.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





TM-9250A Triax Camera Control System

Camera Video
NTSC/PAL

Return Video
Independent video channel for camera viewfinder and external monitor.

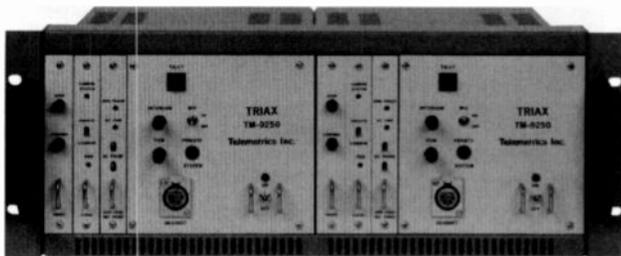
Genlock
Black burst to camera with phasing controls at the base station. This critical feature allows adjustment of subcarrier phase (360°), vertical reset, and horizontal timing (minimum 4µsec advance and 2µsec delay with respect to the reference studio black burst) for synchronous operation of multiple cameras.

Controls
FM carriers for digital remote controls using camera ROP or multicore CCU.

Intercom
RTS or Clearcom, 2- or 4-wire. Intercom convenience panels.

Tally/Call
Tally voltage or contact closure, call to and from camera (two way) with indicator.

Mic./Line Audio
-55dBm or line level input, line level output at base station



Program Audio Mix
Program audio mix adjustment on base station front panel

Camera Adaptor
Direct docking eliminates the need for camera multicore adaptor. Triax or Coax connected. Power connector provided for stand-alone camera operation. Also includes headset connector, microphone input connector, microphone on/off switch. Program audio mix adjustment, cable and power supply fault indicators. Tally/call button indicates when camera is selected.

Remote Power

100W cable interlock power supply for camera adaptor, camera, studio viewfinder and lens. Also powers Telemetrics robotic pan/tilt head. Power supply features automatic shut down upon disconnect, short circuit or open shield (a Telemetrics safety design feature for 20 years). Cable and power fault indicator on front panel.

50-BS	Half rack base station	\$6500.00
50-CA	Camera adaptor	4300.00
50-BS-P	Base station PAL option	1000.00
50-CA-P	Camera adaptor PAL option	700.00
50-RMA	Rack mounting adaptor for half rack BS	425.00
50-BS-N	Base station NTSC option	400.00
50-CA-N	Camera adaptor NTSC option	300.00

TM-9255A Coax Camera Control System

Camera Video
NTSC/PAL

Return Video/Genlock
Advanced black burst combined with return video

Genlock
Black burst to camera with phasing controls at the base station. This critical feature allows adjustment of subcarrier phase (360°), vertical reset, and horizontal timing (minimum 4µsec advance and 2µsec delay with respect to the reference studio black burst) for synchronous operation of multiple cameras.

Controls
FM carriers for digital remote controls using camera ROP or multicore CCU.

Intercom
2- or 4-wire, RTS or Clearcom. Intercom convenience panels.

Tally
Voltage or contact closure.

Mic./Line Auto
-55dBm or line level input, line level output at base station

Camera Adaptor
Direct docking eliminates the need for camera multicore adaptor. Power connector provided for stand-alone camera operation. Also includes: headset connector, microphone on/off and microphone volume control. Studio viewfinder mounting provisions. Available in "universal" hip-pack or battery clip configuration, connecting to the multicore connector of any camera.

Base Station
All standard industry connectors. Full 19" x 1 1/2" high. Intercom convenience panel includes headset connector, private/common switch microphone on/off, and microphone volume control. Video luminance and chroma adjustments. Horizontal and subcarrier phase controls. Open cable fault indicator.

Remote Power
50W cable interlock power supply to power the camera adaptor, camera and studio viewfinder. Power supply features automatic shut down upon disconnect, short or connection to a 75 ohm terminator.

Power Option
The system is available without remote power. Please consult factory.

55-BS	Base station	\$4000.00
55-CA	Camera adaptor	3000.00
55-BS-P	Base station PAL option	860.00
55-CA-P	Camera adaptor PAL option	660.00
55-BS-N	Base station NTSC option	420.00
55-CA-N	Camera adaptor NTSC option	300.00
55-HP	Hip-pack option	300.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





Telepak Soft Carrying Cases

Telepak soft carrying cases provide the best video equipment protection. They are designed and constructed for the video professional for use 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 pakcloth for the best defense against dust and weather. Telepak uses resilient, high density foam padding throughout each bag to provide superior shock absorbency, life and durability. Telepak uses quality components that meet or exceed today's standards. These soft cases are designed to custom fit your gear, and offer the ultimate in carrying comfort and equipment protection.



Custom VCR Paks

Custom VCR Paks feature vinyl, double-sided white card balance. Velcro closing pockets for videotapes. Handy pouch for gadgets and accessories. Velcro straps to hold microphone. Loops to keep cables untangled. Made with rust-proof welded "D" rings and tough-as-nails seat belt strapping. Comes with short handle strap and padded shoulder strap. Available in a wide selection of sizes designed to hold all popular models.

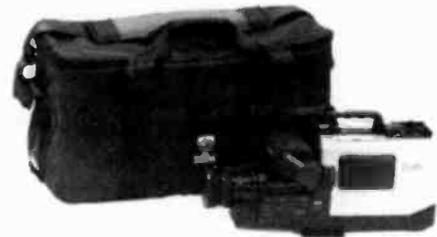
- T50 Sony BVW-50 \$185.00
 - T88 Sony VO-8800 185.00
- All models available in blue, black, burgundy and camouflage*.

Camera Paks

Professional cameras survive the daily bumps and jolts with these top performing foam cushioned paks. Durable and stain repellent Nylon pakcloth keeps safety in, dust and weather out. Comes with heavy-duty padded handle strap and adjustable shoulder strap.



- TCAM-Mini For camcorders and small cameras, Panasonic AG-EZ1U, 9½"H x 17"W x 7"D \$140.00



- TCAM-Small Universal case for cameras, Sony DSR-200 11¼"H x 21"W x 9"D \$200.00

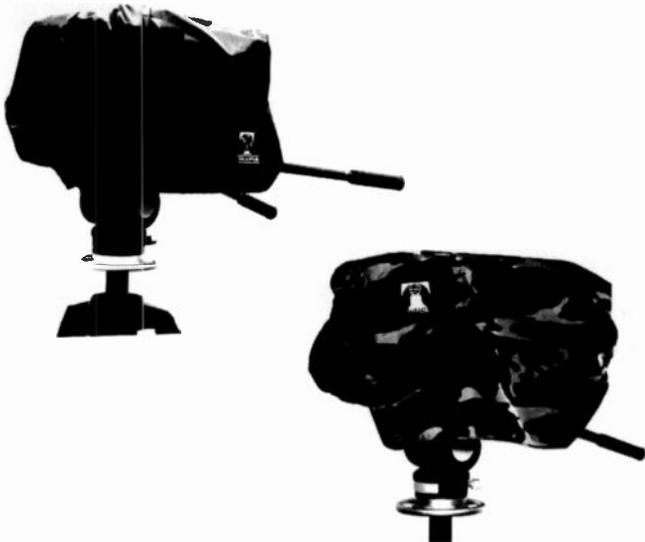


- TCAM-Large Universal case for Betacams, Sony DXC-D30 and DXC-DSR1, 11¼"H x 26½"W x 9"D \$200.00
- TCAM-X Large Universal case for larger cameras, Sony DXC-D30/PVV-3 Betacam, 13"H x 28½"W x 9"D 210.00

All models available in blue, black, burgundy and camouflage*.

*Price of camouflage fabric may be slightly higher. 2 camouflage types available: tropical (various shades of green) and desert (various shades of brown).

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



Camera Rain Covers

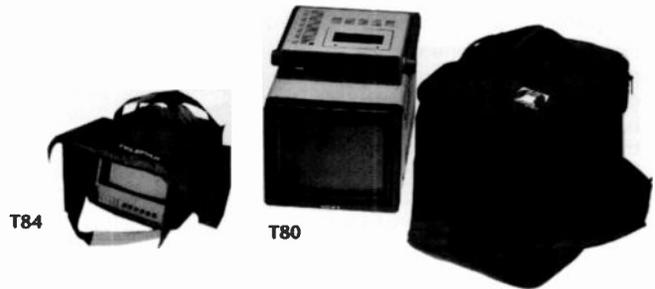
Tough, tight-woven nylon pakcloth insulates all popular models of video cameras from damaging weather. With sturdy elastic neck guards for lens and viewfinder. Also available in lightweight metallized fabrics to protect your gear against surveillance, radar, antenna dish reflection, electromagnetic interference (EMI), radio frequency interference (RFI), and electrostatic charges.

- T1 Sony, DXC-3000, EVW-300, Hitachi Z-One, Z-2000A, SK-F2, Panasonic AG-460, 11½"H x 5½"W x 28"D . . \$ 60.00
- T2 RCA TK-76/86 others, 19½"H x 5½"W x 41"D 60.00
- T3 Betacams, Sony DXC-537/BVW-5, BVW-300, DSR-200, Panasonic WV-F260/AG-7450, others, 12¾"H x 5½"W x 31½"D 60.00
- T4 Panasonic AG-186, 195 others, 10"H x 5½"W x 22½"D . . 60.00
- T5 Panasonic AG-455, 10"H x 5½"W x 19½"D 60.00
- T6 Sony EVO-9100, 10½"H x 5"W x 13½"D 60.00
- T1RFI With metallized covers, 11½"H x 5½"W x 28"D . . . 350.00
- T2RFI With metallized covers, 19½"H x 5½"W x 41"D . . . 350.00
- T3RFI With metallized covers, 12¾"H x 5½"W x 31½"D . . . 350.00
- T4RFI With metallized covers, 10"H x 5½"W x 22½"D . . . 250.00
- T5RFI With metallized covers, 10"H x 5½"W x 19½"D . . . 250.00
- T6RFI With metallized covers, 10½"H x 5"W x 13½"D . . . 250.00

All models available in blue, black, burgundy and camouflage*.

Projector Paks

- T-LCD For data LCD projectors including: NEC TM-800, TM-600 and Sanyo PLC-5500N \$120.00



Monitor Paks

With grip-friendly padded handle and shoulder strap. Quick and easy, 2-way zippered closures. Generous side pockets for videotapes and accessories.

- T84 Sony, PVM-8044Q/8041Q/8040 \$135.00
- T80 Sony EVM-8010, BVM-8021, PVM-8020, 8½"H x 9"W x 14"D . . 125.00
- TMS Panasonic AG-520, 21"H x 20½"W x 19"D 185.00
- TAG Panasonic AG-513, 15"H x 15"W x 14"D . . 150.00
- TAGM Panasonic AG-500, AG-550, AG-560, 11½"H x 16½"W x 13½"D 125.00



All models available in blue, black, burgundy and camouflage*.



Universal Paks

Just outline the footprint of your equipment and grab an Xacto knife. You'll have a completely customized carrying case within minutes. Theft-deterrent design and extra-resilient padding will safeguard your most delicate gear. Nonmemory foam won't shift or pack down with time. Insulates equipment from high level impacts and temperature extremes.

- Tucp-Small 5½"H x 19"W x 14"D \$120.00
- Tucp-Large 5½"H x 22½"W x 16½"D 134.00

All models available in blue, black, burgundy and camouflage*.

*Price of camouflage fabric may be slightly higher. 2 camouflage types available: tropical (various shades of green) and desert (various shades of brown).

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



Tripod Paks

Lightweight and convenient protection for tripods on the go. Strap handle affords best balance. Inside pockets hold tripod plates and accessories. 2-way zipper closing for easy access and loading.



- Tri-Medium 7"H x 42"W x 8"D \$140.00
- Tri-Large 7½"H x 45"W x 10½"D 160.00

Hip Pak

Belted gaffer bag keeps batteries and everything else within easy reach. Pockets safely hold items large and small, with secure 2-way zippered closures.



- THip-Large 6½"H x 16"W x 3¼"D. \$90.00
- Available in blue, black, burgundy and camouflage*.

Lighting Pak

This heavy-duty case safely holds up to 3 lights, with removable dividers and handy end pockets for cords and lighting accessories. 2-way zipper.



- T-Lite 8"H x 25"W x 10"D \$150.00

Lens Cover

With elastic neck guard to shield your camera lens from marring damage, dust and weather. Universal size fits all standard lenses.



- TL-cov 5½" x 5¼" x 4" \$20.00

T-Strap

Most Telepak soft-sided cases come with this universal thick-padded shoulder strap. 2 straps, used together, instantly transform a carrying case into a front-pack or backpack. With 14" of the finest quality suede backing. Tough, detachable and adjustable, with heavy-duty, nonslip metal fasteners.



- T-Strap 3¾"W x 57"L . . . \$20.00
- Available in blue, black, burgundy and camouflage*.

SPECIALTY PAKS

Briefcase Pak

A place for all your paperwork, contracts, cards, pens and notebooks in a matching soft carrying case with crisp, no-nonsense styling. Might as well stick in the calculator, trade journals and passport, too. There's plenty of room in this multipocketed attache with unique zippered front panel.



- T-Brief 12"H x 16½"W x 21½"D \$135.00



Gaffer Paks

Favorite working bag of videographers. 3 huge zippered pouches expand to meet your every need. These practical and versatile bags will look great through years of steady, heavy use.

- TGaf 8"H x 18"W x 6"D \$120.00
- TGaf-Mini 8"H x 12"W x 8"D 90.00

Telepak now offers radio frequency interference protection for your gear. Originally conceived for use by the military, the metalized covers have proven useful in a variety of applications. The lightweight metalized fabrics greatly enhance field production capabilities by protecting recording equipment from surveillance, radar and a variety of interference sources including antenna dish reflection, electromagnetic interference, radio frequency interference, electrostatic charge, pulse, etc. Interference from the recording equipment is minimized when it is protected by the metalized fabric covers.

In addition to the recorder packs and raincovers, all Telepak products can be custom ordered in the metalized fabrics.

*Price of camouflage fabric may be slightly higher. 2 camouflage types available: tropical (various shades of green) and desert (various shades of brown).

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





CamLink™ 200 Wireless ENG Link

A compact transmitter attached to a camera allows a photographer to send stories back to a TV station live. The signal is transmitted up to 1000' from the camera to a receiver, and then relayed to the station. The transmitter attaches to any Betacam®, MII®, 8mm or S-VHS camcorder. A triple-diversity receive antenna system eliminates multipath interference. FM modulation provides immunity against AM type signals from sources such as vehicles, powerlines and generators. Audio, video, time code and tally signals are transmitted via drift-free Phase Lock Loop technology.

CamLink 200 Systems*

- S200-A20 System includes: Camera mounted transmitter, rackmounted receiver, omnidirectional transmitter antenna, 2 transmitter cables, omnidirectional receive antenna, 2 directional sector receive antennas. Preset for 2 RF channels. 2.0GHz, Anton/Bauer™ mount **\$11,499.00**
- S-200-A25 Same as S200-A20, except 2.5GHz. **11,499.00**

System Components

- T200-A20 2-channel audio/video/time code transmitter. 250mW RF output. SMA antenna connector, 12-pin audio/video/time code/ power connector. Accepts mic or line level audio. Includes omnidirectional transmitter antenna. 2.0GHz, Anton/Bauer mount **\$4,999.00**
- T200-A25 Same as T200-A20, except 2.5GH **4,999.00**
- T200-N20 Equipped with mounting plates for attachment to NP-1 or BP-90 battery cases. Mounts behind battery, draws power from camera. 2.0GHz, NP-1/BP-90 mount **4,999.00**
- T200-N25 Same as T200-N20, except 2.5 GHz **4,999.00**
- R200-R20 2-channel rackmounted receiver. 1RU high. AutoPhase™ triple-diversity reception system. Receive signal strength LED bar graph display. 2.0GHz **6,300.00**
- R200-R25 Same configuration as R200-R20, except 2.5GHz. . **6,300.00**
- R100-A20 2-channel handheld receiver. AutoPhase dual-diversity internal antenna array. SMPTE time code window generator. 2.0GHz, Anton/Bauer mount **3,425.00**
- R100-A25 Same as R100-A20, except 2.5GHz **3,425.00**
- R100-N20 Receiver equipped with NP-1 battery case. 2.0GHz, NP-1 mount **3,425.00**
- R100-N25 Same as R100-N20, except 2.5GHz. **3,425.00**
- AT-OA120 Omnidirectional transmit antenna, ground plane monopole whip, vertically polarized, 2.0GHz, SMA connector **165.00**
- AT-OA125 Same as AT-OA120, except 2.5GHz. **165.00**
- AR-ON120 Same as AT-OA120, except receive antenna with type N connector **95.00**
- AR-ON125 Same as AR-ON120, except 2.5GHz **95.00**
- AR-DN120 Directional receive antenna, sector/corner reflector, vertically polarized, 2.0GHz, Type N connector **128.00**
- AR-DN125 Same as AR-DN120, except 2.5GHz **128.00**
- AX-OCPA20 Omnidirectional transmit/receive antenna, circularly polarized rod, 2.0GHz. SMA connector **265.00**

- AX-OCPA25 Same as AX-OCPA20, except 2.5GHz **\$265.00**
- AX-DCPA20 Directional transmit/receive antenna, circularly polarized panel. 2.0GHz. SMA connector **245.00**
- AX-DCPA25 Same as AX-DCPA20, except 2.5GHz **245.00**
- AXF-LA2X Directional transmit/receive antenna. Log periodic flag, vertically polarized, 2.0-2.5GHz. SMA connector. **112.00**
- AXT-YA25 Directional transmit/receive antenna. 16-element enclosed Yagi. Vertically polarized, 2.5GHz. SMA connector. . **314.00**
- AM-1 Adjustable antenna mount for AR-DN20/125, AR-DCPA20/25 and ARX-YA25. **72.00**



Transmitter, optional R100 receiver and Sony Video Walkman CamLink 100 Wireless Field Monitoring System

Increase creativity with better communication between camera operator and field producer. Reporters can watch B-Roll as it is recorded. Transmitter attaches to any Betacam, MII, 8mm or S-VHS camcorder. Up to 100 yard line-of-sight range with receiver's internal diversity antenna array. Time code window can be turned on/off at the receiver.

CamLink 100 Systems

- S100-A25 System includes T100-A25 transmitter, R100-A25 receiver, AT-OR125 omnidirectional transmitter antenna, CT-BNC2-L universal line level transmitter cable, CT-BNC2-M universal mic level audio transmitter cable, MP-101 monitor mounting plate. Preset for 2 RF channels. Anton/Bauer mount **\$5,500.00**
- S100-N25 System includes T100-N25 transmitter, R100-A25 receiver, AT-OR125 omnidirectional transmitter antenna, CT-BNC24H-L universal line level audio transmitter cable, CT-BNC24H-M universal mic level audio transmitter cable, MP-101 VTR/monitor mounting plate. Preset for 2 RF channels. NP-1/BP-90 mount **5,500.00**

System Components

- T100-A25 2-channel audio/video/timecode transmitter. 12-pin connector. Reverse SMA antenna connector. Accepts mic or line level audio. Anton/Bauer mount **\$2,450.00**
- T100-N25 Same as T100-A25, except NP-1/BP-90 mount . . **2,450.00**
- R100-A25 2-channel handheld receiver. AutoPhase dual diversity internal antenna array. SMPTE time code window generator. Anton/Bauer mount **3,425.00**
- R100-N25 Same as R100-A25, except NP-1 mount **3,425.00**
- AT-OR125 Omnidirectional transmitter antenna, ground plane monopole whip, vertically polarized, 2.5GHz. Reverse SMA connector **165.00**
- AT-OCPR25 Omnidirectional transmitter antenna, circularly polarized rod, 2.5GHz. Reverse SMA connector. **265.00**
- AR-DCPB25 Directional receive antenna, circularly polarized panel, 2.5GHz. SMB connector **245.00**
- ARF-LB2X Directional receive antenna, log periodic flag, vertically polarized, 2.0-2.5GHz. SMB connector **112.00**
- ART-YB25 Directional receive antenna, 16-element enclosed Yagi, vertically polarized, 2.5GHz. SMB connector **314.00**

*Systems also available with NP-1 mount.

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

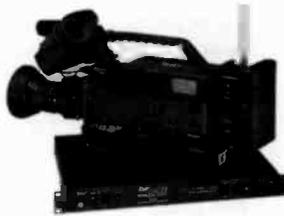




CAMLINK II™ WIRELESS VIDEO SYSTEMS

CamLink II 200 Systems

Systems include: ■ T200 camera-mounted transmitter ■ Anton/Bauer™ or NP-1/BP-90 (2.0 or 2.5GHz) ■ R200 rackmounted receiver (2.0 or 2.5GHz) ■ 2 transmitter cables ■ AX-OCPT2x omnidirectional transmit/receive antenna (2) ■ AR-DCPT2x directional panel receive antennas (2)



S200-A20 2.0GHz, Anton/Bauer mount	\$7383.00
S200-A25 2.5GHz, Anton/Bauer mount	7383.00
S200-N20 2.0GHz, NP-1 mount	7383.00
S200-N25 2.5GHz, NP-1 mount	7383.00

CamLink II 200 Rackmounted Receivers

R200-R20 2.0GHz	\$3299.00
R200-R25 2.5GHz	3299.00

■ 16-channel rackmounted receivers ■ 1RU high ■ AutoPhase™ triple-diversity reception system ■ Receive signal strength LED bar graph display

R200T-R20 Receiver with time code option, 2.0GHz	\$3699.00
R200T-R25 Receiver with time code option, 2.5GHz	3699.00

Same as R200-R20/25, plus: ■ Time code window generator ■ SMPTE LTC and time code output ■ Action safe area generator with center mark ■ Serial VTR controller ■ Tally indicator LED

CamLink II 200 Transmitters

T200-A20 2.0GHz, Anton/Bauer mount	\$2786.00
T200-A25 2.5GHz, Anton/Bauer mount	2786.00

■ Equipped with Anton/Bauer male and female plates for mounting between camcorder and battery

T200-N20 2.0GHz, NP-1 mount	\$2786.00
T200-N25 2.5GHz, NP-1 mount	2786.00

■ Transmitters equipped with mounting plates for attachment to NP-1 or BP-90 battery cases ■ Mounts behind battery and draws power from camera

CamLink II 200 Antennas

Circularly Polarized Antennas

AX-OCPT20 Omnidirectional transmit/receive rod antenna, 2.0GHz	\$269.00
AX-OCPT25 Omnidirectional transmit/receive rod antenna, 2.5GHz	269.00
AX-DCPT20 Directional panel transmit/receive antenna, high gain, 2.0GHz	229.00
AX-DCPT25 Directional panel transmit/receive antenna, high gain, 2.5GHz	229.00

High Gain Directional Antennas

2240-24V Directional parabolic dish, circularly polarized, 2.5GHz	\$499.00
AXT-YT25 High gain directional "Tube" transmit/receive antenna, 16-element Yagi in tubular radome, 2.5GHz	135.00
AXF-LT2X Directional "Flag" transmit/receive antenna, 2.0GHz	89.00
AM-1 Adjustable antenna mount	47.00

CamLink II 150 Systems

S150-A25 Includes: ■ T-100-A25 transmitter-Anton/Bauer mount ■ R200-A25 rackmounted receiver ■ AT-OCPT25 omnidirectional transmitter antenna ■ CT-BNC2-L universal transmitter cable, line level audio ■ CT-BNC2-M universal transmitter cable, mic level audio ■ AT-OCPT25 omnidirectional receive antenna ■ AX-DCPT25 directional CP panel receive antennas (2) \$6661.00

S150-N25 Includes: ■ T100-N25 transmitter-NP-1 mount ■ R200-A25 rackmounted receiver ■ AT-OR125 omnidirectional transmitter antenna ■ CT-BNC24H-L universal transmitter cable, line level audio ■ CT-BNC24H-M universal transmitter cable, mic level audio ■ AR-ON125 omnidirectional receive antenna ■ AR-DN125 directional CP panel receive antenna (2) \$6661.00

S150T-A25 S150 System with time code option and Anton/Bauer mount \$7110.00

S150T-N25 Same as S150-A25 and S150-N25, plus additional R200T receiver features: ■ Time code window generator ■ SMPTE LTC and VITC time code output ■ Action-safe area generator with center mark ■ Serial VTR controller (control L/control S) ■ Tally indicator LED \$7110.00

CamLink II Rackmounted Receivers

R200-R25 ■ 16-channel rackmounted receiver ■ 2.5GHz ■ 1RU high ■ AutoPhase triple-diversity reception system ■ Receive signal strength LED bargraph display ■ Audio connector XLR ■ Video connectors BNC, 3 antennas ■ TNC power connectors: 12VDC or 110-240VAC (EIAC jack) \$3299.00

R200T-R25 Same as R200-R25, plus: ■ Time code window generator ■ SMPTE LTC and VITC time code output ■ Action-safe area generator with center mark ■ Serial VTR controller ■ Tally indicator LED \$3699.00

CamLink II 150 Antennas

AT-OCPT25 Omnidirectional transmitter antenna, circularly polarized rod	\$269.00
AX-OCPT25 Omnidirectional receive antenna, circularly polarized rod	269.00
AX-DCPT25 Directional panel antenna, high gain, circularly polarized	229.00
AXT-YT25 High gain directional receive antenna	135.00
AXF-LT2X High gain receive antenna. Vertically polarized flag	89.00
AM-1 Adjustable antenna mount	47.00

CamLink II S100 Systems

S100-A25 Includes: ■ T100-A25 Transmitter-Anton/Bauer mount ■ R100-A25 receiver-Anton/Bauer mount ■ AT-OCPT25 omnidirectional transmitter antenna ■ CT-BNC2-L universal transmitter cable, line level audio ■ CT-BNC2-M universal transmitter cable, mic level audio ■ MP-101 monitor mounting plate ■ CR-8MM DC power cable ■ CR-101S serial control cable ■ CR102AV RCA patch cables \$4689.00



S100-N25 Includes: ■ T100-N25 transmitter-NP-1/BP-90 mount ■ R100-A25 receiver-NP-1 mount ■ AT-OR125 omnidirectional transmitter antenna ■ CT-BNC24H-L universal transmitter cable, line level audio ■ CT-BNC24H-M universal transmitter cable, mic level audio ■ MP-101 VTR/monitor mounting plate ■ CR-8MM DC power cable ■ CR-101S serial control cable ■ CR102AV RCA patch cables \$4689.00

CamLink II 100 Receivers

R100-A25 ■ Equipped with Anton/Bauer battery mount	\$2209.00
R100-N25 ■ Equipped with NP-1 battery case	2209.00

CamLink II 100/150 Transmitters

T100-A25 ■ Transmitter equipped with Anton/Bauer male and female plates for mounting between camcorder and battery. \$2064.00
 T100-N25 ■ Transmitter equipped with mounting plates for attachment to NP-1 or BP-90 battery cases ■ Mounts behind battery, draws power from camera 2064.00

CamLink II 100 Antennas

AT-OCPT25 Omnidirectional transmitter antenna, circularly polarized rod	\$269.00
AR-DCPB25 Directional panel receive antenna, high gain circularly polarized	229.00
ART-YB25 High gain directional receive antenna	135.00
ARF-LBX Directional receive antenna, vertically polarized flag	89.00

Note: For more information on CamLink II Systems contact Telex.

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

INTERCOM SYSTEMS



Telex®

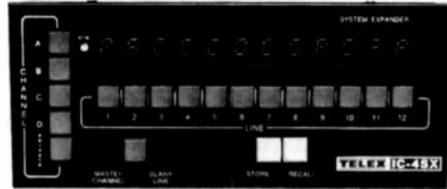
TELEX COMMUNICATIONS, INC.

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" multichannel configurations.

Audiocom Cabled System Components

Model No.	Description	IC-45X	Price
Power Supplies			
PS-1F	1-channel, flushmount.		\$170.00
PS-2L	2-channel with combine/isolate feature.		375.00
PS-X	4-channel		475.00
Programmable Station Controller			
IC-45X	12-channel matrix controller, for use with ES-400		\$699.00
Remote Belt-Pack Stations			
BP-1000	1-channel with call light and mic kill. Balanced/unbalanced operation.		\$215.00
BP-2000	2-channel with call light and mic kill. Balanced/unbalanced operation.		280.00
IC-2B	2-channel binaural with call light, metal case.		330.00
Remote Stations, Flushmount			
IC-1F/LS	1-channel flushmount with call light		\$195.00
IC-2A/F	2-channel flushmount with call light		225.00
Remote Speaker Stations			
SS-2F	2-channel flushmount with mic, balanced/unbalanced compatible		\$299.00
SS-2P	2-channel portable with mic, balanced/unbalanced compatible		399.00
Interface and Accessories			
CCB-1	Interface Telex balanced line to Clear Com unbalanced line		\$100.00
IF-1	Interface to 2, 3 or 4 wire systems with holding coil for telephone systems		\$99.00
JB-2	Dual 3-pin to 6-pin splitter junction box		150.00
TW-SW	1-in, 5-out, 3-pin splitter box.		106.00
Wall Plates (Passive Junction Plate Without Electronics)			
WP-1	Wall plate, 1-channel (XLR-3M)		\$21.00
WP-2	Same as above, with 1-channel/2-channel switch (XLR-3M)		28.00
WP-3	Wall plate, 2-channel (Nuetric XLR-6M)		28.00
Rackmount Kits			
RMK-S	Single rackmount kit mounts 1/2-rack components in center of 19" rack		\$45.00
RMK-D	Dual rackmount kit mounts 1/2-rack components side-by-side in 19" rack		40.00
RMK-M	Quad rackmount kit mounts 1/4-rack components with 1/2-rack components or three 1/4-rack components together in a 19" rack.		50.00
RM-11	Single rack kit, fits PS-2L, IC-45X, IC-SR and IF-1		40.00
RM-12	Dual rack kit, fits same as above.		35.00
RM-14	Single rack kit for SS-2P		35.00



RADIOCOM™ Wireless Intercom System

The RADIOCOM system operates in the high band, 150-216MHz frequency range, and Telex offers several frequencies available from stock. The BTR-200 base station repeater has 4 receive channels and 1 (common) transmit channel. The TR-200 belt pack transceiver has 1 transmit and 1 receive channel. As many as 4 belt-pack transceivers can operate in a fully duplex network with 1 BTR-200 base station. By daisy-chaining 2 stations together, larger networks can be achieved. The RADIOCOM wireless system can be integrated into most existing wired intercom systems, including RTS and Clear Com. The TR-200 belt-pack transceiver is compatible with most intercom headsets with 4-pin XLR connectors.



The lightweight (13 oz.) belt-pack transceiver was designed to be water-resistant and withstand abusive industrial applications. It features simple push-to-talk operation with handy low battery and overmodulation indicators. It has an impressive 24-hour battery life using 6 alkaline "AA" batteries. By using "AA" rechargeable NiCad batteries, 8 hours of use can be expected.

RADIOCOM WIRELESS INTERCOM SYSTEM COMPONENTS

WIRELESS COMPONENTS	
BTR-200 II	4-person base station with antennas, power supply and rackmounts . . . \$1650.00
TR-200	Portable belt-pack transceiver with battery sled \$75.00
TR-200P	Push-to-transmit portable belt-pack transceiver with battery sled. \$75.00
BASE STATION ACCESSORIES	
TX-58L	Omnidirectional 3/4-wave transmit antenna, low 150-169MHz (Blue) \$ 65.00
RX-58L	Omnidirectional 3/4-wave receive antenna high, 169-185MHz. 65.00
UX-58L	Omnidirectional 3/4-wave transmit/receive antenna low 185-200MHz (White) 65.00
UX-58H	Omnidirectional 3/4-wave receive antenna high, 200-216MHz. 65.00
YAG-1	High performance directional Yagi antenna 150-157MHz 66.00
YAG-2	High performance directional Yagi antenna 169-186MHz 66.00
YAG-3	High performance directional Yagi antenna 204-216MHz 66.00
ALP-1	Directional super performance log antenna 165-216 MHz. 250.00
CX-4	50 ohm copper stranded coax cable 4' 17.00
CX-25	50 ohm copper stranded coax cable 25' 24.00
AWB-1	Wall mount bracket and screws for 3/4-wave antennas. 13.00
ASA-1	Microphone stand bracket for 3/4-wave antennas 16.00
PA-2	Replacement wall type power supply BTR-200, 120V. 40.00
PA-2E	Replacement wall type power supply BTR-200, 240V. 38.00
AUDIOCOM/RADIOCOM BELT-PACK ACCESSORIES	
CL-2	Replacement black plastic clip for TR-200 \$ 5.99
CL-3	Replacement gray plastic clip for TR-200 5.99
CLW-3	Replacement belt clip washer 1.00
CLS-3	Replacement belt clip stud 2.00
CL-4	Replacement belt clip for BP-1000/2000 5.00
CLS-4	Replacement screw for BP-1000/2000 belt clips (requires 2) 0.50
BC-4	NiCad battery charging system with charger, sled and batteries for TR-200 50.00
BSL-1	Spare battery sled for TR-200 12.00
NCB-AA	NiCad AA size battery for TR-200 (requires 6) 3.95
CG-9	9V charger for TR-200 (snaps onto battery sled) 24.00
TRH-1	Heavy-duty leather swivel holster with belt loop for TR-200. 89.95
FBB	Football belt harness for BP-1000/2000 30.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

REFERENCE



Packaged VHF Wireless and Assistive Listening Systems

FMR-200C Lapel Mic System (71149-XXX)

Includes: ■ FMR-200 True Diversity Posi-Phase receiver ■ WT-80 metal micro belt-pack transmitter ■ ELM-33S MicroMini cardioid condenser lapel mic ■ Two ¼-wave remotable antennas with coax ■ Rackmount kit ■ UL and CSA approved AC wall pack transformer **\$1445.00**

FMR-200L Lapel Mic System (71148-XXX)

Includes: ■ FMR-200 True Diversity Posi-Phase receiver ■ WT-80 metal micro belt-pack transmitter ■ ELM-22S MicroMini omnidirectional condenser lapel mic ■ Two ¼-wave remotable antennas with coax ■ Rackmount kit ■ UL and CSA approved AC wall pack transformer **\$1440.00**

FMR-200H Handheld Mic System (71150-XXX)

Includes: ■ FMR-200 True Diversity Posi-Phase receiver ■ HT-200/65 condenser cardioid handheld transmitter/mic with Telex 65 ELE head ■ Microphone stand adaptor ■ Two ¼-wave remotable antennas with coax ■ Rackmount kit ■ UL and CSA approved AC wall pack transformer **\$1318.00**

FMR-150H Uni Handheld Mic System (71178-XXX)

Includes: ■ FMR-150 PRO VHF frequency agile crystal controlled True Diversity receiver with Posi-Phase Auto Diversity, Posi-Squelch III Auto Suppression with Tone Coded Squelch and mic/line output ■ HT-150 PRO handheld single switch transmitter with Telex 65 ELE condenser element ■ 2 right angle ¼-wave antennas ■ UL and CSA approved AC wall pack transformer **\$975.00**



FMR-150L PRO Omni Lapel Mic System (71176-XXX)

Includes: ■ FMR-150 PRO VHF frequency agile crystal controlled True Diversity receiver with Posi-Phase Auto Diversity, Posi-Squelch III™ Auto-Suppression with Tone Coded Squelch and mic/line output ■ WT-150 PRO micro-pack single switch transmitter ■ ELM-22S MicroMini Omni lapel mic with TA-4F ■ 2 right angle ¼-wave antennas ■ UL and CSA approved AC wall pack transformer **\$940.00**

FMR-150C PRO Uni Lapel Mic System (71177-XXX)

Includes: ■ FMR-150 PRO VHF frequency agile crystal controlled True Diversity receiver with Posi-Phase Auto Diversity, Posi-Squelch III Auto-Suppression with Tone Coded Squelch and mic/line output ■ WT-150 PRO micro-pack single switch transmitter ■ ELM-33S MicroMini cardioid condenser lapel mic with TA-4F ■ 2 right angle ¼-wave antennas ■ UL and CSA approved AC wall pack transformer **\$940.00**

FMR-70H Handheld System (71135-XXX)

Includes: ■ FMR-70 True Diversity Posi-Phase receiver ■ HT-200/65 cardioid condenser handheld transmitter/mic (with Telex 65 ELE mic/head) ■ Microphone stand adaptor ■ Two ¼-wave antennas ■ UL and CSA approved AC wall pack transformer **\$720.00**



FMR-70L Lapel Mic System (71063-XXX)

Includes: ■ FMR-70 True Diversity Posi-Phase™ receiver ■ WT-55 belt-pack transmitter ■ WLM-50 lapel microphone ■ Two ¼-wave antennas ■ UL and CSA approved AC wall pack transformer . . . **\$617.00**

FMR-70C Cardioid Lapel Mic System (71137-XXX)

Includes: ■ FMR-70 receiver True Diversity Posi-Phase receiver ■ WT-55 belt-pack transmitter ■ AT-831-b cardioid condenser lapel mic ■ Two ¼-wave antennas ■ UL and CSA approved AC wall pack transformer **\$617.00**

SM-1 SoundMate™ Assistive Listening System (70679-XXX)

Includes: ■ AAT-2N base station narrow band transmitter ■ 3 AAR-10N single channel narrow band receivers ■ 3 SEB-1 earbuds with foam covers ■ WP-1 wall plaque ■ One ¼-wave antenna ■ UL and CSA approved AC wall pack transformer **\$803.00**

Packaged UHF Wireless Microphone Systems

FMR-450H Cardioid Handheld System (71145-XXX)

Includes: ■ FMR-450 UHF True Diversity Posi-Phase receiver ■ HT-450/65 UHF handheld transmitter with Telex 65 ELE condenser element ■ 2 colinear ground independent antennas ■ UL and CSA approved AC wall pack transformer **\$1605.00**

FMR-450C Cardioid Lapel Mic System (71140-XXX)

Includes: ■ FMR-450 UHF True Diversity Posi-Phase receiver ■ WT-450UHF metal micro belt-pack transmitter ■ ELM-33L cardioid MicroMini electret lapel mic ■ Two ¼-wave colinear ground independent antennas ■ UL and CSA approved AC wall pack transformer **\$1540.00**

FMR-450L Omnidirectional Lapel Mic System (71139-XXX)

Includes: ■ FMR-450 UHF True Diversity Posi-Phase receiver ■ WT-450 UHF metal micro belt-pack transmitter ■ ELM-22L MicroMini omnidirectional condenser lapel mic ■ Two ¼-wave colinear ground independent antennas ■ UL and CSA approved AC wall pack transformer **\$1525.00**



ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



WIRELESS MICROPHONE SYSTEMS



Telex®
TELEX COMMUNICATIONS, INC.

BROADCAST PRO UHF WIRELESS MICROPHONE PRODUCTS

ENG-500 Broadcast ENG Receiver

• UHF 2-channel frequency-agile, crystal controlled, true-diversity receiver with Posi-Phase Auto-Diversity™ and Posi-Squelch™ III tone code plus auto suppression • Balanced XLR 3-output, 3.5mm headphone output level controls • 5-segment RF/audio level/battery level LED indicators • 9V operation with battery, or 9-17VDC plug adaptor included • All metal aircraft alloy case with water resistant controls • Diversity phase indicators and RF channel selector • 2 removable ¼-wave antennas • Carrying case included
71190-XXX* \$1995.00

Custom Mounting Accessories

DG-GM (71193-030) Anton/Bauer Gold Mount™ plate kit. Mounts ENG-500 between camera and Anton/Bauer power pack. Allows ENG-500 to draw power from battery pack or from internal 9V battery \$250.00

ALP-TM (71147-001) ALP-450 log antenna with 8dB forward gain, 28dB front-to-back ratio, with light stud adaptor and cable for ENG-500 \$169.95

DC-UM (71193-040) Universal Strap Mount Kit. Allows ENG-500 to be temporarily mounted to the camera using an adjustable self-locking strap \$50.00

DC-SM (71193-020) Anton/Bauer side mount kit. Mounts ENG-500 on the side of an Anton/Bauer power pack \$40.00

DC-NP1 (71193-010) Standard NP-1 Mount Kit. Mounts ENG-500 on standard NP-1 and BP-90 studs on the rear of the camera \$40.00

VHF Wireless Transmitters

HT-150/757 (71172-XXX)* Handheld transmitter with E-V ND-757 head \$592.00

HT-150/65 (71174-XXX)* PRO Frequency-agile crystal controlled handheld transmitter with single switch on, condenser mic head and 3 channels \$504.00

HT-200/757 (71122-XXX)* Handheld mic/transmitter with E-V N/Dym757 dynamic mic head, stand adaptor, carrying case \$500.00

WT-80 (70883-XXX)* Metal micropack transmitter \$450.00

HT-200/65 (71124-XXX)* Handheld mic/transmitter with Telex 65ELE condenser mic, stand adaptor, case \$410.00

WT-150 (71169-XXX)* PRO VHF Frequency-agile crystal-controlled micropack belt-pack transmitter with single switch, TA-4F mic connector, 3-channels. . . \$315.00

WT-60 (70881-XXX)* Micropack transmitter \$297.00

WT-55 (71062-XXX)* Belt-pack transmitter 247.00



WT-80

UHF Wireless Transmitters

HT-450/757 (71142-XXX)* Transmitter with E-V N/Dym-757 dynamic mic head \$835.00

HT-450/65 (71144-XXX)* Broadcast quality handheld UHF transmitter with separate RF on and mic mute switches, low battery LED, Telex 65ELE, condenser mic element \$746.00

WT-450 (71132-XXX)* Broadcast quality metal, micro belt-pack transmitter, separate RF on and mic mute switches, field replaceable antenna, gold plated LEMO microphone connector, charge pins on bottom of unit for use with optional NiCad battery and BC-80 charger, and belt clip case \$592.00

Antenna Splitter

AD-450 (71146-000) UHF wideband (520-760MHz) diversity antenna splitter/combiner system with power supply for (4) FMR series receivers. Combines as many as 8 antennas into 2. Includes rackmount brackets with front or rear panel antenna connectors, and eight 2' low loss coaxial receiver cables, two 1' front panel mount low loss antenna cables, four 2' receiver cables. . . . \$900.00



AD-200 (71108-000) VAF wideband 150-234MHz diversity antenna splitter/combiner with power supply for (4) FMR series receivers. Combines up to 8 antennas into 2. Includes rackmount brackets, (8) 2' cables for receivers, and (4) power hookup cables . . . \$515.00

Microphones For Transmitters

ELM-33L (70926-002) Telex Micro-Mini™ unidirectional lapel mic with LEMO connector \$211.00

ELM-22L (70925-002) Telex Micro-Mini omnidirectional lapel mic with LEMO connector 206.00

ELM-33S (70926-001) Telex Micro-Mini unidirectional lapel mic with TA4 connector 205.00

ELM-22S (70925-001) Telex Micro-Mini, omnidirectional lapel mic with TA4 connector 200.00

AT/Pro8 (71110-000) Head-worn, unidirectional, Audio-Technica dynamic mic with TA4 connector 155.00

AT-831b (70856-000) Audio-Technica unidirectional lapel mic with TA4 connector 144.00

PH-22 (64327-002) Head-worn, unidirectional Telex electret mic with LEMO connector \$144.00

WLM-200 (63852-001) Telex omnidirectional lapel mic with LEMO connector \$139.00

PH-21 (64327-001) Head-worn, unidirectional Telex electret mic with TA4 connector \$118.00

PH-23 (70730-000) Head-worn, unidirectional Telex electret mic with TA4 connector, includes sweatband and Velcro® strip for mic attachment \$118.00

WLM-50 (64277-000) Telex omnidirectional lapel mic with TA4 connector. \$102.00



PH-22

*Order using individual component catalog number (XXX). The last 3 digits in the transmitter and receiver catalog number are determined by the frequency selected. See stock frequencies.

Available Stock Frequencies

Frequency Order Suffix (XXX)	Frequency (MHz)
065	171.905
066	171.045 (Traveling Frequencies)
067	170.245
068	169.505

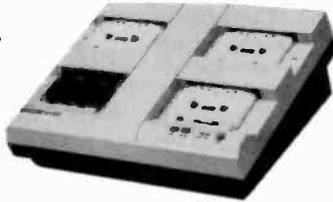
ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





Copyette™ EH Series Copiers

- Simple, 1-button operation
- Rewinds tapes to the beginning, copies, then rewinds back to the beginning before stopping
- Can be stopped at any time by pressing the cycle button, with LEDs clearly identifying the mode in which the Copyette is operating
- Ergonomically designed, slanted work surface along with unobstructed, open cassette wells feature a "heads up" design to support quick cassette loading and unloading
- Easy access for normal maintenance such as head cleaning
- Track select allows you to copy 1 side of a tape at a time or both sides at once
- Optical, non-reflective end-of-tape sensing system provides gentle tape handling
- AV programs can be copied with sync cues for automatic slide advancement
- DC servo motors
- No clutch mechanisms
- Impact-resistant housing with removable AC cord and protective plastic dust cover



Copyette 1•2•3

Copyette EH 1•2•3 Stereo

300350-101 Portable ½-track, 4-channel stereo copier produces 3 copies from a cassette master at 30 ips (16X normal speed) \$2150.00

Copyette EH 1•2•3 Mono

300350-100 Portable ½-track, 2-channel monaural copier produces 3 copies from a cassette master at 30 ips (16X normal speed) 1350.00

Copyette EH 1•2•1 Stereo

300350-001 Portable ½-track, 4-channel stereo copier produces 1 copy from a cassette master at 30 ips (16X normal speed) 885.00

Copyette EH 1•2•1 Mono

300350-000 Portable ½-track, 2-channel monaural copier produces 1 copy from a cassette master at 30 ips (16X normal speed) 550.00

PROFESSIONAL HEADSETS

Broadcast and Announcers Headsets

(With Push-to-Cough Switch)

Model	Description	Impedance in ohms	Plug Type	Price
Lightweight (Mic 150/200 ohms)				
PH-25	Dynamic binaural/with omni condenser mic, 9' cord	300/side	A3M¼"	\$299.00
PH-24	Dynamic dual with noise-canceling condenser, 9' cord	150	Pigtail	250.00

INTERCOM HEADSETS

Dynamic Intercom Headsets With Dynamic Noise-Canceling Microphone (Plug Compatible With Audiocom/Radiocom, Clear-Com and Other Intercom Systems)

Hearing Protectors

PH-16	"ProAir" under helmet 24dB NRR, 6' cord	150	A4F	\$250.00
PH-10	Dual "ProAir" 24dB NRR, 6' cord	150	ASF	235.00
HD-3A	Dual 21dB NRR, 6' cord	150	A4F	170.00



PH-2

Model	Description	Impedance in ohms	Plug Type	Price
Full-Cushion				
PH-3	Binaural, 6' cord	150/side	ASF	\$170.00
PH-2	Dual, 6' cord	150	A4F	160.00
PH-1	Single, 6' cord	150	A4F	140.00
Lightweight				
PH-5	Binaural, 6' cord	300/side	ASF	\$155.00
PH-4	Dual, 6' cord	150	A4F	150.00
PH-8	Single, 6' cord	150	A4F	140.00

Dynamic Intercom Headsets With Dynamic Noise-Canceling Microphone (Plug Compatible With RTS Intercom Systems)

Full-Cushion				
PH-3R	Binaural, 6' cord	150/side	A5M	\$170.00
PH-2R	Dual, 6' cord	150	A4M	160.00
PH-1R	Single, 6' cord	150	A4M	140.00
Lightweight				
PH-5R	Binaural, 6' cord	300/side	A5M	\$155.00
PH-4R	Dual, 6' cord	150	A4M	150.00
PH-8R	Single, 6' cord	150	A4M	140.00

Professional Monitor Headphones

Full-Cushion Stereo

PH-6 Dynamic dual, 12' cord 600/side ¼" \$150.00

Full-Cushion Mono

PH-7 Dynamic dual, 5' cord 600 ¼" 129.00

Lightweight Mono

PH-36 Lightweight dual, 6' cord 600 ¼" 65.00

HMV-2 Monoset stethoscope, 5' cord 125 ¼" 55.00

HFY-91 Tele-Fi Under Chin, 5' cord 2000 ¼" 29.00



V-220



V-210

V-Series Full-Cushion Modular Headset Systems

Model	Description	Price
V-200*	Round full-cushion dual stereo headphone, 600 ohms/side impedance	\$140.00
V-210*	Round full-cushion single sided with boom, 150 ohms impedance	120.00
V-220*	Round full-cushion dual sided with boom, 150 ohms/side stereo, 75 ohms/side/mono	165.00

Microphone Cartridges for V-Series Headsets

MB-11	Cardioid dynamic, 150 ohms impedance	\$49.00
MB-12	Cardioid electret, 150 ohms impedance	49.00

*Microphone cartridge and cord assembly must be ordered separately.

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



Wireless Sound Enhancement System (72-76MHz) for Hearing Assistance (Complies With American Disability Act)

▪ This personal FM sound system is designed especially for use in churches, theaters, auditoriums, amusement parks or any situation—indoors or outdoors—where hearing can be difficult ▪ It actually brings a speaker's voice, music or other program sound directly to the listener's ear, so that distracting noises, reverberation or distance from the sound source no longer interferes with a person's ability to hear ▪ The system consists of a single channel base station or belt-pack transmitter and any number of tunable, personal receivers, which operate on the FM wideband frequencies between 72 and 76MHz ▪ Up to 8 operating channels are available and the receivers may be easily tuned to any of the channels being used ▪ All components are compatible with all FM wideband auditory assistance equipment



In-Line Volume Control



1/4" 2-Circuit Plug
Low Luster Gray Cord



Silicone Eartip

Plastic Covered Metal Earloop

Announcer's Earsets

▪ Field replaceable cords and accessories ▪ Snap-fit, positive contacts ▪ Super-flex cables with strain relief ▪ Interchangeable component parts ▪ Telethin miniature magnetic receiver available in 5 different impedances ▪ Volume control optional with cords ▪ Frequency response 70-3000Hz ±dB useable ▪ Weight 1.7 oz.—complete with cord ▪ Typical applications—TV/broadcast cue monitor, surveillance monitor, private listening

Model	Cat. No.	Description	Price
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Complete System			
SM-1	70679-XXX*	Single-channel high performance system includes: 1 AAT-2N high performance transmitter; 3 AAR-10N single-channel receivers; 3 SEB-1 earbuds with cushion covers; 1 WP-1 wall plaque	\$803.00

Transmitters

AAT-2N	70676-XXX*	Base transmitter with balanced mic/line/70.7V input	\$555.00
TW-6	19758-XXX*	Portable battery transmitter with auxiliary input and TLM-0 microphone	427.00

Receivers (earbuds priced separately)

SSR-100	71156-000	Multichannel tunable receiver	\$189.00
AAR-10N	19791-XXX*	Single-channel receiver without earbud	77.00

Earphones (for non-hearing impaired to moderate hearing loss)

DEB-2	59840-001	Dual earbud with cord	\$11.15
SEB-1	59840-005	Single earbud with cord	8.75
CCS-12	59840-006	Cushion covers for SEB-1 and DEB-2 (package of 12)	4.25
HED-1	59840-003	Ultra-lightweight headphone	12.80
HED-2	59840-003	Lightweight headphone	10.30
HED-3	63510-021	Full cushion noise reduction headphone	38.60

Microphones

NCM-1	70486-000	Noise-canceling boom mic with earhook	\$99.00
NCM-2	64100-000	Noise-canceling boom mic with headband	99.00
TLM-D	17765-003	Directional lapel mic, clip, windscreen	60.00
TLM-0	17765-005	Omni lapel mic, clip, windscreen	60.00

*The last 3 digits in the transmitter catalog number (XXX) will be determined by the frequency that is selected.

Model	Cat. No.	Description	Price
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Telethin Acoustic Drivers			
RTR-04	60012-000	15 ohms, earset, Tele-Fi	\$12.00
RTV-04	60012-003	125 ohms, earset, Tele-Fi	12.00
RTW-04	60012-005	500 ohms, earset, Tele-Fi	12.00

Earset/Telethin Accessories

EH-S	71116-000	Earphone shell holder, small ear	\$10.00
EH-L	71116-001	Earphone shell holder, large ear	10.00
AFC-1	18068-000	Under chin tube and foam cushion, Tele-Fi	7.95
ET-1	35608-000	Eartip, earset	4.50
AEF-2	09252-000	Plastic covered metal earloop, earset, Telethin receivers	3.95

Standard Cords—(Color Gray)

VXT-3	19616-001	Tele-Fi monoset receiver, 500 ohms, with volume control, 5' cord, 1/4" plug	\$38.00
VYT-3	19616-000	Tele-Fi monoset receiver, 2K ohms, volume control, 5' cord, 1/4" plug	38.00
CCX-2	19652-004	Persona Phone, 5' coil cord, RA mini plug	18.00
CMT-2	60013-000	Tele-Fi monoset receiver, 5' cord, 1/4" plug	17.00
CMT-92	60013-013	Tele-Fi monoset receiver, 5' cord, 90°/140° plug	17.00
CMT-98	60013-015	Tele-Fi monoset receiver, 5' coil cord, 140° plug	17.00
CMT-95	60013-073	Tele-Fi monoset receiver, 5' cord, .097" plug	17.00

Miscellaneous Accessories

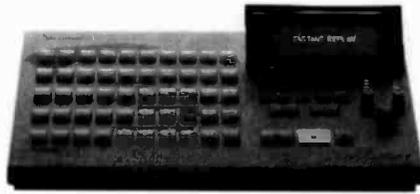
TC-10/100E	19720-003	10 Pocket Charger, 240V	\$628.00
TC-10/100	19720-002	10 Pocket Charger, 110V	565.00
HGA-1	19759-000	1/2-wave dipole gain antenna	47.10
SM-C	71077-001	Carrying case for system with 6 receivers	42.65
TW-A	877960	Telescoping 1/2-wave replacement antenna	22.10

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



**Instant Replay®
Hard Disk
Audio Player**

Instant Replay is a 2-channel, completely self-contained stereo audio recorder and control panel. CDs and DATs can be converted to the professional 48K sample rate with the high-quality sample rate converter.



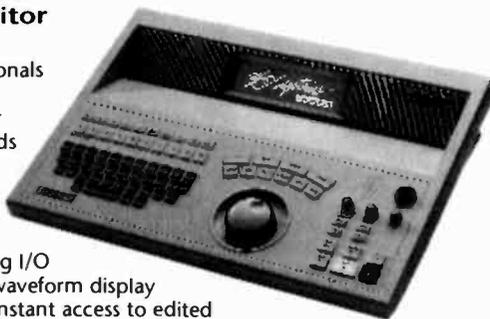
Records onto a 3.5" internal hard disk. Store up to 1000 cuts with no cut length limitations. Input sample frequencies: 24K to 56K samples/second; converted to 48K by internal sample rate converter. Output sample rate: 48K samples/second. 8-hour audio storage on internal hard disk. 50 Hot-Key™ presets per each of the 10 banks. Hot-Keys double as a keyboard for adding titles and finding cuts. Completely self-contained. Unlimited recording length on audio cuts. Comes with a parallel output on 25-pin D connector printer output to make hard-copy listings of its contents. Provides balanced analog inputs on XLR connectors. Both +4dBu professional and -10dBu semi-pro levels accepted. AES/EBU digital inputs and outputs also appear on XLR connectors. Link different 360 Systems digital audio products through their AES ports with D-NET, which works at 8X normal speed. Use bank select to activate the bank of choice. Headphone jack. Recording time: 8 hrs. (DR-550-8) or 16 hrs. (DR-550-16). 2 line x 20 character vacuum fluorescent display. Power requirements: 95-240V, 50/60Hz, 25W.

- DR-550-24 Instant replay with 24 hrs. internal storage . . \$3795.00
- DR-550-16 Instant Replay with 16 hrs. internal storage . . 3495.00
- DR-550-8 Instant Replay with 8 hrs. internal storage . . . 2995.00

**Shortcut™
Personal Audio
Broadcast Editor**

Designed for broadcast professionals.

No computer, mouse, monitor or special plug-in cards needed. Familiar tape recorder interface. 16-bit linear recording. Digital and analog I/O. High resolution waveform display. 10 Hot-Keys for instant access to edited cuts. Password protection of individual directories. Real time editing including cut, copy, paste, insert, erase, loop and more. Insert edit markers as you edit/record. Hard disk storage of up to 3 hrs. of 20kHz stereo audio. Includes built-in mic preamp, speakers and keyboard for titling.



- SC-180-2 Shortcut with 3 hrs. internal storage \$3495.00
- SC-180-1 Shortcut with 1.5 hrs. internal storage 2995.00

DigiCart/II Plus® Hard Disk Recorder

Designed to replace analog cart machines in television master control, radio, and teleproduction applications. Analog and digital I/O. 16-bit linear or Dolby® AC-2 compressed audio storage (user selectable), editing and playlisting capabilities. Remote control options include a production remote, a play-only remote, keyboard for titling and remote control, and both GPI and serial interfaces. External hard disk system enclosure allows expansion of total storage capacity in excess of 148 total hours. Random access and playback of bumpers, music and sound effects. Mass storage of production elements and sound effects libraries. Fast top and tail style editing. Sweetening for video and audio production and post-production. Automated playback of voice-overs for master control. Creation and execution of long, complex playlists. Includes Zip removable disk drive; for use with 100M Byte Zip disks. Includes standard analog ports (XLR), digital AES/EBU ports (XLR), digital IEC-958 II ports (BNC), and D-NET network file transfer system. Mounting for a second internal hard disk optional. Specify 115 or 230VAC.



- 2730 DigiCart/II Plus with HD-3000 Internal Hard Disk. Hard disk capable of storing 1485 minutes stereo 20kHz audio \$4695.00
- 2720 DigiCart/II Plus with HD-2000 Internal Hard Disk. Hard disk capable of storing 970 minutes stereo 20kHz audio 4395.00
- 2710 DigiCart/II Plus with HD-1000 Internal Hard Disk. Hard disk capable of storing 590 minutes stereo 20kHz audio 3995.00

DigiCart/II Plus Upgrade Kits

- D-2PLUS-EUPG-K Upgrades any DigiCart 2500 Series model to DigiCart/II Plus. Includes external Zip drive and and disk, D-NET software and RAM expansion kit. Allows continued use of internal Bernoulli disk drive. \$525.00
- D-2PLUS-IUPG-K Upgrades any DigiCart 2500 Series model to DigiCart/II Plus. Includes internal Zip drive and mounting hardware, D-NET software and RAM expansion kit. Allows use of Bernoulli disk drive on external SCSI port. \$495.00

**DigiCart/II Plus and Shortcut
Removable Zip Disks and Zip Drives**

- D-ZIP-DRV-E 100M Byte External Zip SCSI Disk Drive. Portable Zip disk drive for use with Shortcut editor, DigiCart/II Plus or upgraded DigiCart/II. Includes SCSI interconnect cable, power supply and one free Zip disk. \$199.00
- D-ZIP-DRV-I 100M Byte Internal Zip SCSI Disk Drive. Replacement disk drive for use in DigiCart II/Plus or upgraded DigiCart/II. . . 169.00
- D-ZIP-DSK-10 100M Byte removable Zip disks (10 disks). . 149.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

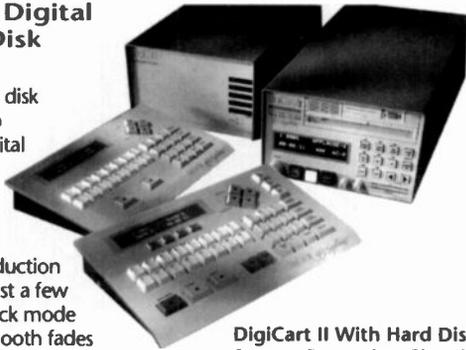
DIGITAL AUDIO HARD DISK RECORDER



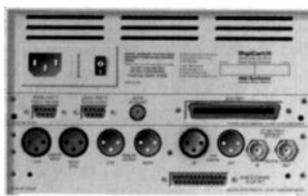
360 Systems

DigiCart/II™ Digital Audio Hard Disk Recorder

- Combination hard disk recorder, mini audio workstation and digital cart machine
- Flawless 16-bit recordings either in linear mode or with Dolby AC-2 data reduction
- Access cuts with just a few keystrokes in playback mode
- DSP editing for smooth fades and precision edits
- Built-in hard disk
- Bernoulli disk technology
- 10:1 audio file transfer rate
- Instant access to directories, disks and audio files
- Loop, pause and preset
- Files recorded in stereo at 48K, 44.1K or 32K sampling rates
- Hard disk stores up to 16 hours of audio
- Expanded storage capacity with accompanying hard disk system houses up to 5 drives for additional storage of 160 hours
- 3 remote control units designed for specific applications



DigiCart II With Hard Disk System Expansion Chassis and RC-210 and RC-220 Remote Controls



- 2530 DigiCart/II with HD-3000 internal hard disk. Hard disk capable of storing 1485 minutes stereo 20kHz audio. \$5695.00
- 2520 DigiCart/II with HD-2000 Internal Hard Disk capable of storing 960 minutes stereo 20kHz audio. 5395.00
- 2510 DigiCart/II with HD-1000 Internal Hard Disk capable of storing 480 minutes stereo 20kHz audio. 4995.00
- 2500 DigiCart/II without hard disk. For use only with 65, 105 and 150M byte Bernoulli disks. 4395.00

Note: Order removable disks separately.

Hard Disk Options

- HD-3000 3G Byte Hard Disk. For installation in hard disk systems enclosure or internally in DigiCart. Stores up to 1485 minutes stereo 20kHz audio. . . . \$1095.00
- HDS-01 Hard Disk Enclosure. Use to expand storage capacity of DigiCart/II. Includes 3RU half rack enclosure power supply and SCSI interconnect cable. Specify 115 or 230VAC . . . 995.00
- HD-2000 2G Byte Hard Disk. For installation in hard disk systems or in DigiCart/II 2000 and 2500. Stores up to 970 minutes stereo 20kHz audio. 795.00
- HD-1000 1G Byte Hard Disk. For installation in hard disk systems or in DigiCart/II 2000 and 2500. Stores up to 590 minutes stereo 20kHz audio. . . 495.00

Multiformat Removable Disks

- DMF-150-10 150M bytes Removable Digital Audio Disks. 10 disks, each capable of storing 68 minutes stereo 20kHz audio. \$990.00

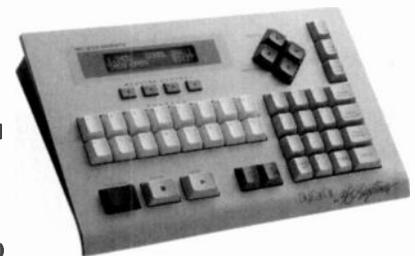
- DMF-105-10 105M Byte Removable Digital Audio Disks. 10 disks, each capable of storing 49 minutes stereo 20kHz audio. \$750.00
- DMF-65-10 65M Byte Removable Digital Audio Disks. 10 disks, each capable of storing 30 minutes stereo 20kHz audio. 500.00
- DAD-10 44M Byte Removable Digital Audio Disks. 10 disks, each capable of storing 20 minutes stereo 20kHz audio. 400.00

DigiCart/II PC Windows™ Control Software

- ONSC-2 On-Screen/II Software Package. Provides simultaneous on-screen display and control of up to 3 DigiCart/II units. Displays contents of selected directory in column format. Build and play stacks using unique "Clipboard" function. All setup and utility menu options are available, as well as all transport functions. Requires 486DX computer running MS-DOS 5.0 or above and Windows 3.1. On-Screen/II package includes Print-It software \$795.00
- PCHK-2 PC Hot-Keys Software Package. Displays panel of 50 hot-keys which allow instant access to preselected cuts or stacks. Stores up to 30 different pages of 50 cuts or stacks each. Provides simultaneous control of up to 3 DigiCart/II units. Requires 486DX computer running MS-DOS 5.0 or above and Windows 3.1. PC Hot-Keys package includes Print-It software. \$595.00
- PRNT-2 Print-It Software Package. Provides simultaneous on-screen display of contents of up to 3 DigiCart/II units. Allows display and print-out of contents of selected directories, detailed information about the disks, directories, and cuts. Works with the word processors of your choice; defaults to Notepad editor included with all Windows software installations. Requires 486DX computer running MS-DOS 5.0 or above and Windows 3.1 \$295.00

Remote Controls

- RC-220 DigiCart/II Remote Control—Full-function remote allows access to all control functions. Provides instant access to 16 presets. Includes 25' 9-pin interconnect cable \$745.00
- RC-210 DigiCart/II Remote Control—Allows access to all playback functions. Prevents access to all destructive functions. Provides instant access to 16 presets. Includes 25' 9-pin interconnect cable \$595.00
- RC-205 Mini-Keyboard Remote. Mini-keyboard provides remote access to all DigiCart/II control functions. Makes labeling fast and easy; provides instant access to 52 of a possible 104 presets \$130.00



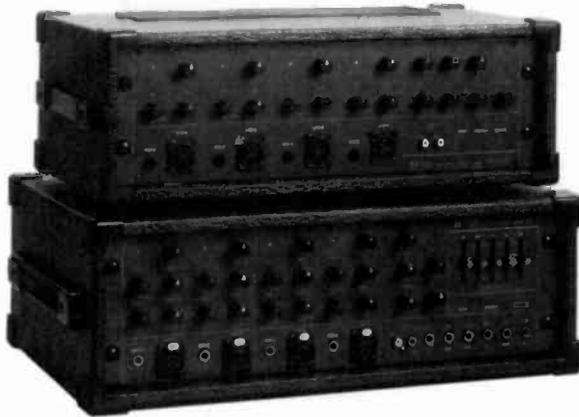
Note: Specify operating voltage of 115VAC or 230VAC.

Special Order Option

- D-NET File Transfer Network—Upgrade for DigiCart/II. Firmware option to allow high-speed digital file transfers between DigiCart/II and Instant Replay. Moves complete audio files at approximately 8X real time. \$300.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

REFERENCE CATALOG 97-90


MX-401 Powered Mixer

- 4 input channels, each with: 1. Lo-Z electronically balanced XLR input; 2. Hi-Z unbalanced 1/4" input; 3. High/low 2-band active EQ; 4. Pre-EQ fold-back send; 5. Input level control; 6. Post-fader reverb send
- 150W into 4 ohms, 100W into 8 ohms
- Patchable 5-band graphic EQ
- Auto comp and amp protection with LEDs
- Full patch bay
- Individual reverb level to PGM and FB
- Aux and tape inputs with level control, RCA and phone jacks
- Independent fold-back (stage monitor) mix
- Portable, lightweight enclosure with handle

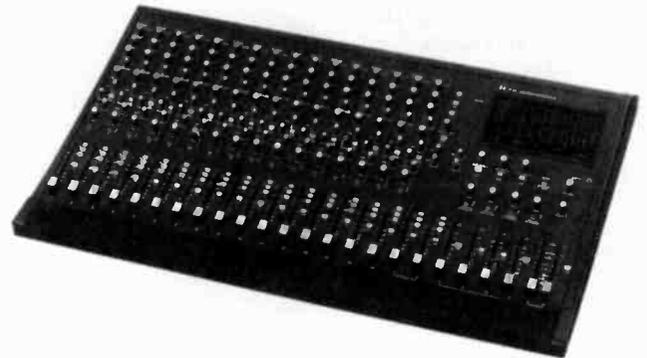
MX-101 Powered Mixer

- 4 input channels, each with: 1. Lo-Z electronically balanced XLR input; 2. Hi-Z unbalanced 1/4" input; 3. Tone-type active EQ; 4. Input level control; 5. Post-fader reverb send
- 75W into 4 ohms, 57W into 8 ohms
- 3-band EQ and built-in spring reverb
- Auto comp compression circuitry with indicator
- Aux tape inputs with level control
- System output jack
- Internal power amp protection with indicator
- Reverb level to system
- Separate foldback (monitor) level control
- Portable, rugged, lightweight (16.5 lbs.) enclosure with handle


M-900MK2 8-Channel Mixer/Preamplifier

- Wide frequency response: 20-20,000Hz, ± 1 dB
- Low distortion and noise level
- Excellent output regulation
- Bass and treble controls
- Bridging input and output
- Signal processing input and output
- Built-in protection circuitry
- Transformer isolated output of 150/600 ohms
- Full range of plug-in modules
- Portable or rackmounted type

M-900MK2 8-input (less modules)
 MB-921A Rackmount brackets (pair) for M-900MK2
 PF-511 Perforated blank panel, 1 1/2"
 YA-920 Volume control cover (basic unit)


CX Series Mixing Consoles

- Low noise, wide, flat frequency response and low distortion for professional quality performance
- Phantom power switch for each set of 4 input channels
- Cut switch on each input channel, stereo input, aux input, group output, stereo output and aux output
- All faders are long-linear type with 100mm travel
- Additional stereo inputs for connecting a stereo playback deck, CD player and other auxiliary equipment
- 6 LED bargraph peak meters allow monitoring of groups 1, 2, 3, 4; Aux Sends 1, 2, 3; stereo L, R; and Sum
- Internally installed kit (optional) adds transformer balancing to 4 adjacent channels
- An outboard 1 rack space unit (optional) transformer balances 4 outputs
- Brightly colored knobs permit visibility in low light applications and are designed for precise, comfortable operation
- Rugged internal supports and cast-aluminum side/back panels for long term durability
- Each input channel includes: electronically balanced, low impedance XLR connector with an unbalanced 1/4" phone jack; accessory input/output jack; input pad switch and trim control on each input channel; 3-band equalizer with sweepable mids; signal/peak indicator LED

CX-124 12-channel, 4-program out, stereo console
 CX-164 16-channel, 4-program out, stereo console
 IT-M4CX Mic input X-fmr (X4)
 IT-L4CX Line input X-fmr (X4)
 OT-X4 Output X-fmr (X4)


P-924MK2
P-924MK2/P-912MK2/P-906MK2 Power Amplifiers

- 20-20,000Hz frequency response, ± 1 dB
- 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)
- 8 module input ports
- Rear panel terminals for a remote master volume control
- Easy reference front panel LEDs indicating power, signal presence, peak, clip and protection
- 2 rack space height on all models (except P-924MK2)
- 2 levels of priority mute

P-924MK2 240WRMS P-912MK2 120WRMS P-906MK2 60WRMS
 MB-35B Rackmount kit for P-924MK2, black
 MB-25B Rackmount kit for P-906MK2/912MK2, black

Call For Pricing

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

MIXER/POWER AMPLIFIERS/ LOUDSPEAKERS

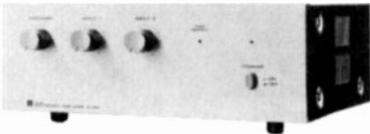


A-512A

A-512A/A-506A/A-503A 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-512A	120W integrated amplifier
A-506A	60W integrated amplifier
A-503A	30W integrated amplifier
U-51	Microphone input module
U-52	Line matching transformer
MB-21B2	Rackmount brackets, black



A-901A 3-Channel Mixer/Power Amplifier

• 10WRMS output power • 20-20,000Hz frequency response, ± 1 dB • 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)
MB-920	Rackmount brackets (pair)



A-912MK2



A-903MK2

A-912MK2/A-906MK2/A-903MK2 6-Channel Mixer/Power Amplifiers

• 20-20,000Hz frequency response, ± 1 dB • Low distortion and noise level • 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 • 8 module input ports • Rear panel terminals for a remote master volume control • Easy reference front panel LEDs indicating power, signal presence, peak, clip and protection • 2 rack space height on all models • 2 levels of priority mute

A-912MK2	120WRMS	A-906MK2	60WRMS	A-903MK2	30WRMS
MB-921A	Rackmount brackets (pair) for A-903MK2				
MB-25B	Rackmount kit for A-903MK2/906MK2/912MK2, black				

Accessories for All Models

PF-511	Perforated panel, 1 1/4", black
YA-920	Volume control cover (for basic units)

F-Series Speaker Systems

• Include 2-way ported systems • Feature durable, low-foam polypropylene enclosures for superb acoustic characteristics • Foreground music speakers featuring both 3-way ported and full-range ported systems

F-505G/W 2-Way Speaker System

• 8" woofer and HF compression driver • Uniform directivity horn with controlled dispersion coverage pattern (60° x 40°) • Low-foam polypropylene enclosure in white (W) or dark gray (G) • Built-in overload protection circuitry • Input panel with push terminals and 1/4" phone jacks internally connected in parallel • Easy installation using optional mounting brackets • 5-year limited warranty

F-605G/W 2-Way Speaker System

Same as F-505, except: • 12" woofer

F-5/F-5W Compact Designer Speaker

• Full-range ported compact designer speaker • 10W continuous pink noise input • 100Hz-18kHz frequency response • 4" full-range cone speaker • Well damped polypropylene enclosure in white (F-5W) or black (F-5)

F-160G/GM,W/WM 2-Way Speaker System

• 2-way 5 1/4" speaker system with 1" dome tweeter • Optimized for maximum efficiency with a flat frequency response when mounted in a half- or quarter-space environment • Built-in overload protection on 8 Ω models • Easily mounted with optional mounting brackets in vertical or horizontal position • Polypropylene enclosure in white (W models) or dark gray (G models) • M models have built-in 70/100V transformer adjustable via a rotary switch under the rear cover • Enclosure has a rear cover with cable feed slot to protect connection terminals • Front grille has a rotatable logo badge for vertical or horizontal enclosure orientation

F-240G/GM,W/WM 2-Way Speaker System

Same as F-160, except: • 2-way 6 1/2" speaker system with 1" titanium dome tweeter

F-160WP Weatherproof 2-Way Speaker System

• 2-way 5 1/4" water resistant speaker system with 1" dome tweeter • Optimized for maximum efficiency with a flat frequency response when mounted in a half- or quarter-space environment • Easily mounted on walls or under eaves with optional outdoor mounting bracket in horizontal position • Polypropylene enclosure in dark gray • Model has built-in 70/100V transformer adjustable via a rotary switch under the rear cover • Enclosure has a rear cover with cable feed slot to protect connection terminals

BS-20W Splashproof 2-Way System

• Sealed ABS enclosure with a 5.2" splashproof cone woofer and 30° x 90° piezo driven uniform directivity horn • Frequency response specially tailored for railway/subway paging • Built-in 70V transformer • Zinc-coated steel bracket for improved rust resistance

SL-60W Wide Range 2-Way System

• Weather-resistant speaker ideal for outdoor BGM, foreground music and PA applications • 90° x 40° uniform directivity horn with 12" woofer • Polyethylene enclosure • Easy installation using optional mounting brackets

CS-61PW Full Range Horn Loaded Speaker

• Attractive and sturdy indoor/outdoor paging speaker • Cone driver provides full, rich sound • Built-in 70V transformer with multiple wattage taps

Call For Pricing

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.




900 SERIES MODULES
**Microphone Modules
Lo-Z, 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.

- M-01F XLR (F)
- M-01M XLR (M)
- M-01P ¼" phone jack (P)
- M-01S (S)
- M-11S Receive mute, select normally on or off (S)
- M-21S Remote volume control (S)
- M-51F Voice gate, XLR (F) (no high filter)
- M-51S Voice gate (S) (no high filter)
- M-61F Compressor, XLR (F)
- M-61S Compressor (S)

Note: Phantom power is defeatable by cutting jumper J-1 on circuit board.

**Microphone
Module
Hi-Z,
Unbalanced,
10K Ohm**

- M-03P
Lo/Hi filter,
gain control (P)

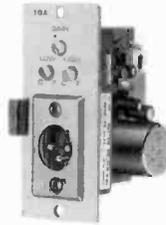
**Magnetic Phono, RIAA
Equalization**

- R-01R
RIAA mag phono (R)

**Auxiliary Modules
Hi-Z, Unbalanced, 220K Ohm, GC**

- U-01F XLR (F)
- U-01P (P)
- U-01R (R)
- U-01S (S)
- U-11R Receive mute (R)
- U-11S Receive mute (S)
- U-12S Receive mute, adjustable
attenuation (S)
- U-21S Remote volume control (S)
- U-61S Compressor (S)

Note: The U-61S can be used as a "Master Compressor" by cutting jumper J-2.


M-01F

Balanced Line Output Module

- T-01S Lo-Z, 600 ohm, bal. out, signal derived from mix bus,
gain control (S)

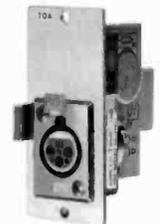
Note: T-01S functions only in ports 5 and 6 of the following models: M-900A, A-903A, A-906A, A-912A, W-906A and W-912A. The T-01S will not function in the A-901A.

**Auxiliary Input—
Balanced Line Output
Module**

- T-02S Unbal., 220K aux. input,
600 ohm bal. out, gain control
for both input and output
(for music-on-hold)

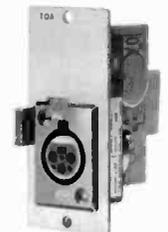

**Bridging Transformers
10K Ohm,
Balanced Input**

- B-01F XLR (F)
- B-01P (P)
- B-01S (S)
- B-11S Receive mute (S)


**Line Matching
Transformer Modules
600 Ohm, Balanced**

- L-01F XLR (F)
- L-01P (P)
- L-01S (S)
- L-11S Receive mute (S)
- L-41S Send mute (S)

Note: When used with the A-901A, the L-41S must occupy port #2.


Signal Generator Modules

- S-01S 1kHz, sine wave, gain
control (S)
- S-02S Buzzer/yelp,
gain control (S)
- S-04S 8 selectable internal
tones (S)


Notes

Suffix Guide: F = Female XLR; M = Male XLR; P = ¼" Phone Jack; R = RCA Pin Jack; S = ½" Screw Terminal

U-61S Aux. Mod: For the U-61S 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.

Call For Pricing

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

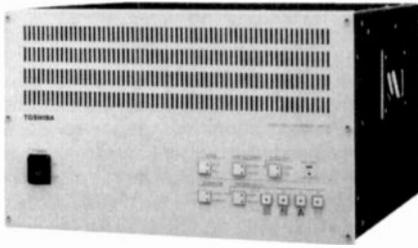
VIDEOWALL PROJECTION/ LCD PROJECTORS



TOSHIBA

TMP100U Videowall Processor

- 4 preset control programs for instant access to special effects
- Works with all projection units
- Individual control programs may be downloaded to the processor's E²PROM
- Supports both NTSC and PAL
- Supports VGA with addition of an optional board
- Double scanning system delivers solid, flicker-free images
- Digital comb filter and contour correction circuits for luminance, chrominance and interlace scanning
- RGB and component input
- Built-in special effects include: color washes, strobe motion, fade, freeze and wipes
- RS-232C interface allows computerized control of picture quality
- Built-in signal generator
- 10 outputs (expandable to 16)
- Power cable included
- Optional VisuWall control software



TMP100U	3 x 3 videowall processor.	\$28,450.00
TMP100U	2 x 3 videowall processor.	24,700.00
TMP100U	2 x 2 videowall processor.	21,375.00
TMP50U	2 x 2 videowall processor.	9,675.00
X-Cues Software + PC computer + Time code card		5,975.00

Options/Accessories

PR413VU	VGA/NTSC/PAL electronic engine (with screen set)	\$7,900.00
PR413UW	NTSC/PAL VGA electronic engine	7,000.00
PR413VU	NTSC/PAL electronic engine (with screen set)	6,450.00
PR413UW	NTSC/PAL electronic engine	5,500.00
TMPU11	Output board for TMP100U	3,650.00
TMU12	VGA input board	2,925.00
PSK50J	50" modification kit for P4130U.	2,465.00
TMPU10	Input board for TMP100U	2,200.00
PSF4130	Fresnel screen replacement.	600.00
PSL4100	Lenticular screen replacement	450.00
CT9802	Remote control unit for P4130/P4135	400.00
PFR413	1.75mm Moulin slide (moulin screen replacement)	360.00
PFR410A	1.75mm Moulin	280.00
PFR412A	2.5mm Moulin	280.00

P4130 Series Videowall Cubes

- P4130 Series accepts both NTSC and PAL signals, automatically switching systems in response to the input signal
- P4130VU is also VGA acceptable, allowing direct input from a computer
- Picture size, position, white balance, convergence and linearity can be digitally controlled and adjusted with a remote control unit or by a computer with an RS-232 interface
- Cube designs built around choice and flexibility—both monobody cubes and collapsible-body cubes
- Contour correction of luminance and chrominance circuits
- When used with the TMP100U Videowall Processor, a double



- scanning system produces flicker-free pictures
- Any user adjustments to the digital data controls may be restored to the factory presets with a computer
- Quick engine replacement
- 3 color temperature positions
- All cubes in a system are linked by a system bus
- 41" rear projection
- 800 lines horizontal resolution; 350 lines vertical resolution; VGA models 640 x 480 pixels
- Viewing angle: 150° min. (horizontal); 60° min. (vertical)
- System bus interface: input and output (DIN) 5-pin connector x 2 = 120VAC, 60Hz
- Dimensions: 631 (H) x 846 (W) x 1,110 (D)mm
- Control cable (DIN 5-pin cable) and power cable included

P4130VU50"	VGA/NTSC/PAL monobody cubes.	\$13,375.00
P4130VU	VGA/NTSC/PAL monobody cube	11,225.00
P4130U50"	NTSC/PAL monobody cube.	11,425.00
P4130UW	NTSC/PAL monobody cube.	8,995.00

P5031U/P5032U Series Video Wall Projectors

- 50" screen
- Easy to install and to operate
- Available in 4 and 6 screen versions
- Accepts NTSC and PAL formats
- 420' lambert images
- Images precisely aligned by a digital convergence circuit
- Optional seamless screens make joints virtually invisible
- Entire system is only 26 1/4" in depth
- Three 7" Toshiba Fine CRT display tubes
- Horizontal resolution is 800 lines or more
- 260W power consumption

P5032U50V	VGA/NTSC/PAL 26" depth bottom cube.	\$8,425.00
P5031U50V	VGA/NTSC/PAL 26" depth top cube	8,425.00
P5032U50"	NTSC/PAL 26" depth bottom cube	6,700.00
P5031U50"	NTSC/PAL 26" depth top cube	6,700.00

TLP-511/510 LCD MediaStar® Projector

- 600 ANSI lumens optical system
- Swivel lens for easy switching between portrait and landscape images
- Wireless, full-function remote control with PC mouse capability
- 2000 hour long life UHP lamp
- Built-in carry handle
- Triple 1.3" LCD polysilicon TFT panels
- True XGA 1024 x 768, and compressed 1280 x 1024 SXGA display capability
- Compatible with XGA/MAC 1024 x 768, NTSC and PAL data and video
- Ceiling, tabletop and rear projection capabilities
- Built-in opaque projection 2-D/3-D object document camera with zoom capability
- Zoom, focus lens system
- Only 17.6 lbs.
- Variable image size from 22" to 300"

TLP-511	\$9,995.00
TLP-510 Same as TLP-511, with no document camera	8,995.00

TLP-411/410 LCD MediaStar Projector

- 500 ANSI lumens optical system
- 2000-hour long life metal-halide lamp
- Built-in carry handle for portability
- Triple 3.1 LCD polysilicon TFT panels
- Wireless full-function control with zoom focus camera control
- True SVGA 800 x 600 display and 1024 x 768 compressed display capability
- Compatibility with VGA/MAC 800 x 600, NTSC, and PAL data and video
- Ceiling, tabletop and rear projection capabilities
- Built-in opaque projection 2-D/3-D object document camera
- Zoom, focus lens system
- Lightweight, only 24.5 lbs.
- Variable image size from 22.5" to 300"
- 16.7 million colors
- User-friendly
- Compatible with VCRs, camcorders, laser discs and computers, including Pentium and Power PCs
- Accessories: power cable, VGA cable, MAC adaptor, video/audio cable, remote control, lens cap, battery, owner's guide and warranty sheet
- Options: case, lamp, ceiling mount

TLP-411	\$8,995.00
TLP-410 Same as TLP-411, with no document camera	7,995.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





ProRaid-FC Fibre Channel RAID Storage Subsystems

Hardware features

- 66MHz 486DX2 microprocessor ▪ Processor DRAM SIMM sockets (2)
- 256KB of level 2 processor cache ▪ Onboard (PCI) bus ▪ RAID Parity Assist (RPA) chip ▪ One Fibre Channel host interface ▪ One Ultra SCSI differential connection ▪ Five 16-bit, single-ended FAST-20 SCSI-2 drive channels ▪ Onboard Ethernet interface ▪ Copper or optical fibre interface supported via plug-on GLM module ▪ 1G bit per second Fibre Channel transfer rate ▪ Supports point-to-point, switched, or arbitrated loop fibre topologies

Software features

- ADP controller command set compatible ▪ Multiple initiators (up to 15) ▪ Multiple logical units (up to 32) ▪ Supports controller and drive hot swap ▪ Dual active redundant controller support ▪ Command queuing at drive and host levels ▪ I/O concatenation and sorting
- Configuration via SCSI, RS-232 port, or Fibre Channel ▪ RAID parity group (N + P where N=2 to 19) ▪ All code stored in flash memory
- Global hot spare ▪ Performance monitor

ProTower-FC Fibre Channel Disk Storage Subsystems

- Fibre Channel—dual arbitrated loop mass storage system ▪ Speeds of up to 1.062G bits per second ▪ Passive backplane technology provides for hot-swapping of quad bypass and repeater logic modules ▪ Supports either copper or fibre cabling ▪ Hot-swappable direct plug-in of FC-AL drives ▪ PassThrough Cooling Technology™
- Capacity: 72G bytes or 32G bytes ▪ Input: 2 each, DB9 4-conductor copper cable connectors ▪ Operating Systems: Mac-OS
- HDD Cannister: 8 each hot-swappable, key locked, individually fused supplied with each cabinet ▪ Power supplies: 1 each power supply assembly with 2 standard 300W hot-swappable power supplies with cooling fans ▪ Alarms: power and drive failure alarms
- Cooling fans: Up to 2 hot-swappable fans in cabinet in addition to power supply ▪ Power efficiency: <70% at full load at 230VAC line
- Redundancy: Hot-swappable, 300W, dual redundant power supplies



StudioBOSS™ FC Network Control Software

- Multiple nonlinear video editing stations can access centralized stored data simultaneously ▪ Secure read/write controls ▪ Access centralized data at speeds up to 200M bytes per second ▪ Can support multiple streams of compressed or uncompressed video

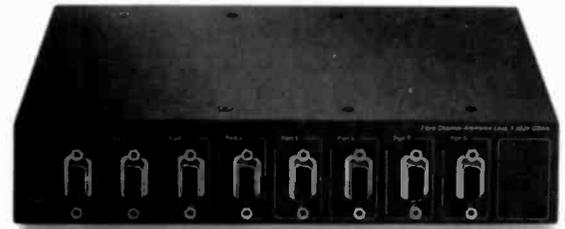
from network storage ▪ Ideal media server for a number of nonlinear video/audio editing situations ▪ Allows multiple editors to work on the same source footage, without being interrupted by sneakernet, searching for shuttles, or duplicating footage

- Users of Avid Media Composer, Data Translation Media 100 and other Macintosh or Silicon Graphics platform digital video and animation workstations can use the lowest compression ratios and very high speed file transfers over the network ▪ Designed for network-based shared data sets for digital video, prepress, and CAD/CAM environments ▪ Each workstation hosts a Transoft Fibre Channel PCI or GIO-64 100M bytes per second full duplex card (200M bytes per second total transfer) ▪ Supports up to 126 nodes (users and/or devices) via copper fibre (30 meters between nodes) and various optical fibres (for up to 10km distance between nodes)

StudioBOSS FC Fibre Channel Network Components

StudioBOSS FC Network File Control Software

- Transoft StudioBOSS software maintains file consistency, controls read/write privileges ▪ The graphical interface makes administration of shared storage simple, and secure



StudioBOSS FC HUB

- StudioBOSS FC requires a StudioBOSS FC Hub for more than 2 users ▪ The 9 port fibre channel hub can support 9 users and/or storage devices and provides routing to all FC devices and users

StudioBOSS FC Adaptor Card, Cable, and Connectors

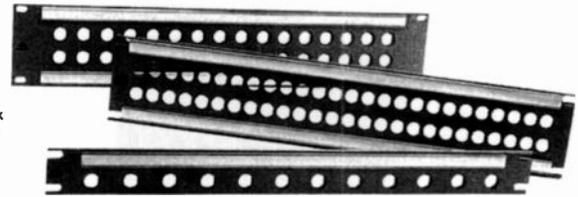
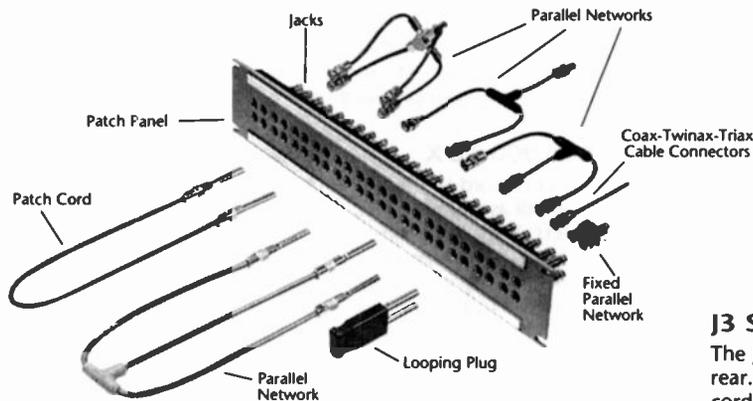
- StudioBOSS FC uses 200M bytes per second Transoft FC-PCI or -GIO-64 adaptor cards at each workstation ▪ StudioBOSS FC cabling may be either copper twin-ax (30 meters between nodes) or fibre optic (10km between nodes) ▪ Each adaptor card also includes a gigabit link module (GLM)

StudioBOSS FC Storage Devices

- StudioBOSS FC utilizes the Transoft ProRAID-FC, a single hardware based FC RAID-3 device capable of 75M bytes per second speeds
- Each ProRAID-FC chassis contains 20 bays and can accommodate from 4 to 180G bytes of mass storage ▪ Terabytes of storage are available through multiple ProRAID-FC devices ▪ Transoft also offers ProTower-FC, a JBOD storage chassis with a 72G byte capacity, for use with software striping

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





Cable Patch Panels

Coax Patching

Patching connectors provide maximum flexibility needed to re-route signals and are used in "shielded cable" video, and RF applications. These jacks may be intermixed on the same panel provided the mechanical limitations are recognized. Microswitches may be added to all jacks in this series (except as noted) by adding the letter "A" to the part number.

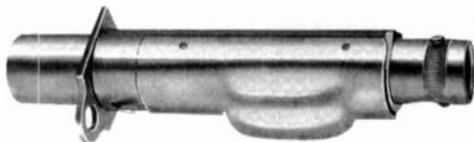


- Patch Cord RCA PC-L-Z
 - Patch plug to patch plug WE PCW-L-Z
- Note: Replace "L" with length in inches; replace "Z" with impedance.



J24 Series Normal-Through Patch Jacks

The J24 Series of connectors are dual coax jacks which automatically provide a normal-through signal path without the use of looping plugs or patch cords. The normalizing switch contacts utilize a unique self-wiping action for positive contact.



- Self-Terminating Patch Jack RCA J13-R
 - BNC WE..... J13W-R
- Circuit is terminated when plug is removed.
NOTE: Replace "R" with resistor value.

J3 Series Single Patch Jacks

The J3 Series of connectors are single patch jacks with BNC on the rear. No normal-through is provided, so looping plugs and patch cords are needed to make interconnections.

Cable Patch Panels

# of holes	Panel Type	Panel Ht.	Hole Hor.	Spacing Vert.
12	JS(I)-12	1.75"	1.430"	-
14	JS(I)-14	1.75"	1.210"	-
16	JS(I)-16	1.75"	1.000"	-
20	JS(I)-20	1.75"	0.830"	-
24	JS(I)-24L	3.50"	1.430"	1.000"
24	JS(I)-24W	3.50"	1.430"	1.000"
32	JS(I)-32A	3.50"	1.000"	0.625"
40	JS(I)-40	3.50"	0.830"	0.625"
40	JS(I)-40W	3.50"	0.830"	1.000"
52	JS(I)-52	3.50"	0.625"	0.625"

Ordering Information

Panels can be ordered separately or combined with any combination of jacks (provided the mechanical restrictions are recognized) by using the following part number format.

Example: JS-12/J13

JS-12 Standard noninsulated panel loaded with (12) J13 Standard 50 ohm patch jacks.

Selected panel part number JS-12

JS = Aluminum panel (open notch)

JSI = Insulated panel (open notch)

Selected jack part number J13-R

Call For Pricing

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



TARGA2000 Series

Common Features

- Onboard 16-bit CD and DAT unbalanced audio
- Composite, Y/C input and output
- Genlock input (blackburst or composite)
- CCIR-601, PAL and NTSC resolution output
- 640 x 480, 648 x 486 NTSC input and output
- 768 x 576 PAL input and output
- Up to 21" at 24-bit onboard RGB monitor support
- Simultaneous RGB and video monitor support
- Microsoft Windows NT and video for Windows support
- Macintosh OS and QuickTime support



TARGA2000 PRO

- Includes common features, plus:
- Full-motion component video input and output
- Ideal for working with component video equipment supporting NTSC Betacam or PAL SMPTE/EBU formats
- Drives RGB desktop at up to 1152 x 870 at 75Hz

Targa2000 Pro NTSC for Windows (PCI) ▪ Adds component video input and output ▪ Available in NTSC and PAL versions\$3,795.00

TARGA2000 Pro NTSC for Macintosh ▪ Includes all necessary input/output cables ▪ Available in PCI and NuBus versions for NTSC or PAL3,795.00

TARGA2000

- Includes all common features, plus:
- Full-motion video input and output
- Output CCIR 601 resolution
- Ideal for working with Hi8 or S-Video equipment
- Drives RGB desktop at up to 1152 x 870 at 75Hz

TARGA2000 for Windows ▪ Offers a Windows desktop display with video-in-a-window and video-out-a-window complete with composite and S-Video connections ▪ Single-slot PCI bus compatible card with 20M bytes of RAM ▪ All cables included\$3,395.00

TARGA2000 for Macintosh ▪ Available in PCI and NuBus versions ▪ Supports composite and S-Video input/output in NTSC and PAL3,395.00

TARGA2000 RTX

- An upgrade to the TARGA2000 Pro
- Drives RGB display at up to 21" at 24-bit color
- Supports full-motion previewing on both RGB and video displays
- Board installs in a single PCI slot
- Breakout box provides input and output connections and plugs directly into TARGA
- Breakout box can also be rackmounted or used as a stand-alone device
- Breakout box allows for easy connection to in/out cables for composite, S-Video, component video and XLR balanced audio, genlock and alpha channel
- QuickTime and video for Windows native works optimally with many off-the-shelf video authoring applications
- Dual M-JPEG codec architecture processes 2-D digital video effects in real time
- Balanced CD and DAT quality audio
- Up to 9M bytes/sec. per channel
- Supports multiple formats in NTSC and PAL
- CCIR 601 resolution plus 648 x 486 NTSC and 768 x 576 PAL\$10,995.00

TARGA2000 DTX

- Same features as TARGA 2000 RTX, plus:
- Single stream configuration
- Compatible with a full range of video applications and delivers a professional solution capable of video capture and playback at 1.5:1 compression
- Industry leading data rates, brilliant color

saturation, and dual monitor support for increased desktop real estate make it a perfect match for traditional compositing, animation, and 3-D applications ▪ Ships with an industrial strength A/V cable or can be configured with the optional Breakout Box\$7,995.00

TARGA2000 SDX

- Designed to record and output 4:2:2 serial digital video (SMPTE 259M), as well as digital audio (AES/EBU)
- Delivers real time digital video effects, 1.5:1 compression in single stream mode and better than 3:1 in dual stream mode
- Ideal for the high-end broadcaster or animator who demands the highest quality digital production end to end
- Supports D1, D3, D5, Digital Betacam, DVCPRO, DVCAM, and Digital-S equipment through its Serial Digital Interface ...\$11,995.00

TARGA1000 Desktop Multimedia Editing System

- Provides fast, nonlinear editing
- 8M bytes onboard memory and 1 PCI card
- Hardware-synchronized audio and video
- Supports NTSC and PAL video standards

- Capture, edit and play back full-motion, full-resolution digital video
- Also supports CD and DAT quality audio input and output
- Software supplied: Windows version—Driver support under Windows/NT v3.51, Video for Windows Support (Video Capture Driver, Playback Driver and WAVE Audio Driver) Mini-Applications and control panels for real time capture and display of video and still image capture; Macintosh version—Control panel for desktop setup, video and audio input/output, QuickTime TARGA movie player
- Supplied accessories: Composite/S-Video I/O cable and Component Pro I/O cable for Pro and Pro Upgrades



TARGA1000 Pro NTSC for Windows (PCI) with Premiere 4.2 ▪ Comes bundled with Adobe Premiere 4.2 (full 32-bit version) ▪ Nonlinear editing, A/B style transitions including dissolves, wipes, spins, etc. ▪ Available in NTSC and PAL versions\$2,095.00

TARGA1000 Pro Module Upgrade for Windows (PCI) with Diaquest 3D/AV for 3-D Studio Max ▪ Bundled with Diaquest's 3D/AV suite of software tools for 3-D Studio Max ▪ Integrate A/V movies into the 3-D animation process ▪ Works simultaneously with 3-D graphics and full-resolution, full-motion movies ▪ Create animations quickly and easily ▪ Synchronize and composite 3-D animation with A/V movies within the digital video/audio production environment easily ▪ Available in NTSC or PAL versions ...\$2,095.00

TARGA1000 Pro NTSC for Macintosh (PCI) with Premiere 4.2 ▪ Includes all input/output cables ▪ Available in NTSC or PAL versions\$2,095.00

TARGA1000 for Windows (PCI) with Premiere 4.2 ▪ Comes bundled with adobe Premiere 4.2 (full 32-bit version)\$1,695.00

TARGA1000 for Macintosh (PCI) ▪ Requires an NTSC or PAL monitor for viewing during video capture and playback ..\$1,695.00

TARGA1000/2000 Pro NTSC Upgrade Module\$1,145.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



TVL Director 3 Presentation System

- Software selectable ultrawide (8 x 3), wide (16 x 9) and standard (4 x 3) video presentation formats
- 3 graphic buffers plus 2 video inputs
- 32-bit true-color display
- Panic Buttons—theme slide and speaker support image (IMAG)
- SMPTE—sync to sound modules
- 30 fps burst mode
- Video output boosted to 1024 lines
- Microsoft Windows 3.1/Windows 95 compatible
- Graphics over live video
- Live video in a box or full-screen
- Image cropping and sizing
- 600 built-in special effects
- Import MAC or PC TARGA, Windows WMF and BMP files
- Seamless graphic to video transitions
- VGA monitor and RGB monitor/projectors not included

TeleVision Laboratories, Inc. (TVL) provides the presentation professional with systems capable of creating and delivering a seamless mix of speaker support images and graphics, full-motion video, and computer animations for major meetings with the highest possible quality. The TVL Director 3 systems combine state-of-the-art software and hardware into fully integrated, turnkey electronic presentation systems for the professional presenter.

The TVL Director hardware includes a unique design incorporating 3 fully independent graphic buffers and up to 2 video inputs. This proprietary design enables TVL to provide the industry's only presentation systems capable of performing true dissolves in real time, moving images rapidly around in front of and behind other images in real time, and doing 2-D animation movements of 3-D objects over an unlimited number of still images or full-motion video backgrounds in real time without re-rendering the background graphics or video. TVL's Director system is also the only presentation system available today which provides truly seamless transitions from computer originated text, graphics and animations to full-motion video from a live camera, a CRV, or videotape.

The Turbo 3 option dramatically increases the speed and the storage capability of Director systems by providing motion JPEG image compression and decompression capabilities. The Turbo option also includes the ability to read SMPTE time code to allow precise synchronization of graphics and video with audio tape and/or videotape soundtracks.

A complete set of meeting creation and control software, TVL's ShowStar software, is included with all TVL Director systems. This includes ShowStar Word for creating speaker support text, ShowStar Draw for creating vector-based objects and sophisticated backgrounds, ShowStar Pictures for frame-grabbing video images and working with pictures, ShowStar Show for sequencing speaker support, controlling video sources and creating sync-to-sound modules, and ShowStar VGA for rendering finished ShowStar shows and images to runtime VGA shows for desktop distribution. All ShowStar programs have been created in the Microsoft Windows environment and feature pushbutton ease of use and blazing speed. Images can be directly imported into TVL ShowStar from popular Windows formats such as WMF and BMP and from MAC and PC Targa TGA files.

In addition to the 8 x 3 and 16 x 9 wide-screen single projector capability of the Director 3, TVL offers optional software (LetterBox

and MotionSplitter) for its Director systems to allow the professional user to create, render, and playback mixed media, video based still and motion presentations in multiscreen hard or soft edge (seamless) panoramic formats to provide ultrawide screen presentations for captivating large audiences in major meetings.

TVL Director 3 Hardware Specifications

- RGB Resolution:** 1024 x 484 pixels, anti-aliased
- Output:** RGB analog, 75 ohms/0.7V p-p
NTSC composite video, 1V p-p
Composite sync, 75 ohms/2.0V p-p
- Sync:** 15.75kHz, 59.94Hz Interlaced
- Input:** 2 video inputs
RGB analog, 75 ohms/0.7V p-p, 15.75kHz, 59.94Hz Interlaced
- Genlock:** Locks to external sync
- Colors:** 16.7 million (24 bits) colors plus 8 bits transparency
- Remote control:** Standard 5-pin Kodak hand control interface
- Processor:** Intel Pentium
- RAM:** 16M bytes standard, options up to 128M bytes
- Hard disk:** 1G byte IDE to 4G byte Fast Wide SCSI-2 options
- Floppy disk:** 3.5" 1.44M bytes
- Interface:** 1 parallel port—25-pin D connector
2 serial ports—9-pin D connectors
- Display board:** VGA (Video Graphics Adapter) 640 x 480, 256 colors for operator console
- Mouse:** 2-button, serial mouse, Microsoft compatible
- Power:** 110VAC/220VAC (switchable), 50/60Hz, 250W
- Dimensions:** 16.75"H x 7.5"W x 16.5"D
- Weight:** 24 lbs.
- Keyboard:** 101 keys, IBM PS compatible
- ShowStar software:** Show, Pictures, Draw, Word, Chart, VGAShow

DIR-514 Ultrawide Screen System for Major Meetings

- Director 3 Turbo 3 with TVL line quadrupler for image enhancement and real time cropping and zooming of standard 4 x 3 video to allow single projector display in 8 x 3 or 16 x 9 format
- 3 TVL 32-bit graphic buffers
- 2 video inputs: software selectable ultra-wide screen single projector 8 x 3 format, wide screen 16 x 9 screen format, or standard 4 x 3 format
- ShowStar software suite including the High Performance Show Package with 30 fps burst mode
- Motion JPEG compression/decompression
- SMPTE time code
- Pentium 133MHz CPU
- 2G byte IDE hard drive
- Tape backup system
- Network card
- 32M bytes of memory

DIR-514 \$23,995.00

DIR-510 Wide-Screen Professional System

- Director 3 with 3 TVL 32-bit graphic buffers
- 2 video inputs: software selectable widescreen 16 x 9 screen format or standard 4 x 3 format
- ShowStar software suite
- Pentium 133MHz CPU
- 1G byte IDE hard drive
- Tape backup system
- 16M bytes of memory

DIR-510 \$14,995.00

QUAD Quad Image Enhancer Option for Director 3 Turbo 3

- Enhances graphic output and any video source fed into it by increasing the 15.75kHz horizontal frequency to 63kHz thereby eliminating visible scan lines while simultaneously providing horizontal splining to sharpen the image from a resolution of 512 x 480 to 1024 x 960

QUAD..... \$4,995.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

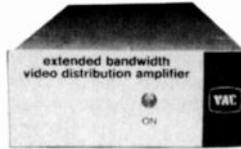




DISTRIBUTION AMPLIFIERS/ RACKMOUNT SYSTEMS

XB/VDA Extended Bandwidth Video Distribution Amplifier

- Features extra wide bandwidth • Unit provides high resolution video distribution through 8 isolated outputs from a single video input • User may switch between differential input and single ended input modes of operation
- Differential input mode is useful in avoiding hum and interference • Can be used to distribute Channel 3 and 4 RF output signals from a VCR, due to extra wide bandwidth. \$445.00



CONVENTIONAL ALUMINUM CHASSIS DAS YCDA-2 Y/C (S-Video) Distribution Amplifier

- 1-input, 6-output component video DA with 45MHz bandwidth • Internal gain controls provided for each Y or C channel and equal signal paths alleviate Y/C timing errors • Connectors are through standard 4-pin mini-DIN connectors \$425.00

CVDA-3 Clamping Video Distribution Amplifier

- Featuring adjustable clamping level to allow proper setup level and help eliminate hum bars and black level retention problems • Single loopthrough input • 6 outputs • Adjustable gain
- 30MHz bandwidth • Excellent resolution \$370.00



ADA-3 Audio Distribution Amplifier

- Direct coupled ADA-3 offers a single loopthrough input • Adjustable gain
- 6 outputs for proper distribution of audio • Available with RCA jacks or terminal blocks. \$370.00

PDA-4 Pulse Distribution Amplifier

- 1-in, 6-out, loopthrough input unit with adjustable output level • Utilizes pulse regeneration to clean up pulse synchronization signals \$310.00

HN/VDA Hum-Nulling Video Distribution Amplifier

- Features video distribution and hum reduction in a single wideband unit with adjustable gain • Reduces/eliminates AM broadcast interference • 6 video outputs • Isolated BNC connectors standard on input • 75 ohm output impedance • Differential input • 60dB hum reduction adjustable
- Rackmountable \$279.00

VDA-640 Video Distribution Amplifier

- Features 6 wideband outputs with 45MHz bandwidth • 75 ohm output impedance • Gain adjustable from -6dB to +6dB and a single ended loopthrough input • Rackmountable \$249.00

BRICK™ SERIES DISTRIBUTION AMPLIFIERS

EQVB/VDA-XL Brick Equalizing Video Distribution Amplifier

- Compensates for timing and amplitude errors • Helps reduce interference caused by long cables • Equalization control corrects for both SC/H phase and high frequency signal amplitude errors introduced by 1500'-3000' of Belden 8233, 1000'-2000' of Belden 8281 or Mohawk M52210 or equivalent video cable • Overall signal gain may be adjusted over a -2.5 to +6dB range • The EQVB/VDA-XL takes advantage of the inherent hum canceling capability of a differential input • By isolating input and output grounds, common mode interference is reduced by typically 40dB at the output \$239.00

EQVB/VDA Cable Equalizing Video Distribution Amplifier

- One 75 ohm input • 4-output composite video DA • Capable of frequency compensating zero to 1000' of Belden 8281 video cable
- Useful frequency response is DC to 40MHz • Separate gain and equalization adjustments are provided • AC adaptor included. . . . \$229.00

YCVB/VDA S-Video Distribution Amplifier

- For S-Video, the YCVB/VDA provides 4 Y/C outputs from a single 75 ohm terminated Y/C input using 4-pin mini-DIN connectors • Features DC to 45MHz frequency response and independent Y and C adjustments to facilitate signal level matching • Dimensions: 3" x 0.6" x 2.65" • AC adaptor included. \$209.00

HBVB/VDA Humbucking Video Distribution Amplifier

- Reduces/eliminates hum and herringbone interference resulting from a ground loop • Provides additional gain to compensate for system losses
- Input/output grounds have a high impedance isolation between each other, breaking the ground loop and providing up to 15V peak hum rejection of the input signal • All 4 output shields are connected to each other as well as to the local power ground \$199.00

LTVB/VDA Video Distribution Amplifier

- 1 loopthrough input, 4-output composite video DA • Exceptional DC to 120MHz frequency response and gain control • Dimensions: 3" x 0.6" x 2.65" • AC adaptor included \$169.00

LTVB/VDA-DI Video Brick Video Distribution Amplifier

- Similar to VB/VDA except provides a loopthrough differential input
- Ideal for situations in which source signal cannot be interrupted, but differential input and multiple unity gain outputs are needed • Takes advantage of the hum-canceling features inherent in the differential input design to help solve hum bar causing ground loop interference problems \$169.00

VB/VDA Video Distribution Amplifier

- 1-input, 4-output composite video DA • Exceptional DC to 120MHz frequency response and selectable single ended or differential (to alleviate ground loops) 75 ohm input • Dimensions: 3" x 0.6" x 2.65" • AC adaptor included. \$159.00

MVB/VDA4 Mini-Brick Video Distribution Amplifier

- Provides 4 unity gain outputs from a single 75 ohm internally terminated input • Low power requirements allow a 9V lithium battery (not included) to drive all 4 outputs with SMPTE bars for up to 2 days
- Ideal for ENG or EFP applications • Dimensions: 1.6"H x 1.3"W x 2.12"L (with battery and connectors) \$139.00

BRM Brick Rackmount System

- Holds up to 8VAC Brick series distribution amplifiers in a 1.75" H, 19" rackmount configuration • Compatible with all other VAC rackmount hardware allowing side-by-side mounting of Bricks and other VAC equipment • Available in ¼, ½, ¾ and full-rack widths, holding 1 or 2, 3 or 4, 5 or 6, and 7 or 8 Brick DAs, respectively • Each brick provides 4 outputs from 1 input • At its highest density of 8 DAs per 1.75" rack space, the Brick rack system offers 32 outputs

- VBRM8 7 or 8 Bricks. \$159.00
- VBRM6 5 or 6 Bricks. 135.00
- VBRM4 3 or 4 Bricks. 100.00
- VBRM2 1 or 2 Bricks. 65.00

Brick™ and Conventional Combinations

- VBRM6 and RM-¼ 5 or 6 Bricks. \$162.00
- VBRM4 and RM-¼ or RM-½ 3 or 4 Bricks. 118.00
- VBRM2 and RM-¼, RM-½ or RM-¾ 1 or 2 Bricks. 74.00

Conventional Rackmount

RM-¼, ½, ¾, 1 rackmount for conventional products (per rack width) . . \$30.00

VB/12V DC-DC Adaptor for 12VDC Applications

- Brick series distribution amplifiers require 12 to 24VAC or DC and their power supplies cannot share ground with their inputs or outputs • The adaptor provides a power supply isolated from the system's ground, allowing Bricks to operate properly in 12 to 24VAC systems \$49.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





SG-2 Genlockable RS-170A Blackburst and Sync Generator

▪ Provides 8 blackburst, 1 subcarrier and 6 pulse outputs ▪ Array of front panel indicators provides information about the sync tip level, SC/H phase and frequency of the signal at the genlock input to help diagnose any genlock problems that may arise ▪ 8 identical blackburst outputs are guaranteed to meet RS-170A specifications including SC/H phase, frequency accuracy, rise times and amplitudes from the moment the unit is plugged in ▪ Multiple outputs eliminate the need for a blackburst distribution amplifier ▪ Subcarrier and pulse outputs allow equipment requiring them to genlock to a composite video or blackburst signal by using the SG-2 as a means of conversion

SG-2..... \$987.00

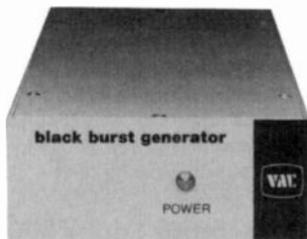
SG-2PG4 Genlockable Color Pattern, Blackburst and Sync Generator

Provides all of the features of the SG-2, plus: ▪ A selection of test patterns ▪ The pattern output provides 1 of 5 test patterns or blackburst, selected by front panel controls ▪ Two additional customized test patterns may be specified when the unit is ordered ▪ Includes S-Video (Y/C) and composite test pattern outputs ▪ Custom test patterns can use any configuration of the available colors in an 84H x 64V pixel array

SG-2PG4..... \$1495.00

BBG-2 Blackburst Generator

▪ Provides 9 identical blackburst outputs for system synchronization
 ▪ Includes a temperature compensated crystal time base to help guarantee compliance with RS-170A specifications including SC/H phase, frequency accuracy, rise times and amplitudes from the moment the unit is plugged in
 ▪ Multiple outputs eliminate the need for a blackburst distribution amplifier
 ▪ Burst, sync, blanking and setup levels are internally adjustable
 ▪ Specify 120VAC or 12VDC power supply when ordering



BBG-2..... \$495.00

VB/BBG Brick™ Blackburst Generator

▪ Provides 4 blackburst outputs guaranteed to meet RS-170A specifications including SC/H phase, frequency accuracy, rise times and amplitudes from the moment the unit is first powered ▪ Trimable burst level ▪ 12-24V, 100mA, ungrounded ▪ AC adaptor included

VB/BBG..... \$249.00

Absent Signal Alarms

▪ Prevent unnoticed loss of signal ▪ VA-2 and AA-2 alarms provide both audible and visible alarms whenever the input signal is lost ▪ Alarm continues to sound until loss of signal condition is corrected

AA-2 Audio signal loss alarm..... \$220.00
 VA-2 Video signal loss alarm..... 220.00

VB/AVS Automatic Video Switch

▪ For installations that require automatic switching when a video feed becomes active or inactive ▪ Automatically switches to alternate source if main source fails ▪ Senses sync-tips at main input ▪ Monitors H-sync-tips at its main input ▪ When main sync tip level falls too low, alternate input is routed to the output ▪ Both video inputs are loopthrough and differential to help avoid ground loop interference ▪ 8-pin remote control port allows user to select automatic or manual mode ▪ Unit comes with a pair of removable switches plugged into the port to allow local operation

VB/AVS..... \$219.00

VB/4X1 Video Switch

▪ For manual video switching ▪ 4 inputs and 1 output, plus remote or local control port ▪ Active input selected by an 8-pin port ▪ Switches for local operation installed in the port at the factory but can be removed for hard-wired remote or daisy-chaining of units ▪ All video inputs are differential to help avoid ground loop interference

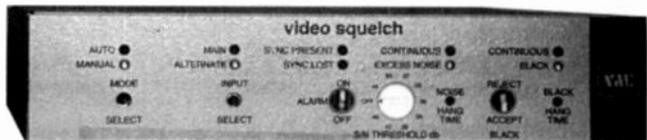
VB/4X1..... \$199.00

VMPS-2 Video Monitor Power Switch

▪ Automatically switches power off whenever the video sync-tip amplitude at the input drops below 21 IRE and returns power when the input sync-tip returns to above 28 IRE
 ▪ The loopthrough input allows unit to be easily inserted in the line between the signal source and destination
 ▪ Applies power only when a signal is present
 ▪ Installs easily between video source and destination



VMPS-2..... \$220.00



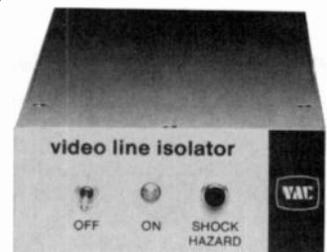
VS-3 Video Squelch

▪ When unsatisfactory degradation or loss of main video occurs, this unit automatically switches to alternate video source feeds and provides an alarm to alert of the condition ▪ Detects excess noise and loss of H-sync from main video source ▪ It can accept or reject black from main video source ▪ A manual mode, where either main or alternate inputs can be selected for output, can be invoked by front panel control or the rear panel remote control port ▪ The loopthrough inputs allow each signal to be routed to additional equipment

VS-3..... \$1095.00

VL-2 Video Line Isolator

▪ Removes ground loop generated hum bars from the system ▪ Optical coupling provides 80dB of ground noise reduction ▪ 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 ▪ Also available with an audio isolator so both audio and video can be distributed through the same isolated path



VL-2A Video line isolator with audio option..... \$395.00
 VL-2 Video line isolator..... 340.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





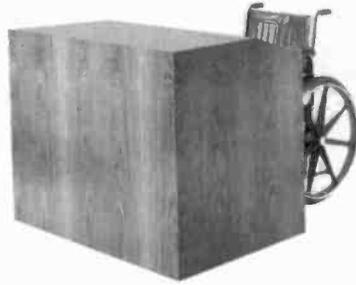
VanSan Corporation



LECTERNS

Omni Lecterns

- Floor model lectern
- "Lectrajust" height control lets lectern move quietly and smoothly from wheelchair to full standing use
- Standard finish is book-matched natural oak or walnut veneer
- Work light and timer/clock are available options
- 40" width
- Available for the Diplomat, Conference or Classic Series lecterns

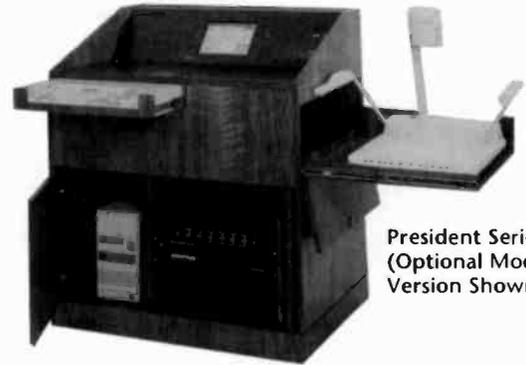


Omni \$4830.00-5195.00

Encore Series 300 Lecterns

- Floor model lectern
- Versatile lecterns with 2-part construction that allows the top section to be removed for tabletop use
- Clean architectural lines accented 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 sound system and "Lectrajust" height control
- Available in 25", 32" and 40" widths

Encore Series 300 \$2170.00-4490.00



President Series (Optional Modified Version Shown)



Direction Series 2700 Lecterns

- Floor model lectern
- Series 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 sound system
- 28", 35½" and 46" widths available

Direction Series 2700 \$3295.00-5675.00

President Series 700 Lecterns

- Floor model lectern
- Deep reveal is a perfect accent to a modern wood decor
- Available with "Lectrajust" height control and/or self-contained sound system
- Includes light and digital clock plus recessed wheels for easy mobility
- 25", 32" and 40" widths available

President Series 700 \$2075.00-4410.00

Classic Series 600 Lecterns

- Floor model lectern
- Smooth wraparound curved edges expose the book-matched veneer
- Includes recessed wheels, light and digital clock
- Available with "Lectrajust" height control and self-contained sound system
- 25", 32" and 40" widths available

Classic Series 600 \$2540.00-5340.00



Conference Series 500 Lecterns

- Floor model lectern
- 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 sound system
- 25", 32" and 40" widths available

Conference Series 500 . . . \$1615.00-2915.00



Executive Series 400 Lecterns

- Floor model lectern
- Gently radiused edges, create a solidity of both form and function
- Equipped with work light and timer/clock
- Mobility is assured with recessed locking casters
- Standard finishes are natural oak and walnut; other finishes optional
- Available with "Lectrajust" height control and AC sound system
- Available in 25", 32" and 40" widths

Executive Series 400 \$2280.00-5160.00

Diplomat Series 200 Lecterns

- Floor model lectern
- Covered in carpet to match your interior
- Chamfered corners and a plinth base reflect the surface it stands on
- Includes work surface light and recessed wheels for easy mobility
- Available with self-contained sound system
- 25" wide

Diplomat Series 200 \$1260.00-1985.00

Table Model Lecterns

- 19", 24", 25" and 28" widths
- Available with light, clock, sound system, carpeted sides or acrylic construction

Table Model \$775.00-2540.00

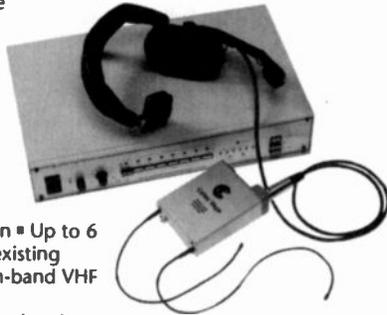
ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





Q+ VHF FM Full-Duplex Belt-Pack Wireless Intercom Systems

■ Systems feature: single-package wireless belt-pack remote, simplified operation, near-program-quality audio, improved operating range, 115 or 230VAC or DC operation
 ■ System packages include base station receiver and transmitter mules, portable belt-pack units, two 9V batteries per belt-pack
 ■ Easy to use full-duplex operation ■ Up to 6 portables per system ■ Ties into existing wired intercom ■ Low-noise, high-band VHF frequencies ■ Crystal-clear radio communications ■ Remote belt-pack units similar in size/configuration to conventional wired-intercom belt-packs
 ■ QTR-2 portable has only 2 operating controls: a combined on/off and headset volume control, and a pushbutton audio control switch (internally programmable for push-to-mute with continuous transmit, or push-to-talk with transmitter and audio "off" until pushed) ■ 168X headset (using a Beyer DT-108) plugs into heavy-duty connector on the QTR-2 ■ QTR-2 also accepts Clear-Com headsets or other headsets with a 4-pin female XLR connector ■ Headsets plug directly into front panel of master station ■ QX-6A master station provides a full set of convenient controls for monitoring and troubleshooting ■ Master station has universal intercom interface, enabling the portables to communicate with other stations and systems ■ 2 master stations can be linked together for full-duplex communications between up to 12 portables, operators plugged into master stations and stations on connected systems ■ Frequency range: 150MHz-216MHz



- Q+/3 3-up Q+ system, consisting of a QX-6A master station with 1 TQX-6 transmitter module, 3 RQX-6 receiver modules and two 121BNC antennas, plus 3 QTR-2 belt-pack remotes \$8,352.00
- Q+/2 2-up Q+ system, consisting of a QX-6A master station with 1 TQX-6 transmitter module, 2 RQX-6 receiver modules and two 121BNC antennas, plus 2 QTR-2 belt-pack remotes 6,663.00
- Q+/1 1-up Q+ system, consisting of a QX-6A master station with 1 TQX-6 transmitter module, 1 RQX-6 receiver module and two 121BNC antennas, plus 1 QTR-2 belt-pack remote 4,974.00

Remotes, Master Stations and Spare Modules

- QX-600 Spare master station without transmitter or receiver modules, but with two 121BNC whip antennas and full audio interfacing circuitry \$3,545.00
- QX-6A Spare master station without transmitter or receiver modules, but with two 121BNC whip antennas and full audio interfacing circuitry 2,907.00
- QTR-600 Belt-pack remote with pushbutton audio control switch, BNC antenna connectors, one 224 limp wire BNC VHF antenna, 1 AN-734 limp wire BNC-UHF antenna and two 9V batteries 1,623.00
- QTR-2/BN QTR-2 with BNC connectors and RS-1 pushbutton audio control switch; requires two 124 or 224 antennas . . . 1,287.00
- QTR-2 Spare (or nonsystem) belt-pack remote with pushbutton audio control switch and 2 attached antennas (includes two 9V batteries). 1,271.00
- RQX-600 Spare/add-on receiver module for QX-600. 425.00
- RQX-6 Spare/add-on receiver module for QX-6A (6 max.). . . . 419.00
- TQX-6 Spare transmitter module for QX-6A or QX-600 378.00
- PL-2D 2-frequency miniature VHF monitor/receiver for listen-only; includes one 9V battery. Requires headset . . . 291.00
- PL-2S Same as the PL-2D, but with 1 frequency. 257.00
- RS-1 Factory installed at time of order. Rocker switch option (momentary in 1-position and locked in the other) for QTR-2 and QTR-2/BNC; duplicates push-to-talk or push-to-mute function (as selected internally) of momentary pushbutton switch normally supplied with belt-pack remote 20.00
- RS-2 Factory installed at time of order. Rocker switch option for QTR-600; duplicates push-to-talk or push-to-mute function. 20.00

Q600 UHF Plus VHF Full-Duplex Systems with Master Station

- Q600/1 1-up Q600 system consisting of a QX-600 master station with 1 TQX-6 transmitter module, 1 RQX-600 receiver module, one 121BNC antenna, 1 AN-721 UHF whip antenna and 1 QTR-600 belt-pack remote. \$ 5,970.00
- Q600/6 6-up Q600 system similar to the Q600/1, but with 6 QTR-600s and 6 RQX-600s. 16,208.00
- Q600/5 5-up Q600 system similar to the Q600/1, but with 5 QTR-600s and 5 RQX-600s. 14,160.00
- Q600/4 4-up Q600 system similar to the Q600/1, but with 4 QTR-600s and 4 RQX-600s. 12,113.00
- Q600/3 3-up Q600 system similar to the Q600/1, but with 3 QTR-600s and 3 RQX-600s. 10,065.00
- Q600/2 2-up Q600 system similar to the Q600/1, but with 2 QTR-600s and 2 RQX-600s. 8,018.00

Q+ VHF Full-Duplex Systems With Master Station

- Q+/6 6-up Q+ system, consisting of a QX-6A master station with 1 TQX-6 transmitter module, 6 RQX-6 receiver modules and two 121BNC antennas, plus 6 QTR-2 belt-pack remotes \$13,419.00
- Q+/5 5-up Q+ system, consisting of a QX-6A master station with 1 TQX-6 transmitter module, 5 RQX-6 receiver modules and two 121BNC antennas, plus 5 QTR-2 belt-pack remotes 11,730.00
- Q+/4 4-up Q+ system, consisting of a QX-6A master station with 1 TQX-6 transmitter module, 4 RQX-6 receiver modules and two 121BNC antennas, plus 4 QTR-2 belt-pack remotes 10,041.00

Full-Duplex VHF Man-to-Man System

- Q+/M 2-up Q+ system with 2 QTR-1 belt-pack remotes . . . \$2,540.00

Accessories

- 168X Beyer DT-108 headset with 166X connector installed for QTR-2 \$486.00
- 179X Dynatech lightweight headset with dynamic microphone, 166X connector installed; for use with QTR-2 387.00
- 171X Clear-Com CC-85 single-muff headset with 166X connector installed for QTR-2 and remotes 206.00
- 281 Rechargeable battery adaptor for QTR-2/-2/BNC. . . . 120.00
- 176 Sony MDR-E5 single-muff over-the-ear earpiece. 48.00
- 224 Flexible (limp wire) VHF antenna for QTR-2/BNC. 38.00
- AN-734 Flexible (limp wire) UHF antenna with BNC connector for QTR-600. 32.00
- 173 Telex SEB-1 single earbud with cord for PL-2 models. . . . 27.00
- 166X Audio connector for QTR-2 or QTR-2/BNC. 12.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





Pro 2 Wireless Microphone Systems

Pro 2 Diversity Wireless Microphone Systems

PRO 2-HE	Handheld system; T-36 transmitter and R-32A diversity receiver with accessories . . .	\$2574.00
PRO 2-HN	Handheld system; T-38 transmitter and R-32A diversity receiver with accessories . . .	2574.00
PRO 2-BPM	Body-pack system; T-37 transmitter and R-32A diversity receiver with accessories, with LM-206X miniature omnidirectional electret mic	2247.00
PRO 2-BP	Body-pack system with all accessories except mic	2144.00

Pro 2 Receivers and Transmitters

R-32A	Diversity Pro 2 receiver with Dynex III; includes two 120U whip antennas	\$1475.00
T-36	Dynex III handheld transmitter with E-V BK-1 element; includes 9V alkaline battery, 126 mic stand holder and C-158 protective case . . .	1100.00
T-38	Same as T-36 transmitter, but with E-V N/D457B dynamic microphone element; includes 9V alkaline battery, 126 mic stand holder and C-158 protective case	1100.00
T-37	Dynex III body-pack transmitter; includes C-157 protective case, 9V alkaline battery, 119X miniature XLR audio input plug, 153A heavy-duty belt clip	669.00

AX-20 Systems

AX-20 HE	Handheld system consisting of a T-28 transmitter, R-22 receiver and accessories . .	\$1643.00
AX-20 HN	Handheld system consisting of a T-24 transmitter, R-22 receiver and accessories . .	1643.00
AX-20 HV	Handheld system consisting of a T-29 transmitter, R-22 receiver and accessories . .	1643.00
AX-20 BPM	Body-pack system consisting of a T-25 transmitter, R-22 receiver, LM-206X omnidirectional electret condenser lapel microphone and accessories	1526.00
AX-20 BP	Body-pack system with accessories, consisting of T-25 transmitter and R-22 receiver . . .	1422.00
AX-20 LBP	Same as AX-20 BP except body-pack has a Lemo connector	1470.00

VX-20 Wireless Microphone Systems

VX-20 HE	Handheld system; T-28 transmitter and R-27 receiver with accessories	\$1692.00
VX-20 HN	Handheld system; T-24 transmitter and R-27 receiver with accessories	1692.00
VX-20 HV	Handheld system; T-29 transmitter and R-27 receiver with accessories	1692.00
VX-20 BPM	Body-pack system with lapel microphone; includes T-25 transmitter and R-27 receiver with accessories and LM-206X omnidirectional electret condenser mic	1575.00
VX-20 BP	Body-pack system with accessories, consisting of T-25 and R-27	1472.00
VX-20 LBP	Same as VX-20 BP, except body-pack has a Lemo connector	1518.00

R-27	Miniature portable receiver with Dynex III; includes 124 whip antenna, 9V battery, Velcro mounting strips, soft-zippered protective case . .	\$920.00
R-22	Full-width rackmounting diversity receiver with DYNEX®III and dual-mode squelch circuitry; for use with T-24/25/26/28/29; includes 2 whip antennas	870.00
T-24	Dynex III handheld transmitter with E-V N/D757B Series III cardioid dynamic element; includes 9V battery	773.00
T-29	Same as T-24, but with Vega K4 cardioid condenser element	773.00
T-28	Dynex III handheld transmitter with E-V BK-1 element; includes 9V battery	773.00
T-25	Dynex III body-pack transmitter; includes C-157 protective case, 9V alkaline battery, 153A heavy-duty clip	552.00
T-26	Same as T-25, but with 4-pin Lemo connector, compatible with existing Vega lavalier mics and accessories wired with Lemo plugs; includes 153A heavy-duty clip, 9V battery	600.00

U2020 100-Channel UHF Wireless System

U2020 Systems and Components

U2020H7	Handheld system with N/D757B mic head . .	\$1028.00
U2020H5	Handheld system with N/D557 mic head . .	974.00
U2020BPH	Body-pack system with headset mic	953.00
U2020BPI	Body-pack system with instrument cable . .	900.00
U2020BPM	Body-pack system with omni lavalier mic . .	900.00

Combo Systems

U2020BP/H7	System with both BP/lavalier and HH/757B transmitters	\$1305.00
U2020BP/H5	System with both BP/lavalier and HH/557 transmitters	1253.00

Components

R-2020	100-channel frequency selectable UHF receiver	\$653.00
HT-2020/7	Handheld transmitter with N/D757B mic head . .	533.00



HT-2020/5	Handheld transmitter with N/D557 mic head . .	480.00
BT-2020/H	Body-pack transmitter with TA4 connector and headset mic	420.00
BT-2020/I	Body-pack transmitter with TA4 connector and instrument cable	368.00
BT-2020/M	Body-pack transmitter with TA4 connector and omni lavalier mic	368.00
Multicoupler		
MC-2020	Multicoupler for up to 4 R-2020 UHF receivers; not for use with any other UHF receiver . .	\$495.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





ViDStar Graphics Video Billboard and Super Controller

▪ ViDStar meets the challenge of the most demanding text/titling and graphics creation and display scheduling needs: advertising and promotional displays, electronic billboards, employee information, public access channel bulletin boards ▪ The *CreationStation™* software/*DisplayStation* hardware package can be operated in real time; or graphic displays can be scheduled in advance, allowing for automated, unsupervised operation ▪ The Windows interface provides easy-to-follow set of menus that guide the operator through every step of graphics creation, scheduling and remote control ▪ *CreationStation* software runs intuitive, Windows based message generation, scheduling and machine control software ▪ For fast, easy operation, the user engineered interface provides hypertext search and help files throughout the application ▪ Hardware requirements: 486 CPU, 8M bytes RAM, Windows 3.1/Windows 95, SVGA card, modem, network card or RS-485 ▪ 20M bytes available disk space for program and data storage ▪ WYSIWYG message creation using over 30 True Type™ fonts ▪ Up to 15 text colors per display ▪ Over 50 predefined textured backgrounds ▪ Import graphics via GIF, TIFF, PCX, BMP or TGA file formats

ViDStar Display Station

▪ Over 2Gb hard disk storage ▪ Automatically reboots in case of power outage ▪ Multitasking software ▪ Composite video out with genlock ▪ 2 serial ports ▪ Time/date, count up/down displays ▪ 19" rackmount chassis

Advanced Features

▪ Serial control for up to 64 designated devices for broadcast quality automated playback with pre-roll and queueing option ▪ GPI option for simple contract closure control of decks, switchers, or other devices ▪ File management system safeguards against accidental deletion of files in the active schedule; allows for easy removal of old files to free up disk space ▪ Spell Checker built into the *CreationStation* software ▪ *DisplayStation* has a durable rackmount industrial housing

AdamLink Scheduler™

▪ Simple folder and page scheduling setup ▪ Graphic and page transition previews ▪ Auto-cancelling time slots

- DS ViDStar *Display Station* \$4995.00
- CS ViDStar *CreationStation* Software 1495.00
- WI Weather Interface 1495.00
- VNC ViDStar NOAA Crawl Inserter 1495.00

System 900 Multichannel Keyer

▪ Combines model CG840 and 880 Vertical Interval Routing Switcher
 ▪ Easy to use, operating 7 discrete video channels in basic configuration
 ▪ Provides precise control of specific channel overlay sequences and dwell time per channel ▪ Can be controlled directly from its included keyboard or remotely via optional DOS or Windows based software \$2995.00

800 Series Character Generators

▪ Compact, easy to use systems for any application: video promotions, announcements and emergency bulletin displays ▪ All systems include a real time, nonvolatile date/time display ▪ 50 µs font resolution and a crawl line ▪ All systems except the 830 are capable of PC remote access, external event scheduling via a 12 TTL logic line general purpose interface ▪ All systems include the following features: 4 standard fonts, bordered or nonbordered characters; QWERTY keyboard; 3-speed text crawl line; nonvolatile message/page storage in battery-backed RAM and 7 serial ports (except the 830) ▪ All are 19", 1RU, lightweight with rackmount ears

- System 800CI-C Color crawl inserter \$1695.00
- System 840 Color messaging system with crawl line. . 1695.00
- System 800NC NOAA crawl inserter 1495.00
- System 800A Monochrome annotation unit 1495.00
- System 800CI-M Monochrome crawl inserter 1295.00
- System 830E Color billboard with crawl line. 1295.00
- System 810 Page titler with crawl line 1295.00
- System 830 Color billboard with crawl line. 995.00
- PCS/WIN PC Remote Access software (Windows) . . 450.00



System 830E MicroPlayback System

▪ A complete turnkey system including character generator, control software, GPI interface, and VHS deck \$2495.00

System 2000 CG-2000 Character Generator

▪ Integrated, versatile events controller and full color character generator system ▪ Off-line edit channel ▪ Genlock ▪ Up to 8 fonts of 128 characters each ▪ Diskette memory ▪ Display regions
 ▪ Unattended automation ▪ Real time programmable controller
 ▪ 512-color palette ▪ Character sizing ▪ Help mode ▪ Downloadable software and fonts ▪ Animation ▪ External devices may be controlled in real time in conjunction with the display of text and video
 ▪ Automated operation achieved by means of user prepared control files ▪ Event timing can be for any second, minute, hour, day, date, month and year ▪ Logging capability is available to record the exact time at which an event was initiated ▪ In addition to keyboard input of data, the System 2000 accepts weather transducers ▪ Multiple System 2000 units can be interconnected locally or remotely by means of telephone modems. \$3995.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



Newstation™ Family of Desktop Broadcasting Software

■ 4 integrated software packages comprise the line: *newstation Producer™*, *newstation Player™*, *newstation Editor™* and *newstation Viewer™* ■ *Newstation Producer* and *Player* are sold as bundles that include software, Videofax S-VGA Combo board for analog video capture, overlay and passthrough features and NTSC output ■ Also available as turnkey systems that include required PC hardware and systems integration ■ *Newstation Editor* and *Viewer* are software-only products

Newstation Producer Software

■ For authoring and control of single or multisite broadcasting networks with 1 or more remote *newstation Player* systems ■ 3 powerful modules are used to create, schedule and broadcast multimedia presentations

Create

■ Smooth anti-aliased, word-wrapped text with any TrueType font ■ Import text from Microsoft Word® and other Windows™ applications ■ Text effects including crawls over graphics and video ■ Import images, graphics and clip art from any CD-ROM, Adobe Photoshop™, Microsoft Paint®, Corel® and the Web ■ Integrate and link with your choice of Microsoft Windows™ 95 paint and audio software ■ Palette of 32,000 colors with shading ■ Exciting digital effects including fades, wipes and transitions ■ Preview slide sequences with easy next, back and select functions ■ Dynamic scaling of analog and digital video ■ Layer video images over graphic images ■ Record multiple still images from any live video source in real time and insert them into presentations* ■ Select, size and position digital motion video segments from AVI and MPEG files ■ Analog video pass-through for video input from cable, tape, videoconferencing feed, built-in TV tuner or any other video source* ■ Live "Video-in-a-Window"™ ■ Video device control for external media sources including laserdisc players, VCRs, digital video servers, A/V switchers, event controllers and videowalls ■ Set slide timing of individual slides to SMPTE time code format or link to video segment length ■ Individually link slide timing to audio segments† ■ Incorporate and control CD quality stereo audio from WAV files† ■ Record CD audio from disc or microphone and insert into presentations† ■ Fast and easy presentation organization using *newstation Slidestrip™* ■ Free media library with real time media finder for superb organization and presentation of all elements in each show ■ Modify shows created with *newstation Editor* software

*Optional Videofax S-VGA Combo board required

†Sound Blaster compatible audio board required

Schedule

■ Schedule shows, up to 3 months in advance, to play by time of day or in a loop ■ Schedule shows created and received from remote *newstation Editors/Producers* ■ Build daily schedules for any date ■ Attach different daily schedules for *newstation Players* from a central *newstation Producer* ■ Schedule device control for tape, laserdisc and switcher inputs and outputs ■ Set default daily schedules to play when a custom schedule is not required ■ Remote control of emergency scheduling

Broadcast

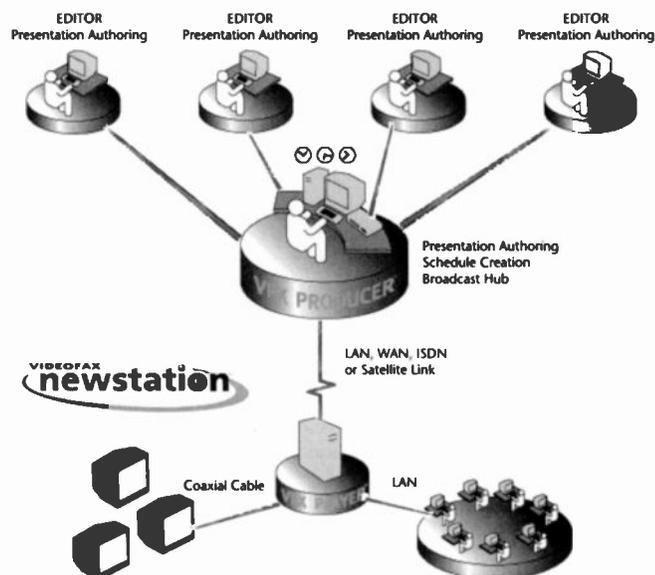
■ Unattended operation allows for broadcast during off-peak hours ■ Send shows and schedules to multiple remote *newstation* systems with device control information via modem, RS-232, LAN and satellite ■ Send RS-232 commands for analog or digital audio and video devices ■ Remote systems for emergency message schedules

Receive and Playback

■ Automated schedule driven playback ■ Background updating allows for continuous, uninterrupted viewing ■ Supports a choice of S-VGA or optional NTSC or PAL playback ■ Playback to LAN based desktop PCs via *newstation Viewer* software

Minimum Hardware Configuration

■ Pentium MMX ■ 32M bytes RAM ■ 2.0G byte hard drive ■ 28.8bps modem ■ NIC card for LAN (optional) ■ 4X CD-ROM ■ Sound Blaster compatible audio card ■ Keyboard and mouse ■ MS Win 95 and Plus! Pack (CD-ROM) ■ S-VGA board (2M byte high color) ■ MPEG MCI driver ■ Hard drive space program requirement 50M bytes, plus a minimum of 450M bytes for show storage ■ Scan converter or S-VGA video card for NTSC out



Newstation Player Software

■ For use as a multiple channel or multiple site network where each remote channel/site has its own *newstation Player* ■ Each Player provides one of a selection of viewing possibilities dedicated to different audiences ■ Receives and stores shows from the *newstation Producer* and plays them through a local network of television monitors and/or *newstation Viewer* PC displays ■ Acts as a communications and show storage server for *newstation Viewers* connected on the same local area network while simultaneously playing shows

Receive and Playback

■ Optimized for unattended operation ■ Automated schedule driven playback ■ Background updating for continuous, uninterrupted viewing ■ Auto boot feature for resumption of uninterrupted scheduled broadcasts in case of power failure ■ Supports a choice of S-VGA or optional NTSC or PAL playback ■ Receive shows and schedules from remote *newstation Producer* systems by modem, ISDN, RS-232 connection, LAN and satellite ■ Receive daily, weekly or monthly schedules automatically ■ Receive shows by time of day or in a loop ■ Receive device control information from *newstation Producer* to control commands for analog or digital audio and video devices ■ Playback on LAN based desktops via *newstation Viewer*

Minimum Hardware Configuration

■ Pentium MMX ■ 32M bytes RAM ■ 1.6G byte hard drive ■ 28.8bps modem ■ NIC card for LAN (optional) ■ 4X CD-ROM ■ Sound Blaster compatible audio card ■ Keyboard and mouse ■ MS Win. 95 and Plus! Pack (CD-ROM) ■ S-VGA board (2M byte high color) ■ MPEG MCI driver ■ Hard drive space program requirement 50M bytes, plus a minimum of 450M bytes for show storage ■ Scan converter or S-VGA video card for NTSC out

Newstation Editor Software

■ Create/edit shows ■ Use *newstation Producers* for control, scheduling and broadcast purposes ■ Allows multiple people and workgroups to contribute creative content ■ Provides all major "Create" features of *newstation Producer*

Newstation Viewer Software

■ For use in playing shows on Windows 95 workstations which are connected by a local area network to a *newstation Player* ■ For interactive viewing, the user can select one of multiple channels of programming ■ Selection can be viewed either in autoplay mode (where the show plays until the user selects a pause or another show) or on a slide-by-slide basis ■ Works in conjunction with *newstation Player* ■ LAN based delivery

Call For Pricing

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



OZ™ Editing Systems for Microsoft® Windows™

▪ Video editing software ▪ Uses V-LAN™ network ▪ User can combine videotape/videodisc devices with a video switcher and audio mixer for frame-accurate roll editing and single-frame animation ▪ User-friendly screen interface ▪ Feature-packed toolbar ▪ Edit Decision List allows up to 10,000 events and features CMX lost translation ▪ Expandable ▪ OZ Clip Bins/Clip Data Base logging system for video source material ▪ VDI™ (Virtual Device Interface) provides advanced control of DVEs ▪ OZ Selectable Control Panels provide instant access to transition, key layer, audio, GPI trigger information, edit list management options ▪ OZ Advanced Windows List Management On-screen Edit Decision List displays current edit information ▪ Clip Bin Database, Park and Perform editing, Reel Library functionality standard in all 3 available OZ versions

OZ-CUTS Control of 1 or 2 sources for logging/cuts editing, A/B Roll using GPI trigger for video switcher control. Upgradeable

OZ-A/B ROLL Supports V-LAN/VDI interfaces to control a video switcher and audio mixer with 2 source devices for A/B Roll editing. Upgradeable

OZ-PCE Features of OZ-A/B Roll plus: A/B/C/D roll editing (4 sources per edit of any of 31 devices on V-LAN Network). Advanced EDL management



VLX-i-DT

VLX*i* CONTROLLERS

▪ V-LAN compatible device control systems ▪ All necessary transmitter/receiver hardware may be contained in a single unit ▪ Boards require installation into 1 of 3 available VLX*i* chassis

Single Module Boards

- VLX-i-T** Contains 1 transmitter
- VLX-i-R** Contains 1 receiver for control of a serial/parallel device
- VLX-i-GT** Contains 6 programmable General Purpose Interface (GPI) inputs/outputs. Can be reconfigured as a receiver

Dual Module Boards

- VLX-i-T/R** Contains 1 transmitter and 1 serial receiver
- VLX-i-2R** Contains 2 serial receivers

Triple Module Boards

- VLX-i-T/2R** Contains 1 transmitter and 2 serial receivers
- VLX-i-3R** Contains 3 serial receivers

Quad Module Board

- VLX-i-4R** Contains 4 serial receivers

Options

- VLX-i-SM** LTC time code reader/generator for some VLX*i* board receivers
- VLX-i-HD** Modification to transmitters on a VLX-i-T allowing user to switch between high definition and standard device control

Available Chassis for VLX*i* Boards

- Desktop/drive bay/rackmount applications ▪ Reconfigurable as receivers
- Compatible with V-LAN 4.0 ▪ Frame-accurate animation/editing control
- Interface major graphics, animation, multimedia packages ▪ Control serial and parallel VTRs/laserdiscs/digital disks/video switchers ▪ Downloadable device drivers ▪ Support 4-/8-field color framing ▪ Support NTSC/PAL
- Drive bay configurations remove hardware from computer bus space
- VLX-i-DB** Allows installation of any VLX*i* board into the drive bay of an IBM compatible computer
- VLX-i-DT** Provides desktop enclosure for any VLX*i* board
- VLX-i-RM** Provides a 19" rackmountable enclosure for any 2 VLX*i* boards

Express®/Express CX™ Cross-Platform Single-Device Controllers

▪ Time code/control track ▪ Downloadable drivers control VTRs/DDRs/DATs ▪ Frame-accurate controls of applicable devices ▪ Interfaces to animation/ multimedia presentation/authoring programs ▪ Interfaces with rotoscoping/ special effects software ▪ V-LAN 4.0 compatible

Express Controls RS-232/422/VISCA industrial, professional, and broadcast videotape, videodisc, digital disk recorders supported by the V-LAN network

Express CX Controls RS-232/422/VISCA serial devices, Sony Control L, Panasonic Control M

V-LAN HUB Router and Synchronizer

▪ Allows remote assignment/control of devices in multiple locations
 ▪ Accepts inputs from up to 8 workstations ▪ Use to send data to remote V-LAN transmitters

V-LAN HUB Routing Module

▪ 8 unit rackmount chassis and power supply ▪ Houses up to 16 HUB-4R modules ▪ Controlled via RS-232 serial port ▪ Supports all major VTRs/digital disk recorders/video switchers/audio mixers/DAT machines

HUB-4R Boards

▪ Each has 4 V-LAN receivers ▪ Can control 4 serial devices ▪ Reassignable node numbers ▪ Receivers are software downloadable and can be assigned to different transmitters ▪ Include V-LAN software utilities/downloadable device drivers

HUB Routing Utility Program

▪ Software assignment/reassignment of transmitter, internal receivers, node numbers ▪ User can visualize which machines/node numbers are assigned to each V-LAN Network

Animax and PC ISA IBM/Amiga V-LAN Hardware

▪ V-LAN 4.0 compatible ▪ Frame-accurate animation/editing control
 ▪ Interfaces major graphics/animation/multimedia packages ▪ Controls serial VTRs/laserdiscs/digital disks/switchers ▪ Device-specific driver software
 ▪ Supports 4-/8-field color framing ▪ Contains loophrough reference

- PC-T™** V-LAN compatible transmitter
- PC-R™** Single V-LAN compatible receiver
- Animax™** ISA board with 1 transmitter, 1 compatible receiver
- PC-2R™** Single plug-in board with 2 receivers
- Animax-2™** Single plug-in board with 1 transmitter
- PC-3R™** Single plug-in board with 3 receivers



V-LAN CX™

▪ V-LAN control for "prosumer" devices ▪ Receiver module designed to provide control of "prosumer" selected videotape recorders/camcorders
 ▪ Works with any frame-accurate V-LAN compatible receiver

Express-800™

▪ V-LAN Control for JVC Recorders ▪ Single board module for desktop video editing systems ▪ Plugs into VTR option slot and provides full VTR control ▪ May be a transceiver for single machine operation or a V-LAN compatible receiver on a V-LAN network

Call For Pricing

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



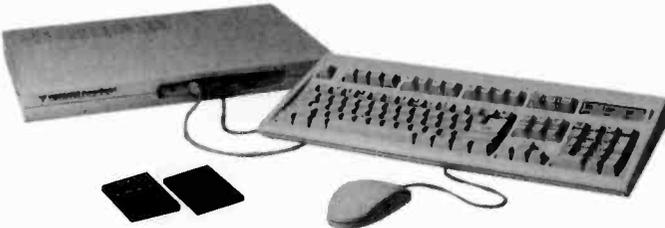


PowerScript Studio™ Character Generator

- Advanced stand-alone character generator producing fully anti-aliased characters and graphics
- Models are available in both PAL/NTSC standards with optional component I/O's and feature 10-bit sampling with 4:2:2 component architecture
- Incorporates PostScript® character generation, extensive graphics capabilities, roll, crawl, computer connectivity and system timing controls
- Text can be arbitrarily sized, rotated, skewed, stretched without using a separate computer to render
- 35 PostScript fonts are standard and users can add additional PostScript fonts from their desktop computer
- Characters can be keyed over a background video signal or solid color background with variable transparency
- Includes serial and Ethernet connections and supports standard protocols (FTP and TCP/IP) for easy network connection, including connection to the Internet
- Display graphics created on standard computing platforms from a variety of graphics application programs
- Accepts most EPS-format graphics
- Specifically designed for high-end studio applications
- Models include timing adjustments for keying applications and a power-fail bypass relay \$4000.00
- SRP for PowerScript Studio with analog component I/O's . . . 5000.00

PowerScript Communicator Software

- Software package that enhances PowerScript's functionality
- Links up to 10 PowerScript CGs to a Windows 95/3.1 based computer
- Allows PowerScript to interface with PCs and networks
- Connects via standard serial (RS-232) and Ethernet connections
- Supports Internet protocols, making it easy to connect and operate using standard networking hardware and software
- File management interface lets user easily transfer files between PowerScript units and PCS
- Allows user to easily copy text from word processor, e-mail or other text-based applications and create a PowerScript page
- Can capture screen shots of PowerScript pages and attach them to PC-based files, letting the user quickly look through and find projects
- Users can schedule up to 99 different events on 10 different PowerScripts to play projects at any specified date and time, by creating a series of timed triggers
- Includes remote control capability \$599.00

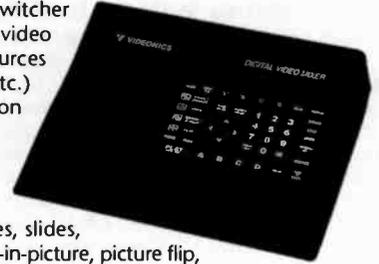


PS-1000 Powerscript Character/Graphics Generator With TBC

- High resolution anti-aliased CG, keyer and TBC
- PostScript™ titles and graphics
- Character and graphics animation
- Works stand-alone or with computer connection
- Built-in clock/calendar displays current date, time or elapsed time counter in a wide range of formats
- GPI automatically plays a sequence of titles when a pulse appears at one of the 2 GPI inports
- Displays complex graphics created with standard Macintosh, Windows, DOS, Amiga and UNIX based graphics programs
- Standard video test patterns
- Desktop or rackmount
- 17ns effective pixel resolution
- 4:2:2 digital video, oversamples at 20MHz using 10-bit luminance sampling
- 35 built-in fonts
- 2 Type III PC card (PCMCIA) slots
- RS-232 serial port
- Internal linear keyer superimposes characters and graphics on Y/C or composite sources
- Powerful object based drawing tool and text editor
- Characters can be rotated, stretched horizontally or vertically or skewed at any angle
- Over 4 million colors \$3000.00

MX-1 Digital Video Mixer

- 4-input synchronized video switcher
- Digital synchronizer mixes video images from virtually any 2 sources (cameras, VCRs, live feeds, etc.)
- Dual-field time base correction (TBC) automatically corrects time base
- Meets broadcast video standards (FCC and RS-170A)
- Over 200 video effects, including: fade, wipes, slides, dissolve (mix), zoom, picture-in-picture, picture flip, luminance and chromakey, superimpose, mosaic, strobe, freeze frame, posterization (paint), solarization, negative, color inverse, zoom, filter
- Chromakey keys on any color
- Compose "paints" a video collage: combines lines, rectangles and borders in any color with still or moving frames
- Background color generator creates solid color background behind effects
- Border color generator creates borders between wipes
- Mix or fade audio, with video transitions or independently
- Preview display shows all 4 inputs at once, at reduced frame rate (depending on how many inputs are live)
- Manual transitions using T-bar or automatic transitions (9 speeds) using Auto-Take
- GPI trigger input
- Sequencer memorizes and repeats user actions automatically
- S-Video (Y/C) and composite (RCA-style) video inputs on all 4 channels and on output
- Color bar and blackburst generators \$1199.00



TM-3000 Video TitleMaker 3000 Character Generator

- High resolution titles (720 x 480) created with an easy to use stand-alone keyboard
- Over 200 font combinations, including special and accented characters that support 21 different languages
- Separate full-function keyboard offers easy access to special effects and editing functions
- Stores 16,000 characters on hundreds of pages
- Multidirectional 8-speed scroll and crawl
- 24 special effects including fades, wipes, scroll and crawl and see-through effects
- Over 1 million colors
- Genlockable
- On-screen text editing
- Compatible with all video sources and tape formats \$799.00

TM-2000 Video TitleMaker 2000 Character Generator

- High resolution: 720 pixels per line, 480 lines (70ns)
- 8000-character memory; hundreds of pages
- Page index screen allows easy page identification and access
- 92 size and font combinations
- Drop shadow, outline, 3 grades of bold, variable character spacing
- Over 1 million colors, custom color palette
- 20 special effects (fades/wipes) in 8 speeds each
- Multidirectional scroll and crawl (each in 8 speeds)
- Superimpose (genlock): Title over video, or use video for letters, outlines or borders
- Separate selection of colors and patterns for letters, outline/shadow colors can also change for each line
- 32 rainbow and pixel patterns, including animated patterns, can be used on background, letters, outline/shadow and borders
- Background video mix: Mix colors or patterns with video for see-through or tinted-video effects
- On-screen text modes: Play pre-arranged program with times set for each page; play pages manually (slide show); repeated play sequence (video billboard); play 1 page
- Full keyboard includes special and foreign characters such as ©, Ü, Ø, etc.
- Video and audio inputs and outputs
- S-Video and composite video inputs and outputs
- GPI trigger input
- 10-year lithium battery back-up
- Compatible with all video sources and videotape formats \$599.00

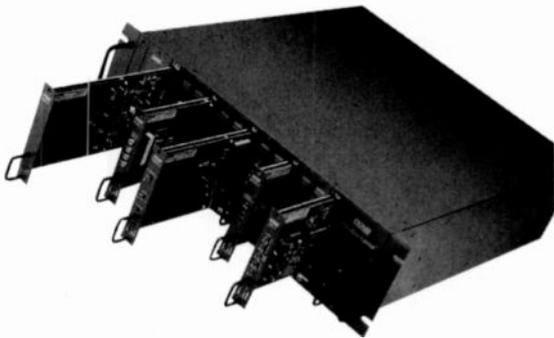


ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



Effetto™ Pronto™ Real Time Compositing and 3D Effects System

▪ Offers Faster-than-Real-Time and Near-Real-Time™ effects processing with unlimited layering based on proprietary Recombinant Image Processing™ (RIP) pipeline architecture ▪ High-end features include: character generation, texture and bump mapping, 3D warps, 3D animatable camera view and 3D animatable lights ▪ Designed to be platform independent ▪ Effetto QuickTime™ compositing software and dedicated resolution independent PCI hardware accelerator card ▪ 100% QuickTime compatible ▪ Easily integrated into a third-party over-the-top digital video bus ▪ Not limited to the resolution of a video raster ▪ RIP pipeline makes it possible to composite an unlimited number of QuickTime video and graphical elements in any resolution ▪ Pronto PCI accelerator card can process over 1 million pixels of film, video, graphics and CG elements in real time \$4995.00
Rapido Daughter Card. 995.00
Effetto Software. 495.00



StudioFrame™ Signal Processing System

▪ System's scalable nature and comprehensive product offering allow it to be easily reconfigured and/or upgraded ▪ Based on 2 rackmount frame models, up to 13 front loading function modules and 13 rear mounted passive interface cards can be accommodated in a single chassis ▪ New modules include a 10-bit video synchronizer with accompanying audio delay/synchronizer, IEEE 1394 (FireWire) to analog component interface, transcoding Time Base Corrector (TBC), and serial digital distribution amplifier and routing switcher **SDA-4**

▪ IEEE1394 to analog component interface offers a bridge in connecting emerging digital video (DV) field acquisition camcorders to existing analog component studio equipment ▪ Preserves full 500-line digital video resolution and quality **\$2500.00**

StudioSyncX

▪ Offers advanced capabilities for synchronizing external video signals such as microwave, satellite and other remote studio feeds ▪ Precision 10-bit processing ▪ Exceptional video transparency **\$2200.00**

AudSync

▪ Companion stereo audio delay/synchronizer can be controlled directly from the StudioSyncX for automatic lip sync correction or independently as a fixed audio delay of up to 8 seconds . . . **\$2000.00**

TBC

▪ Features component/Y/C/composite video I/O's ▪ Satisfies wide range of VCR signal correction and video interface requirements ▪ Intersformat transcoding from any input to all outputs is standard. **\$1900.00**

SDSW

▪ Supports any type of serial digital input signal conforming to SMPTE 259M specifications ▪ Provides a 4 input x 1 output configuration with input equalization with relocking **\$800.00**

SDDA

▪ Supports any type of serial digital input signal conforming to SMPTE 259M specifications ▪ 4 serial digital outputs with optional relocking and analog confidence outputs are provided . . . **\$400.00**

AB-1 Edit Suite A/B Roll Edit Controller

▪ Controls 4 play VCRs ▪ Stores up to 250 scenes ▪ RCTC, VITC and LTC time code support ▪ Works with Sony LANC (Control-L), Panasonic 5-pin (Control-M), RS-232C, RS-422A VCRs ▪ Jog/shuttle for precise VCR control ▪ Uploads/downloads EDL data for multiple project management ▪ Exports CMX files ▪ A/B/C/D roll editing when used with MX-1 ▪ Sequence, cuts-only or random assembly ▪ Select MX-1 transitions, direction, speed, backgrounds and border colors ▪ Works with GPI-compatible mixers, titlers and other equipment ▪ 2 independent GPI ports for multiple device control ▪ Advanced audio only, video only, insert and split edits with compatible decks ▪ Internal beeper for user feedback/error detection ▪ Auto build EDL and auto assemble ▪ Manual time entry ▪ Edit preview/review **\$699.00**

Video ToolKit™ Edit Controller

▪ Assembles productions automatically from single or multiple sources ▪ Allows you to build an on-screen edit decision list (EDL) in either text or timeline format ▪ Drag-and-drop feature ▪ Ability to connect up to 7 devices ▪ Tape-to-tape editing with A/B/C/D roll ▪ Add effect and titles with TitleMaker and MX-1 ▪ Build an unlimited scene log database ▪ Supports snapshots and digital movie with user-added video capture card ▪ Internet outputs to HTML pages for your web site ▪ One AV/net universal module ▪ Dual-headed control-L (LANC) cable ▪ Dual GPI/IR/S/MX-1 control cable **\$279.00**

Video ToolKit 3.0™ Video Editing Package

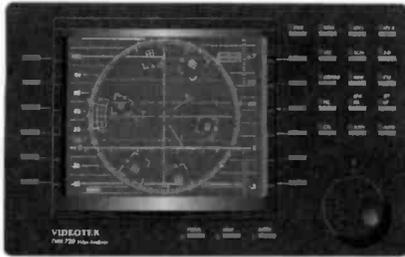
▪ Ability to add Internet connectivity to the editing process ▪ Ability to link and control up to 7 source and post-production devices through 1 computer serial port ▪ Videonic's software and patented AV/Net Universal Module, which enables Windows 95/NT 4.0 users to create fully integrated multimedia video editing studios ▪ A/V Net Module connects to computer's serial port and communicates with controllable consumer or professional VCRs, camcorders and post-production devices (such as mixers and special effects generators) and bring each under VTK's software control ▪ Time code capture function and log capabilities ▪ Ability to create HTML web page documents ▪ Allows user to send storyboards and edit lists as HTML pages ▪ Available in English with software selection for German, French, Spanish, Portuguese, Dutch and Italian **\$279.00**

Cables

- CBLA-0014-02** Edit Suite to Control-M (Panasonic). **\$20.00**
- CBLA-0034-01** Edit Suite to RS-232/422 **20.00**
- CBLA-0019-01** Edit Suite to Control-L 5 pin **10.00**
- CBLA-0020-01** Edit Suite to Control-L sub-mini. **10.00**
- CBLA-0041-01** GPI trigger, Edit Suite to TitleMaker/video mixer. . **6.00**

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





TVM-730 Composite Video Analyzer With Auto Measure

▪ Auto measure provides 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 ▪ 9 different inputs/filters can be displayed simultaneously ▪ Waveforms can be displayed in simultaneous parade modes or overlaid for comparison of timing and amplitude characteristics ▪ Vector displays can be overlaid 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 ▪ Picture mode displays monochrome pictures individually or paraded ▪ Remote control (RS-232/RS-422) of all functions may be accessed via personal computer \$7995.00



TVM-720 Component Analog/Composite Video Analyzer

▪ Operator defined measurement parameters can be stored in memory for instant recall and can be downloaded to a personal computer for storage ▪ 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 ▪ 9 different inputs/filters can be displayed simultaneously ▪ Waveforms can be displayed in simultaneous parade modes or overlaid for comparison of timing and amplitude characteristics ▪ Vector displays can be overlaid 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 ▪ Picture mode displays monochrome pictures individually or paraded ▪ Remote control (RS-232/RS-422) of all functions may be accessed via personal computer \$6243.00

TVM-710 Composite Video Analyzer

▪ Operator defined measurement parameters can be stored in memory for instant recall and can be downloaded to a personal computer for storage ▪ 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 ▪ 9 different inputs/filters can be displayed simultaneously ▪ Waveforms can be displayed in simultaneous parade modes or overlaid for comparison of timing and amplitude characteristics ▪ Vector displays can be overlaid 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 ▪ Picture mode displays monochrome pictures individually or paraded ▪ Remote control (RS-232/RS-422) of all functions may be accessed via personal computer \$5625.00

Options

- DRC-1 Double rackmount case \$220.00
- PTC-1 Portable case with handle and sunshield 165.00
- DAT-3 Half-rack tray for DRC-1 to mount PVS-6, PVS-6A or self-contained series distribution amplifiers 135.00
- SSC-1 Single standard case 70.00
- BLK-1 Blank panel 45.00



S-2000 Video Analyzer/System

▪ A unique video analyzer that, unattended, automatically performs hundreds of both NTSC and PAL systems tests and automatic measurements in NTSC (FCC, FCC/Cable, RS-170A, RS-250C, NTC-7, ICPM) and in PAL CCIR (473, 567, 569, 624, ICPM), plus common basic measurements for both formats ▪ 10-bit, 8X subcarrier sampling assures the high resolution and extreme accuracy of this innovative instrument ▪ Easy to learn, and intuitive operation via on-screen PC menus makes it extremely user-friendly ▪ Ease of operation allows nontechnical staff to program the instrument for testing ▪ Full user control of the 4 video inputs is achieved through any standard PC in defining and scheduling an unlimited series of tests at predetermined intervals ▪ Any test can be performed instantly at the press of a button ▪ Test results are available for immediate on-screen review and hard copy output and are stored in disk files for future review (IBM compatible software is provided) ▪ Through the use of a modem or similar device, S-2000 can be accessed to perform measurements from any remote location in the world ▪ One central computer can access multiple S-2000 installations \$5995.00

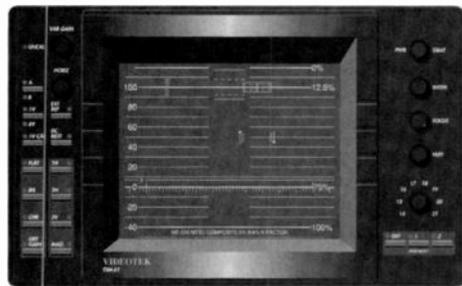
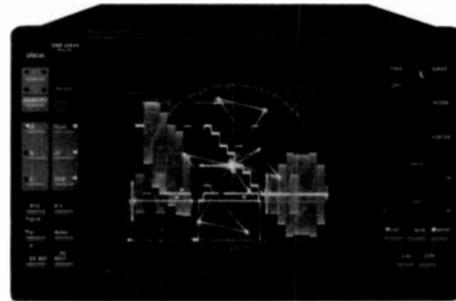
ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





VSM-61 Vectorscope

- 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") 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. \$2195.00



TVM-675 Component Analog/Composite Combination Waveform Monitor/ Vectorscope Audio Monitor

- A full-featured half-rack width combination waveform monitor/ vectorscope, audio monitor
- Engineered to observe either composite or component analog signals
- Stereo audio phase and levels may be monitored via the audio display
- Audio may be displayed alone or in any combination with waveform and/or vector
- 1, 2 or 3 composite video signals may be observed individually or in any combination of 3 inputs
- Waveforms can be displayed in either parade modes or overlaid for comparison of timing and amplitude characteristics
- All 3 composite inputs may be displayed simultaneously with flat, low pass and chroma filters
- Vector displays can also be overlaid for simultaneous observation and comparison of the phase and amplitude of up to 3 composite signals
- Can display component analog video signals from Beta, SMPTE, EBU or MII standards of 75% and 100% equivalent saturations
- Component vectors may be displayed by themselves or in combination with the waveform display
- 4 user-defined memories permit rapid recall of frequently used modes
- Diagnostic testing of the front panel controls and LEDs is built in
- An R-Y (V axis PAL) mode displays the demodulated chrominance with horizontal sweep
- A graticule scale is provided to aid in measuring differential phase (this display may be viewed simultaneously in the parade mode with 1 or 2 additional filter waveforms)
- Ideal for multiformat analog video and stereo audio monitoring \$4228.00

TSM-61 Waveform Monitor With Line Select

- Designed for convenience and ease of operation
- 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 and assures a clear, well defined image of the line selected, without readjustment
- Requires only 3 rack units of vertical rack space (5.25") and 1 half-rack width
- May be mounted in the optional DRC-1 double rackmount case along with a VSM-61 vectorscope for complete signal monitoring. \$2195.00

TVM-621 Combination Waveform Monitor/Vectorscope

- Same as TVM-675 but does not have component or audio measurement functions \$3828.00

Options

- DRC-1 Double rackmount case \$220.00
- PTC-1 Portable case with handle and sun shield 165.00
- 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. 135.00
- SSC-1 Single standard case 70.00
- BLK-1 Blank panel for DRC-1 45.00

TSM-51 Waveform Monitor

- 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
- Requires only 3 rack units of vertical rack space (5.25") and 1 half-rack width
- May be mounted in the optional DRC-1 double rackmount case along with a VSM-61 vectorscope for complete signal monitoring \$1795.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





VTM-200 Multi-Format On-Screen Monitor

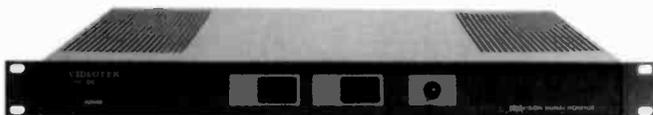
- Monitors 601 digital and composite analog video plus AES digital and analog audio signals
- Primary output is VGA compatible for display on any standard computer monitor
- Output display includes video picture, waveform, vector and optional audio—each in one high resolution quadrant of the screen or any element in a full-screen view
- Standard inputs include two 601 serial digital (525 or 625) and two analog composite (NTSC or PAL)
- Optionally accepts 4 AES stereo pairs/4 analog stereo pairs as inputs and displays 2 stereo pairs plus phase differences in the standard audio display
- "Zoom" feature allows user to individually adjust and measure black level, white level, audio reference levels
- All operator functions are via dedicated buttons or knobs
- At home in mixed format facilities, graphics suites, production and post production areas and remote vehicles
- Replaces 2 waveform monitor/vectorscopes, an audio test set and 2 video monitors
- Versatile user configuration
- Operates from 100 to 260VAC, 50 or 60Hz
- Unit is 1RU high
- Rackmountable

Specifications

- Video inputs A and B (analog) signal level: 1V p-p ±6dB
- Video inputs A and B input impedance: 75Ω nominal
- Video inputs C and D (digital) data rate: 270 Mb/s, 525/625 line rate
- Inputs C and D input impedance: 75Ω nominal
- Input: blackburst or NTSC/PAL analog composite video
- Reference signal level: 1V p-p ±6dB
- Reference input impedance: Hi-Z looping
- VGA R, G, B output levels: 1V p-p nominal
- VGA R, G, B output impedance: 75Ω nominal
- Vertical rate capability: 50-60Hz
- Horizontal rate capability: 30-40kHz
- 15-pin VGA "D" connector
- Optional audio inputs A and B maximum input level: +24dBm
- Optional audio inputs A and B input impedance: 30kΩ unbalanced, 60kΩ balanced
- Optional audio inputs C and D input impedance: 75Ω nominal
- Optional audio inputs C and D output impedance: 50Ω unbalanced or 100Ω balanced (nominal)
- Power consumption: 50 VA typical
- 1.75"H x 19.0"W x 18.0"D
- 13 lbs.
- Operators's manual included . . . \$5995.00

Option

200-OPT1 Audio inputs and outputs \$695.00



VTM-100D Digital Video Signal Monitor

- Displays waveform, vector, analog audio signals simultaneously on a picture monitor
- Designed for use with 525/60 and 625/50 serial digital component video formats at 270 Mb/s
- Drop-down menus provide access to all display settings
- Analog video waveform and vector displays are generated from the digital input signal and output for display on a component analog or (optionally) serial digital video monitor
- Auxiliary displays provide on-screen analog stereo audio levels and phase
- Detected errors in input signal are reported on-screen as alarms and are accumulated and tracked over time

- Display modes, magnification, alarms, formats can be configured to user needs
- Ability to display signals alone, as a key or mix with video picture, plus as half or quarter screen overlays
- Inputs, outputs and RS-232 control may be connected to routing switchers, allowing one display to be monitored at multiple locations
- Full resolution, 10-bit processing
- Outputs for component analog/RGB and (with option SDO-1) serial digital video monitors
- Auto detection of illegal digital or invalid analog signal parameters
- Line select views at full intensity
- Self-calibrating
- Memory of 10 user-defined setups

Specifications

- Display waveform accuracy: <1%
- Waveform frequency response: Y (luminance) channel ±2%-5.0MHz; Cb/Cr chromes ±2%-2.5MHz
- Waveforms can be gained by approx. 2.5 times
- 10 user-defined setups
- Serial video inputs: two 75Ω BNC loopthrough
- Input level: 800mV p-p ±10%
- Audio inputs: 2 balanced stereo pairs with push-on mailing connector
- Video outputs: 1 component analog output (3 BNCs)
- Serial digital outputs: option SDO-1 provides a serial output of waveform, vector, audio, graticule information over input video or color background, 50Hz or 60Hz field rate dependent upon input field rate; one 75Ω BNC output
- 90-260VAC, 50-60Hz
- Power consumption: 50VA typical without SDO-1 option, 55VA typical with SDO-1 option
- 1.75"H x 19.0"W x 18.75"D
- 15.6 lbs.
- Remote control: 1 RS-232 port for external computer interface
- Operator's handbook included
- One 75Ω terminator included \$3795.00

Option

SDO-1 Serial digital output option \$995.00

VTM-100 Television Signal Monitor

- Test instrument which employs 3 inputs
- Capable of composite or component measurements
- Displays component signals and automatically detects NTSC or PAL composite signals
- Drop down menus allow choices including mix of display over picture (adjustable from 0-100%), waveform, vector, waveform/vector overlaid and dual audio
- Controlled from the front panel and remotely controlled via a mouse or any PC
- Separate flat, low pass chroma filters can be used in parade or overlay mode, a full-field line select and user-adjustable alarms for sync and SCH employing auto measure which eliminates those subjective test results
- Component features include the display of all common CAV signals in waveform, bowtie and vector modes
- Graticules, displays and user-adjustable alarms, indicated in color, are generated electronically and not affected by a nonlinear monitor raster
- Inputs: 3 composite or 1 component plus external reference inputs (all looping)
- Vector display may include up to 3 overlaid inputs
- Picture mix or key displayed with picture from 0-100%
- Sync, burst and SC/H phase numeric readout and alarms are auto-measured
- Time base modes: 1H/2H/3H and 1V/2V/3V, magnifications are 1X, 5X, 10X, 20X
- DC restoration: maintains display baseline stability with varying APL
- Line select: Bright, full-field
- Alarms: SC/H phase, sync and burst amplitude alarm limits are user-selectable; all alarms are indicated with a text message and display color is changed to red

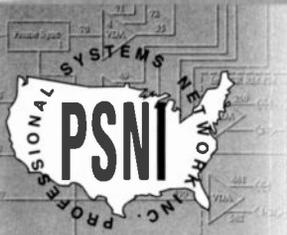
Specifications

- Display waveform accuracy: ±1% @ 1V
- Video response: 25Hz-6MHz ±1% of 50kHz
- Input gain range: fully adjustable from 50% to 500%
- Component formats: Y/C (through YC-1), GBR, BETA, MII, SMPTE, EBU, 75% and 100%
- Memory: 5 user-defined setups with total instrument settings
- Video inputs: 3 BNC loopthrough NTSC/PAL composite or 1 component video input into 75Ω load, sync negative
- Audio inputs: 2 balanced stereo pairs with push-on 2-piece connector
- Two 75Ω BNC video outputs; in component mode, output is "Y" or green channel with selected displays
- 90-260VAC, 50-60Hz
- Power consumption: 35VA typical
- 1.75"H x 19"W x 16"D
- 15.0 lbs.
- Remote control: RS-232 or mouse supports Microsoft™ or Logitech™
- Operator's manual included

VTM-100 \$2495.00
YC-1 Adaptor for Y/C input 35.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





Prodigy Production Switcher

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



Multilevel Effects System ▪ Background transitions: cut, mix, wipe ▪ Key transitions: cut, mix, wipe ▪ Downstream key transitions: cut, mix ▪ Combined background and key transitions provide 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
System Timing Reference ▪ System genlocks to blackburst reference signal on input 1 (Prodigy Composite) ▪ System locks to composite sync reference signal (Prodigy Component) ▪ Chroma and luminance linear keys on all primary inputs (Prodigy C Component)
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 (Prodigy Composite)
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/out (0-999 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 standard editor interface
Programmable Effects Transition System ▪ 100 online events with battery back-up ▪ Recalls preprogrammed 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 ▪ Can access memory recall ▪ Allows external device with GPI input to be triggered by Prodigy

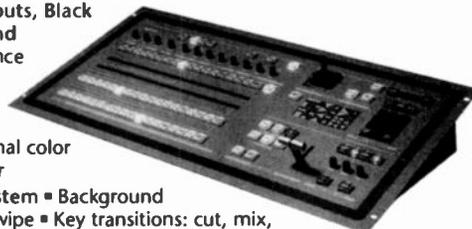
Prodigy C Component \$17,185.00
 Prodigy Composite 8,665.00
 Options

- SA-1 Stereo audio-follow-video \$1,995.00
- EI-1 Serial editor interface 1,028.00
- RGB-1 RGB chromakeyer for Prodigy. Can be mounted in CTC-2 console extension 995.00
- EX-P Extender cards for servicing electronics frame circuit boards. 495.00
- CTC-1 Console for countertop installation of Prodigy. Solid hardwood construction. 225.00
- CTC-2 Console for CTC-1 to mount RGB-1 control panel. Solid hardwood construction 150.00
- Prodigy C Component service manual 125.00
- Prodigy Composite service manual 75.00

PDG-418 18-Input Production Switcher

16 Primary Video Inputs, Black and Color Background

- Input 1 is the reference for genlock plus black
- Inputs 2-17 are primary video inputs
- Input 18 is the internal color background generator



Multilevel Effects System ▪ Background transitions: cut, mix, wipe ▪ Key transitions: cut, mix, wipe ▪ Downstream key transitions: cut, mix ▪ Combined background key and downstream key transitions provide the power of a 2 mix/effect switcher
Program Video Bus ▪ Permits direct switching of video
Clean Feed ▪ Provides third program video output ▪ Bypasses downstream keyer and blanking processor
Look Ahead Preview ▪ Displays the result of the next transition
Integrated Stereo Audio-Follow-Video System (Optional) ▪ 2-bus system—preset and program, inputs 1-10 ▪ Cut or fade between stereo audio sources ▪ Editor control of audio transitions ▪ Audio hold—inhibits AFV operation
Fade-to-Black ▪ Integrated with transition system
System Timing Reference ▪ System locks to blackburst reference signal on input 1
Blanking Processor ▪ Provides high stability video output and masks minor timing and sync level 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 ▪ Remembers the key clip and key gain settings for each input in both self-key and auto external key modes ▪ Includes chromakey generator, digital effects system and graphics camera
3 External Key Inputs ▪ Allows integration of a "wide key" character generator, digital effects system and graphics camera
Key Loop ▪ Allows key bus cut and fill to be looped through an external digital effects processor ▪ Alternate software setting will send only key bus fill to the external processor loop and key bus cut will remain for internal processing only
Auto External Key Follow ▪ Automatically selects external key when primary input for which it is programmed is selected ▪ Automatically performs self-key if selected primary input is not programmed for external key
Downstream Keyer ▪ User-programmable in/out (0-999 frames), or manual cut or fade ▪ May be operated independent of the main mix effects system ▪ 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 standard editor interface
Programmable Effects Transition System ▪ 100 online events with battery back-up ▪ Recall preprogrammed effects at the touch of a button ▪ Effects transitions smoothly change analog control settings between the values stored in 2 events ▪ Instant replay allows PDG-418 to learn the operator's actions against a real time clock ▪ Programmed sequences for repeatability without setting the effect up in real time
General Purpose Interface (GPI) ▪ Integrates PDG-418 with other devices through contact closure interface ▪ PDG-418 may be controlled from inexpensive "cuts only" editing systems ▪ Can access memory recall ▪ Allows external device with GPI input to be triggered by PDG-418
Serial Editor Interface for Video and Audio (Optional) ▪ RS-422 port interfaces with most available editing systems
 PDG-418 18-input production switcher \$16,995.00
 BG-1 Border generator for PDG-418 downstream keyer 1,995.00
 CK-1 RGB/Y, R-Y, B-Y chromakeyer for PDG-418 995.00
 EX-PDG Extender cards for servicing electronics frame circuit boards. 550.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





DM-154 Precision Stereo Demodulator

- 154 channels (VHF/UHF/Cable) ▪ Synchronous detection ▪ Frequency synthesized channel selection ▪ HRC/IRC offset tuning capability with memory for every channel selection ▪ Front panel antenna/cable selection
- Full FCC bandwidth video -4.1MHz ±0.5dB ▪ 2 baseband video outputs
- BTSC (MTS) stereo decoder output with LED stereo pilot indicator
- Balanced (XLR) stereo audio outputs ▪ SAP presence LED indicator
- User selection of stereo, mono, SAP or SAP and mono outputs ▪ Internal audio monitoring, 1" speaker ▪ Quadrature output for transmitter measurements ▪ 4.5MHz output ▪ Front panel LED channel display
- Front panel memory maintained during power loss ▪ 75 ohm F connector for antenna/cable input ▪ 1 3/4"H, rackmountable \$3895.00

DM-192 Precision Stereo Demodulator

- 192 channels (VHF/UHF/Cable) ▪ Synchronous/envelope detection
- Simultaneous stereo/SAP/Pro Audio channel outputs ▪ Front panel signal strength indicator ▪ Plus all other features and specifications of the DM-154 \$6995.00

DM-145 154-Channel Stereo Broadcast/Cable TV Demodulator

- BTSC (MTS) stereo decoder with similar features of DM-141A, except has simultaneous stereo/SAP outputs ▪ Integral rackmount . . . \$2995.00



DM-141A 154-Channel Stereo Tuner/Demodulator

- Automatic/manual fine tuning ▪ Varacter 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 ▪ Front panel antenna/cable select ▪ Access to controls for video gain, audio gain and balance on front panel ▪ 75 ohm "F" connectors for antenna/cable inputs ▪ 1 3/4"H, rackmountable ▪ Integral rackmount \$1995.00

APM-800 Stereo Audio Program Monitor

- Requires only 3 1/2" of vertical rack space ▪ 8 inputs—balanced/unbalanced ▪ Barrier strip input/output connections ▪ Internal 3" speaker
- 15W amplifier ▪ 5m sensitivity ranges ▪ 0dBm, 600 ohm line output
- Calibrated tone output ▪ High/Low input impedance select . . . \$995.00

APM-200 Audio Program Monitor

- Stereo input ▪ 3-pin female XLR input connectors, balanced ▪ RCA phono jack connectors, unbalanced ▪ Input mode switching: L - R, L + R, stereo, reversed stereo, L only, R only ▪ Two 3" speakers ▪ 10-segment bargraph VU meter displays ▪ 4 input sensitivity ranges (-10dBu, 0dBu, +4dBu, +8dBu) selectable ▪ 600 ohm or high impedance selectable, balanced inputs XLR ▪ Power output 4WRMS per channel (nominal)
- 1/4" stereo headphone jack ▪ 1 1/4"H, rackmountable \$799.00

RM-13TR/13T 13" Cable Ready Closed Caption Color Receiver/Monitors

- Power requirements: 120VAC, 60Hz ▪ Power consumption: 55W average, 80W maximum

RM-13TR 14"H x 19"W x 16 1/2"D ▪ Weighs 33 lbs.
▪ Rackmountable \$995.00

RM-13T 13 3/8"H x 14 1/2"W x 16 1/2"D ▪ Weighs 26 lbs. 895.00

Options

AB-1	A/B inputs	\$250.00
PC-1	Pulse cross	199.00
US-1	Underscan	99.00
HG-1	Hospital grade AC cord	60.00
8P-1	8-pin VTR cable (8")	25.00

STG-6600/6000 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 indicators ▪ Compensates for up to 1000' of cable
- Automatically compensates for cable length and equipment drift (STG-6600) ▪ 1 3/4"H, rackmountable

STG-6600 Manual/automatic	\$3245.00
STG-6000 Manual	2575.00

VSG-10 NTSC and PAL Blackburst Generator

- Stand-alone sync generator with 3 high stability NTSC or PAL blackburst outputs ▪ Operates on 115 or 230VAC mains ▪ 1RU high, 1/2 rackwidth ▪ Designed to rackmount in DAT-1 frame \$475.00



VIT-411 Vertical Interval Test Signal Generator

- Provides test signals required by TVM-730 for auto measure ▪ Insertion on user-selectable lines ▪ FCC bars, NTC-7 combination, FCC multiburst/composite ▪ Bypass on invalid input ▪ Compact package ▪ 75 ohm input impedance ▪ RS-170 compatible video, 1.0 p-p ±3dB ▪ 90-132, 180-264VAC, 50/60Hz, nominal input ▪ Ideal for CATV baseband system tests, common carrier microwave relay stations and SNG/ENG vehicles \$1995.00

VSG-21 Color Sync and Test Signal Generator

- Selectable test patterns: SMPTE color bars, modulated ramp, multiburst, 10-step unmodulated staircase, audio test tone, blackburst output . . \$995.00

VSG-201 Color Sync Generator

- RS-170A specifications ▪ Genlock ▪ Genlock input subcarrier and sync loss/presence indication on front panel ▪ 6 isolated blackburst outputs ▪ SMPTE color bars—dual outputs ▪ Color field 1 ID pulse output ▪ Front panel adjustments for H phase and SC phase ▪ Selectable vertical blanking width (lines 16-21 internal) ▪ +4dBm 1kHz tone output, balanced or unbalanced outputs into 600 ohms ▪ 1 1/4" high, rackmountable \$1995.00

VDP-8410 Video Frame Synchronizer

- 10-bit, 4-field video frame synchronizer which provides transparent signal processing in addition to stable, jitter-free lock-up of noisy video signals ▪ Will freeze on either field or frame ▪ Can store a frame while remaining in operation as a 2-field synchronizer ▪ Loss of signal action can freeze, fade to black or switch to an alternate video input ▪ RS-232 remote control capable ▪ 1 3/8" rackmountable \$3495.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





RS-103A

RS-103A 10 x 1 Routing Switcher Series With RS-422 Interface

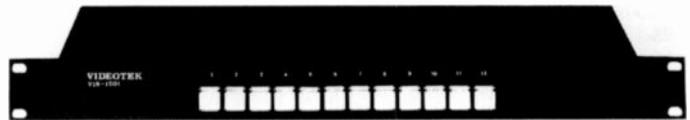
- 10 looping video inputs ▪ Wide bandwidth for high resolution applications (1.0dB at 40MHz) ▪ DC restored output amplifier
- High-speed clamping provides excellent hum rejection
- Low return loss >55dB at 5MHz ▪ +24dBm audio headroom
- 3 audio channels per input, balanced or unbalanced
- Transformer 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 back-up ▪ Serial data bus for communication within the system and remote control ▪ Data bus interconnection via RJ-11C telephone connectors ▪ System expandable horizontally to 40 x 1 and vertically to 30 x 10 ▪ 1 3/4" rackmountable

RS-103A	.....	\$1950.00
RS-103AL	Same as RS-103A, but without switches. May be controlled by computer or optional RSP-4 remote switching panel	.....1785.00
RS-103	10 x 1 vertical interval switcher, video only. RS-422 computer control interface	.....1395.00
RS-103L	Same as RS-103, but without switches. May be controlled by computer or optional RSP-4 remote switching panel	.....1270.00
RSP-4	10 x 1 remote switching panel for RS-103A/103AL/103/103L. RS-422 computer control interface	.....859.00
ABP-3	Audio breakout panel for RS-103A/AL. Converts audio I/O 37-pin D connectors to latching terminal blocks. Includes three 18" 37-pin to 37-pin interconnect cables	.....395.00
RSP-5	10 x 1 expansion remote switching panel for RSP-4. Permits remote switching from 2 locations	.....360.00

RS-12A, 12 x 1 AFV Routing Switcher With RS-232/422 Control Capability

- Audio and video breakaway control ▪ Configures to RGB/YUV operation ▪ Standard GPI port ▪ 3 day memory retention ▪ Optional remote control ▪ 1 1/4" rackmountable

RS-12A	.....	\$1125.00
RS-12AL	No local control panel	.....1085.00
ABP-12	Audio breakout panel	.....395.00
RSP-12	Remote control panel	.....381.00
GCK-12	Grass Valley 10 x 1 style connectors	.....150.00



VIS-1201 12 x 1 Video-Only Routing Switcher

- 12 video inputs, bridging/2 isolated video outputs ▪ 24-hour channel memory ▪ Vertical interval switching ▪ Momentary contact illuminated pushbuttons with changeable legends ▪ 1 3/4" rackmount

VIS-1201	\$550.00
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PVS-6A 6 x 1 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 ▪ 1 3/4" rackmount height ▪ Can mount 3 units side-by-side using a Videotek DAT-1 rackmount tray

PVS-6A	\$250.00
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PVS-6 6 x 1 Passive Video Switcher

- 100% passive—no power requirements ▪ Low insertion loss
- Low video crosstalk ▪ 6 video inputs/1 video output ▪ 1 3/4" rackmount height ▪ Can mount 3 units side-by-side using a Videotek DAT-1 rackmount tray

PVS-6	\$195.00
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ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





Digital Distribution Amplifiers

▪ Compatible with 143Mbps, 177Mbps and 360Mbps serial digital signals for composite, component or HDTV ▪ Available in self-contained or OMNIFRAME modular versions, with or without relocking ▪ Each features a dynamic equalization display, which indicates the amount of equalization applied to the signal ▪ DAT-1 tray for self-contained and OMNIFRAME modular systems allow combining analog and video DAs with digital DAs in the same rackmount

- DDA-144 Digital DA with 4 serial component digital outputs and 4 composite analog outputs \$1095.00
- DDA-144F Same as DDA-144, but with modular for OMNIFRAME 1045.00
- RDA-108 1 x 8 serial digital DA with relocking, self-contained . . . 849.00
- RDA-108F 1 x 8 serial digital DA with relocking, OMNIFRAME module 739.00
- DDA-108 1 x 8 serial digital DA, self-contained 549.00
- DDA-108F 1 x 8 serial digital DA, OMNIFRAME module 355.00

VSG-21F Color Sync Reference and Test Signal Generator

▪ Color sync and test signal generator with selectable test patterns: RS-170M SMPTE color bars, multiburst, 10-step modulated stair step, 10-step luminance stair step, audio test tone and separate blackburst output \$995.00

Switchers

- RS-61FRC 6 x 1 video switcher with remote control (RSP-61) \$845.00
- ARS-61FRC 6 x 1 stereo audio switcher with remote control (RSP-61) 845.00
- RS-61F 6 x 1 vertical interval video routing switcher with remote control 595.00
- ARS-61F 6 x 1 stereo audio routing switcher module . . . 595.00

OMNIFRAME™ DISTRIBUTION SYSTEM
OMNIFRAME System
Master Chassis

▪ Accommodates 10 modules (DDA-108F, RDA-108F, VDA-18F, ADA-18F, ADS-24F, RS-61F, ARS-61F, VSG-21F) and may be mixed in 1 frame ▪ Requires only 3RU, saving valuable rack space ▪ Each module has a self-contained power supply for independent reliability ▪ Modules may be hot inserted or removed as needed \$575.00



OMNIFRAME/DC Distribution System

▪ Accommodates 10 modules (VDA-18F/DC, ADS-24F/DC) and may be mixed in 1 frame ▪ Requires only 3RU ▪ Each module has a self-contained power supply for independent reliability ▪ Modules may be hot inserted or removed as needed \$575.00

VSG-10F NTSC and PAL Blackburst Generator

▪ OMNIFRAME module sync generator with 3 high stability NTSC or PAL blackburst outputs ▪ Operates on either 115 VAC or 230VAC mains ▪ Module plugs into OMNIFRAME system master chassis \$475.00

SELF-CONTAINED SERIES

SDA-14 Subcarrier Distribution Amplifier

▪ 1 looping subcarrier input ▪ 4 isolated subcarrier outputs
▪ Available for NTSC, PAL, PAL-M ▪ Front panel 0°-360° output phase adjust with 0° preset ▪ BNC input/output connectors
▪ Rackmountable \$446.00

ADS-24F/DC Stereo Audio DA Module

▪ -48VDC 2 x 4 stereo audio or DA module ▪ 600 ohms or Hi-Z input
▪ Low noise ▪ +24dB outputs \$399.00

VDA-18F/DC Video DA Module

▪ -48VDC 1 x 8 Video DA module with equalization for 400' Belden 8281
▪ 10MHz \$399.00

VDA-16WB Wideband Video Distribution Amplifier

▪ 40MHz video bandwidth ▪ 1 looping video input ▪ 6 isolated video outputs ▪ Wideband cable equalization from panel to adjustment
▪ BNC input/output connectors ▪ Rackmountable \$396.00

PDA-16 Pulse Distribution Amplifier

▪ 1 looping pulse input ▪ 6 pulse outputs ▪ BNC input/output connectors ▪ Rackmountable \$375.00

ADS-24F 2 x 4 Analog Stereo Audio Distribution Amplifier

▪ Analog stereo audio DA with 1 stereo input and 4 stereo outputs
▪ +24dBm maximum \$350.00

VDA-16 Video Distribution Amplifier

▪ 1 looping video input ▪ 6 isolated video outputs ▪ Front panel output level adjustment ▪ Cable equalizer front panel adjustment (300' Belden 8281) ▪ BNC input/output connectors ▪ Rackmountable \$306.00

ADA-16 Audio Distribution Amplifier

▪ 1 balanced/unbalanced audio input ▪ 6 balanced audio outputs ▪ Front panel output level adjustment ▪ Barrier strip input/output connectors
▪ Rackmountable \$306.00

VDA-16A Nonequalizing Video Distribution Amplifier

▪ 1 looping video input ▪ 6 isolated video outputs ▪ Front panel output level adjustment ▪ BNC input/output connectors
▪ Rackmountable \$280.00

VDA-18F 1 x 8 Analog Video Distribution Amplifier

▪ Analog video DA with equalization for 400' Belden 8281, 10MHz bandwidth \$259.00

ADA-18F 1 x 8 Analog Audio Distribution Amplifier

▪ Analog audio DA with 1 balanced input and 8 balanced outputs
▪ +24dBm maximum \$259.00

RSP-61 Remote Control Switch Panel

▪ Controls OMNIFRAME 6 x 1 routing switchers either singularly or in parallel ▪ Interconnect multiple routers for component video or more channels of audio or audio follow video ▪ Will mount in a DAT-1 rackmount tray, or stand alone \$250.00

Options for All Self-Contained Distribution Amplifiers

- DAT-3 Half-rack tray for DRC-1 to mount 2 PVS-6 or PVS-6A, Videotek self-contained series DAs and/or VSG-21F Color Sync Reference and Test Signal Generator . . . \$135.00
- DAT-1 Rackmount frame, accommodates 3 DAs 99.00
- DAT-2 Blank panel 25.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





SDC-101 Serial Digital Corrector

- Provides means to adjust levels in serial digital component video
- Adjustments are similar to camera CCU, which operator can use to modify hue, luminance, white clip, gamma, black stretch, etc.
- As easy to operate as a standard analog proc amp
- Performs real time correction either manually, from scene files, or under editor control, which makes it ideal for match frame editing
- Only 1 1/4" high, the SDC-101's compact chassis performs many tasks usually requiring an off-line session or expensive color correctors
- Integral rackmount

SDC-101	\$6995.00
RCU-102 Desktop or rackmount remote control unit	1495.00
EI-SDC Editor interface for SDC-101	995.00

DPA-100 Serial Digital Processing Amplifier

- Provides analog world controls of 6 video parameters while in the component serial digital format
- Full 10-bit resolution
- "Auto-Legal" function
- Full EDH support and alarms
- Remote control option is provided
- 1 1/4", rackmountable using DRT-1 tray

DPA-100	\$4930.00
RCU-100	1160.00
DRT-1 Rackmount tray	149.00

Digital Distribution Amplifiers

- Compatible with 143Mbps, 177Mbps, 270Mbps and 360Mbps serial digital signals for composite/component/HDTV
- Available in self-contained or OMNIFRAME modular versions, with/without reclocking
- Each has dynamic equalization display, indicating amount of equalization applied to the signal
- DAT-1 tray for self-contained and OMNIFRAME modular systems allows analog and video DAs with digital DAs to be in the same rackmount

DDA-144 Digital DA with 4 serial component digital outputs and 4 composite analog outputs	\$1095.00
DDA-144F Same as DDA-144 but modular for OMNIFRAME ..	1045.00
DDA-108 1 x 8 serial digital DA, self-contained	549.00
RDA-108 1 x 8 serial digital DA w/reclocking, self-contained ..	849.00
RDA-108F 1 x 8 serial digital DA with reclocking, OMNIFRAME module	739.00
DDA-108F 1 x 8 serial digital DA, OMNIFRAME module	355.00

VSG-204D Serial Digital Sync Generator

- High stability 525/60 or 625/50 sync generator with infinite genlock range
- 2 independently adjustable black outputs
- 2 digital test signal outputs with user selection of 10 test signals
- 4 analog blackburst outputs (2 independently adjustable; ±2 fields NTSC, ±4 fields PAL)
- Includes stereo tone analog audio outputs, AES/EBU, embedded tones in the serial digital outputs
- 1RU high
- 19" wide rackmountable

VSG-204D	\$4800.00
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VSG-203D 601 Serial Digital Sync Generator

- High stability 525/60 or 625/50 sync generator with infinite genlock range
- 2 independently adjustable digital black outputs
- 2 digital color bar outputs
- 4 analog blackburst outputs for system timing, 2 of which are independently adjustable (±2 fields NTSC, ±4 fields PAL)
- Includes analog stereo audio tone out
- 1RU high
- 19" wide rackmountable

VSG-203D	\$3900.00
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VSG-201D 601 Serial Digital Sync Generator

- Genlock sync generator for 601 serial digital or hybrid analog/digital applications in either NTSC or PAL systems
- TCXO controlled generator provides: serial digital black and color outputs, 4 analog blackburst outputs, stereo analog tone outputs
- 1 1/4" rackmountable

VSG-202D 601 Serial Digital Sync Generator With Embedded and AES/EBU Tone

- Same features as VSG-201D plus provides both embedded and AES/EBU tone with level adjustments and channel selection on front panel

TVM-821D Digital Waveform Monitor/Vectorscope

- 601 serial digital component video waveform/vectorscope with 12-bit processing
- "One-button-per-function" concept with GBR or Y, Cb, Cr display
- 2 digital input signals
- EDH/EAV/SAV alarms
- Analog audio phase and amplitude measurement
- 3RU high, 1/2 rackwidth
- Rackmounts in DRC-1 case

TVM-821D	\$4125.00
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TAD-101 Component Analog-to-Digital Transcoder

- Transcodes RGB/color difference signals to parallel/serial digital component video
- Adds EDH data checkword to output signal
- Accepts 525/60 and 625/50 inputs
- 10-bit processing, selectable as 10-bit or 8-bit output
- 1 1/4" high rackmountable

TAD-101	\$2799.00
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VMA-10 Video Monitor Adaptor for Serial Digital

- Allows use of composite analog video monitors for serial digital component video monitoring
- Conversion of serial digital component video to composite analog for monitoring
- Can be used with any brand monitor
- Single looping serial digital input with 2 analog outputs

VMA-10	\$745.00
VMA-10F OMNIFRAME module	745.00

SDR-800 Series 8 x 8 and 16 x 16 Serial Digital Video Router

- Ideal for HDTV
- Vertical interval, serial digital video matrix router
- 8-signal presence LEDs
- Front control panel has optical rotary control panel
- LCD display used to select input/output number, or SALVO register when used with function button
- RS-232/485/422 and GPI interfaces
- 1 1/4" rackmountable

SDR-800	TBA*
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SDR-800A Series 8 x 8 and 16 x 16 Digital Audio Router

- Digital audio matrix router with 8-signal presence LEDs
- Front control panel has optical rotary encoder and LCD display used to select the input/output number or SALVO register
- Channel 8 allows connection to S/P DIF/BNC or XLR connector and provides same connectors for channel 8 output
- Communications port for remote control operation includes RS-232/485/422 and GPI interfaces
- 1 1/4" rackmountable

SDR-800A	TBA*
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* To Be Announced

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





V-BEAM SERIES FIXTURES

Common Features

- Beam angles achieved through accessory options
- Included: lamps, yoke, power cord, choice of C-clamp/stand adaptor
- Reflector: 24 gauge formed aluminum
- 10,000 hours rated lamp life
- Mounting: 28 gauge aluminum yoke welded construction
- Power entry module with on/off switch, EMI filter, fuse holder and IEC connector on head

V-BEAM 0200 ▪ 192W compact fixture
 ▪ Ideal for general short throw lighting applications
 ▪ Housing: 14 gauge formed aluminum sheet metal

V-BEAM 2256 ▪ 256W compact fixture
 ▪ Ideal for broad/long throw lighting applications
 ▪ High output achieved from reflector design
 ▪ Housing: 18 gauge aluminum

V-BEAM 2330 ▪ 330W multipurpose fixture
 ▪ Ideal for broad/long throw lighting applications
 ▪ Lamps available in tungsten or daylight balance
 ▪ Housing: 14 gauge aluminum

V-BEAM 3441 ▪ 440W high output fixture
 ▪ Ideal for broad/long throw lighting applications
 ▪ Optimized proprietary high frequency electronic ballast with analog dimming standard
 ▪ Lamps available in tungsten or daylight balance
 ▪ Housing: 14 gauge aluminum



V-BEAM 2256



V-BEAM 3441

BASELIGHT SERIES FIXTURES

Common Features

- Lamps available in tungsten or daylight balance
- Included: lamps, yoke, power cord, choice of C-clamp or stand adaptor
- Housing: 14 gauge aluminum
- Reflector: 24 gauge aluminum

BASELIGHT 5110 ▪ 110W compact fixture
 ▪ Ideal for short throw studio/location lighting applications
 ▪ Wide range of beam angles achieved through configurations of accessory options
 ▪ Enhance performance by utilizing intensifier

BASELIGHT 5117 ▪ 117W compact fixture
 ▪ Ideal for short throw studio/location lighting applications
 ▪ Wide range of beam angles achieved through configurations of accessory options
 ▪ Enhance performance by utilizing intensifier

BASELIGHT 5220 ▪ 220W multipurpose fixture
 ▪ Ideal for medium throw studio/location lighting applications
 ▪ Wide range of beam angles achieved through configurations of accessory options
 ▪ Enhance performance by utilizing intensifier

BASELIGHT 5221 ▪ 221W multipurpose fixture
 ▪ Ideal for medium throw studio/location lighting applications
 ▪ Wide range of beam angles achieved through variable configurations of accessory options
 ▪ Enhance performance by utilizing intensifier
 ▪ Optimized proprietary high frequency electronic ballast with analog dimming standard

BASELIGHT 5330 ▪ 330W multipurpose fixture
 ▪ Ideal for long throw studio/location lighting applications
 ▪ Wide range of beam angles achieved through configurations of accessory options
 ▪ Enhance performance by utilizing intensifier

BASELIGHT 5330RB ▪ 330W remote ballast fixture
 ▪ Ideal for tabletop applications, primarily for stand/boom mount
 ▪ Interconnect head to ballast cable, ballast box contains 3 on/off switches for variable intensity control



BASELIGHT 5110

BASELIGHT 5660RB ▪ 660W remote ballast fixture
 ▪ Ideal for stand mounted studio/location applications
 ▪ Interconnect head to ballast cable, ballast box contains 6 on/off switches for variable intensity control

MODULAR SERIES

Common Features

- Ideal for low grids/ceilings when used in single fixture configuration
- Unique interlocking dove-tail construction allows for building of multiple fixture configurations, providing longer throw ranges
- Lamps available in tungsten or daylight balance
- Included with fixture are lamps, yoke, power cord, line lens, and C-clamp
- Housing: fiberglass reinforced extruded ABS plastic
- 24 gauge rolled aluminum construction
- Power entry module with fuse holder and IEC connector incorporated on head

Modular VVC-078

78W modular fixture

Modular VVC-110

110W modular fixture

Modular VVC-117

117W modular fixture

VID-LITE SERIES

VID-LITE 3/5 ▪ Especially compact and weigh only 12 lbs. and 16 lbs., respectively

VID-LITE 117 ▪ Compact, rugged fixture measuring 17" x 12" x 2"

VID-LITE 128 ▪ Available with 2, 4, or 6 T8 lamps operating at 64W, 128W, and 192W, respectively
 ▪ Fixtures are available in all dimming/power options
 ▪ Lamps are available for film and video options

VID-LITE 96/160/224/384 ▪ For situations where a controlled, highly focused, energy efficient light is needed
 ▪ Feature 3 or 12 conical reflectors mounted in a round housing
 ▪ Provide as much light as competitive fixtures using a hot centered beam of Cool Light SRGB
 ▪ Available in nondimming, as well as power mains or analog dimming versions

VID-TRANS

▪ Printed in any size
 ▪ Images can be digitally transferred to SRGB/RGB/CMYK files
 ▪ When used in an SRGB Light Box, color reproduction in video studios is optimized and guaranteed color correct
 ▪ Videsence has developed a process where transparency is nonreflective and does not require mounting to any other substrate

LIGHT BOX

▪ Series of light emitting panels that can evenly light Vid-Trans or other transparent membranes
 ▪ Boxes are 2' x 4' and 4' x 4' units
 ▪ Can be ganged together to form a wall-sized array of light
 ▪ Vid-Trans attaches to leading edges in a variety of fashions
 ▪ Units can be framed or seamless

VISTA DIMMING CONSOLES

VISTA I ▪ 12-channel lighting control console with standard DMX-512 output
 ▪ AMX-192 and 0 to +10VDC analog outputs are optional
 ▪ Hold mode gives VISTA I capabilities of a 2-scene console
 ▪ Has a Grandmaster, 2 sub-masters, and 12 channel sliders
 ▪ Can softpatch up to 192 dimmers
 ▪ Modes of operation: play, hold, assign, patch

VISTA II ▪ 2-scene 24-channel programmable control console with proportional softpatching, 10 dedicated sub-masters, chase functions, battery backed up memory
 ▪ Outputs AMX-192/DMX-512 simultaneously
 ▪ Keypad entry for patch assignments
 ▪ Manual X and Y cross faders with timers

VID-STRIPS

▪ Designed to drive dimmable fluorescent lighting fixtures
 ▪ May be used with other dimmable fluorescent lamps or incandescent fixtures
 ▪ Each includes: a DMX-512 input at one end, and a DMX-512 output at one end
 ▪ May be daisy-chained using standard DMX-512 techniques
 ▪ Includes a DMX hold feature, status LED, channel select switch, and a non-dim switch

Call For Pricing

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

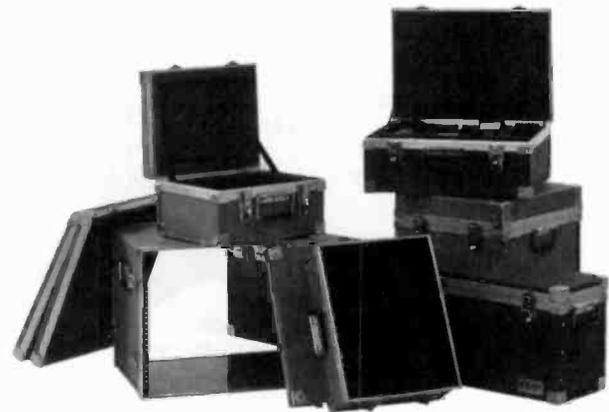


CASES



Standard ATA Cases

Second only to the spec 300 case. Available in $\frac{1}{4}$ " and $\frac{1}{2}$ " construction using furniture-grade plywood laminated to A.B.S., stucco, aluminum or fiberglass. Double edge extrusion is used for exceptional strength and support, plus heavy-duty steel twist locks, corners and handles.



Carrylite Cases

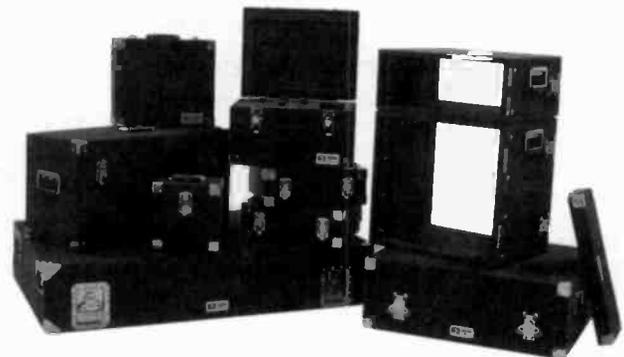
This semi-molded case is made from $\frac{1}{8}$ " tough, scratch-resistant A.B.S. It has steel corners that protect better than an all molded case and is available in gray or dark blue. Recommended for equipment that weighs 40 lbs. or less.

Tilt n' Go Travel Cases

- Standard sizes or built to your specifications
- Recessed telescopic handle
- Sturdy built-in wheels

Viking cases offer a logical solution to those travelers who need to carry heavy items aboard aircraft, but are hindered by long walks to and from the boarding gate.

Simply pull out the telescoping handle, tilt the case onto its sturdy built-in wheels and go.



Crosstown Cases

Priced 40% less than standard ATA cases, they are very popular with rental departments where strength and durability are important.



Norseman Cases

An economical, local-duty shipping case using nonrecessed hardware. This is a very strong case, but because of the nonrecessed hardware, it cannot be recommended for air or surface common carrier type shipments. Available only in black and $\frac{1}{4}$ " construction. Priced less than standard ATA cases.

Call For Pricing

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





STUDIO PEDESTALS

- 3445-3 Quattro, 4-stage pedestal. Capacity: 242 lbs. \$37,500.00
- 3429-3 Quartz Two, 2-stage pedestal. Capacity: 176 lbs. 22,500.00
- 3447-3 Quartz One, 1-stage pedestal. Capacity: 209 lbs. 18,600.00



OSPREY PEDESTALS

- 3374-3B Osprey *Elite* 2-stage steering O/B pedestal. Capacity: 165 lbs. \$17,980.00
- 3374-3C Osprey *Elite* 2-stage steering studio pedestal. Capacity: 165 lbs. \$17,980.00
- 3328-3C Osprey *Plus*, 2-stage, steering pedestal. Capacity: 165 lbs. 15,955.00
- 3323-3C Osprey *Plus*, 1-stage, steering pedestal. Capacity: 198 lbs. 15,393.00

LIGHTWEIGHT STUDIO/OB PEDESTALS

- 3381-3C Pro-Ped Studio pedestal (5" wheels, cable guards, track locks). Capacity: 120 lbs. . . . \$8,540.00
- 3381-3B Pro-Ped OB pedestal. 6" wheels, track locks. Capacity: 120 lbs. 7,555.00
- 3320-3C VISION Studio pedestal (4" wheels, cable guards, track locks). Capacity: 44 lbs. 3,065.00

LIGHTWEIGHT STUDIO/OB ACCESSORIES

- 3369-50 Tracking skid for Osprey columns and tripods. \$3,375.00
- 3329-30 Osprey OB wheel set (set of 3). 2,230.00
- 3407-1A Scaffold clamp 985.00
- 3357-3 Portable pump for ProPed, Osprey, Quartz, Quattro 845.00
- 3329-44 Osprey OB wheel cable guards (set of 3) 650.00
- 10072 Nitrogen regulator (requires 1503-4 hose) 620.00
- 3329-21 Osprey tiller arm 320.00
- 1503-4 High pressure hose 100.00

Note: 44 lb. capacity includes pan/tilt head. Not suitable for mounting teleprompters.

STUDIO AND OB PAN/TILT HEADS

- 3448-3 Vector 700 head (TF drag). Capacity: 154 lbs. . . \$12,000.00
 - 3354-3 Vector 70 head (LF drag). Capacity: 154 lbs. . . 10,485.00
 - 3354-3H Vector 70 head (High center of gravity version). Capacity: 154 lbs. 10,465.00
 - 3716-3 MK5 Cam head. Capacity: 180 lbs. 7,735.00
- Note: Above prices include female wedge adaptor, male wedge plate, two 14" pan bars and clamps, foam handle extension and Vinten Mitchell base
- 3076-5 Petrel head (includes dual pan bars and clamps). Capacity: 100 lbs. 4,485.00

STUDIO AND OB PAN/TILT HEAD ACCESSORIES

Camera Mounting Adaptors

- 3069-3 Wedge plate extender, MK5 \$1,185.00
- 1125 3" riser block. 380.00
- 1126 1" riser block. 245.00
- 3052-1A Standard male wedge plate (slotted). 345.00
- 3391-3 Short male wedge plate MK5, Vector 70/700 . . 315.00
- 3052 Standard male wedge plate MK5, Vector 70/700 . 310.00

Note: Above adaptors supplied with basic fastening hardware only. Some applications may require additional hardware.

Head Base Mounting Adaptors

- 3103-3 Mitchell mount 4-bolt flat base to heavy duty tripod \$494.00
- 3750-3 Vinten 4-bolt to Vinten Mitchell mount adaptor . . 465.00
- 3155-3 Hi-hat, 4-bolt flat base to 4-bolt flat base (8" rise) . 410.00
- 3055-3 Mitchell hi-hat adaptor for pedestals. 370.00
- 3724-3 Mitchell Spider w/wingnut 315.00
- 1212-7 3750-3 to generic Mitchell mount adaptor 195.00
- 3432-2 Vinten Mitchell wingnut 105.00

Pan Bars

- 3219-62 Full-sized pan bar and clamp for Vector 70, MK7B and MK5 \$375.00
- 3219-41 Telescopic pan bar and clamp for 3076-5 Petrel 310.00
- 3219-58 Foam handle extension sleeve 255.00
- 3219-67 Short pan bar and clamp for Vector 70/700/MK5 189.00

TRANSIT CASES

- 8628-3A For Osprey/ProPed column \$1,340.00
- 8628-3B For Osprey/ProPed dolly 1,340.00
- 3355-3 For Vector 70 and Vector 700 heads 1,185.00
- 3205-3 Universal case for HD-1/HD-2 with dolly 940.00
- 3138-3 For Petrel head 840.00
- 3119-3 For MK5 head. 705.00

SPREADERS

- 3378-901SP EFP mid-level spreader w/set of 3 circular feet \$725.00
- 3378-900SP ENG mid-level spreader w/set of 3 circular feet . . 650.00
- 3367-3 Heavy duty flexible calibrated floor spreader . . . 495.00
- 3363-3 Lightweight calibrated floor spreader . . . 330.00
- 3378-902SP Set of 3 circular anti-skid feet \$70.00



VISION DOLLIES

- 3319-3C Folding/castoring dolly w/4" wheels, track lock steering and cable guards, for studio use . . . \$940.00
- 3319-3B Folding/castoring dolly w/5" wheels, for OB use. . . 830.00

HEAVY DUTY TRIPODS

- 3496-3C HD-2 two-stage tripod w/mid-level spreader, Mitchell and 4-bolt mount; 253 lb. capacity \$4,265.00
- 3495-3C HD-1 one-stage tripod w/mid-level spreader, Mitchell and 4-bolt mount; 265 lb. capacity 3,400.00

HEAVY DUTY TRIPOD ACCESSORIES

- 33370-3 Elevation unit for HD-1 (use only with HD-1 tripod and mid-level spreader). \$2,720.00
- 3497-3C Studio skid for HD-1 and HD-2 tripod with 125mm (5") castoring wheels, track locks and cable guards 2,205.00
- 3497-3B OB skid for HD-1 and HD-2 tripod with 150mm (6") castoring wheels 1,960.00
- 3368-24 Vinten 4-bolt mounting adaptor to mount pan and tilt directly to skids 550.00
- 3367-3 Heavy duty flexible calibrated floor spreader. . . 495.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



CAMERA SUPPORT EQUIPMENT



Vinten

VISION PAN/TILT HEADS

- 3259-3F VISION 30 EFP Fluid Head w/single pan bar and clamp. With 3761-3/13 Quick-fit camera adaptor, flat base to accept intermediate adaptors. Capacity: 80 lbs. \$10,210.00
- 3259-3S VISION 30 EFP Fluid Head w/single pan bar and clamp. With 3761-3/13 Quick-fit camera adaptor, 150mm ball base. Capacity: 80 lbs. 9,900.00
- 3386-3F VISION SD22 ENG/EFP Serial Drag head w/single telescopic pan bar and flat base to accept intermediate adaptors. Capacity: 55 lbs. 6,490.00
- 3386-3S VISION SD22 ENG/EFP Serial Drag head w/single telescopic pan bar, dual 100/150mm ball base. Capacity: 55 lbs. 6,150.00
- 3364-3 VISION SD12 ENG Serial Drag head w/single telescopic pan bar, 100mm ball base. Capacity: 35 lbs. 4,500.00
- 3390-3 VISION 10LF Fluid Head w/single pan bar, 100mm ball base. Capacity: 30 lbs. 3,530.00
- 3395-3 VISION 5LF Fluid Head w/single pan bar, 100mm ball base. Capacity: 18 lbs. 2,180.00

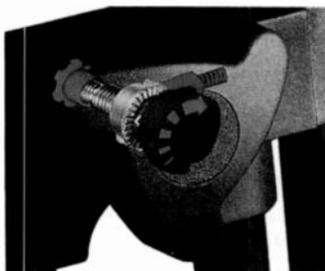
PAN/TILT HEAD ACCESSORIES

Pan Bars and Clamps

- 3219-42 Telescopic pan bar for VISION 30 \$355.00
- 3219-34 Sideways extension clamp for VISION 10LF 340.00
- 3219-52 Telescopic pan bar for VISION 10LF, SD12, SD22 255.00
- 3219-39 Telescopic pan bar for VISION 5LF 255.00
- 3259-30 Studio pan bar clamp for VISION 30 157.00
- 3219-26 Pan bar and clamp for VISION 5LF 145.00
- 3219-21 Pan bar and clamp for VISION 10LF 145.00
- 3308-157 14" Studio pan bar for VISION 30 142.00

Camera Plates

- 3364-900SP Camera mounting plate w/2 3/8"-16 fixing screws for VISION 10LF, SD12, SD22 \$170.00
- 3325-901SP Camera mounting plate w/2 3/8"-16 fixing screws for VISION 5LF 150.00



Torque-Safe Clamp

VISION LIGHTWEIGHT SYSTEMS

Carbon Fiber (C/F) Torque-Safe Tripod Systems

- SD-12ELT VISION SD22 dual telescopic pan bars, 2-stage EFP (150 mm) C/F tripod, L/W spreader \$9,085.00
- SD-12XLT VISION SD12, telescopic pan bar, 2-stage EFP (10mm) C/F tripod, L/W spreader 7,075.00
- SD-12LTM VISION SD12, telescopic pan bar, 2-stage C/F tripod w/mid-level spreader, 3 circular feet 6,880.00
- SD-12LT VISION SD12, telescopic pan bar, 2-stage C/F tripod 6,560.00
- VIN-10LTM VISION 10LF, single pan bar, 2-stage C/F tripod w/mid-level spreader, 3 circular feet 5,910.00
- VIN-10LT VISION 10LF, single pan bar, 2-stage C/F tripod, L/W spreader 5,590.00

Aluminum Torque-Safe Tripod Systems

- SD-22S VISION SD22, dual telescopic pan bars, EFP tripod, VISION folding/castoring dolly w/cable guards. \$8,970.00
- SD-22M VISION SD22, dual telescopic pan bars, EFP tripod, C/F mid-level spreader, 3 circular feet 8,755.00
- SD-22E VISION SD22, dual telescopic pan bars, EFP tripod, HD spreader 8,525.00
- SD-12M VISION SD12, telescopic pan bar, 2-stage tripod, C/F mid-level spreader, 3 circular feet 6,435.00
- SD-12C VISION SD12, telescopic pan bar, 2-stage tripod, L/W spreader 6,115.00
- VIN-10M VISION 10LF, single pan bar, 2-stage tripod, C/F mid-level spreader, 3 circular feet 5,465.00
- VIN-10C VISION 10LF, single pan bar, 2-stage tripod, L/W spreader 5,145.00
- VIN-10A VISION 10LF, single pan bar, 1-stage tripod, L/W spreader 4,845.00
- VIN-5C VISION 5LF, single pan bar, 2-stage tripod, L/W spreader 3,795.00
- VIN-5AB VISION 5LF, single pan bar, 1-stage tripod, L/W spreader, soft case 2,900.00

Aluminum Toggle-Clamp (T/C) Tripod Systems

- VIN-10ST2 VISION 10LF, single pan bar, 2-stage T/C tripod, spreader, soft case \$4,690.00
- VIN-5ST VISION 5LF, single pan bar, 1-stage T/C tripod, spreader, soft case 2,665.00

Pro Touch Systems

- Pro-130/10-1 Pro-130/10 single-stage VISION ENG tripod, floor spreader and soft carrying case \$1,850.00
- Pro-130/10-2 Pro-130/10 2-stage VISION ENG tripod, floor spreader, soft carrying case 1,850.00
- Pro-130/7-1 Pro-130/7 single-stage VISION ENG tripod, floor spreader and soft carrying case 1,700.00
- Pro-130/7-2 Pro-130/7 2-stage VISION ENG tripod, floor spreader and soft carrying case 1,700.00

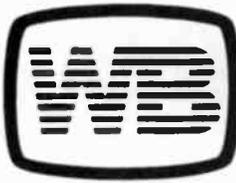


VISION LIGHTWEIGHT TRIPODS AND PEDESTALS

- Carbon Fiber Tripods with Torque-Safe Leg Locks**
- 3383-3 2-stage EFP (150mm bowl) C/F tripod with carrying strap. Capacity: 100 lbs. \$2,350.00
- 3380-3 2-stage EFP (100mm bowl) C/F tripod with carrying strap. Capacity: 99 lbs. 2,245.00
- 3523-3 2-stage EFP (150mm bowl) C/F tripod with carrying strap. Capacity: 45 lbs. 1,730.00
- Aluminum Tripods with Torque-Safe Leg Locks**
- 3516-3 2-stage EFP (150mm bowl). Capacity: 100 lbs. 1,675.00
- 3522-3 EFP "Baby Legs" (150mm bowl). Capacity: 100 lbs. 1,435.00
- 3513-3 2-stage ENG (100mm bowl). Capacity: 45 lbs. 1,285.00
- 3521-3 ENG "Baby Legs" (100mm bowl) Capacity: 45 lbs. 1,200.00
- 3518-3 1-stage ENG (100mm bowl). Capacity: 45 lbs. 985.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





WALTER BREWER CORPORATION
 Television & Motion Picture
Lighting Systems Integrators
 Design • Engineering • Sales



STUDIO LIGHTING SYSTEMS

- Power Distribution
- Dimming & Control
- Grids & Grid Hardware
- Curtains & Curtain Tracks
- Fixtures & Accessories
- Grip & Gaffer Equipment



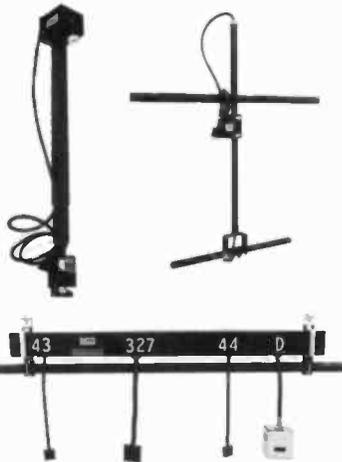
WBC Scoops

14" and 18" focusing type scoops; 1000W and 2000W. All aluminum construction combines strength with light weight and high heat dissipation. UL listed.



WBC Light Hangers

2 types available: 100 lb. capacity Pole and 200 lb. capacity Telescoping. Both extendable from 5' to 15'. Telescoping operable from studio floor.



WBC Connector Strips

Rigid steel construction with UL listed wiring and connectors. 10', 13' and 16' lengths with four, five and six 20 amp pigtails, respectively. Custom lengths available.



SERVICES AVAILABLE

- Standard Studio Packages complete with drawings and material take-offs
- Custom studio lighting design, engineering, installation and commissioning
- Standard and custom lighting packages for teleconferencing, private production, training, church and school environments
- Remote power generation, location lighting systems, mobile lighting equipment trucks & trailers
- Fee-based consultation in studio lighting design and engineering.
- Fee-based, hands-on instruction in equipment utilization and lighting techniques

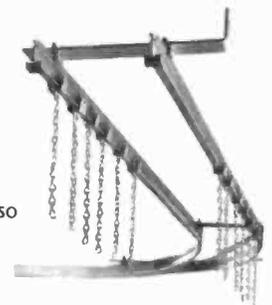
WBC Studio Ladders

All steel construction. 9 models available to reach grids from 8' to 16' high. Large top platform. Locking casters. Exceed OSHA safety standards.



WBC Cycs Curtains & Curtain Tracks

Seamless cycloramas to 125' long and 28' high. Choice of 3 colors. Seamless scrim in white or black also available. Curtain track, hardware and accessories in standard and custom configurations.

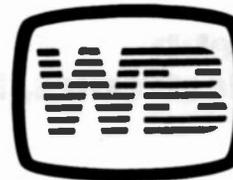


Call For Pricing

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



FLUORESCENT LIGHTING



WALTER BREWER CORPORATION
Television & Motion Picture
Lighting Systems Integrators
Design · Engineering · Sales



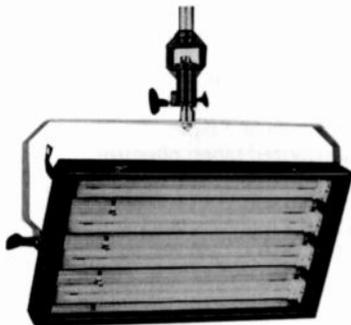
Lighting With Fluorescents

Walter Brewer Corporation provides fluorescent "cool light" lighting systems for video, combining the efficiency of high-frequency/intensity fluorescent light sources with the new, improved color rendition lamps equal to that of tungsten lighting.

The fluorescent light fixture is a lighting tool to be used with quartz or other lighting instruments to combine the qualities of a natural setting with depth, dimension, mood and modeling shadows. It is most effective in studio production applications when used with quartz tungsten lighting. The modeling and mood characteristics of quartz lights add to the efficiency and comfort of fluorescent lights.

Walter Brewer Corporation offers a wide range of fluorescent fixtures and control accessories. The fixtures are available in different configurations using 36W or 55W compact fluorescent lamps (CFLs). Color rendition is improved through the use of high frequency ballasts and color-corrected lamps with increased camera sensitivity to lamp phosphors, which allows these fixtures to provide more viable options for television lighting.

Fluorescent lighting is ideal for static sets or blocked shots such as news or interview sets, teleconferencing or small studios that lack ceiling heights, power or air conditioning. Fluorescent lights are not point source lights and cannot be projected long distance. They must be used up close.



Beam Control

Control of light rays is achieved by combining the reflector with "screens" or honeycombs. These honeycombs direct the beams in parallel rays. They are available in a number of thicknesses providing different beam angles (30°, 60°, or 90°). Most are available in black or silver. They slide into the gel frame slot on the face of the fixture or intensifier.

Intensifiers

The intensifier increases light output by redirecting the stray light emitted by the fixture. The increased light ranges from 1.2X to 2.0X, depending on the fixture. The intensifier looks like a mirror-lined barn door when attached to the front of the fixture.

Prismatic Lens

When not using the intensifier, the center axial illumination can be improved by $\frac{1}{2}$ using an acrylic prismatic lens behind the control screen.

Control

Fluorescent fixtures available for remote control by the following:

- On-Off/Non-dim—Breaker or local switching of power source.
- Analog—Dimming by 0-10VDC analog signal does not turn off fixture completely, 25-100% range.
- DMX—Dimming by 0-10VDC DMX512 signal allowing patch digital address assignment of fixture. Fixture can be turned off, range 0-100%, off after 20%



Lamps

A choice of lamp color temperature is available, "Tungsten" 3200K or "Daylight" 5500K. Wattages range from a 36W to 55W model. The lamp life of a CFL averages between 10,000 and 12,000 hours.

Fluorescent Benefits

- Improved efficiency over tungsten with a lumen per watt efficiency of 3X greater
- Talent comfort—no radiant heat
- Less power consumption with low wattage lamps
- Less air-conditioning requirements
- Choice of color temperatures, tungsten or daylight
- Lamp life in excess of 10,000 hours
- Dimming with no significant color change
- Less glare with assortment of control screen attachments
- Softlight or shadowless source allows natural modeling

Call For Pricing

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

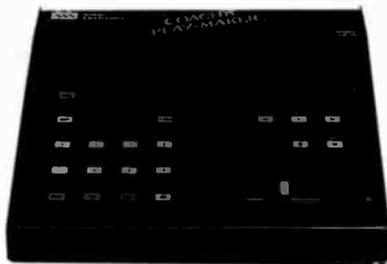
REFERENCE



**Webb
Electronics, Inc.**



**SPORTS VIDEO
SYSTEMS**



CPM12

Coach's Play-Maker Editing System

Using 1 player and 1-4 recorders the Coach's Play-Maker enables you to break down your source tape into 16 or more different tapes: offense, defense, kicks, first downs, long yardage, etc. Information for 16 games can be kept in memory. The Play-Maker will record segments in slow-motion automatically for easily made highlight tapes.

The CPM3 Play-Maker system enables you to break out offense, defense and kicks or any 3 categories.

Play-Maker edit systems include: edit panel, control box and cable for edit panel. An additional edit cable is needed for each VCR.

CPM22	2 source, 4 automated edit VCR system	\$3125.00
CPM12	1 source, 4 automated edit VCR system	2775.00
CPM8	1 Panasonic AG-1970 source, 4 Sharp XA-410 edit VCR system	2775.00
CPM3	1 source, 3 manual edit VCR system	1400.00
CABED60	VCR edit cable	30.00



VP5

VP5 Video Pickle

- Use as a pointer ▪ Quickly place Os, Vs and Xs on the video
- Use as an electronic chalkboard (no VCR needed) ▪ Hundreds of formations can be saved for future review ▪ Selectively erase the whole screen or just small portions ▪ Works with S-VHS and composite signals

The Video Pickle enables you to draw over video, highlighting coaching points and drawing plays during video sessions. Pressing a button on the pen activates a menu of formations and symbols. Offensive and defensive formations are simply programmed and easily added to the menu.

VP5	Video Pickle	\$1390.00
VP5.P	With printer port	1650.00
VP3	Draw on video; set diagrams for football, basketball and volleyball	850.00
VP1	Draw on video only	795.00

"Cowboy Remote" Control

The Cowboy Remote is designed to meet the needs of coaches and players reviewing game and practice videotapes. The remote comfortably fits in your hand with buttons strategically placed for instant access and control. This remote is used by more than 22 NFL organizations and many colleges and high schools.



These functions are at your fingertips: ▪ Reverse while pressed, returns to play when released ▪ Reverse-Play while pressed, returns to play when released ▪ Slow-Motion ▪ Reverse-Slow-Motion ▪ Still Frame ▪ Reverse-Frame ▪ Fast View ▪ Play ▪ Rewind ▪ Stop ▪ On/Off ▪ Record/Record Pause ▪ Lighted buttons let you operate in dark offices and conference rooms ▪ 3-year warranty

Beamer Remote:	Cowboy remote with built-in laser pointer . . .	\$565.00
RCP1960	Panasonic AG-1960, AG-1970	399.00
RCP1960FS	Same as RCP1960 with foot switch for Reverse-Play operation	459.00

Note: Remotes available for use with other Panasonic, Sony and JVC VCRs.

Coach Potato Sideline Video Recording System

Coach Potato is a portable system allowing easy copying or breakdown of game video while you're on the field. As soon as you step off the turf, your tapes are readily available. Coach Potato products make it easy to record the action without taping unwanted material by mistake. Once you begin recording with the camera, the VCR also begins recording. When you stop taping, the VCR stops taping. With this system, you won't have to worry about turning the VCR on and off between each play—all you have to do is aim and shoot. Several options are available with the Coach Potato family. You can choose a specific product in the Potato family to meet your needs as well as your budget.

Making 1 copy—the One Potato: This product enables you to produce 1 copy of your game tape.

Making 2 copies—the Two Potato: The Two Potato consists of 2 connecting Potatoes controlling 2 VCRs. Immediately after the game, you have 2 copies.

Break out 1 or 2 categories with the Potato Switch Box: The switch box enables you to divide your game video into 1-2 categories. All you have to do is select 1 of the buttons on the face of the box and the corresponding VCR will be controlled by the camera as you tape.

Break out 1-4 categories—the Three Potato: Has the ability to control up to 6 editing VCRs generating a maximum of 7 tapes. You can have as many as 4 categorized tapes: offensive, defensive, punts, PATs, etc., plus 3 duplicates.

Three Potato	CS3P1960 . . .	\$1500.00
Potato Switch Box	. . . . .	995.00
Coach Potato (1) CP60	. . . . .	395.00
Potato Cable	. . . . .	9.00



Three Potato

DA10/DA8 Distribution Amplifiers

DA10	1-in/6-out S-VHS, stereo audio (may be needed with edit system)	\$675.00
DA8	1-in/6-out composite	675.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



RACKMOUNT AUDIO MONITORING PRODUCTS



Self-Powered Speaker Systems



AMP-1A/PF Self-Powered High Fidelity Speaker System

▪ 1RU = 98dB SPL ▪ Magnetic shielding ▪ Volume and balance controls ▪ 3 power amps ▪ 5 speakers ▪ Balanced and unbalanced stereo inputs ▪ Visual phase/polarity ▪ Input meters-10-segments, tri-color, LED 23dB range ▪ Overrange (-6, 0, +4 or +8dBv) and VU- or PPM-type ballistic set by DIP switches in cover ▪ Other threshold levels for overseas standards. \$975.00

AMP-1A/P Self-Powered High Fidelity Speaker System

▪ Same as AMP-1A/PF but with level meters only included. . . \$860.00

AMP-1A/F Self-Powered High Fidelity Speaker System

▪ Same as AMP-1A/PF but with visual phase/polarity indicator only. \$825.00

AMP-1A Self-Powered High Fidelity Speaker System

▪ 1RU = 98dB SPL ▪ Magnetic shielding ▪ Volume/balance controls ▪ 3 power amps ▪ 5 speakers ▪ Balanced/unbalanced stereo inputs . . \$710.00

AMP-2 Self-Powered High Fidelity Speaker System

▪ 2RU = 104dB SPL ▪ Magnetic shielding ▪ 20 segment LED level meters VU or PPM ▪ Levels/ballistics settable ▪ Visual phase/polarity. . \$1095.00

AMP-1A/VTR+ Self-Powered High Fidelity Speaker System

▪ 1RU = All 4 VTR audio tracks ▪ 4 level meters ▪ Visual phase/polarity \$1445.00

AMP-2/VTR+ Self-Powered High Fidelity Speaker System

▪ 2RU = All 4 VTR audio tracks ▪ 4 level meters ▪ Visual phase/polarity \$1715.00

AMP-2AMPPM Self-Powered High Fidelity Speaker System

▪ 2RU = 104dB SPL ▪ Magnetic shielding ▪ True PPM mechanical level meters ▪ Visual phase/polarity \$1650.00

AMP-2AMVU Self-Powered High Fidelity Speaker System

▪ 2RU = Audiophile quality ▪ 104dB SPL ▪ Magnetic shielding ▪ True VU mechanical level meters ▪ Visual phase/polarity \$1570.00

Self-Powered Speakers-Confidence Monitoring

VM-2 Self-Powered, Confidence Monitoring Speakers

▪ 2 ch ▪ 1RU ▪ Separate volume controls and headphone jack ▪ XLR and RCA in ▪ Magnetic shielding \$515.00

VM-1 Self-Powered, Confidence Monitoring Speakers

▪ 1 ch ▪ 1RU ▪ XLR in ▪ Magnetic shielding \$370.00



VM-4 Self-Powered, Confidence Monitoring Speakers

▪ 4 ch ▪ 1RU ▪ 4 separate volume controls ▪ 4 speakers ▪ Magnetic shielding \$840.00

Audio Routing Switchers/Source Select-Analog

ARS-11 5 stereo ins, 1 stereo out \$475.00

ARS-12 Selects one of five 4-channel groups. 695.00

ARS-14 Selects one of five 8-channel groups. 785.00

ARS-21-A 5 mono inputs to 2 independent outputs. 510.00

ARS-21-B 10 mono inputs to 1 output. 520.00

ARS-21-C 2 independent groups of (5 mono in to 1 mono out). . 530.00

ARS-22-A 5 stereo ins, 2 independent stereo out 675.00

ARS-22-B 10 stereo ins, 1 stereo out 695.00

ARS-22-C 2 independent groups of (5 stereo inputs to 1 stereo out) 710.00

ARS-42-A 5 mono ins, 4 independent outs. 780.00

ARS-42-B 10 mono ins, 2 independent outs. 780.00

ARS-42-C 2 independent groups of 5 mono ins to 2 independent outs \$ 810.00

ARS-42-D 20 mono ins, 1 out. 810.00

ARS-44-A 5 stereo ins, 4 independent stereo outs 1015.00

ARS-44-B 10 stereo ins, 2 independent stereo outs 1060.00

ARS-44-C 2 independent groups of (5 stereo ins to 2 individual stereo outs) 1015.00

ARS-44-D 20 stereo ins to 1 stereo out. 1135.00

Audio Routing Switchers/Source Select-Digital

ARS-D161 ▪ 16 AES/EBU in ▪ 1 AES/EBU out ▪ BNC connectors. \$1260.00

ARS-D82 ▪ 8 AES/EBU in ▪ 2 AES/EBU out ▪ BNC connectors. . 975.00

ARS-D81 ▪ 8 AES/EBU in ▪ 1 AES/EBU out ▪ BNC connectors. . 775.00

Standard Level Meters and Audio Alarms

MLH-2 Standard Level Meter

▪ 1RU ▪ 2 ch ▪ Large 24-segment, tri-color bargraph ▪ Separate peak LED \$610.00

MLH-2P Standard Level Meter

▪ Same as MLH-2 but with phase/polarity indicator \$750.00

MLH-2D Standard Level Meter

▪ For digital AES/EBU signals \$755.00

MLH-2AL Standard Level Meter

▪ 1RU ▪ 2 ch ▪ Large 24-segment, tri-color bargraph ▪ Separate peak LEC ▪ Alarm module for loss of audio and overrange \$945.00

MLH-2ALD Standard Level Meter

▪ For digital AES/EBU signals \$1090.00

MLH-4 Series Standard Level Meter

▪ 1RU ▪ 4 ch (2 pair) ▪ Large 24-segment, tri-color bargraph ▪ Separate peak LED. \$945.00-1790.00

MSH-8 Standard Level Meter

▪ 1RU ▪ 8 ch (4 pair) ▪ 25-segment, tri-color bargraph \$1285.00

MSH-8P Standard Level Meter

▪ Same as MSH-8 but with phase/polarity indicator. \$1845.00

MSH-8D Standard Level Meter

▪ For digital AES/EBU signals \$1800.00

MSH-8AL Standard Level Meter

▪ 1RU ▪ 8 ch (4 pair) ▪ 25-segment, tri-color bargraphs ▪ Alarm modules for loss of audio and overrange ▪ Time delays set in pairs \$2180.00

MSH-8ALD Standard Level Meter

▪ For digital AES/EBU signals \$2695.00

MSLV-120 Standard Level Meter

▪ 1RU ▪ 20 ch ▪ 10-segment, tri-color bargraphs \$1600.00

MSLV-120D Standard Level Meter

▪ For digital AES/EBU signals \$2700.00

MSLV-220 Standard Level Meter

▪ 20 channels ▪ 25-segment, tri-color bargraph analog level meters ▪ 2RU. \$2800.00

MSLV-220D Standard Level Meter

▪ Same as MSLV-220 except with digital level meters. \$4060.00

Half-Rack Speaker Systems

SPM-1 Speaker System

▪ 3RU, half rack ▪ 4 channel ▪ Analog inputs on XLR with loopthrough ▪ Lighed pushbutton channel select with summing. \$745.00

SPM-2 Speaker System

▪ 3RU, half rack ▪ Dual AES inputs on BNC with loopthrough ▪ Lighed pushbutton channel select with summing \$1950.00

SPM-3 Speaker System

▪ 3RU, half rack ▪ One SDI input with loopthrough and reclocking ▪ 2 auxiliary AES inputs and AES outputs from SDI source ▪ Lighed pushbutton channel select with summing \$4200.00

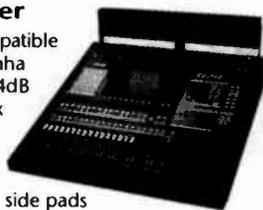
ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





O2R Digital Recording Mixer

- 40 inputs ■ 8-bus ■ Fully automated ■ Compatible with TASCAM, ADAT, AES/EBU and Yamaha digital formats ■ 20Hz~20kHz +1, -3dB at +4dB into 600 ohms frequency response ■ 320 x 240 pixel back lit LCD display ■ Many accessories available including interface cards, digital cascade card kit, meter bridge, memory expansion kit and wood side pads



O2R \$8699.00

EMX3500 Series Powered Mixers

- For live SR/commercial installation markets ■ Built-in stereo amplifiers/digital signal processor ■ 350W + 350W/4 ohms, 0.5% THD at 1kHz, 200W + 200W/8 ohms, 0.5% THD at 1kHz max. output power ■ 20Hz-20kHz +1, -3dB, 1W into 4 ohms frequency response ■ 40dB range (-60~-16dB) stop to stop gain control ■ Pad switch ■ A (XLR-type)/B (TRS-type) select switch ■ 2 illuminated level meters ■ +48VDC phantom power ■ Digital Effects Processor includes: vocal echo 1 and 2; vocal reverb 1 and 2; reverb and echo 1 and 2; large/small hall; church; room; snare gate; snare reverb; delay; short delay; pitch chorus

EMX3500-16 16 inputs \$2199.00
EMX3500-12 12 inputs 1999.00

EMX640 Powered Mixer

- 4 separate pieces: mixer, digital reverb, 2 graphic equalizers, 2-channel amplifier ■ 6 inputs (2 stereo) ■ Tape-in/effects return inputs ■ Patching necessary for connecting more amplifiers or for accepting more inputs via another mixer ■ RCA jacks ■ 200W/4 ohms @ 0.5% THD at 1kHz maximum output power ■ Frequency response: 20Hz~20kHz +1dB, -3dB ■ 65dB adjacent input/input to output crosstalk at 1kHz ■ <0.2% @ 20~20kHz +14dBt output into 10k ohms THD (main out, monitor out, effect send) ■ 5-point LED meter ■ +48V phantom power



EMX640 6-channel with DSP, 200W x 2 @ 4 ohms \$649.95

ProMix 01 Programmable Mixer

- Instant recall with 50 scene memories ■ 16 input channels (8 XLR, 8 phone jacks—all balanced) ■ Linear 20-bit 64X oversampling A/D converters/8X oversampling D/A converters ■ 2 internal effects processors with 30 preset/10 user programs ■ 3 dynamics processors with 10 preset/10 user programs ■ 20Hz~20kHz +1, -3dB at +4dB into 600 ohms frequency response ■ 2 x 12-segment LED bars

ProMix 01 \$1999.00

MM1402 Mixer

- Light/compact ■ For small PA, home recording, multi-keyboard systems ■ 14-into-2 mixer comprising 6 mic/line inputs, 4 stereo inputs, 2 ST-Aux returns, stereo tape inputs and stereo sub inputs ■ 20Hz~20kHz 0 +1, -3dB at +4dB (ST OUT L, at 600 ohms, AUX SEND 1, 2 at 600 ohms) frequency response ■ LED meters ■ CH peak indicators ■ +48VDC phantom power

MM1402 \$449.00
RK02 Rackmount kit for MM1402 29.95

MC10 Series Monitor Mixing Consoles

- Onstage monitoring ■ 10 mix ■ Professional compatibility ■ Monitor/auxiliary mixing facilities ■ 12-bus format allows up to 10 independent monitor mixes/2 auxiliary mixes ■ 20Hz~20kHz 0 +1, -3dB (at 600 ohms +4dB) frequency response ■ VU meter illuminated peak indicators ■ 80W power consumption

MC3210M 32 inputs \$8199.00
MC2410M 24 inputs 6199.00

MC04 Series Mixing Consoles

- Flexible signal routing ■ Versatile processing functions ■ Mix matrix feature provides output grouping flexibility ■ Compatible with professional audio equipment ■ Light/compact for stage and studio applications ■ 10 mixing buses—4 group, 4 auxiliary and master stereo ■ 20Hz~20kHz 0dB (at 600 ohms +4dB) frequency response ■ +48VDC phantom power supply ■ 80W power consumption

MC3204II 32 inputs \$6199.00
MC2404II 24 inputs 4999.00
MC1604II 16 inputs 3999.00
MC1204II 12 inputs 3459.00

O3D Digital Mixing Console

- For professional project/post production studios ■ 26 inputs/18 outputs with highly flexible digital I/O ■ Maximum compatibility through YGDAI open system ■ Individual channel preset EQ and dynamics processors ■ 2 effects processors with Freeze and Amp Simulator ■ 50 scene memories ■ Motorized faders, and fader and mute grouping ■ Crossfade, auto-fade, and solo in place ■ Surround sound mixing ■ MIDI remote control ■ MTC time code based "automixing" provides full onboard automation ■ Twin RISC CPUs with 32-bit DSP processing, and 20-bit AD/DA

O3D \$3699.00

MX400 Series Mixing Consoles

- Multipurpose, 4-bus stereo mixing ■ Flexible signal routing ■ Versatile processing functions ■ 5 aux. sends (2 pre, 2 pre/post front panel switchable, 1 post) ■ Mono input offers 2 switchable balanced inputs (XLR/TRS), 3-band EQ with sweepable mid, HPF, TRS insert and direct out ■ 20Hz~20kHz +1dB, -2dB frequency response ■ +48VDC phantom power ■ Power requirement: UL/CSA model: 120VAC 60Hz, General model: 230VAC 50Hz

MX400-24 24 inputs \$2699.00
MX400-16 16 inputs 2099.00
MX400-12 12 inputs 1599.00

MX200 Series Mixing Consoles

- Light/compact ■ Primarily conserved as an SR mixer for small concert applications ■ 20Hz~20kHz +1dB, -2dB frequency response ■ +48V phantom power ■ Power requirement: UL/CSA model: 120VAC 60Hz, General model: 230VAC 50Hz, GS/Aus model: 240VAC 50Hz ■ 4 aux, stereo/mono outputs

MX200-24 24 inputs, 80W power consumption \$1499.00
MX200-16 16 inputs, 65W power consumption 1099.00
MX200-12 12 inputs, 55W power consumption 949.00
MX200-8 8 inputs, 45W power consumption 749.00

MX12/4 Mixing Console

- 12 inputs/4 bus with DSP; level matching ■ Channel insertion ■ Gain trim ■ Built-in digital effect ■ 3-band channel EQ ■ 7-band graphic equalizer ■ Monitor and effects send ■ 4-group assignment, panning, channel faders ■ Rec outputs and tape inputs ■ Master monitor/effect send and return ■ Control room and phone out level control ■ Flexible monitoring and metering ■ Stereo fader, balanced stereo outputs ■ Group fader (1~4)

MX12/4 \$599.95

MLA7 8-Channel Mic Line Pre-Amplifier

- Microphone and balanced-line input capability in a slim, rackmount package ■ Built-in 48VDC phantom power supply to XLR connectors ■ Balanced XLR connectors on all input channels ■ 20dB pad switch extends range of input levels ■ 0 +1dB, -3dB, 20Hz~20kHz at +4dB into 10K ohms frequency response ■ 20W power consumption ■ 8 channels ■ 1/8" unbalanced line outputs

MLA7 \$599.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



DEQ5 Digital Equalizer

- Digital dual-channel, 1/2-octave or PEQ with AES/EBU input/output
- Clean, precise digital equalization through advanced digital signal processing technology
- Large LCD and special rotary encoders for intuitive operation
- Selectable graphic/parametric equalization modes
- Sophisticated remote control/network capability—with up to 23 expander slaves

DEQ5\$3199.00



YDG2030 Digital Graphic Equalizer

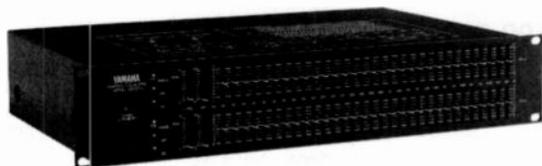
- 20-bit digital graphic equalizer
- Intuitive interface
- Outstanding performance
- 50 user programs as 30-band (stereo) with HPF and LPF
- 4 programmable notch filters for hum elimination, etc.
- Unique sweep function for cutting feedback
- 20Hz-20kHz 0±1, 0dB

YDG2030\$1299.00

YDP2006 Digital Parametric Equalizer

- 20-bit digital parametric equalizer
- Graphical interface
- Outstanding performance
- 50 user programs as 12-band (mono) or 2 x 6-band (stereo)
- Gain, frequency and Q settable on all bands
- HPF and LPF
- 4 notch filters for hum elimination
- 20Hz-20kHz 0±1, 0dB

YDP2006\$1299.00



Q2031B Graphic Equalizer

- Highly sophisticated stereo 31-band graphic equalizer
- Automatic muting circuit mutes output for 3 to 5 seconds after power is switched on
- 6 or 12dB of boost or cut, with points centered at ISO 1/2-octave frequencies from 20Hz to 20kHz
- Both balanced XLR connectors and standard unbalanced phone jacks
- Red peak LED indicator on each channel turns on when post-EQ signal reaches 3dB below clipping
- Green signal LED indicator on each channel turns on when post-EQ signal reaches 3dB below nominal level

Q2031B\$749.00

GQ2015A Professional Graphic Equalizer

- Dual 1/2-octave 15-band graphic equalizers with switchable EQ gain ±6dB or ±12dB per octave
- Balanced and unbalanced I/O
- 20Hz-20kHz, ±1dB frequency response
- Red peak LED indicator on each channel turns on when post-EQ signal reaches 3dB below clipping
- Green signal LED indicator on each channel turns on when post-EQ signal reaches 3dB below nominal level

GQ2015A\$429.00

GQ1031C Graphic Equalizer

- 1/2-octave 31-band graphic equalizer
- EQ switch in addition to main power switch determines whether equalizer circuitry is on or bypassed
- Input and output connections are via either standard 1/4" phone jacks or XLR balanced connectors
- 20Hz-20kHz, ±1dB at +4dB frequency response
- Red peak LED indicator on each channel turns on when post-EQ signal reaches 3dB below clipping
- Green signal LED indicator on each channel turns on when post-EQ signal reaches 3dB below nominal level

GQ1031C\$399.00

HA8 Mic Pre Amplifier

- High performance
- 8-input/8-output
- Balanced XLR connectors on all input and output channels
- Built-in 48VDC phantom power supply
- 20Hz-40kHz, 0 +0.2/-1.0dB at +4dB into 600 ohms frequency response
- Less than 0.05% THD
- -110dB crosstalk (at 1kHz)
- 35W power consumption

HA8\$1779.00

GC2020C 2-Channel Compressor/Limiter

- Ultra-high performance 2-channel compressor/limiter with all the features necessary for accurate tailoring of compression and limiting parameters
- Switch selectable dual-mono and stereo modes
- Expander gate with a variable threshold level on each channel
- Input and output connections utilize both standard 1/4" phone jacks and XLR balanced connectors
- +1dB, -3dB 20Hz-20kHz at +4dB frequency response

GC2020C\$469.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





D2040 Digital Channel Divider

- Stereo 4-channel (2-in/8-out) digital channel divider
- RS-485 serial interface allows external computer control over all parameters
- Top-performance A/D and D/A converters provide outstanding audio quality, with 110dB S/N ratio and frequency response of 20Hz to 20kHz
- Independent crossover filter, EQ, compression and digital delay available on each channel
- Fader settings and digital parameters can be stored to 15 user memory locations

D2040..... \$3999.00



SPX1000 Digital Multi-Effect Processor

- 40 preset effects in ROM
- 59 user-stored RAM locations for custom-edited programs
- Individual 2-band parametric EQ and dynamic filter parameters on each effect program
- MIDI control: program change, note on, control change and bulk dump and load

SPX1000..... \$1829.00



SPX990 Multi-Effect Processor

- Wide selection of professional-quality digital effects
- True stereo (2-in/2-out) configuration
- MIDI control: program change, note on, control change and bulk dump
- Effect configuration: 4 pre-effects to 36 main effects to 3 post-effects
- Main effects include variations of the following: reverb, early reflections, delay and echo, modulation, pitch change, pan, complex effects and freeze

SPX990..... \$1179.00

D5000 Digital Delay

- Professional quality digital delay
- Designed for use in studio and sound reinforcement applications
- 4 types of effect programs: dual delay, single delay, freeze record and playback, and sample and hold playback
- Stereo 20-bit A/D
- 10.4 second delay and sampling

D5000..... \$1499.00

D1030 Digital Delay Line

- Onboard equalization
- Designed especially for commercial sound applications
- 1-in/3-out configuration with independently programmable delays
- 18-bit Delta-Sigma conversion technology for greater sound performance, particularly with low-level signals
- 15 memory locations for preset selection of user-programmed delay and EQ settings; programs can be recalled via the front panel controls, a custom-built contact-closure device or an external MIDI device

D1030..... \$1299.00



ProR3 Digital Reverberator

- Designed for use in the recording studio, post production studio and for sound reinforcement applications
- 32-bit digital signal processing
- 20-bit AD/DA conversions for superior sound
- All programs are based on 1 of 10 basic effect types: reverb, early reflections, room simulator, echo+rev, early reflections+rev, chorus+rev, symphonic+rev, flange+rev, pitch change+rev and pan+rev
- 2 balanced input and output channels
- MIDI controls: program change, control change, bulk dump, note on/off, parameter change

ProR3..... \$1299.00



REV500 Digital Reverberator

- DSP technology
- 32-bit signal processing
- 20-bit oversampling A/D and D/A converters
- Left and right channel stereo signals are independently handled by separate DSP stages
- 100 presets that range from straight reverb through echo to a variety of hybrid effects
- Presets can be edited and stored in any of 100 user program memory locations
- Preset and user programs are divided into 4 categories of 25 programs each: Hall, Room, Plate and Special
- Each program has up to 8 additional "internal" parameters
- Built-in drum samples for easy setup and testing
- Provides both balance XLR and balanced/unbalanced phone jack input and output connectors
- Inputs and outputs feature independent -10/+4dB level switches
- Dual input level controls with 4-point input level monitors
- Extensive MIDI control capabilities
- Selectable "effect only" or "add direct" (original signal plus effect) output modes for convenient setup in mixer effect loop or series-connected applications
- 20Hz-20kHz (+1, -2dB) frequency response

REV500..... \$499.00

REV100 Digital Reverberator

- 99 professional quality, pre-programmed reverb and delay effects
- Stereo I/O true stereo reverb programs
- 20Hz-20kHz (all bypass) frequency response
- Front panel controls: input level, mix balance, delay, decay, level
- Front panel buttons: s, t, MIDI, store
- LED indicators: peak, L, R, delay, decay, level (editing reference)
- Effect types: stereo reverb, reverb, gate reverb, delay, delay+reverb, reverb-flanger, chorus+reverb and symphonic+reverb

REV100..... \$299.00

C20A System Controller

- Provides broad control over crossover, equalization, and delay parameters right at the console location
- Equalization parameters allow compensation for room acoustics, suppression of bass buildup in stacked systems and distance compensation
- 20Hz-20kHz frequency response

C20A..... \$1199.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

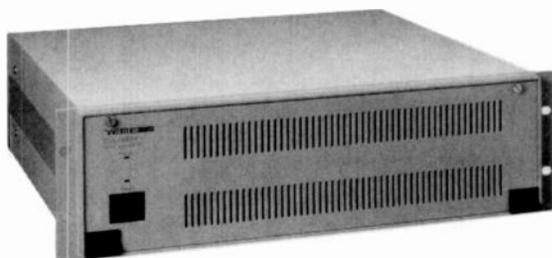




**CVS-970B High Resolution (HDTV)
Automatic Downconverter**

▪ Converts high resolution computer graphics and CAD pictures of engineering workstations to high definition TV formats ▪ Designed for multisync and multiscan modes ▪ Automatically senses and adjusts with various formats of EWS output video

CVS-970B \$23,500.00



CVS-980H Super Auto Scan Converter

▪ Real time processing wide-range multisync, multiscan converter for professional use ▪ Can convert computer graphics or CAD signals of personal computers or engineering workstations to high quality NTSC/PAL format TV picture signals ▪ Can be used as live sources of broadcasting, for making animations, etc.

CVS-980H \$19,800.00

CVS-980A Super Auto Scan Converter

▪ Converts analog or TTL RGB of interlaced/noninterlaced computer output video and high vision HDTV RGB video to NTSC or PAL TV standard format signals ▪ Designed for multisync and multiscan modes, automatically sensing and adjusting various formats of computer graphics video in the range from personal computer to high resolution engineering workstation systems

CVS-980A \$14,000.00

HSC-1125A HDTV Upconverter

▪ Handles standard NTSC video signals and nonstandard video signals as LD home video replays, TV games or still video outputs to convert to the HDTV format of Y, PB, PR and RGB signals

HSC-1125A \$11,500.00



EDC-3000 Digital Line Doubler

▪ Can convert NTSC and PAL format interlaced video signal to 2X scan rate noninterlaced high quality RGB signals ▪ Can automatically handle not only the standard composite video signal, but also the nonstandard composite video signal as the laserdisc or VCR reproduced and TV game output ▪ Accepts 2 composite video signals, 2 S(Y/C) signals, Y/R-Y/B-Y or RGB ▪ Provides high quality color correction performance on a built-in vertical and horizontal enhancer and also provides high vertical resolution and a no-flicker picture by "motion adaptive line scanning interpolation" process ▪ Eliminates cross-color, dot and chromacrawl disturbance ▪ Built-in RS-232C port for remote control

EDC-3000 \$8,995.00

EDC-2000B Digital EDTV Decoder

▪ Can handle composite NTSC video signals from live cameras, TV receivers, reproduced video of VCR or LD, family computers and still video processors ▪ High quality decoder that converts composite interlaced NTSC video with 15.73kHz horizontal and 59.94Hz vertical frequencies to noninterlaced 2X scan rates (RGB video) with 31.468kHz horizontal frequencies ▪ Handles NTSC standard interlaced RGB video at the same time

EDC-2000B \$7,650.00

ENC-3000 Genlock Color Encoder

▪ Compact, stable, color encoder designed to meet or exceed the most demanding professional broadcast and computer graphics requirements ▪ Produces an NTSC/PAL signal from 3 (RGB, R-Y/B-Y/Y or Beta) video sources ▪ Has a genlock sync generator with a sync-locked subcarrier function

ENC-3000 \$3,950.00

SW-950A Computer Graphics Video Switcher

▪ Compact low crosstalk switcher, designed to meet or exceed the most demanding computer graphics super wideband requirement ▪ Has 4 inputs and 1 output channel that consists of 5 signals (RGB video and HD, VD sync) ▪ One channel of 4 inputs can be selected by push-switches on the front panel and a remote control terminal

SW-950A \$3,550.00

**DA-950A Super Wideband Video
Distribution Amplifier**

▪ Can handle high resolution computer graphics video and high vision HDTV signals ▪ Provides 1 input and 4 output channels that consist of 5 different signals, RGB video, HD, VD and sync pulses ▪ Distributes high resolution CG or HDTV video and sync to 4 terminals or peripherals such as CRT monitors, large screen projectors, hand-copy machines and scan converters simultaneously ▪ Offers the most useful application with the SW-950A computer graphics video switcher

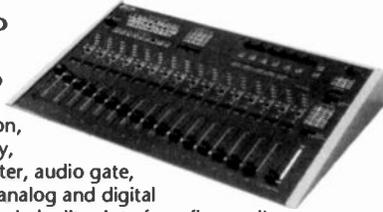
DA-950A \$2,950.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



DMX1000 Digital Audio Mixing Console

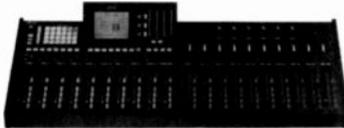
- Compact, full-featured digital audio mixer for video post-production
- Standard features: timeline operation, internal RAM recorder, channel delay, comprehensive EQ, compressor limiter, audio gate, pan levels, internal monitor mixer, analog and digital outputs, cue track mute select, extended editor interface, floppy disc drive, 400-event memory, 6 output buses and 20-bit DA processors



DMX1000	Digital audio console (includes control head, audio processor, meter module, (1) 5' meter cable, (1) 25' APU cable)	\$26,950.00
RP100	Router protocol	3,500.00
SAI100	Analog inputs/up to 10 stereo pair	3,000.00
	(300.00/pr.)	
ZRT100	RAM recorder expansion memory	2,000.00
	TruePitch™ pitch correction software	2,000.00
MM100	Monitor mixer remote	750.00
RTR100	AES Router (32 input stereo AES EBU router)	500.00
	LCD meter display	500.00
	Disk drive remote kit	100.00

Arria Digital Audio Mixer

- Compact TV production/post-production console
- EQ, compression, delay, gating, pan, solo bus, PFL bus, timeline, PCMCIA data card, monitor preset memory, 2 talkback groups, talkback group microphone, internal LCD/LED metering, 320 x 240 LCD graphic display, 512-bit 4" Penny & Giles Faders, 8-character LED display on faders
- Base configuration includes APU with 22 AES in 75 ohm coax, 14 mono output buses available AES/analog, 10-fader control panel



Options		
Additional APU		\$11,000.00
10-fader control extender		8,000.00
TruePitch pitch correction		3,000.00
Time compression		3,000.00
Reverb		2,000.00
Redundant power supply (1 control surface, 1 APU)		2,000.00
Sample rate conversion	Standard	
Analog inputs (maximum 4 pair)	1,000.00/1st pr.	
	200.00 each add'l pr.	

ZAP1000 Compressor/Limiter Display

- 4-channel digital compressor/limiter
- Adjustable delay up to 7 video frames
- 20-bit D/A converters on analog outputs
- 24-bit oversampling

Deva Portable Digital Audio Mixer With Removable Hard Disk Recorder

- Film audio recording
- Nonlinear editing/playback
- Loop record
- Portable 4-channel field mixer
- PCMCIA modem playback
- Music video production playback with instant cue
- Online editing
- LCD display
- RS-422 control
- Radio field production

Studio Machine Control System

- Capable of controlling all tape transport functions of 8 RS-422 controlled VTRs
- Provides 2 control groups and 8 rows of control keys to provide TD style operation
- Provides numeric entry of timecode and preroll values as well as jog and shuttle VTR operations
- Cross between a video tape editor (providing editor type cueing functions) and a traditional TD style interface for studio control
- System may be expanded to any size with the use of an external RS-422 router
- Controller may use up to two control panels, has an auxiliary RS-422 input and GPI inputs for external control

MTBC1500 Multiple TBC/D2 Controller

- Provides control of 8 TBCs on D2s from up to 2 control panels
- Basic system includes 1 HCP400 control panel
- Includes D2 or Zeus software

MTBC1400 TBC/D2 Controller

- Provides control of up to 4 TBC/D2 units
- Basic units include 3 analog TBC protocols and EDL or GVG200 interface
- Unit is expandable to

HUB1000 TBC Control Router

- Allows up to 64 TBCs/D2 machines to be controlled from up to 8 edit rooms
- Following options are required: HCP400 control panel (min. 1, max. 8), HUB100 cross-point card—each provides interface to 8 TBC remotes, 1 remote required for each TBC to be controlled (min. 1, max. 64)

HUB2000 TBC/Machine Control System

- 2 HUB2000 intelligent TBC/D2 systems allow control of 16 tape machines from 2 edit suites
- HCP2000 control panel provides control of all TBC functions and audio controls on digital type VTRs
- Reads values that are set from the local control panel of a digital VTR
- Directly interfaces with digital VTRs without a separate TBC control unit (via RS-422 control)
- Each HCP2000 panel can control 10 machines at a time
- System requires each TBC to have an SDR300 or SDR350, and that each edit room have an HCP2000 or HPC400

SDR400 Digital TBC D2 Remote Control

- Digital remote controls proc amp adjustments for D2 format VCRs and Ampex Zeus
- Includes serial communications port for use with HUB1000 TBC control system
- No additional options required

SDR450 Digital TBC D2 Remote Control

- Same as SDR400, less front panel controls and displays
- Intended for use as a remote in HUB1000 based systems
- Must be controlled via HUB1000

SDR300 Analog TBC Remote Control

- Analog remote for control on 1 TBC
- Includes serial communications port for use with HUB1000 TBC control system
- May be ordered with optional "auto color framing"
- No additional options required

SDR350 Analog TBC Remote Control

- Same as the SDR300, less front panel controls and displays
- Intended for use as a TBC remote in HUB1000 based systems
- Must be controlled via HUB1000

Note 1 Zaxcom provides the required interconnect cable diagrams with all products. Cable fabrication is available. Please specify cable length and type of equipment to which connection will be made. All cables are \$50.00 per cable, + 1.00 per foot. All cables are nondiscountable, nonreturnable.

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.

CRT PROJECTORS/ PROJECTION MONITOR



PRO2000 Data/Graphics CRT Projector

▪ 190 ANSI lumens ▪ Adjustable 70" to 300" diagonal image size ▪ Wireless remote control ▪ 1600 dots x 1200 lines RGB resolution ▪ RGB1, RGB2 and video inputs ▪ Built-in line doubler for NTSC/PAL ▪ Full digital convergence

Main Unit

▪ 120VAC at 50/60Hz power supply ▪ 550W power consumption ▪ 68.5kg ▪ 11.7"H x 26.8"W x 34.3"D ▪ Ambient operating conditions: -5-35°C, 20-80% humidity ▪ Color systems: NTSC, PAL, SECAM, NTSC 4.3, HD (baseband) ▪ Horizontal scan frequency: 15-100kHz ▪ Vertical scan frequency: 38-150Hz

Optical System

▪ 3-tube, 3-lens inline front-projection method ▪ Projection tube: 7" liquid-cooled 90° polarized impregnated-cathode magnetically focused CRT ▪ f/1.1 full color corrected hybrid lens

Accessories

▪ 1 wireless remote ▪ 2 "AA" size batteries ▪ 1 power cord ▪ 1 wired remote control cable (15m)

Terminals

▪ Video inputs: video composite (BNC):1; Y/C (BNC x 2):1 ▪ RGB1 inputs: R, G/G SYNC, B, H/SYNC, V (BNC x 5) ▪ RGB2 inputs: R/PR, G/Y, B/PB, H/SYNC, V (BNC x 5) ▪ Video outputs: composite (BNC):1 ▪ Remote 1 external control: RS-232C/RS-422 (D-sub 25-pin) ▪ System bus for coordinated control of multiple units: input, output (DIN 5-pin x 2) ▪ Remote 2 remote control: for wired remote control (3.5mm stereo mini-jack); usable both wired and wireless
PRO2000 \$20,500.00



PRO900 Data/Graphics CRT Projector

▪ 800 lumens ▪ Adjustable 60" to 240" diagonal image size ▪ Wireless trackball remote control ▪ Super data ▪ 1024 x 768 RGB resolution ▪ 1920 x 1080 HDTV resolution ▪ 800 TV lines resolution ▪ 3-D digital comb filter ▪ RGB, composite and S-Video inputs ▪ Digitally controlled convergence ▪ 12.9"H x 25.75"W x 33.28"D

Optical

▪ Projection system: CRT; 7" high performance liquid-cooled tubes, 5" active phosphor area, 90° deflection angle, super oxide cathodes ▪ Lenses: high resolution color corrected multilayered coating hybrid lens system, f/1.3 aperture ▪ Convergence: digital controlled analog with 10 factory presets and 5 customer memory locations plus copy function feature (full digital convergence with upgrade module) ▪ Self-generated setup patterns: cross hatch (coarse and fine); convergence color pattern, static adjust

Input

▪ RGB inputs: 5 BNC analog (RGB H/V) with full VGA and VESA Super VGA tracking compatibility ▪ Composite video input: 1.0Vp-p 75 ohm (BNC jack), loopthrough (NTSC 3.58/4.43, PAL M/N, PAL B/G) (Y) S-Video input: 1.0Vp-p 75 ohm (C) S-Video input: 0.28Vp-p color burst level (via Mini Din) ▪ RS-232 serial data communication port ▪ Dual range power supply: 90-137VAC, 180-264VAC, 47-63Hz

Video Features

▪ 3-D digital comb filter ▪ 2-D picture sharpness circuitry ▪ Digital dynamic video noise reduction ▪ Color transient improvement ▪ Black level expansion ▪ Auto flesh tone correction ▪ Video edge enhancement ▪ Color noise reduction ▪ Advanced video DSP with 5 megabits of memory ▪ Extra wide band video amplifiers ▪ High resolution AKB with programmable white balance control ▪ Gamma correction ▪ Picture setup via source selection ▪ Worldwide multistandard video system ▪ Digital aspect ratio correction ▪ Multifrequency, multiformat high definition system ▪ Addressability via IR for multiple projection unit applications ▪ On-screen display capable of 13 x 32 character display resolution
PRO900 \$12,600.00



PRO851X 5'-10' Digital Projection Monitor

▪ Super Delta-Brite projection lens system ▪ Adjustable 5' to 10' diagonal picture ▪ Digital chassis with digital 2H comb filter ▪ Advanced video processor ▪ High resolution capability ▪ Front/rear, floor/ceiling projection option ▪ Optional custom floor stand (CV275Y) in matte black ▪ Universal TV/VCR/cable remote control ▪ Can be used with an A/V source supplying a composite video and audio signal such as a VCR, TV tuner with audio/video output jacks, video camera, or video disc player ▪ On-screen adjustment of all audio and video setting, easy source selection, and instant access to special features by remote

Remote

▪ Infrared remote control is pre-programmed to operate most brands of TVs, VCRs and cable TV decoders ▪ Features remote source selection through the source button for easy remote control switching to an audio/video component

Picture

▪ Advanced video processor ▪ High resolution monitor ▪ 600 lumens picture brightness ▪ Viewing surface/distance requirements: either a white wall painted with a flat (non-gloss) paint, a good quality front projection screen with a flat white (matte) finish, or a rear projection screen ▪ Precise image control ▪ Digital chassis with digital comb filter

PRO851X \$3,292.00

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.





H2742DT



H2745DT

Presentation Series Color Televisions

Common Features

- SuperPort™ provides for easy installation of local service provider accessory modules without removing the cabinet back
- CamPort™ front A/V jacks (25" and 27" models) ▪ Channel Preview™ provides end users with an on-screen pre-programmed directory listing station and network affiliation ▪ Multiple Protocol Interface (MPI™) provides for easy external connection of most interactive information services and allows access to on-screen display information ▪ End User-Ready Control System includes: AC on/off, channel lock, start channel, and volume limiter ▪ Auto programming ▪ Picture preference provides for installer selection of custom or preset picture settings
- On-screen menu displays ▪ Customer control access ▪ Remote control ▪ Tuning ▪ Picture tube ZDG™ dark glass high contrast picture tube ▪ Black level expansion/white level compression circuits ▪ 560+ lines of horizontal resolution ▪ S-Video (Y/C) loop in/out ▪ MTS stereo with SAP ▪ Audio/video input jacks
- External speaker jack for external speaker applications ▪ 20' 3-wire polarized power cord ▪ Power on/off indicator ▪ Channel label and guide ▪ Electronic power sentry voltage regulator
- Master antenna connector for VHF, UHF and CATV ▪ UL listed for commercial and consumer applications ▪ Power source: 120VAC, 60Hz ▪ Power consumption: 70W (average) ▪ Optional QuickSet™ clone programming ▪ CaptionVision (CC) capability
- Power management software feature allows the end user the flexibility to automatically power-off the television after a specific period of inactivity ▪ Spill-proof cabinet

Presentation 42 Series Color Televisions

H3642DT	36" diagonal receiver/monitor	\$1757.00
H3242DT	32" diagonal receiver/monitor	1153.00
H2742DT	27" diagonal receiver/monitor	592.00
H2542DT	25" diagonal receiver/monitor	485.00

Presentation 45 Series Color Televisions

Includes common features, plus: ▪ Built-in SVGA (800 x 600, 76Hz) scan conversion card for direct PC and Mac connection

- Horizontal/vertical underscan capability

H3645DT	36" diagonal receiver/monitor	\$2005.00
H3245DT	32" diagonal receiver/monitor	1415.00
H2745DT	27" diagonal receiver/monitor	928.00
H2545DT	25" diagonal receiver/monitor	761.00

Note: Call for information on accessories.

PCZ1700/1300 Scan Conversion Cards

Common Features

- Compatible with Zenith SuperPort televisions ▪ Support up to 16 million colors (24 bits) ▪ Input resolution: 640 x 480, 60-72Hz to 800 x 600, 72Hz ▪ Input timing: standard 31.5kHz
- User options include: television flicker filter reduction modes, horizontal/vertical screen squeeze featuring exclusive Digital Video Processing (DVP) Technology for superior image quality, and zoom/pan ▪ 15' VGA interconnect cable ▪ Software support for Electronic Marker Featuring Highlight and Chalkboard
- Macintosh video cable adaptor

PCZ1700	Includes common features, plus: 15' audio cable	POR*
PCZ1300	Includes common features, plus: S-Video out cable for Zenith SuperPort TVs	POR*

PCZ150 Set Top Box

- Compatible with both Mac and PC systems ▪ Works with any TV monitor with composite or S-Video input connector
 - Compact travel size ▪ Supports up to 16.7 million colors; 640 x 480, 60Hz (NTSC) ▪ User options include: TV flicker filter reduction modes, horizontal/vertical screen position control, color bar mode and screen reset control ▪ Includes: Presentation Series Presenter, power supply, composite video cable, Mac adaptor, S-Video cable, passthrough monitor cable and manual ▪ Weighs under 7 oz. (without cables)
- *Price on Request

ADDITIONAL PRODUCTS AVAILABLE. PLEASE CALL.



Children's Computer Furniture

The Connections™ Series for children's classrooms features a broad selection of interchangeable components that enable many different and flexible configurations for group instruction. The Work Centers feature adjustable heights. All tables feature grey laminate worksurfaces with steel bases and cord management. Work Centers feature grommet holes, a hinged cord bin, modesty panel and are available with either casters or glides.

NEW Trim, toe caps and grommet holes on Children's Computer Work Center Tables and Shelves are available in four designer colors:



CARDINAL=C QUARTZ=Q POLO=L TOPAZ=T

To order the trim package (trim, toe caps and grommet holes) colors, please indicate the one-letter color code (indicated above) following the model number.

Youth-Height Adjustable Work Centers with casters.

Model	Trim	Overall Dimensions	Price
3541-GM__		36"W x 24"D x 20-25"H	UPS \$314.00
3542-GM__		48"W x 24"D x 20-25"H	\$362.00
3544-GM__		36"W x 30"D x 20-25"H	UPS \$327.00
3546-GM__		48"W x 30"D x 20-25"H	\$375.00
3549-GM__		60"W x 30"D x 20-25"H	\$403.00



3541-GMT

Youth-Height Adjustable Work Centers with glides.

Model	Trim	Overall Dimensions	Price
3571-GM__		36"W x 24"D x 20-25"H	UPS \$268.00
3572-GM__		48"W x 24"D x 20-25"H	\$316.00
3543-GM__		36"W x 30"D x 20-25"H	UPS \$280.00
3545-GM__		48"W x 30"D x 20-25"H	\$316.00
3547-GM__		60"W x 30"D x 20-25"H	\$356.00



3543-GMQ

Connections Low-Rise Shelves are ideal for monitors or as a storage shelf for books and binders.

Model	Trim	Overall Dimensions	Price
3530-GM__		36"W x 12"D x 11"H	UPS \$134.00
3531-GM__		48"W x 12"D x 11"H	UPS \$186.00
3532-GM__		60"W x 12"D x 11"H	UPS \$221.00
3574-GM__		72"W x 12"D x 11"H	UPS \$242.00



Complete Instruction and Work Center

Connections Instruction Centers easily hold up to three computer systems. Spacious cord management bin neatly hides all cords.

Model	Trim	Overall Dimensions	Price
3528-GM__		96"W x 41 1/4"D x 24"H	\$674.00
3548-GM__		80"W x 34 1/2"D x 24"H	\$651.00



3528-GMQ shown with optional 3535-GMQ

Connections Instruction Center Shelves elevate equipment above worksurface. The 7 1/2" high shelf accommodates up to three monitors, and the 21" high shelf allows ample room for computer and monitor below.

Model	Trim	Overall Dimensions	Price
3534-GM__		78 3/8"W x 23 1/2"D x 7 1/2"H (use with 3508-GM__ or 3528-GM__)	\$148.00
3536-GM__		57 3/4"W x 18 3/4"D x 7 1/2"H (use with 3548-GM__ or 3568-GM__)	\$140.00
3535-GM__		78 3/8"W x 23 1/2"D x 21"H (use with 3508-GM__ or 3528-GM__)	\$167.00
3537-GM__		57 3/4"W x 18 3/4"D x 21"H (use with 3548-GM__ or 3568-GM__)	\$159.00

Connections is a trademark of Bretford Manufacturing, Inc.
Prices are subject to change without notice 1/97

Adult Classroom Furniture

The Connections Series for adult classrooms features a broad selection of interchangeable components that enable many different and flexible configurations for group instruction. The Work Centers and Corner Tables feature adjustable heights and meet ADA requirements. All tables feature grey laminate worksurfaces with steel bases and cord management. Work Centers feature grommet holes, a hinged cord bin, modesty panel, and are available with either casters or glides.

NEW Trim, toe caps and grommet holes on Adult Computer Work Center tables and shelves are available in four designer colors:



CARDINAL=C



QUARTZ=Q



POLO=L



TOPAZ=T

To order the trim package (trim, toe caps and grommet holes) colors, please indicate the one-letter color code (indicated above) following the model number.

Connections Adjustable Work Centers with glides.

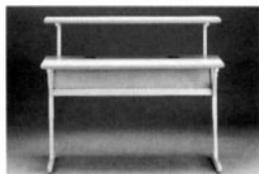
Model	Trim	Overall Dimensions		Price
3569-GM__		36" W x 24" D x 24-32" H	UPS	\$268.00
3570-GM__		48" W x 24" D x 24-32" H		\$316.00
3521-GM__		36" W x 30" D x 24-32" H	UPS	\$280.00
3523-GM__		48" W x 30" D x 24-32" H		\$316.00
3524-GM__		60" W x 30" D x 24-32" H		\$356.00
3525-GM__		72" W x 30" D x 24-32" H		\$390.00



3521-GMC

Connections Adjustable Work Centers with casters.

Model	Trim	Overall Dimensions		Price
3520-GM__		36" W x 24" D x 24-32" H	UPS	\$314.00
3522-GM__		48" W x 24" D x 24-32" H		\$362.00
3517-GM__		36" W x 30" D x 24-32" H	UPS	\$327.00
3518-GM__		48" W x 30" D x 24-32" H		\$375.00
3519-GM__		60" W x 30" D x 24-32" H		\$403.00
3526-GM__		72" W x 30" D x 24-32" H		\$438.00

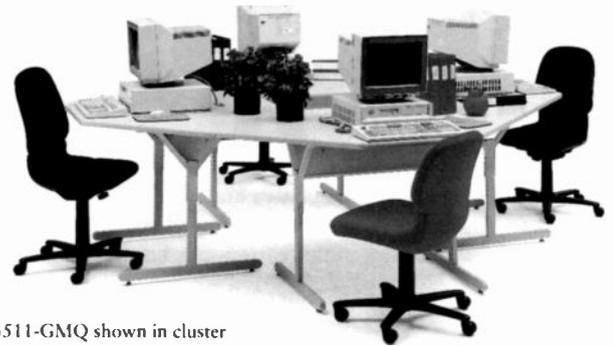


3523-GMQ shown with optional 3531-GMQ

Connections Low-Rise Shelves are ideal for monitors or as a storage shelf for books and binders.

Model	Trim	Overall Dimensions		Price
3530-GM__		36" W x 12" D x 11" H	UPS	\$134.00
3531-GM__		48" W x 12" D x 11" H	UPS	\$186.00
3532-GM__		60" W x 12" D x 11" H	UPS	\$221.00
3574-GM__		72" W x 12" D x 11" H	UPS	\$242.00

Prices are subject to change without notice 1/97



3511-GMQ shown in cluster

Connections Corner Table maximizes the unused space in any room. Use it tucked away neatly in a corner or cluster in a group of four.

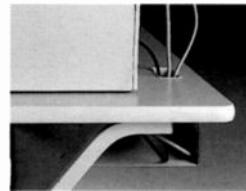
Model	Trim	Overall Dimensions	Price
3511-GM__		65" W x 42" D x 24-32" H	\$392.00



3568-GMQ shown with optional 3537-GMQ found on page B1

Connections Instruction Centers easily hold up to three computer systems. Spacious cord management bins neatly hide all cords. 21" H shelves available for Instruction Centers (see page B1).

Model	Trim	Overall Dimensions	Price
3508-GM__		96" W x 41 1/4" D x 26 1/2" H	\$674.00
3568-GM__		80" W x 34 1/2" D x 26 1/2" H	\$651.00



Cord Management Bin



35CPU1-GM

Connections Accessories (All ship UPS)

CFPS Computer Furniture Power Strip features four outlets, 20-ft. cord, on-off switch and surge suppression. UL and C-UL listed. 110V. Black. \$96.00

3557-GM Connections Flat Bracket Connectors attach Work Centers together. Mounting hardware included. Set of two. \$28.00

UCSKD-GM Keyboard Drawer can be added to any Work Center or 96" W Instruction Center. \$97.00

NEW 35CPU1-GM CPU Holder with glides hooks on the outside of Connections Work Centers with glides. \$49.00

NEW 35CPU2-GM CPU Holder with casters hooks on the outside of Connections work centers with casters. \$83.00

NEW 3573-GM Connections Bridge Pack bridges gap between cord management bins on rectangular Connections tables when connected side to side. \$24.00

Mobile Computer Workstations

The durable, space-saving EC line of computer workstations was designed with the user in mind. All are height adjustable and feature solid steel construction, putty beige powder paint finish and 4" casters, two with locking brakes.

EC1000-PB Computer Workstation is height adjustable to meet ADA requirements. Now features increased height adjustment on top shelf. The EC1000-PBM comes with a UL and C-UL listed, three-outlet electrical unit.

Model	Overall Dimensions/Description		Price
▼ EC1000-PB	38"W x 24"D x 50 1/2"H	UPS	\$391.00
EC1000-PBM	above with electrical unit	UPS	\$453.00

IMPROVED PRODUCT



EC1000-PBM

EC10-PB and EC15-PB Computer Workstations feature an adjustable top shelf (height adjustable from 35-38"), adjustable work surface (height adjustable from 23-27") and four outlet electrical unit. The EC15-PB electrical outlet includes surge protection.

Model	Overall Dimensions		Price
▼ EC10-PB	36"W x 24"D x 38"H	UPS	\$436.00
▼ EC15-PB	36"W x 24"D x 38"H	UPS	\$375.00

EC5-PB and EC7-PB Computer Workstations feature an adjustable worksurface (height adjustable from 23-27") and does not have a top shelf. Includes a four outlet electrical unit. The EC7 electrical outlet includes surge protection.

Model	Overall Dimensions		Price
▼ EC5-PB	36"W x 24"D x 27"H	UPS	\$386.00
▼ EC7-PB	36"W x 24"D x 27"H	UPS	\$440.00



EC15-PB

NEW



EC4X-P4

EC2-P4, EC4 and EC4X Computer Workstations feature a large work surface and height-adjustable locking keyboard shelf. The EC4 is an all-in-one unit with 2 additional shelves. EC4X is identical to the EC4 but also features a mouse pad extender which extends from the keyboard drawer.

Model	Overall Dimensions		Price
EC2-P4	24"W x 18"D x 33"H	UPS	\$222.00
EC4	24"W x 18"D x 33"H	UPS	\$310.00
EC4X-P4	24"W x 18"D x 33"H	UPS	\$361.00
EC4X-E4	above with electrical unit	UPS	\$410.00



LAP15E-GM



NEW LAP15 Laptop Storage Cart houses 15 laptop computers which can be recharged with optional UL listed, 15-outlet, electrical unit. Locking doors ensure security of equipment. Sturdy metal construction is light enough to easily push cart from room to room.

Model	Overall Dimensions		Price
LAP15-GM	35 1/2"W x 21 1/2"D x 38 1/8"H		\$556.00
LAP15E-GM	above with electrical unit		\$698.00

Accessories

▼CL5 Cable Lock Security Kit secures computer equipment.

Includes two adhesive-backed plates, 5' vinyl-coated steel cable. UPS \$40.00

▼CLPA Accessory Kit includes two extra mounting plates

for Cable Lock Security Kit. UPS \$21.00

CFPS Computer Furniture Power Strip features four outlets, 20-ft. cord, on-off switch and surge suppression. UL and C-UL listed. 110V. Black. UPS \$96.00

EC4PCB Paper Catch Basket easily attaches to the EC4 and neatly catches printer output. UPS \$48.00

Prices are subject to change without notice 1/97

▼ Quick Ship items

Mobile Multimedia Workstations

Bretford's Mobile Computer and Multimedia Workstations accommodate today's computer generated presentations and enable access to a variety of equipment. UCS models are all provided in grey laminate and trim.

UCS900-GM Multimedia Table supports some of the largest multimedia systems. A rear panel enables easy access to equipment. Lower cabinet features two adjustable shelves.

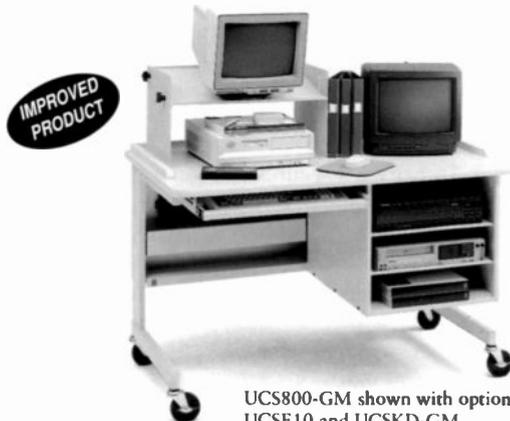
Model	Overall Dimensions	Price
UCS900-GM	60" W x 30" D x 27 1/2-34 3/4" H	\$979.00



UCS900-GM shown with optional UCSTVS-GM, UCSAMS-GM, UCSCPU-GM and UCSKD-GM

UCS800-GM Multimedia Table supports a variety of multimedia equipment and is a Level 3 ILS Cart. Lower cabinet features two adjustable shelves and now features a rear panel access.

Model	Overall Dimensions	Price
UCS800-GM	51" W x 30" D x 26 1/2-33 3/4" H	\$685.00



UCS800-GM shown with optional UCSAMS-GM, UCSE10 and UCSKD-GM

UCS700-GM Multimedia Cart is ideal for overhead/computer presentations. Adjustable platform well for overhead projector.

Model	Overall Dimensions	Price
UCS700-GM	49 1/2" W x 30" D x 26 1/2-33 3/4" H	\$644.00



UCS700-GM shown with optional UCSAMS-GM

Accessories

UCSAMS-GM Monitor Shelf for UCS tables holds extra equipment. UPS \$73.00

UCSE10 Electrical Unit includes 10 outlets, 20-ft. cord, on-off switch and 110 volt surge suppression. UL and C-UL listed. UPS \$143.00

UCSTVS-GM TV shelf for UCS900-GM places monitor at the proper viewing height. Recommended for use with up to 31" monitors. UPS \$169.00

UCSCPU-GM CPU tower holder for UCS900-GM places CPU out of the way below table top. UPS \$96.00

UCSKD-GM Keyboard Drawer (not available for use with UCS700-GM) UPS \$97.00

BBILS3 Multimedia Presentation Cart supports an entire multimedia system. Features pull-out scanner shelf and keyboard drawer with new mouse pad extender. Includes 10-outlet electrical unit. Black. Recommended for use with up to 31" diagonal monitors.

Model	Overall Dimensions/Description	UPS	Price
BBILS3	50 1/4" W x 30" D x 54 1/2" H	UPS	\$714.00
▼AVB-BK	video bracket	UPS	\$117.00



BBILS3 shown with optional AVB-BK

Plastic Utility Carts

Our plastic carts are strong yet lightweight for easy moving. Molded from tough, high-density polyethylene plastic to resist scratches and dents with black finish. Legs are designed from PVC tubing with 4" casters, two with locking brakes.

BP42-P4, BP34-P4, BP26-P4, and BPDUO-P4 Plastic Utility Carts designed with smaller shelves for audio visual and utility applications.

Model	Overall Dimensions		Price
▼BP26-P4	24"W x 18"D x 26"H	UPS	\$118.00
▼BP34-P4	24"W x 18"D x 34"H	UPS	\$137.00
▼BP42-P4	24"W x 18"D x 42"H	UPS	\$141.00
▼BPDUO-P4	24"W x 18"D x 26-42"H	UPS	\$159.00

To order with electrical unit, replace -P4 with -E4 add \$ 44.00
 To order with big wheels, replace -P4 with -PW add \$ 54.00



BP42-P4

BPTV54-P4, BPTV48-P4, BPTV42-P4, BPTV27-P4, and BPTVDUO-P4 Plastic Utility Carts are designed with larger shelves especially for TV/VCR applications. Recommended for use with up to 25" monitors.

Model	Overall Dimensions		Price
▼BPTV27-P4	32" x 24"D x 27"H	UPS	\$241.00
▼BPTV42-P4	32" x 24"D x 42"H	UPS	\$294.00
▼BPTV48-P4	32" x 24"D x 48"H	UPS	\$314.00
▼BPTV54-P4	32" x 24"D x 54"H	UPS	\$315.00
▼BPTVDUO-P4	32" x 24"D x 27-54"H	UPS	\$348.00

To order with electrical unit, replace -P4 with -E4 add \$ 44.00
 To order with big wheels, replace -P4 with -PW add \$ 54.00



BPTV54-P4

Wide Body TV Carts

The pyramid design and solid steel construction of Bretford's Wide Body TV Carts provides support for large monitors. Each comes with casters, two with locking brakes. Black.

VTRPN44-P8 TV Cart features mar-resistant, 8" pneumatic wheels. Recommended for use with up to 35" monitors.

Model	Overall Dimensions		Price
VTRPN44-P8	37"W x 27 1/2"D x 44"H	UPS	\$652.00

To order with electrical unit, replace -P8 with -E8 add\$ 45.00

BBPN48-P8 TV Cart features mar-resistant, 8" pneumatic wheels. Recommended for use with up to 27" monitors.

Model	Overall Dimensions		Price
BBPN48-P8	32"W x 27 1/2"D x 48"H	UPS	\$642.00

To order with electrical unit, replace -P8 with -E8 add\$ 45.00

NEW BBLM41 TV Cart features 5" plate casters.

Recommended for use with up to 35" monitors.

Model	Overall Dimensions		Price
BBLM41	37"W x 27 1/2"D x 41"H	UPS	\$439.00
BBLM41E	above with electrical unit	UPS	\$487.00



BBLM41

Accessories

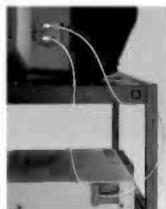
▼ **CL5 Cable Lock Security System** secures your equipment. Includes two adhesive-backed plates, 5' vinyl-coated steel cable. UPS \$40.00

▼ **CLPA Accessory Kit** provides two additional mounting plates for Cable Lock Security System. UPS \$21.00

▼ **SB Safety Belt** surrounds your monitor and bolts to table for extra support. 8' total length. UPS \$42.00

▼ **E-Unit Electrical Unit** can be attached to any Bretford steel cart. Features two outlets with a 20' cord. UL and C-UL listed. UPS \$50.00

▼ **BPE Plastic Utility Cart Electrical Unit** provides three electrical outlets and a 20' cord. UL listed. UPS \$44.00



CL5



BPE



SB

Prices are subject to change without notice 1/97

▼ Quick Ship items

Wide Body TV Carts

The pyramid design and solid steel construction of Bretford's Wide Body TV Carts provide support for large monitors. Comes with 4" casters, two with locking brakes. Finished in black.

Recommended for use with up to 27" monitors.

Model	Overall Dimensions		Price
BBUL44	32" W x 27 1/2" D x 44" H	UPS	\$287.00
BBUL44-C4	above with electrical unit	UPS	\$340.00
▼BB44-P4	32" W x 27 1/2" D x 44" H	UPS	\$232.00
BB48-P4	32" W x 27 1/2" D x 48" H	UPS	\$258.00
▼BB54-P4	32" W x 27 1/2" D x 54" H	UPS	\$284.00

To order with electrical unit, replace -P4 with -E4 add \$ 50.00

NEW BB54-P4 also comes available in four designer colors:



CARDINAL=CD



POLO=PL



QUARTZ=QZ



TOPAZ=TZ

To order the BB54-P4 in a designer color, please indicate the two-letter color code (indicated above) following the model number (i.e. BB54-P4PL). Designer colors are not available for our Quick Ship Program.



BB54-P4CD shown with optional AVB-BK found on page B4

BB54SX-P4 AV Cart features four shelves with an adjustable shelf resting below the top shelf providing support for additional AV equipment.

Model	Overall Dimensions		Price
BB54SX-P4	32" W x 27 1/2" D x 54" H	UPS	\$314.00

To order with electrical unit, replace -P4 with -E4 add \$ 60.00



BB54SX-P4

Prices are subject to change without notice 1/97

▼ Quick Ship items.

Wide Body Cabinet TV Carts

Bretford's Wide Body TV Carts also come equipped with spacious, locking cabinets for storage and display. Smooth, rounded shelf edges and black powder paint finish. 4" casters, two with locking brakes. Comes with two-outlet electrical assembly.

Recommended for use with up to 27" monitors except the BBULC48 which is recommended for use with up to 32" monitors.



BBULC48-C4

Model	Overall Dimensions		Price
BBULC48-C4	32" W x 27 1/2" D x 48" H	UPS	\$615.00
▼BBC54-E4	32" W x 27 1/2" D x 54" H	UPS	\$584.00
BBC48-E4	32" W x 27 1/2" D x 48" H	UPS	\$575.00

NEW BBSC44-E4 Wide Body TV Cart with a cabinet at the top of the cart. Comes with electrical unit.

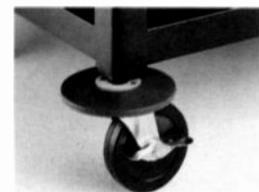
BBSC44-E4	32" W x 27 1/2" D x 44" H	UPS	\$554.00
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BBSC44-E4

Accessories

NEW CBG Caster Bumper Guard attaches to the stem of caster carts. Will save cart from wear and tear during transport or when its bumped up against a wall. UPS \$34.00



CBG

Adjustable Carts

These Bretford carts adjust to multiple heights by simply resetting four screws. All-steel welded construction, die pressed shelves and 4" casters, two with locking brakes. Black powder paint finish. Comes with non-slip ribbed rubber mat. Recommended for use with up to 20" monitors.

NEW A2642 also comes available in four designer colors:



CARDINAL=CD



POLO=PL



QUARTZ=QZ



TOPAZ=TZ

To order the A2642 in a designer color, please indicate the two-letter color code (indicated above) following the model number (i.e. A2642-PWCD). Colored colors are not available as Quick Ship items.



A2642-P1

Model	Overall Dimensions	UPS	Price
▼ A2642	24"W x 18"D x 26-42"H	UPS	\$172.00
▼ A2642E	above with electrical unit	UPS	\$222.00
A2642-PW	above with big wheels	UPS	\$225.00
▼ TVA3654-P4	28"W x 24"D x 36-54"H	UPS	\$317.00
▼ TVA3654-E4	above with electrical unit	UPS	\$366.00
TVA3654-PW	above with big wheels	UPS	\$373.00



TVA3654-P4

Adjustable Cabinet Carts

Bretford's Adjustable Cabinet Carts have a locking cabinet to store valuable audio visual equipment. Black powder paint finish on all-steel welded construction. 4" casters, two with locking brakes. Recommended for use with up to 20" monitors.



CA2642

Model	Overall Dimensions	UPS	Price
▼ CA2642	24"W x 18"D x 26-42"H	UPS	\$277.00
▼ CA2642E	above with electrical unit	UPS	\$327.00
CA2642-PW	above with big wheels	UPS	\$330.00
▼ TVCA3654-P4	28"W x 24"D x 36-54"H	UPS	\$433.00
▼ TVCA3654-E4	above with electrical unit	UPS	\$483.00
TVCA3654-PW	above with big wheels	UPS	\$486.00

Accessories

▼ SB Safety Belt surrounds your monitor and attaches to cart for extra support. 8' long. UPS \$42.00



TVCA3654-P4



SB

Prices are subject to change without notice 1/97

▼ Quick Ship items

Overhead Projector Carts

Bretford's Overhead Projector Carts come in a variety of sizes and models for sit down or stand up applications. Features include durable construction, height adjustable designs and roll-away mobility. Roll on 4" casters, two with locking brakes.



OH29

OH29 Overhead Cart is desk height for easy access when presenting from desk. Features folding, space-saving, drop leaves on both sides of projector well. Projector shelf adjusts in four increments from 19" to 27 3/4" high.

Model	Overall Dimensions with leaves down	Price
OH29	22 1/2"W x 19 3/4"D x 29"H	UPS \$218.00
To order with electrical unit, add E to model number		add \$ 49.00



OH39

OH39 Overhead Cart is designed for stand-up presentations. Features folding, space-saving, drop leaves on both sides of projector well. Projector shelf adjusts in four increments from 29" to 37 3/4" high on the OH39.

Model	Overall Dimensions with leaves down	Price
OH39	22 1/2"W x 19 3/4"D x 39"H	UPS \$230.00
To order with electrical unit, add E to model number		add \$ 48.00

Prices are subject to change without notice 1/97

▼ Quick Ship items



AOH2741-P4

AOH2741-P4 Adjustable OH Table is height adjustable to accommodate stand-up or sit down presentations. Storage space below projector well holds papers and view prints. Projector well adjusts from 5" to 11" in 1/2" increments. Black finish.

Model	Overall Dimensions	Price
▼AOH2741-P4	37"W x 22 1/2"D x 27-41"H	UPS \$355.00
▼AOH2741-E4	above with electrical unit	UPS \$402.00



UCS700-GM shown with optional UCSAMS-GM

UCS700-GM Overhead Workstation ideal for computer/overhead presentations. Adjustable platform well. Meets ADA requirements. Grey finish.

Model	Overall Dimensions/Description	Price
UCS700-GM	49 1/2"W x 30"D x 26 1/2-33 3/4"H	\$644.00
UCSAMS	Adjustable Monitor Shelf	UPS \$ 73.00
CFPS	Surge-Protected Power Strip	UPS \$ 96.00

Metal Utility Trucks

Bretford Mobile Utility Trucks are perfect for transporting books, reference materials, data processing information, video tapes and more. Select from a variety of styles - slant or flat shelf models. Putty Beige powder paint finish. Durable all-steel welded construction. 4" Quiet Glide casters, two with locking brakes (except R227 which features 2" ball casters).

L330 Slant-Shelf Library Booktruck features three slant shelves.

Model	Overall Dimensions	Price
L330	31" W x 13" D x 42" H	\$272.00

R227 Slant-Shelf Library Booktruck features two slant shelves.

Model	Overall Dimensions	Price
R227	28" W x 13" D x 24 1/2" H	\$209.00



V336

V336 Slant-Shelf Library Booktruck includes six slant shelves.

Model	Overall Dimensions	Price
V336	37" W x 18" D x 42" H	\$384.00

V230 Slant-Shelf Library Booktruck includes four slant shelves.

Model	Overall Dimensions	Price
V230	31" W x 18" D x 37" H	\$325.00



SWF336-PB

NEW SWF336-PB Six-Wheel Booktruck features three flat shelves and rolls easily on six wheels providing full rotation on a single point.

Model	Overall Dimensions	Price
SWF336-PB	37" W x 18" D x 43" H	\$428.00

NEW SWVF336-PB Six-Wheel Booktruck features four slant shelves and one flat shelf and rolls on six wheels providing full rotation on a single point.

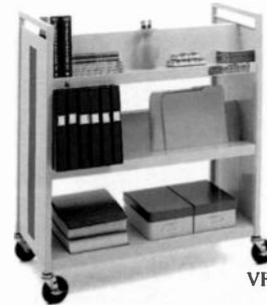
Model	Overall Dimensions	Price
SWVF336-PB	37" W x 18" D x 43" H	\$475.00

VF336 Combination-Shelf Booktruck features four top slant shelves and one bottom flat shelf.

Model	Overall Dimensions	Price
VF336	37" W x 18" D x 42" H	\$375.00

FV336 Combination-Shelf Booktruck featuring a flat top shelf and four slant shelves below.

Model	Overall Dimensions	Price
FV336	37" W x 18" D x 42" H	\$375.00



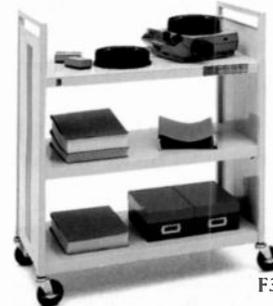
VF336

F336 Flat-Shelf Booktruck features three flat shelves.

Model	Overall Dimensions	Price
F336	37" W x 18" D x 42" H	\$327.00

F230 Flat-Shelf Booktruck includes two flat shelves.

Model	Overall Dimensions	Price
F230	31" W x 18" D x 37" H	\$311.00



F336

Wood Utility Trucks

Add a touch of real wood elegance to your office or library with these all-purpose Wood Mobile Utility Trucks. 1" thick genuine hardwood end panels. Shelves are constructed of heavy-gauge steel and finished in smooth Putty Beige powder paint. 4" Quiet Glide casters, two with locking brakes.

WL330 Slant-Shelf Wood Booktruck has three slant shelves.

Overall Dimensions: 31" W x 13" D x 43 1/2" H

Model	Description		Price
WL330-2	natural oak	UPS	\$325.00
WL330-3	dark oak	UPS	\$325.00
WL330-7	medium oak	UPS	\$325.00



WL330

Television Mounts

Any installation situation can be accomplished with a Bretford television mount. Bretford mounts are available in three styles: ceiling-yoke, wall-yoke, and wall-platform. Plus, each mount has been designed as a system -- so you select only the exact components you require for your application. Several models now C-UL listed.

WALL-PLATFORM TV MOUNTS



TVPW27-BK

TVPW Wall-Platform models feature a non-adjustable platform and Safety Belt. 0-10° tilt. Ships UPS. C-UL listed.

▼TVPW20-BK* for 19-20" diagonal monitors. UPS \$157.00

▼TVPW27-BK* for 25-27" diagonal monitors. UPS \$163.00

▼TVM4 Wall-Platform style mount will fit most 19-27" diagonal monitors. 0-10° tilt. Includes Bretford Safety Belt.

UPS \$264.00



TVDSPW20-BK shown with optional VCR4-BK

TVDSPW Double Stud Wall-Platform models have the same features as the TVPW's plus a pre-drilled mounting plate to mount on a 16" center double stud. 0-10° tilt. C-UL listed.

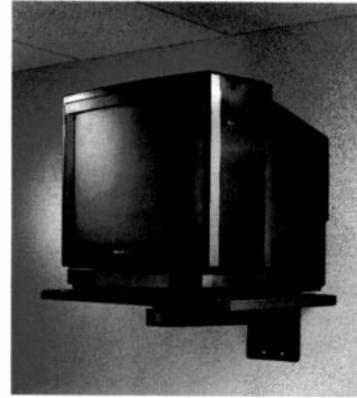
▼TVDSPW20-BK* for 19-20" diagonal monitors. UPS \$156.00

▼TVDSPW27-BK* for 25-27" diagonal monitors. UPS \$161.00

* Indicates models that are C-UL listed.

Prices are subject to change without notice 1/97

▼ Quick Ship items



TVML27-BK

TVML Wall-Platform Locking models include a locking mechanism to deter theft. 0-10° tilt.

▼TVML20-BK for 19-20" diagonal monitors. UPS \$120.00

▼TVML27-BK for 25-27" diagonal monitors. UPS \$130.00



TVDSM4 shown with optional VCR4-BK

TVDSM Double Stud Wall-Platform has the same features as the TVM4 model but includes a predrilled mounting plate to mount on a double stud. Can be easily mounted to a finished wall.

▼TVDSM4 for 19-27" diagonal monitors. UPS \$264.00

▼TVDSML20-BK for 19-20" diagonal monitors. UPS \$190.00

▼TVDSML27-BK for 25-27" diagonal monitors. UPS \$205.00

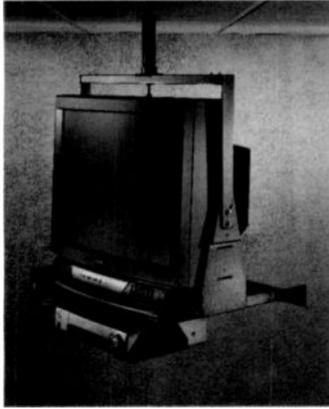
Accessories

▼VCR4-BK Brackets can be used with any of the TV Mounts.

C-UL listed. UPS \$89.00

Model	Monitor Size	
	19-20"	25-27"
TVPW20-BK	●	
TVPW27-BK		●
TVM4	●	●
TVDSPW20-BK	●	
TVDSPW27-BK		●
TVML20-BK	●	
TVML27-BK		●
TVDSM4	●	●
TVDSML20-BK	●	
TVDSML27-BK		●

CEILING-YOKE TV MOUNTS

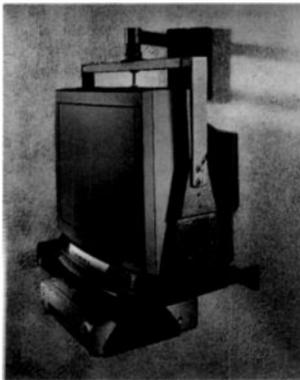


TVCY35T-BK shown with optional VCR4-BK

TVCY Ceiling-Yoke models feature a 10° and adjustable positioning in a 360° range. Models come standard with lower tray. Monitors secured by front retainer lip or retainer lip brackets.

- ▼TVCY20T-BK* fits 19-20" monitors. UPS \$206.00
- ▼TVCY27T-BK* fits 25-27" monitors. UPS \$217.00
- ▼TVCY35T-BK* fits 30-35" monitors. UPS \$229.00
- ▼TVM1 Ceiling-Yoke style mount fits 19-27" diagonal monitors. 0-20° tilt. UPS \$282.00

WALL-YOKE TV MOUNTS



TVWY27T-BK shown with optional VCR4-BK

TVWY Wall-Yoke models feature back plates with knock-outs for easy wiring. Models come standard with lower tray.

- ▼TVWY20T-BK* fits 19-20" diagonal monitors. UPS \$268.00
- ▼TVWY27T-BK* fits 25-27" diagonal monitors. UPS \$280.00
- ▼TVM3 Wall-Yoke mount is identical to the TVM1 but is designed for a wall installation. 0-20° tilt. UPS \$371.00

NEW TVWY35T models fit most 30" diagonal monitors. Each model is designed for a specific type of installation.

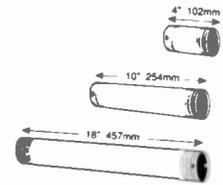
- ▼TVWY35TI-BK* for internal wood installations. Comes with a 16" interior mounting plate (TVMP-BK). \$372.00
- ▼TVWY35TX-BK* for external wood installations. Comes with a 16" exterior mounting plate (TVMPEX-BK). \$372.00
- ▼TVWY35TB-BK* for brick/concrete installations. Comes with a UL accessory hardware pack (TVULHDW-BK). \$345.00

* Indicates models that are C-UL listed.

TV MOUNT ACCESSORIES - All ship UPS

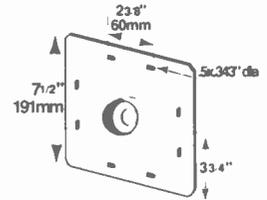
TV18-BK, TV10-BK and TV4-BK Pipes extend ceiling-mounts.

- ▼TV4-BK* \$25.00
- ▼TV10-BK* \$31.00
- ▼TV18-BK* \$35.00



- ▼TVCPLR-BK* Coupler for joining pipes together. 1 1/2" NPS. \$27.00

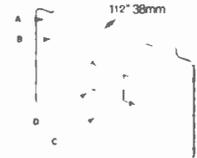
- ▼TVCMBK* Ceiling Flange has welded pipe coupling for ceiling mounts. Mounting hardware included. 7 1/2" square. \$41.00



- ▼TVAC-BK Adaptable Coupler is used for ceiling installations using threaded rod instead of pipe. \$30.00
- ▼TVRA-BK* Revolving Adapter allows user to swivel yoke-style TV mount without resetting screw. \$58.00

- ▼VCR4-BK* Brackets can be used with any of the TV Mounts except the TVM1 and TVM3. Anti-theft device included. \$89.00

TVMP-BK Ceiling/Wall Plates feature two cut-outs for junction boxes when used with TVWY models.



- | Model | Price | Descriptions | |
|---------------|-------|------------------------------|---------|
| ▼TVMP-BK* | | 16" Interior Mounting Plates | \$52.00 |
| ▼TVMP24-BK* | | 24" Interior Mounting Plates | \$63.00 |
| ▼TVMPEX-BK* | | 16" Exterior Mounting Plates | \$52.00 |
| ▼TVMP24EX-BK* | | 24" Exterior Mounting Plates | \$63.00 |

- ▼TVUMBK* Ceiling/Wall Mounting Brackets have junction box cut-outs. Set of two. \$48.00

- ▼TVULHDW* UL Accessory Hardware Pack is designed for concrete, concrete block or brick installations. \$25.00

Model	Monitor Size		
	19-20"	25-27"	30-35"
TVCY20T-BK	●		
TVCY27T-BK		●	
TVCY35T-BK			●
TVM1	●	●	
TVWY20T-BK	●		
TVWY27T-BK		●	
TVWY35TI-BK			●
TVWY35TX-BK			●
TVWY35TB-BK			●
TVM3	●	●	

Prices are subject to change without notice 1/97

▼ Quick Ship items

Projection Screens

Every projection screen requirement can be satisfied -- with one of the largest screen selections available. Choose from multimedia, video-view, or HDTV screens in your choice of screen style: tripod, wall or electric. A variety of screen fabrics and sizes let you tailor the screen to your viewing application. Plus, new seamless fabric screens provide another viewing alternative. Bretford screens feature a black steel case and a choice of viewing surfaces:

- M-Matte White for general purpose viewing
 - B-Glass Beaded for projectors with poor light output
 - S-Silver Suede for video viewing
 - SM-Seamless screens with Matte White surface
- Video View screens come with black borders.

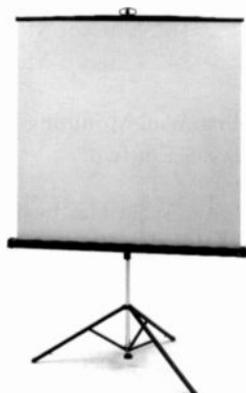
TRIPOD SCREENS



1005-M

Series 10 Tripod Screens are Bretford's most economical choice. Three viewing sizes to select from. Screen surface is Matte White fabric for general purpose viewing.

Model	Overall Dimensions		Price
1005-M	50" x 50"	UPS	\$149.00
1006-M	60" x 60"	UPS	\$190.00
1007-M	70" x 70"	UPS	\$211.00



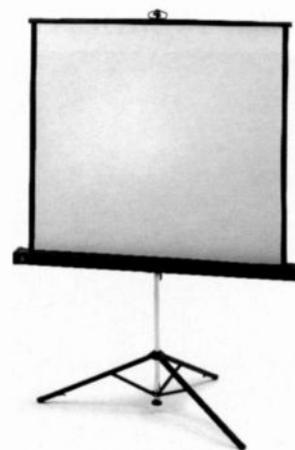
3750-M

Series 375 Tripod Screens feature magnetic leg lock, a durable roller, several screen surface options, and an optional keystone eliminator.

Model	Overall Dimensions		Price
3750-B	50" x 50"	UPS	\$173.00
3750-M▼	50" x 50"	UPS	\$164.00
3760-B	60" x 60"	UPS	\$195.00
3760-M▼	60" x 60"	UPS	\$185.00
3770-B	70" x 70"	UPS	\$239.00
3770-M▼	70" x 70"	UPS	\$227.00

Prices are subject to change without notice 1/97

▼ Quick Ship items



3050-M

Series 300 Tripod Screens feature magnetic leg lock, an extra heavy-duty roller, a die cast handle, a steel slat with tensioning mechanism, and several screen surface options. Many also feature a built-in keystone eliminator that allows the viewing surface to tilt further forward to avoid distortion. Black borders.

Multi Media

Model	Overall Dimensions		Price
3050-B	50" x 50"	UPS	\$231.00
3050-M▼	50" x 50"	UPS	\$219.00
3060-B	60" x 60"	UPS	\$258.00
3060-M▼	60" x 60"	UPS	\$245.00
3070-B	70" x 70"	UPS	\$286.00
3070-M▼	70" x 70"	UPS	\$271.00
3050-S	50" x 50"	UPS	\$296.00
3060-S	60" x 60"	UPS	\$331.00
3070-S	70" x 70"	UPS	\$370.00
3045-B	46" x 60"	UPS	\$302.00
3045-M	46" x 60"	UPS	\$286.00
3057-B	64" x 84"	UPS	\$455.00
3057-M	64" x 84"	UPS	\$432.00
3077-B*	7' x 7'	UPS	\$480.00
3077-M*	7' x 7'	UPS	\$456.00
3077-SM*	7' x 7', seamless	UPS	\$593.00
3068-B*	6' x 8'	UPS	\$556.00
3068-M*	6' x 8'	UPS	\$528.00
3088-B*	8' x 8'	UPS	\$582.00
3088-M*	8' x 8'	UPS	\$552.00
3088-SM	8' x 8', seamless	UPS	\$723.00

Video View

Model	Overall Dimensions		Price
3V45-S	70" diag.	UPS	\$440.00
3V57-S	100" diag.	UPS	\$656.00
3V68-S*	120" diag.	UPS	\$767.00

* No Keystone Eliminator

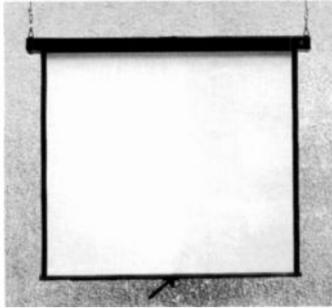
Accessories

4002 Keystone Eliminator for Series 375 tilts the screen to eliminate distortion. UPS \$22.00

ELECTRIC SCREENS

Bretford also offers a wide selection of electric screens to suit most needs. Call for a full line catalog.

WALL SCREENS



1050-M

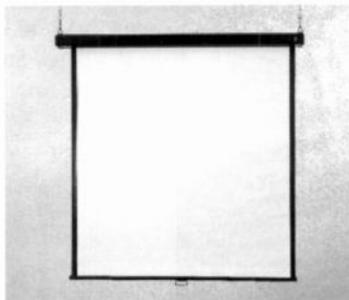
Series 100 Wall Screens come with screen tensioning adjustment. Taut projection surface eliminates waves. Includes black borders on two sides. Video view has borders on four sides. Includes two mounting brackets.

Multi Media

Model	Overall Dimensions	UPS	Price
1050-S	50" x 50"	UPS	\$254.00
1060-S	60" x 60"	UPS	\$287.00
1070-S	70" x 70"	UPS	\$331.00

Video View

Model	Overall Dimensions	UPS	Price
1V45-S	70" diag.	UPS	\$219.00
1V57-S	100" diag.	UPS	\$309.00
1V68-S	120" diag.	UPS	\$396.00



2050-M

Series 200 Wall Screens feature a matching slat that fits into the case opening to keep out dust and dirt. Strong, durable design provides years of lasting use. Black borders.

Model	Overall Dimensions	UPS	Price
2050-B	50" x 50"	UPS	\$122.00
2050-M▼	50" x 50"	UPS	\$115.00
2060-B	60" x 60"	UPS	\$152.00
2060-M▼	60" x 60"	UPS	\$141.00
2070-B	70" x 70"	UPS	\$166.00
2070-M▼	70" x 70"	UPS	\$157.00
2045-B	46" x 60"	UPS	\$119.00
2045-M	46" x 60"	UPS	\$113.00
2057-B	64" x 84"	UPS	\$279.00
2057-M	64" x 84"	UPS	\$265.00
2077-B	7' x 7'	UPS	\$298.00
2077-M	7' x 7'	UPS	\$283.00
2068-B	6' x 8'	UPS	\$316.00
2068-M	6' x 8'	UPS	\$300.00
2088-B	8' x 8'	UPS	\$373.00
2088-M	8' x 8'	UPS	\$354.00

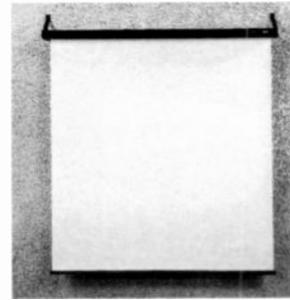
Accessories - All ship UPS

Screen Mounting Brackets sold in pairs (Series 65, 100 and 200).

▼KW18	supports up to 100 lbs.	18" Adjustable	\$38.00
▼KW6	supports up to 35 lbs.	6" Fixed	\$19.00
KW1	supports up to 35 lbs.	Wall/Ceiling	\$25.00

Prices are subject to change without notice 1/96.

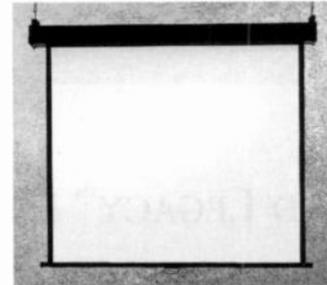
▼ Quick Ship items



6550-M

Series 65 Wall Screen features a durable slat which runs along base of screen. Includes steel case with painted end caps. Our most economical screen, ideal for small audience viewing.

Model	Overall Dimensions	UPS	Price
▼6550-M	50" x 50"	UPS	\$ 77.00
▼6560-M	60" x 60"	UPS	\$ 98.00
▼6570-M	70" x 70"	UPS	\$120.00



5045-M

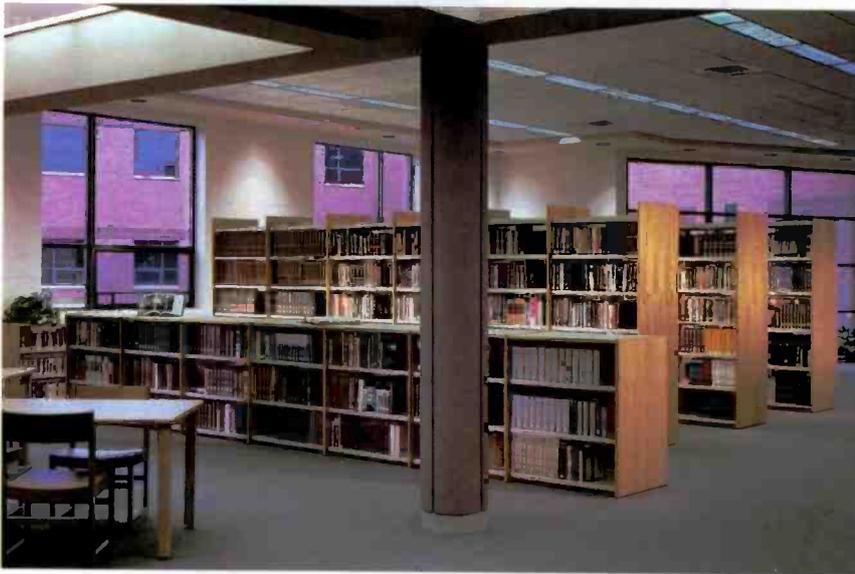
Series 500 Auditorium Wall Screens are our largest manually operated wall screens. Installs easily on mounting brackets built right into the heavy gauge black steel case. Black borders on two sides. Video View has black borders on four sides.

Multi Media

Model	Overall Dimensions	UPS	Price
5045-B	4' x 5'	UPS	\$417.00
5045-M	4' x 5'	UPS	\$396.00
5050-B	50" x 50"	UPS	\$379.00
5050-M	50" x 50"	UPS	\$360.00
5060-B	60" x 60"	UPS	\$399.00
5060-M	60" x 60"	UPS	\$379.00
5057-B	5' x 7'	UPS	\$451.00
5057-M	5' x 7'	UPS	\$428.00
5070-B	70" x 70"	UPS	\$417.00
5070-M	70" x 70"	UPS	\$396.00
5077-B	7' x 7'	UPS	\$489.00
5077-M	7' x 7'	UPS	\$464.00
5068-B	6' x 8'	UPS	\$494.00
5068-M	6' x 8'	UPS	\$469.00
5088-B	8' x 8'	UPS	\$531.00
5088-M▼	8' x 8'	UPS	\$504.00
5079-B	7' x 9'	UPS	\$550.00
5079-M	7' x 9'	UPS	\$522.00
5099-B	9' x 9'	UPS	\$566.00
5099-M	9' x 9'	UPS	\$537.00
5080-B	8' x 10'	UPS	\$630.00
5080-M	8' x 10'	UPS	\$598.00
5000-B	10' x 10'	UPS	\$720.00
5000-M▼	10' x 10'	UPS	\$684.00
5092-B	9' x 12'	UPS	\$836.00
5092-M	9' x 12'	UPS	\$794.00
5022-B	12' x 12'	UPS	\$907.00
5022-M▼	12' x 12'	UPS	\$861.00

Video View

Model	Overall Dimensions	UPS	Price
5V45-M	70" diag.	UPS	\$415.00
5V57-M	100" diag.	UPS	\$458.00
5V68-M	120" diag.	UPS	\$494.00

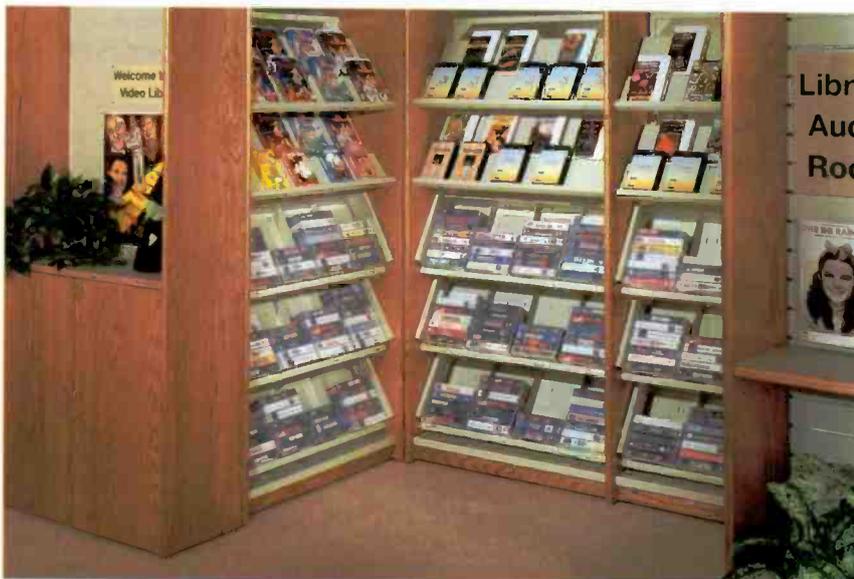


LD42M12S-7
42"H, Medium Oak
Mobile Shelving Unit
\$1,013.00

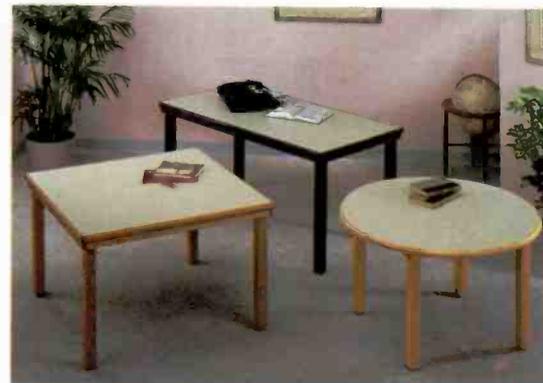


LSSCS-7
36"W, Medium
Oak Study Carrel.
\$740.00

BRETFORD LEGACY™ LIBRARY SYSTEM



LBBS32-7
Big Book Storage
Unit in Medium Oak
\$535.00



LT4242Y-7 Youth Height Square Reading
Table in Medium Oak \$ 876.00
LT3060A-3 Adult Height Rectangle Reading
Table in Dark Oak \$ 925.00
LT42DIJ-2 Juvenile Height Round Reading
Table in Natural Oak \$1,077.00

Today's libraries and media centers serve as much more than traditional reference facilities for books and reading materials. Bretford offers Legacy, a system that incorporates the beauty of fine wood and the strength of steel with the flexibility of modular design. Details like a unique tamper-proof pin system, steel shelf stiffeners, steel frames and wood endpanels, and a special palette of colors and finishes ensure durability, practicality and aesthetics. Our starter/add-on concept enables your system to accommodate storage growth as needed. An ideal choice for law, reference, corporate and school libraries, and retail display. Choose from a wide variety of pieces to design a library that best suits your needs.

Call us for more information on Bretford's full line of library furniture.



PCC5495PL05R
Media Cart with
cabinet in Polo.
\$1,630.00



PME7236CD Mobile Easel
in Cardinal.
\$1,025.00

**YOUR SINGLE RESOURCE FOR
TRAINING, MEETING, CONFERENCE
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PSL2112AN77R Slim
Line Lectern in
Champagne.
\$935.00



POH0229AN32A4 Mobile
Overhead Cart in Wild
Cherry.
\$1,475.00



PTCSWA2A41 Alcott
Chair in Ambiance Dusk.
\$720.00



PMC5430PLR Media Cart
in Polo.
\$990.00

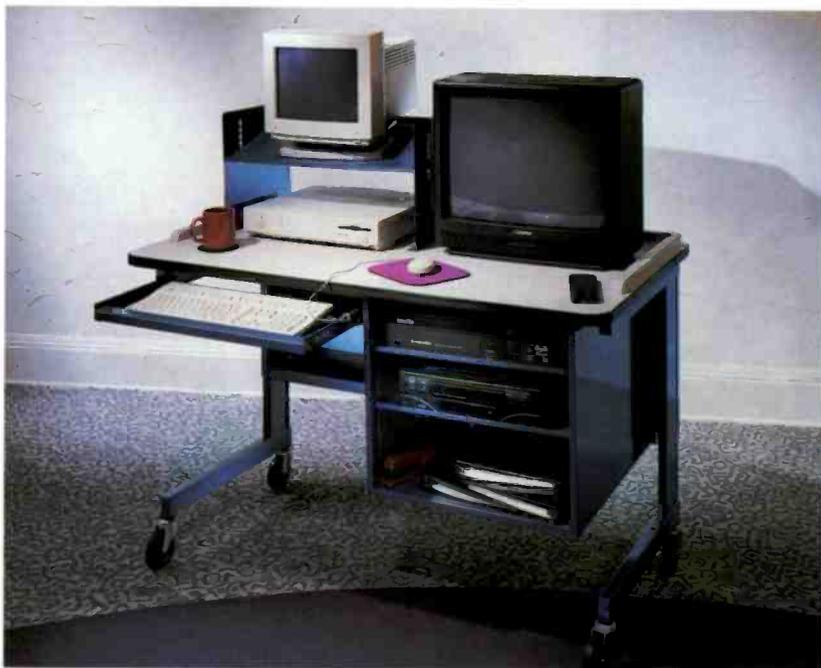
Bretford offers the complete training, meeting, conference, and presentation environment. The Presentation Environments product line offers over 25 products with 40 different laminates, six veneer finishes, 18 powder coat finishes, six coordinating trim colors, and 74 fabric coverings. Bretford can help you create a unique and productive environment. To order a full-line catalog, please contact us.



PXWAX63AN07A1
Concave/Convex
TransTable in Anthracite.
\$950.00

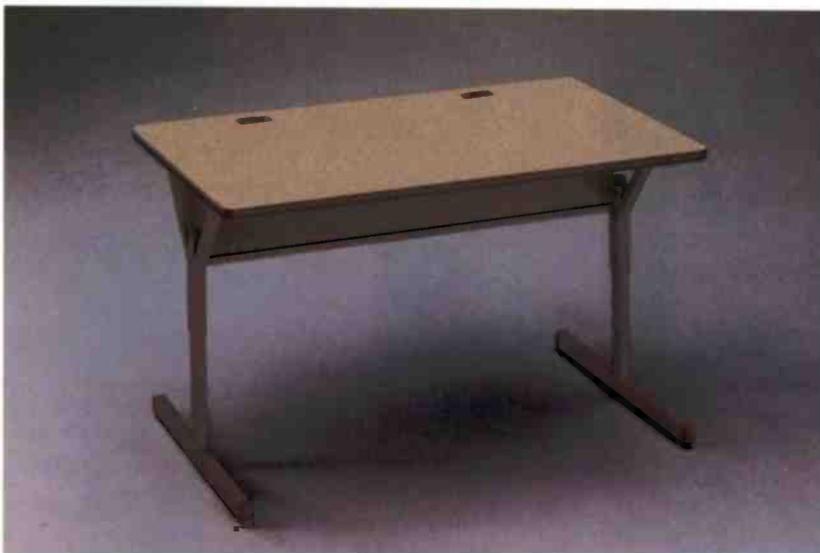


TransTable is a trademark of Bretford Manufacturing, Inc.
Presentation Environments is a registered trademark of
Bretford Manufacturing, Inc.



UCS800 with Quartz laminate, Topaz powder paint and Black trim

**BRETFORD...YOUR SOURCE FOR
CUSTOM FURNITURE**



Connections Table with Beige Nebula and Cappuccino powder paint

Do you need a special color or laminate? An added shelf or wider cart? A special stain or wood to match an existing design? A TV Mount with an enclosed shroud? Call Bretford with your special requirements. We can design the cart, TV mount or furniture for your custom application.

We offer nearly fifty years of experience in all facets of furniture design and manufacturing. Our custom paint, laminate and wood veneer capabilities can accommodate many user-selected colors. Our ability to match a unique color or finish lets you create a Bretford product in the color of your choice for a nominal charge.

Call us with your special requirements and let us create the product to meet your needs.



Custom designed cart



Booktruck in Cabernet



AV Cart in Titanium



TVWY20T with Shroud

A WORD ABOUT VIEWING SURFACES

The projection screens on these pages are available in a variety of viewing surfaces. Refer to the description of each model for surface options.

- **Fiberglass Matt White, and M1300:** General-purpose projection surfaces, with excellent clarity and uniform brightness over a broad viewing cone.
- **Glass Beaded and M2500:** These surfaces offer higher brightness, within a narrower viewing cone. M2500 is ideal for video and data projection.
- **Cineflex:** A vinyl surface for rear projection. Neutral grey.

TRIPOD SCREENS

Diplomat—The Finest Tripod Screen in the World

Simplicity of design, heavy gauge components, and careful workmanship combine to make the DIPLOMAT the world's finest tripod screen. Patented Bell Leg Lock eliminates bent and broken tripod legs. Built-in keystone eliminator disappears when not in use. Sturdy steel case. Optional leatherette carrying case. Choice of fiberglass matt white or glass beaded viewing surfaces.

Consul—Economy and Durability

Lightweight, yet durably constructed, the CONSUL is designed for educational audio-visual use. Cylindrical steel case. Bell Leg Lock eliminates bent and broken tripod legs. Keystone eliminator and carrying case are optional. Choice of fiberglass matt white, glass beaded, or silver lenticular viewing surfaces.

Size (H x W)	Diplomat Matt White or Glass Beaded	Consul Silver Lenticular	Consul Silver Lenticular	Optional Carrying Case
40" x 40"	—	\$119.00	\$149.00	\$39.00
50" x 50"	\$182.00	129.00	160.00	40.00
60" x 60"	208.00	151.00	180.00	41.50
70" x 70"	226.00	172.00	200.00	43.00
84" x 84"	356.00	—	—	54.00
72" x 96"	386.00	—	—	56.00
96" x 96"	446.00	—	—	56.00

Video Format Nominal Diagonal	Viewing Area	Diplomat Matt White or Glass Beaded	Optional Carrying Case
6'	42" x 56½"	\$208.00	\$41.50
7'	49½" x 66½"	226.00	43.00
8'	59" x 79½"	356.00	54.00
10'	71" x 92"	388.00	56.00

LINEAR LASER POINTERS

LINEAR laser pointers combine precision optics and light emitting diode technology. LINEAR pointers project a brilliant red point of light, visible at distances of up to 150'. LINEAR laser pointers are Class II laser devices with 1 mW (except as noted), and are warranted against defects in materials and workmanship. *Ultra-Bright* pointers appear ten times brighter to the eye than 3 mW or 5 mW pointers.

Linear Z4—Pen size pointer in matte black aluminum. Includes clamshell carrying case. Class IIIa laser, with 3mW output.

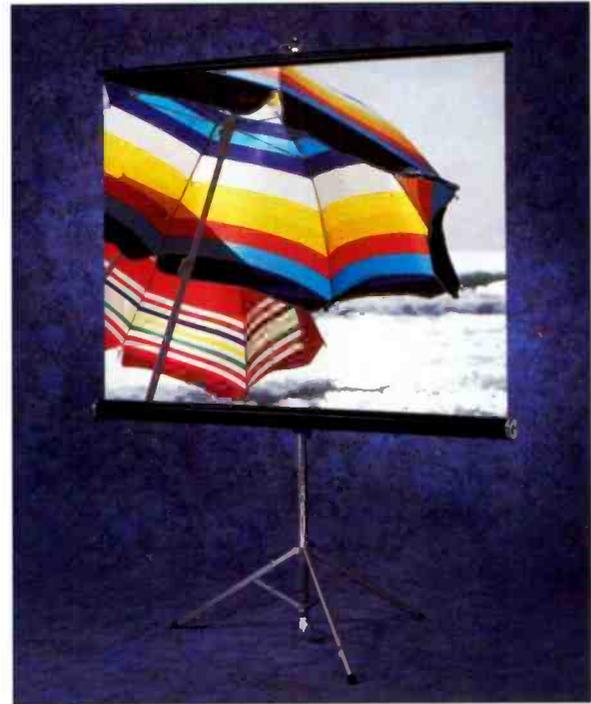
Linear A3—The same high quality electronic components as the LINEAR C6, in a contemporary shatterproof plastic housing. Charcoal grey finish.

Linear C6/UltraBright—Rugged yet stylish. Cast aluminum chassis is finished with a charcoal grey sheath and convenient pocket clip. 3 year warranty.

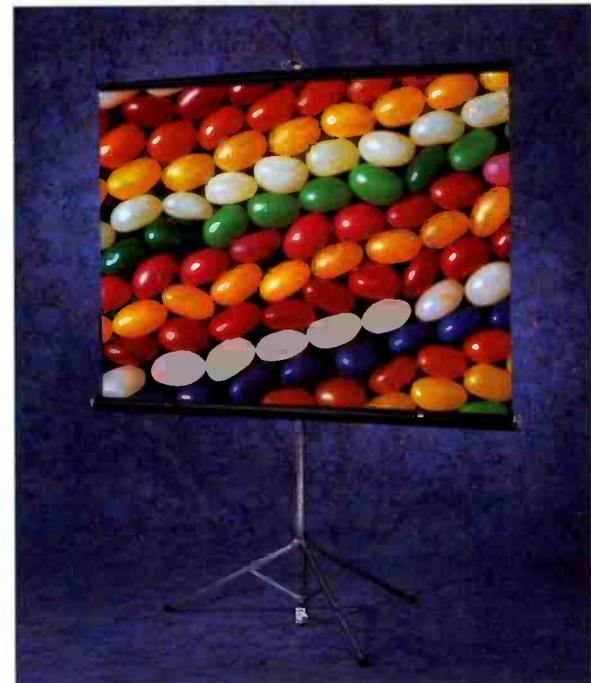
Linear 1/UltraBright—The charcoal grey LINEAR 1 fits comfortably in the palm of the hand, travels in pocket or briefcase. Soft leather carrying case.

Linear 2/UltraBright—Sleek tubular housing. Built-in rechargeable NiCad battery pack and charger. Locking hard-body carrying case is included.

	Dimensions	Power Supply	Warranty	Price
Linear Z4	9/16" dia. x 5 1/16"	2 AAA batteries	2 years	\$ 65.00
Linear A3	7/8" dia. x 6 1/2"	3 N or 2 AAA batteries	3 years	80.00
Linear C6/UltraBright	3/4" x 1 1/16" x 6"	3 N or 2 AAA batteries	3 years	130.00
Linear 1/UltraBright	2 1/4" x 1 1/4" x 6"	2 9V batteries/AC adapter	3 years	250.00
Linear 2/UltraBright	1 1/2" dia. x 13"	NiCad batteries/AC adapter	3 years	415.00



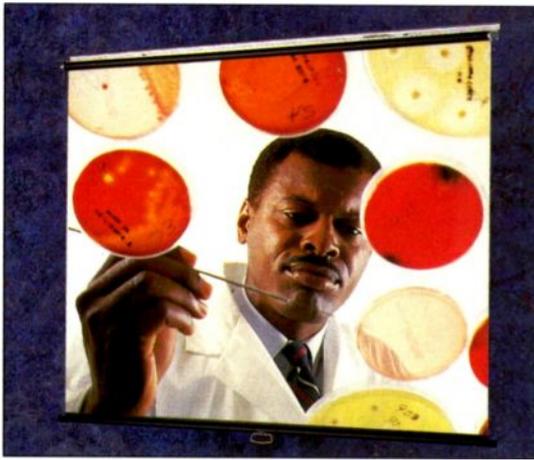
Diplomat



Consul



Linear 2/UltraBright



V-Screen



Star



Luma

Mounting Fixtures for Wall/Ceiling Screens

	Price/pr.
<i>T-Bar Twist Clips</i> —Mount screens directly to T-irons supporting suspended ceilings, without tools. For STAR and LUMA through 70" x 70", and all V-SCREENS.	\$10.00
16-25" Adjustable Wall Brackets	33.50
Non-Adjustable Wall Brackets	6" 15.50 12" 27.50

V-Screen—The Screen with the Five Year Warranty

All Draper V-Screens are warranted against defects in materials and/or workmanship for five (5) years from date of shipment from company.

Extreme simplicity of design, durable components and tearproof fiberglass matt white viewing surface make the DRAPER V-SCREEN the longest lasting classroom wall screen, at a very reasonable price. Installs easily to wall, map rail, or ceiling.

Star—Classroom Wall Screen

Durable construction and attractive design—at an economy price. Sturdy cylindrical steel case and tearproof fiberglass matt white viewing surface are standard. Heavy gauge plated end caps form universal hanging brackets for attachment to wall, ceiling or map rail hooks.

Luma—Finest Wall/Ceiling Screen

Highest quality projection screen for wall or ceiling mounting. Friction-free, pentagonal steel case with plated end caps. Choice of fiberglass matt white or glass beaded viewing surface.

Luma Elite—Tensioned Screen for Wall or Ceiling

The LUMA ELITE has all the advantages of the popular LUMA, plus an automatic tension arm to hold the viewing surface perfectly flat. Choice of three viewing surfaces: fiberglass matt white, glass beaded, or silver lenticular. May be suspended from ceiling or from extension wall brackets (see below).

Size (HxW)	V-Screen	Star	Luma	Luma Elite
50" x 50"	\$55.00	\$61.00	\$ 88.00	\$134.00
60" x 60"	65.00	77.00	102.00	152.00
70" x 70"	80.00	91.00	126.00	174.00
84" x 84"	173.00	198.00	203.00	—
72" x 96"	—	—	218.00	—
96" x 96"	244.00	—	272.00	—

Video Format	Nominal Diagonal	Viewing Area	Luma	Nominal Diagonal	Viewing Area	Luma
6'	42" x 56½"	\$105.00	8'	59" x 79½"	\$206.00	
7'	49½" x 66½"	129.00	10'	71" x 92"	221.00	

Luma 2—for Large Audiences

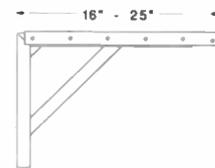
Attractive and a practical choice wherever a large spring roller screen is required. Similar in design to the LUMA, the LUMA 2 is constructed entirely of heavy gauge components for years of dependable operation. Designed for wall or ceiling mounting. Choose fiberglass matt white or glass beaded viewing surface.

Size (HxW)	Luma 2	Size (HxW)	Luma 2	Size (HxW)	Luma 2
50" x 50"	\$230.00	6' x 8'	\$357.00	8' x 10'	\$459.00
60" x 60"	252.00	8' x 8'	385.00	10' x 10'	517.00
70" x 70"	292.00	7' x 9'	397.00	9' x 12'	603.00
84" x 84"	316.00	9' x 9'	416.00	12' x 12'	660.00

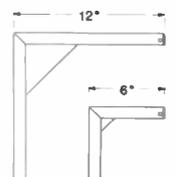
Video Format	Nominal Diagonal	Viewing Area	Luma 2	Nominal Diagonal	Viewing Area	Luma 2
8'	60" x 80½"	\$330.00	150"	87" x 116"	\$459.00	
10'	71" x 92"	357.00	15'	104" x 140"	603.00	



T-Bar Twist Clips



Adjustable Wall Brackets



Non-Adjustable Wall Brackets

Targa—Contemporary Electric Screen

Contemporary motor-in-roller electric screen. Smooth, silent operation with viewing surface centered in a steel case for a trim, balanced look. Designed for either wall or suspended mounting. Select fiberglass matt white or glass beaded viewing surface.

Profile—Requires No Wiring

Profile/DC—Battery Operated

The PROFILE/DC incorporates 3 totally new ideas—

- **Battery Operated:** The power source is a built-in, rechargeable battery, with charger furnished. Installation takes only minutes.
- **Infrared Control:** Standardly equipped with a hand-held infrared remote control transmitter and built-in receiver.
- **Appearance:** Instead of a steel housing, the PROFILE features an attractive fascia and endcaps in white, black, beige, or dove grey. Hardwood veneers also available.

Viewing surfaces in matt white or glass beaded.

Profile/AC

The contemporary good looks of the PROFILE/DC, with infrared remote control, plus permanently mounted power cord.

Envoy—Concealed in the Ceiling

The ENVOY combines an automatic ceiling closure feature with a quiet motor-in-roller design. The screen appears at the touch of a switch and disappears completely when not in use. Choice of fiberglass matt white or glass beaded viewing surfaces.

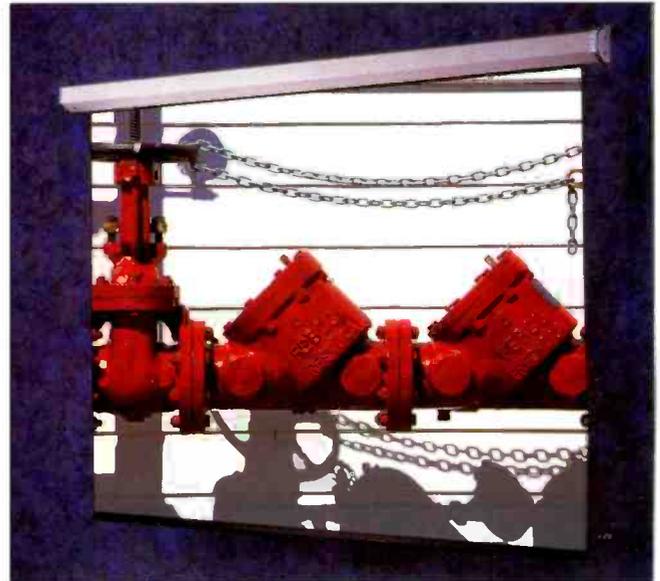
Signature—With Tab Tensioning System & Automatic Ceiling Closure

The SIGNATURE combines the clean appearance of a ceiling recessed screen with the unparalleled performance of DRAPER's tab-tensioning system and motor-in-roller design. The SIGNATURE's ceiling closure disappears into the case when the screen is lowered. Choice of M1300 or M2500 front projection surfaces, or CINEFLEX for rear projection (by quotation).

Size (HxW)	Targa	Profile/AC or DC	Envoy	Signature
50" x 50"	\$720.00	\$1080.00	\$1500.00	\$3393.00
60" x 60"	731.00	1096.00	1530.00	3590.00
70" x 70"	749.00	1114.00	1546.00	3800.00
84" x 84"	821.00	1171.00	1603.00	4071.00
6' x 8'	840.00	1202.00	1618.00	4177.00
8' x 8'	877.00	1236.00	1658.00	4343.00
7' x 9'	892.00	—	1707.00	4451.00
9' x 9'	927.00	—	1738.00	4636.00
8' x 10'	987.00	—	1763.00	4743.00
10' x 10'	1020.00	—	1810.00	4708.00*
9' x 12'	1044.00	—	1856.00	5007.00
12' x 12'	1109.00	—	1898.00	5291.00*

Video Format		Targa	Profile/AC or DC	Envoy	Signature
Nominal Diagonal	Viewing Area				
6'	42" x 56½"	\$731.00	\$1096.00	\$1530.00	\$3533.00
7'	49½" x 66½"	749.00	1114.00	1546.00	3714.00
8'	59" x 79½"	821.00	1171.00	1603.00	3945.00
10'	71" x 92"	840.00	1202.00	1618.00	4177.00
150"	87" x 116"	987.00	—	1763.00	4702.00
15'	104" x 140"	1044.00	—	1856.00	5007.00

*SIGNATURE in these sizes is only available with M1300 viewing surface.



Targa



Profile/DC



Envoy



Rolleramic



Premier



Artisan/Series E

Rolleramic—Large Electric Screen



Designed for wall or suspended mounting, the ROLLERAMIC features heavy duty components and is built to withstand many years of continuous use. The viewing surface is concealed when not in use. Descends smoothly and silently at the touch of a switch. Choice of fiberglass matt white or glass beaded viewing surfaces.

Premier—With *Perfectly Flat* Surface



PREMIER is designed to meet the exacting requirements of video and data projection. Tab Tensioning System holds M1300 or M2500 viewing surface perfectly flat and wrinkle-free. CINEFLEX rear projection surface also available by quotation. Quiet motor-in-roller design. Projected image fully framed by black masking borders (standard). Designed for wall or suspended mounting.

Size (HxW)	Rolleramic	Premier	Size (HxW)	Rolleramic	Premier
50" x 50"	\$1352.00	\$1434.00	9' x 12'	\$1632.00	\$2731.00
60" x 60"	1370.00	1577.00	12' x 12'	1712.00	3046.00*
70" x 70"	1383.00	1754.00	10'6" x 14'	1967.00	—
84" x 84"	1413.00	1962.00	14' x 14'	2059.00	—
6' x 8'	1426.00	2015.00	12' x 16'	2256.00	—
8' x 8'	1466.00	2177.00	16' x 16'	2315.00	—
7' x 9'	1510.00	2239.00	13'6" x 18'	2502.00	—
9' x 9'	1552.00	2423.00	18' x 18'	2672.00	—
8' x 10'	1569.00	2477.00	15' x 20'	2750.00	—
10' x 10'	1610.00	2531.00*	20' x 20'	2962.00	—

Video Format				Nominal Viewing			
Diagonal	Area	Rolleramic	Premier	Diagonal	Area	Rolleramic	Premier
6'	42" x 56½"	\$1370.00	\$1523.00	150"	87" x 116"	\$1569.00	\$2423.00
7'	49½" x 66½"	1383.00	1674.00	15'	104" x 140"	1632.00	2731.00
8'	59" x 79½"	1413.00	1831.00	25'	176" x 236"	2750.00	—
10'	71" x 92"	1426.00	2015.00				

*PREMIER in these sizes is available only with M1300 viewing surface.

Artisan—Solid Hardwood Case



ARTISAN—a new standard in projection screen design. Hand-rubbed solid hardwoods or contemporary plastic laminates complement fine office or residential furnishings. Available finishes include Light, Medium, and Dark Oak; Walnut, Mahogany, Dove Grey, Beige, Burgundy, and Black. Series M is spring-roller operated; Series E is motorized; Series V is motorized and features Tab Tensioning System. Hardwood units are offered in choice of rectilinear, radius, or traditional case style. Viewing surfaces for Series M and Series E in fiberglass matt white or glass beaded. Series V available by quotation in M1300 or M2500 viewing surface.

Size (HxW)	Series M	Series E	Size (HxW)	Series M	Series E
50" x 50"	\$500.00	\$1292.00	84" x 84"	\$846.00	\$1500.00
60" x 60"	554.00	1323.00	72" x 96"	892.00	1762.00
70" x 70"	707.00	1369.00	96" x 96"	930.00	1811.00

Video Format				Nominal Viewing			
Diagonal	Area	Series M	Series E	Diagonal	Area	Series M	Series E
6'	42" x 56½"	\$554.00	\$1323.00	8'	59" x 79½"	\$846.00	\$1500.00
7'	49½" x 66½"	707.00	1369.00	10'	71" x 92"	892.00	1762.00

Motorized Screen Controls

All DRAPER motorized screens are standardly furnished with one 3-position 115v switch. The following controls are optionally available.

115v or 220v Multiple Station Controls	\$ 46.00 per station
Low Voltage Controls	177.00 control unit only
1 or more stations	46.00 additional per station
Wireless transmitter/receiver (RF)	215.00
Wireless transmitter/receiver (IR)	85.00
Key Operated Switches	
Power supply switch (on/off)	69.00
3-position control switch	85.00

Cinefold—Portable Folding Projection Screen

CINEFOLD portable screens—whenever you need to take a show on the road. CINEFOLD comes in virtually any size, folds into a small ABS carrying case. Sets up in minutes without tools. Available with matt white for front projection or CINEFLEX rear projection vinyl—or both for maximum versatility. Folding aluminum frame, legs, surface, and carrying case are standard equipment. Velour dress kits and Pipe & Drape Runoffs available—inquire. Custom sizes available.

Accessories		Price			
Heavy-duty legs	\$139.00	NOTE—Heavy-duty legs recommended for screens over 9' x 9', and screens purchased with dress kit.			
Anti-sway stabilizers	88.00	Anti-sway stabilizers recommended with dress kit.			
Overall Size (HxW)	Matt White	Cineflex	Overall Size (HxW)	Matt White	Cineflex
1.00:1.00 Square					
6' x 6'	\$503.00	\$614.00	9' x 9'	\$651.00	\$ 866.00
7' x 7'	540.00	699.00	10' x 10'	689.00	965.00
8' x 8'	591.00	795.00	12' x 12'	813.00	1091.00
1.00:1.33 Movies/Video					
6' x 8'	540.00	698.00	9' x 12'	710.00	1047.00
7'6" x 10'	632.00	833.00	10'6" x 14'	824.00	1107.00
1.00:1.48 Slide					
5' x 7'6"	527.00	626.00	7' x 10'6"	626.00	849.00
6' x 9'	581.00	719.00	8' x 12'	693.00	962.00

Viewing area is 4" less than overall size in each dimension. Replacement viewing surfaces—front or rear—also available.



Cinefold

REAR PROJECTION SCREENS

Cinescreen™—Rigid Rear Projection Screens

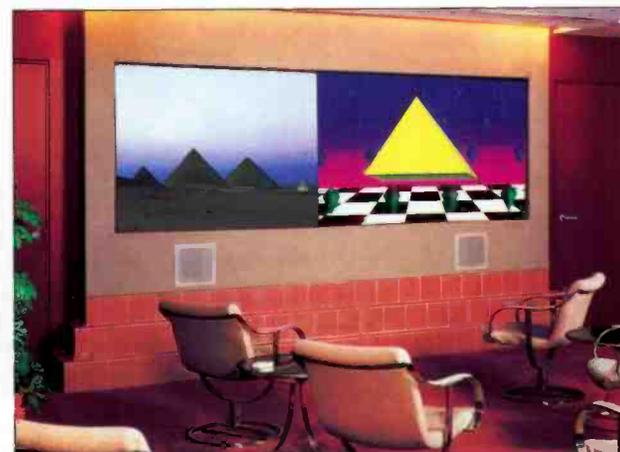
What is a Cinescreen?

A CINESCREEN is a transparent substrate of glass or acrylic, and a permanently bonded optical coating. The optical coating diffuses projected light to reproduce the image. The optical coating may be formulated to provide varying degrees of brightness and image resolution.

- **Substrates & Optical Coatings**—CINEGLASS™ is select quality plate glass; CINEPLEX™ is lightweight, durable clear acrylic. Both CINESCREEN substrates offer virtually identical optical qualities.
- **Optical Coatings and Tints**—DRAPER offers 6 optical coatings, each in 3 tints. Request assistance in finding the perfect combination for your presentation room and projection equipment.
- **Protective Coating**—ARMORKOTE™ is highly resistant to solvents and abrasion. An excellent "insurance policy" against accidents and user error.

Planning a System

DRAPER CINESCREENS are available in virtually any size. They are manufactured to your order, with your specified coatings. Factory installed frames are available. Planning a rear screen installation is a complex undertaking. Contact your DRAPER dealer for assistance with your project.



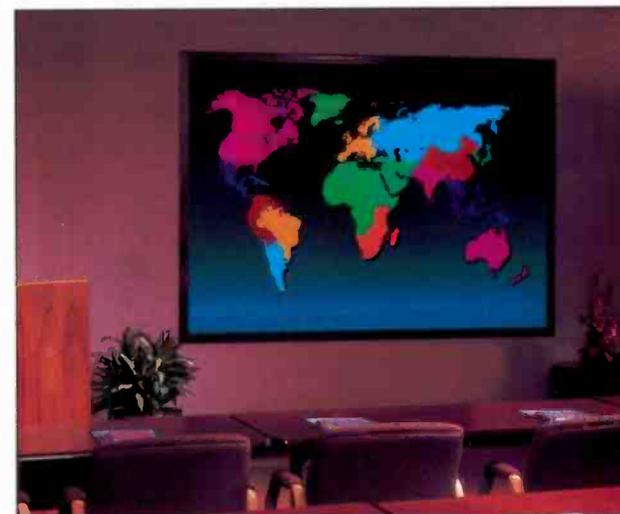
Cinescreen

DiamondScreen—World's Brightest Rear Screen

DIAMONDSCREEN is the first rear projection screen designed specifically for video and data projection. Unlike conventional rear screens, the DIAMONDSCREEN is cast (molded) and derives its incredible optical performance from its patented Fresnel/lenticular lens system. This unique design provides:

- The brightest rear screen image in the world—5.0+ gain on axis.
- A panoramic 180° horizontal viewing cone.
- Excellent resolution.
- High Contrast grey optical tint for superior color contrast and high tolerance of ambient light.

DIAMONDSCREEN is available by quotation.



DiamondScreen



UniMount

ElectraMount

- Accommodates virtually any ceiling-mounted video projector.
- Hides and protects your video projector when not in use.

The ELECTRAMOUNT is the ideal video projector mount. To begin a presentation, touch a switch and watch it descend. After the show, flip the switch and it retracts into the ceiling—safe from dust, smoke, and tampering.

Five models fit almost any video projector. Request quotation.

UniMount

The UNIMOUNT offers all the function and convenience of the ELECTRAMOUNT in a smaller, lighter package. Simplified unibody construction reduces volume by over 30%, as compared to the ELECTRAMOUNT Model S—while retaining the same interior capacity.

LCD Mount

For use with ceiling-mounted LCD projectors. Available in two sizes—designated “A” and “B”—to fit your projector. Bomb bay doors for a compact profile.

PROJECTION SCREENS

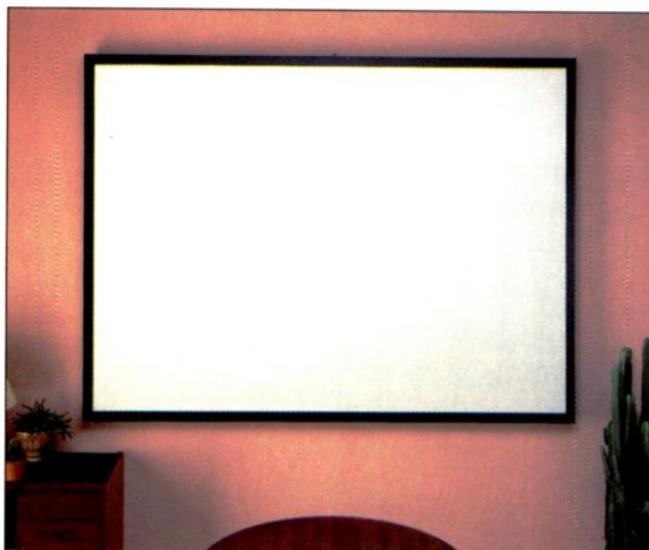
Clarion—Perfect Picture Quality

Improve your image—with a CLARION projection screen. Why? Because the viewing surface is perfectly flat. And a perfectly flat viewing surface means perfect resolution: in other words, perfect picture quality. The CLARION's viewing surface is stretched tightly over a self-concealing aluminum frame, which also forms an attractive border, giving the screen a clean, theatre-like appearance. With six viewing surfaces to choose from, CLARION offers the surface that's perfect for your projector. You won't find a better image. (Additional viewing surfaces available by quotation). Frame is standardly finished in black. Optional frame finishes, including hardwood veneers, are available. CLARION is also offered with a tilting mechanism for keystone elimination: by quotation.

Image Area (HxW)	M1300 or M2500	Matt White or Glass Beaded	Image Area (HxW)	M1300 or M2500	Matt White/Glass Beaded
50" x 50"	\$ 651.00	\$651.00	8' x 8'	\$1561.00	—
60" x 60"	821.00	821.00	9' x 9'	1852.00	—
70" x 70"	1004.00	1004.00	10' x 10'	1986.00	—
84" x 84"	1292.00	—			

Video Format

Nom. Diag.	Image Area	M1300/M2500	Matt White/Glass Beaded	Nom. Diag.	Image Area	M1300/M2500	Matt White/Glass Beaded
6'	43" x 57"	\$ 612.00	\$ 646.00	10'	72" x 96"	\$1217.00	\$1281.00
7'	50" x 67"	749.00	787.00	150"	90" x 120"	1672.00	—
100"	60" x 80"	949.00	998.00	15'	108" x 144"	2009.00	—



Clarion

Cineperm—Permanently Tensioned Screen

The CINEPERM offers a contemporary, theatre-like appearance wherever a permanently mounted front or rear screen is required. Viewing surface, in choice of M1300 or M2500 for front projection and CINEFLEX for rear projection, is framed by a 2" black border with snaps to match snaps on 1" square tubular aluminum wall mounted frame. Perfectly flat viewing surface conceals frame completely.

Size (HxW)	M1300 or M2500	Size (HxW)	M1300 or M2500	Size (HxW)	M1300 or M2500
50" x 50"	\$303.00	84" x 84"	\$575.00	10' x 10'	\$845.00*
60" x 60"	378.00	6' x 8'	566.00	9' x 12'	798.00
70" x 70"	417.00	8' x 8'	666.00	12' x 12'	1007.00*

Video Format

Nominal Diagonal	Viewing Area	M1300 or M2500	Nominal Viewing	Viewing Area	M1300 or M2500
6'	43" x 56"	\$339.00	150"	86" x 116"	\$ 666.00
6½'	48½" x 65½"	360.00	15'	104" x 140"	798.00
8'	58" x 79"	509.00	25'	180" x 240"	3816.00†
10'	68" x 92"	566.00			

*These sizes not available with M2500 viewing surface.

†This size requires truss-style construction.



Cineperm

A totally integrated offering of communication support furniture for conference and meeting rooms, made to the highest standard of quality. Everything matches. A complete system of beautiful, functional furniture with a unified appearance.

Series, Styles, and Finishes

Integrated Systems is offered in two series:

- **Series 1500:** Constructed of hardwood solids and veneers, in three styles—Rectilinear, Radius, and Traditional—and five finishes—Light, Medium, and Dark Oak; Walnut; and Mahogany.
- **Series 1400:** Constructed of high pressure plastic laminate, in Rectilinear style and four standard colors—Black, Dove Grey, Beige, and Burgundy.

All products shown on these pages are offered in all of the above series, styles, and finishes, and in various sizes. Call for quotation.

Visual Presentation Systems

Conference cabinets for meeting rooms, executive offices, and work stations. Closed, they harmonize with room decor. Open to find a wealth of visual communication tools—dry erase porcelain steel writing surface, cork or textile tackable display surfaces, flipchart, and concealed projection screen.

Visual Display Boards

- **Series 600:** Soft radius styled hardwood frames, in all Series 1500 finishes. Magnetic white porcelain steel writing surface, with 12" pen tray, or cork display surface. Keyhole hanging brackets for easy installation.
- **Series 400:** Same high quality display surfaces, wrapped in contemporary satin anodized aluminum frame. Full width pen tray and map rail with cork insert. Brackets furnished.

Lecterns

DRAPER floor, stacking, and table lecterns are suitable for conference room or lecture hall. Floor and stacking lecterns include 4 large, concealed 3" casters for mobility and stability. Reading shelf adjusts easily to fit every speaker. Lower shelf is also adjustable.

Mobile TV/VCR Cabinets & Consoles

Hand crafted video presentation furniture. TV/VCR Cabinet serves as pedestal for TV monitor; TV/VCR Console has upper monitor storage area with pocket doors, pull-out VCR shelf, and internal power supply. TV/VCR Cabinets and Consoles have 3" casters and adjustable storage shelves.

Mobile Projector Cabinets

Mobile Projector Cabinets are designed for the use and storage of overhead, slide, and motion picture projectors and supplies. Standardly includes: concealed casters, one adjustable shelf, and one door with concealed hinges.

Overhead Projector Cabinets & Carts

With an Overhead Projector Cabinet, your overhead projector sits securely inside a beautifully crafted, mobile enclosure. An automatic lift system raises the projector from inside the cabinet when you need it. The top of the cabinet opens to become leaves on both sides of the projector.

An Overhead Projector Cart is a convenient rolling shelf unit for an overhead projector, with drop leaves on both sides for transparencies and notes.

Conference Tables

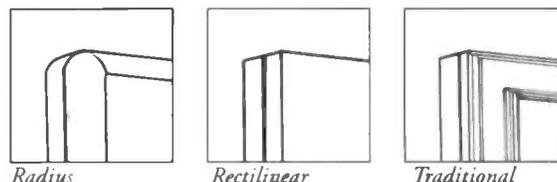
Crafted from the highest grade materials, DRAPER Conference Tables complete the INTEGRATED SYSTEM. Sizes to 60" x 192".

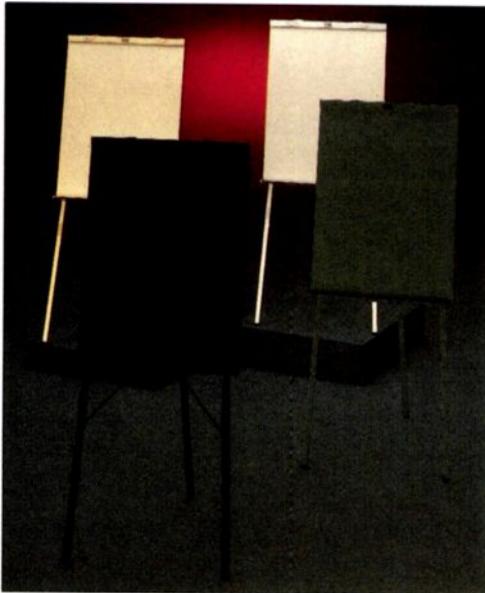
Bookcases and Credenzas

Credenzas and Bookcases are designed for convenient storage in the conference room. Adjustable shelving, adjustable levelers, and concealed all-metal door hinges are standard.



Integrated Systems—Finishes & Styles





Paper Pad Easels



Writing Surface Easels



Poster Easels

Paper Pad Easels

- **DR Series:** The finest paper pad easels you can buy. All-aluminum easels feature spring-loaded paper clamp, hinged pen tray, pen storage compartment, and protective rubber feet. Use all standard easel paper pads. Fold from 70" height to 28" x 38" x 2". Grey, black, silver, and gold finishes available.
- **OP Series:** Same quality construction as the DR Series, with fixed pen tray and without storage compartment.

Color	DR Series	OP Series
Grey Epoxy Powdercoat	DR400 \$171.00	OP400 \$160.00
Black Epoxy Powdercoat	DR450 171.00	OP450 160.00
Silver Anodized	DR500 198.00	OP500 187.00
Gold Anodized	DR550 198.00	OP550 187.00

Writing Surface Easels

DR Series and OP Series available with all the features described above, plus choice of white porcelain dry-erase surface or magnetic green chalkboard.

Color	DR Series	OP Series
Chalkboard/Silver	DR700 \$180.00	OP700 \$169.00
Chalkboard/Gold	DR750 180.00	OP750 169.00
Porcelain/Gold	DR800 289.00	OP800 278.00
Porcelain/Black	DR850 256.00	OP850 245.00

Poster Easels

All-aluminum tripod-style easels are lightweight yet rugged. Hinged chart holders at multiple heights for poster display. Folding and non-folding models available in gold anodized and black epoxy powdercoat finishes. Folding models furnished complete with Spring-Loaded Chart Clamp to mount any standard paper pad.

Color	Model	Height	Price	Model	Height	Price
<i>Folding Models</i>						
Gold Anodized	DR250	6'	\$145.00	DR260	7'	\$169.00
Black Epoxy Powdercoat	DR270	6'	145.00	DR275	7'	169.00
<i>Non-Folding Models</i>						
Gold Anodized	DR200	5'	\$84.00	DR220	6'	\$93.00
Black Epoxy Powdercoat	DR205	5'	84.00	DR225	6'	93.00

Decorative Poster Easels

The classic design and brass accents of a Decorative Poster Easel will draw attention to posters and announcements, complement works of art. The DR150 is brass-finished; DR160 is black, white, grey, navy, maroon, or teal. DR170 is solid oak, with finishes in light or medium oak, walnut, cherry, and mahogany.

Brass	Painted Hardwood	Stained Hardwood
DR150 \$71.00	DR160 \$87.00	DR170 \$96.00

Heavy-Duty Easels

DRAPER heavy-duty paper pad easels are the world's toughest. 1" square tubular aluminum frames and sturdy aluminum backboards take the hardest knocks with complete stability.

Type	Model	Price	Type	Model	Price
A-Frame Easel	DR890	\$232.00	A-Frame with Casters	DR891	\$255.00
Folding A-Frame	DR895	285.00	3-Fold Easelfold	DR910	345.00
Sled-Base Easelfold	DR900	333.00			

Easel Paper Pads

Standard 27" x 34" paper pads, all with chipboard backing, bound at top, and drilled on 17½" centers. 50 sheets per pad, 4 pads per carton. Prices per carton.

PP10	Plain 16 lb. white bond. Headstrip at top of pad.	\$50.00
AV15	As above, without headstrip.	47.50
GP20	Same as AV15, with light blue 1" grid.	55.00
RP30	Same as AV15, with light blue horizontal rules at 1" intervals.	53.75

OVERHEAD PROJECTOR TABLES



OHT-32

OHT-32 Plastic compact stand-up overhead projector table. Includes 3-outlet, 15' surge suppressing electric assembly U.L. and C.S.A. listed and 4" casters, two with locking brake. Middle shelf has tray for storing supplies. Assembly required. 24"W x 15 3/4"D x 32"H. Wt. 34 lbs. **\$192**

OHT-20 Same as above but sit-down two shelf model. 24"W x 15 3/4"D x 20"H. Wt. 24 lbs. **\$174**



OHT-42

OHT-42 Plastic stand-up table for large overhead projectors. Includes 3-outlet, 15' surge suppressing electric assembly U.L. and C.S.A. listed and 4" casters, two with locking brake. Top shelf has tray for storing supplies. Assembly required. 32"W x 24"D x 36"H. Wt. 45 lbs. **\$283**



TL-OH-29

TL-OH-29 Sit-down overhead projector table with 2" furniture casters, 2 with brake. Specify black or gray frame. Assembly required. 40"W x 21"D x 29"H. Projector opening is 20" x 17 1/2". Wt. 47 lbs. **\$324**

TL-OH-38 Same as above but with stand up capability. 40"W x 21"D x 38"H. Wt. 48 lbs. **\$324**



OHS-42

OHS-42 Plastic stand-up table for large overhead projectors. Includes 3-outlet, 15' surge suppressing electric assembly U.L. and C.S.A. listed and 4" casters, two with locking brake. Top shelf has tray for storing supplies. Assembly required. 32"W x 24"D x 36"H. Wt. 45 lbs. **\$296**



TL-27-TP

TL-27-TP Overhead projector and computer workstation with adjustable terminal and projector platform. Complete with 2" furniture casters, 2 with brake. Specify black or gray frame. Assembly required. 51 1/2"W x 32"D x 43 1/2"H. Projector opening is 20" x 17 1/2". Wt. 114 lbs. **\$644**

TL-27 Same as above without adjustable terminal platform. 51 1/2"W x 32"D x 30"H. Wt. 94 lbs. **\$536**



OHS-32

OHS-32 Plastic compact stand up overhead projector table. Includes 3-outlet, 15' surge suppressing electric assembly U.L. and C.S.A. listed and 4" casters, two with locking brake. Middle shelf has tray for storing supplies. Assembly required. 24"W x 15 3/4"D x 32"H. Wt. 34 lbs. **\$204**



OHT-50

OHT-50 Plastic stand-up table with 3-outlet 15' surge suppressing electric assembly U.L. and C.S.A. listed and 4" casters, two with locking brake. Accommodates the new larger overhead projectors and provides a large work area. Assembly required. 39 3/4"W x 24"D x 36"H. Projector opening is 20 1/8" x 15 1/4". Wt. 35 lbs. **\$269**



OHT-30

OHT-30 Plastic sit-down overhead projector table with 3-outlet 15' surge suppressing electric assembly U.L. and C.S.A. listed and 4" casters, two with locking brake. Includes two sets of legs to allow top shelf height to match OH projector. Assembly required. 39 3/4"W x 18"D x 29" to 32"H. Projector opening is 17 3/4" x 15 1/4". Wt. 31 lbs. **\$243**

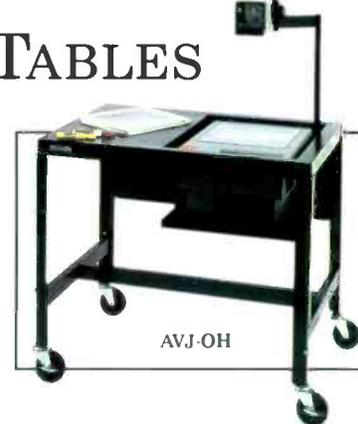
OHT-40 Same as above with stand-up capability. 39 3/4"W x 18"D x 38" to 40 1/2"H. Wt. 33 lbs. **\$260**



OHT-39

OHT-39 Sit-down adjustable height steel overhead projector table. Complete with 3-outlet 15' U.L. and C.S.A. listed electric assembly and 4" casters, two with locking brake. Assembly required. 39"W x 20 1/4"D x 29"H. Projector platform adjusts from 17 1/2" to 27 1/2" in 2 1/2" increments. Projector opening is 19 3/4" x 17". Wt. 29 lbs. **\$266**

OHT-39 Same as above with stand-up capability. 39"W x 20 1/4"D x 39"H. Projector platform adjusts from 27 1/2" to 37 1/2" in 2 1/2" increments. Projector opening is 19 3/4" x 17". Wt. 37 lbs. **\$277**



AVJ-OH

AVJ-OH Steel adjustable height overhead projector table for stand-up or sit-down use. Work surface adjusts from 26 1/4" to 39 3/4". Projector platform adjusts from 6" to 10" in 1" increments. Complete with 3-outlet 15' U.L. and C.S.A. listed electric assembly. Ships set-up. 36"W x 24"D x 26 1/4" to 39 3/4"H. Projector opening is 20 1/2" x 17 1/2". Wt. 60 lbs. **\$356**



AVJ-OH48MM

AVJ-OH48MM 48" extra wide all steel adjustable height multi-media center with pull-out keyboard shelf. Work surface adjusts from 30" to 46". Projector well platform adjusts from 6" to 10" in 1" increments. Middle shelf is also adjustable to allow for a variety of equipment, including a CPU Tower. This unit includes 8" pneumatic tires and 3-outlet 15' U.L. and CSA listed electric assembly. Available in black color only. Assembly required. Wt. 121 lbs. **\$596**



AVJ-OH48T

AVJ-OH48T Adjustable height, mobile, multi-media computer workstation. Work surface adjusts from 26 1/4" to 39 3/4". Projector well platform adjusts from 6" to 10" in 1" increments. Terminal platform adjusts and tilts in 1" increments. Projector opening is 20 1/2" x 17 1/2". Complete with 3-outlet 15' U.L. and C.S.A. listed electric assembly. 48"W x 24"D x 26 1/4" to 39 3/4"H. Wt. 78 lbs. **\$472**

AVJ-OH48 Same as above without terminal platform. 48"W x 24"D x 26 1/4" to 39 3/4"H. Wt. 72 lbs. **\$405**



ENDURA® EQUIPMENT TABLES

- Lifetime warranty.
- Integral safety push handle is molded into top shelf.
- Top shelf reinforced with one steel bar.
- Big wheel models are (UL) listed.



- Molded cord wrap attaches around table leg and swings out for easy access.
- 3-outlet, 15 ft. surge suppressing electric assembly. U.L. & C.S.A. listed.
- Cable-Track Cord Management System.
- 4" ball bearing casters, two with locking brake.
- Assembly required.



- LE-26** 24"W x 18"D x 26"H equipment table. Wt. 23 lbs. **\$167**
- LE-34** 24"W x 18"D x 34"H equipment table. Wt. 30 lbs. **\$199**
- LEB-26** (UL) listed with 8" big wheels. Wt. 33 lbs. **\$217**
- LEB-34** (UL) listed with 8" big wheels. Wt. 40 lbs. **\$249**
- LE-26C** With locking cabinet. Wt. 45 lbs. **\$315**
- LE-34C** With locking cabinet. Wt. 52 lbs. **\$348**
- LEB-26C** (UL) listed with locking cabinet and 8" big wheels. Wt. 55 lbs. **\$365**
- LEB-34C** (UL) listed with locking cabinet and 8" big wheels. Wt. 62 lbs. **\$397**

- LE-42** 24"W x 18"D x 42"H equipment table. Wt. 32 lbs. **\$20**
- LEB-42** (UL) listed with 8" big wheels. Wt. 42 lbs. **\$25**
- LE-42C** With locking cabinet. Wt. 54 lbs. **\$35**
- LEB-42C** (UL) listed with locking cabinet and 8" big wheels. Wt. 64 lbs. **\$40**



- LEF-34C** Locking console with one inner shelf. 24"W x 18"D x 34"H. Wt. 61 lbs. **\$391**
- LEF-42C** Locking console with two inner shelves. 24"W x 18"D x 42"H. Wt. 69 lbs. **\$470**



- LE-50C** Partially enclosed locking video console with one inner shelf. 24"W x 18"D x 50"H. Wt. 80 lbs. **\$438**
- LEB-50C** Same as above with 8" big wheels on one end. Wt. 90 lbs. **\$488**



- LEVC-34** 18"W x 24"D x 34"H equipment table with tamper resistant video compartment. Wt. 31 lbs. **\$207**



- LEVC-42** 18"W x 24"D x 42"H equipment table with tamper resistant video compartment. Wt. 33 lbs. **\$214**



- LEVC-45** 24"W x 28"D x 45"H equipment table with tamper resistant video compartment. Wt. 50 lbs. **\$310**



All wood cabinet models available with 4" casters.

- LE-26WC** Locking wood cabinet table with 2" casters. Putty and walnut color. 24"W x 18"D x 26"H. Wt. 45 lbs. **\$315**
- LE-34WC** Same as above with two shelves. 24"W x 18"D x 34"H. Wt. 52 lbs. **\$348**
- LE-42WC** Same as above with two shelves. 24"W x 18"D x 42"H. Wt. 54 lbs. **\$353**

Accessories



- LSK SECURITY SYSTEM**
6-foot cable, two mounting plates and lock. **\$32**
- LSO** Optional - two additional mounting plates. **\$13**



- LSS SAFETY STRAP**
10-foot safety strap with easy lock buckle. **\$14**



LP Audio/Visual Tables

The LP line is a high quality economy version of the traditional audio visual/utility stand.

- Shelves and legs are molded. Tables won't stain, scratch, dent or rust.
- Integral safety push handle and cord wrap.
- 4" ball bearing casters, two with locking brake.
- Optional electric and big wheel models.
- Assembly required.

- LP-26** 24"W x 18"D x 26"H table. Wt. 19 lbs. **\$100**
- LP-34** 24"W x 18"D x 34"H table. Wt. 26 lbs. **\$115**
- LP-42** 24"W x 18"D x 42"H table. Wt. 27 lbs. **\$120**
- LP-DUO** 24"W x 18"D x 16", 26", 34", 42"H table. Wt. 28 lbs. **\$132**
- "LPE"** - 3-outlet, 15' electric assembly, U.L. listed. Wt. 3 lbs. **\$33**
- "LP-BW"** - Big wheel assembly. Wt. 10 lbs. **\$49**
- LEC** Cabinet pack for 18" x 24" tables. Wt. 22 lbs. **\$139**



ENDURA® VIDEO TABLES

- Lifetime warranty.
- Integral safety push handle is molded into top shelf.
- Top shelf reinforced with two steel bars.



- Molded cord wrap attaches around table leg and swings out for easy access.
- 3-outlet, 15 ft. surge suppressing electric assembly. U.L. & C.S.A. listed.
- Cable-Track Cord Management System
- 4" ball bearing casters, two with locking brake.
- Assembly required.



LE-27 32"W x 24"D x 27"H video table. Wt. 42 lbs. **\$262**

LEB-27 With 8" big wheels. Wt. 52 lbs. **\$313**

LE-27C With locking cabinet. Wt. 74 lbs. **\$461**

LEB-27C With locking cabinet & 8" big wheels. Wt. 84 lbs. **\$513**

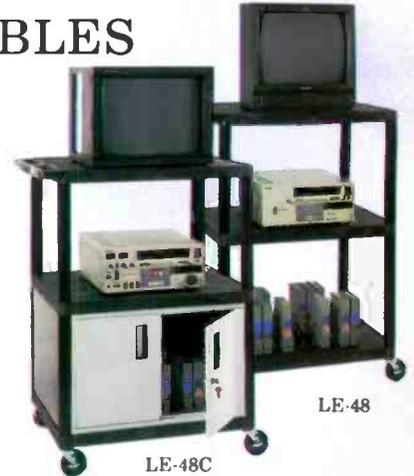


LE-40 32"W x 24"D x 40"H video table. Wt. 51 lbs. **\$313**

LEB-40 With 8" big wheels. Wt. 61 lbs. **\$363**

LE-40C With locking cabinet. Wt. 83 lbs. **\$513**

LEB-40C With locking cabinet & 8" big wheels. Wt. 93 lbs. **\$562**



LE-48 32"W x 24"D x 48"H video table. Wt. 55 lbs. **\$323**

LEB-48 With 8" big wheels. Wt. 65 lbs. **\$374**

LE-48C With locking cabinet. Wt. 87 lbs. **\$522**

LEB-48C With locking cabinet & 8" big wheels. Wt. 97 lbs. **\$573**

Models pictured with optional VTO-28 Video Tape Rack \$35



LEB-54C

LEF-40C pictured with the optional LECS shelf \$73



LEF-40C

LEF-56C Locking video console with one inner shelf. Cabinet features ventilation louvers in back panel. 32"W x 24"D x 59 1/2"H. Wt. 140 lbs. **\$892**



LEF-56C

LE-54 32"W x 24"D x 54"H video table. Wt. 59 lbs. **\$331**

LEB-54 With 8" big wheels. Wt. 69 lbs. **\$382**

LE-54C With locking cabinet. Wt. 91 lbs. **\$532**

LEB-54C With locking cabinet & 8" big wheels. Wt. 101 lbs. **\$581**

LEF-40C Locking video console with one inner shelf. Cabinet features ventilation louvers in back panel. 32"W x 24"D x 44 1/2"H. Wt. 90 lbs. **\$618**

Accessories



4" DUAL WHEEL CASTERS \$43
In lieu of standard casters, add suffix "DW" and \$16 to unit cost.



LSK SECURITY SYSTEM
6-foot cable, two mounting plates and lock. **\$32**



LSS SAFETY STRAP
10-foot safety strap with easy lock buckle. **\$14**

LP Utility TV Video Tables



LPT-27



LPT-48

Tray Shelves

LPT-27 32"W x 24"D x 27"H table with lower tray. Wt. 40 lbs. **\$193**

LPT-40 32"W x 24"D x 40"H table with lower tray. Wt. 48 lbs. **\$261**

"LPT-BW" Optional big wheel assembly. Wt. 11 lbs. **\$51**

LPT-48 32"W x 24"D x 48"H table with lower tray. Wt. 56 lbs. **\$270**

LPT-54 32"W x 24"D x 54"H table with lower tray. Wt. 57 lbs. **\$278**

"LPE" Optional electric assembly, U.L. approved. Wt. 3 lbs. **\$33**

LP TV/Video Tables

The LP line is a high quality economy version of the traditional TV/video stand.



LP-54E

LP-27 32"W x 24"D x 27"H table. Wt. 36 lbs. **\$193**

LP-40 32"W x 24"D x 40"H table. Wt. 44 lbs. **\$250**

LP-48 32"W x 24"D x 48"H table. Wt. 48 lbs. **\$260**

LP-54 32"W x 24"D x 54"H table. Wt. 50 lbs. **\$267**

LPL-DUO 32"W x 24"D x 27", 40", 48", 54"H. Wt. 54 lbs. **\$286**

"LPE" Electric assembly, U.L. approved. Wt. 3 lbs. **\$33**

"LPL-BW" Optional big wheel assembly. Wt. 10 lbs. **\$49**

MOBILE STEEL TABLES

Fixed Height Tables — Adjustable Height Tables — Large Screen Monitor Tables



- AV-26** Fixed height, open shelf table with 4" casters, two with brake. Wt. 34 lbs. **\$224**
- AV-26B** listed. Same as above with 8" big wheels. Wt. 38 lbs. **\$280**
- AV-34** Fixed height, open shelf table with 4" casters, two with brake. Wt. 41 lbs. **\$243**
- AV-34B** listed. Same as AV-34 with 8" big wheels. Wt. 45 lbs. **\$298**
- AV-42** Fixed height, open shelf table with 4" casters, two with brake. Wt. 42 lbs. **\$249**
- AV-42B** listed. Same as above with 8" big wheels. Wt. 46 lbs. **\$303**



- AVJ-42** Adjustable height open shelf table with 4" casters, two with brake. Adjusts to 24", 26", 30", 34", 38", 42". 24"W x 18"D. Wt. 48 lbs. **\$248**
- AVJ-42B** Same as above with 8" big wheels. Wt. 52 lbs. **\$303**
- AVJ-42C** Adjustable height cabinet table with 4" casters, two with brake. Adjusts to 24", 26", 30", 34", 38", 42". 24"W x 18"D. Wt. 62 lbs. **\$406**
- AVJ-42BC** Same as above with 8" big wheels. Wt. 66 lbs. **\$460**



- ATW-56** Adjustable height wide base table. Adjusts to 40", 42", 48", 50", 54", 56". 32"W x 27"D. Wt. 80 lbs. **\$411**
- ATW-56C** Same as above with wide base cabinet. Wt. 106 lbs. **\$623**

Features Include

- Heavier gauge steel, arc-welded.
- Durable baked-on silicone paint.
- Push handle.
- 1 1/2" lip on all shelves.
- Slots in top shelf for safety strap.
- Sure grip pads.
- U.L. and C.S.A. listed, 15' cord, 3-outlets.
- Cable management system.
- 8" pneumatic tires, 2 fixed, 2 swivel with brakes.
- Ships set up.



TVP-32LT Heavy-duty, two-shelf large screen monitor table. 39 3/4"W x 27 5/8"D x 32"H. Wt. 101 lbs. **\$584**

TVP-44LT

TVP-44LT Heavy-duty, three-shelf, large screen monitor table. 39 3/8"W x 29 1/4"D x 44"H. Wt. 126 lbs. **\$703**

TVP-44LTC Same as above with locking cabinet. Wt. 170 lbs. **\$1011**



TVP-44 Three-shelf, large screen monitor table. 37"W x 25"D x 44"H. Wt. 121 lbs. **\$665**

TVP-32 Two-shelf, large screen monitor table. 38 1/4"W x 26 1/4"D x 32"H. Wt. 96 lbs. **\$569**

TVP-44C Three-shelf, large screen monitor table with locking cabinet. 37"W x 25"D x 44"H. Wt. 165 lbs. **\$973**

All models pictured with optional VTO-28 video rack. Order separately. \$35

Traditional TV Tables Accessories

For All Mobile Steel Tables



4" DUAL WHEEL CASTERS
In lieu of standard casters. Add suffix "DW" and \$16 to unit cost.



LSB SAFETY BELT
8-foot long strap with "J" hooks and easy lock buckle. **\$28**



LSK SECURITY SYSTEM
6-foot cable, two mounting plates and lock. **\$32**

LSO Optional - two additional mounting plates. **\$13**



ATV-56 Adjustable height 24" deep open shelf table with electric and 4" casters, two with brake. Adjusts to 40", 42", 48", 50", 54", 56". 28"W x 24"D. Wt. 77 lbs. **\$365**

ATV-56C Adjustable height 24" deep lock-up cabinet table with electric and 4" casters, two with brake. Adjusts to 40", 42", 48", 50", 54", 56". 28"W x 24"D. Wt. 89 lbs. **\$581**

ATV-56B Same as above with 8" big wheels on one end. Wt. 81 lbs. **\$422**

ATV-56BC Same as above with 8" big wheels on one end. Wt. 93 lbs. **\$637**

TVR-54 Fixed height, slant top, 24" deep open shelf table with electric and 4" casters, two with brake. 28"W x 24"D x 54"H. Wt. 80 lbs. **\$359**

TVR-54B Same as above with 8" big wheels one one end. Wt. 84 lbs. **\$413**



Endura Video Tables
Lifetime warranty. Molded shelves and legs won't stain, scratch, dent or rust.

LE-44P Open shelf table with surge electric and 8" pneumatic tires, two fixed, two swivel with brake. 32"W x 24"D x 44"H. Wt. 75 lbs. **\$512**

LE-32P Same as above with two shelves. 32"W x 24"D x 32"H. Wt. 66 lbs. **\$135**

MOBILE STEEL TABLES



Listed Models



ATW-48EUL



TVW-48EUL

- Integral safety push handle
- 1/2" retaining lip
- Safety belt
- Sure grip safety pads
- Cabling holes
- 3-outlet, 15' U.L. & C.S.A. listed electric assembly
- 4" casters, 2 fixed, 2 swivel w/brake



TVW-48CEUL



TWP-46

ATW-48EUL UL listed. Adjustable height wide base table. 32"W x 27"D x 40" to 48"H. Ships set-up. Wt. 81 lbs. **\$445**

ATW-48CEUL UL listed wide base cabinet table. 32"W x 27"D x 40" to 48"H. Wt. 102 lbs. **\$623**

TVW-48EUL 48" UL listed wide base table. Assembly required. 32"W x 27"D x 48"H. Wt. 62 lbs. **\$362**

TVW-44EUL 44" UL listed wide base table. 32"W x 27"D x 44"H. Wt. 62 lbs. **\$334**

TVW-48CEUL 48" UL listed wide base cabinet table. 32"W x 27"D x 48"H. Assembly required. Wt. 93 lbs. **\$637**

TVW-44CEUL 44" UL listed wide base cabinet table. 32"W x 27"D x 44"H. Wt. 93 lbs. **\$607**

TWP-46 46" UL listed wide base table. Includes 8" semi-pneumatic wheels, 2 fixed, 2 swivel. Assembly required. 32"W x 27"D x 46"H. Wt. 95 lbs. **\$634**

TWP-46P Non U.L. 46" wide base table. Includes 8" pneumatic wheels, 2 fixed, 2 swivel. Assembly required. 32"W x 27"D x 46"H. Wt. 95 lbs. **\$634**

TVW Video Tables

- Die pressed shelves with baked-on enamel finish
- 3-outlet, 15' U.L. & C.S.A. listed electric assembly
- Heavy duty, 4" ball bearing casters, two with brake
- Integral safety push handle
- Cable pass through holes
- Assembly required
- Models pictured with optional VTO-28 Tape rack \$35



TVW-554



TVWE-54C



TVW-54



TVW-44C

TVW-554 Wide base video table. 32"W x 27"D x 54"H. Wt. 85 lbs. **\$414**

TVWE-54C Wide base video table with locking cabinet. 32"W x 27"D x 54"H. Wt. 106 lbs. **\$550**

TVW-54 Wide base video table. 32"W x 27"D x 54"H. Wt. 62 lbs. **\$341**

TVW-48 32"W x 27"D x 48"H. Wt. 61 lbs. **\$333**

TVW-44 32"W x 27"D x 44"H. Wt. 60 lbs. **\$332**

TVW-54C Wide base video table with locking cabinet. 32"W x 27"D x 54"H. Wt. 93 lbs. **\$605**

TVW-48C 32"W x 27"D x 48"H. Wt. 92 lbs. **\$602**

TVW-44C 32"W x 27"D x 44"H. Wt. 91 lbs. **\$598**

TVS Video Tables

TVS models feature the same high quality conveniences of the TVW video tables.

Accessories



4" DUAL WHEEL CASTERS
In lieu of standard casters. Add suffix "DW" and \$16 to unit cost.



LHB SAFETY BELT
10-foot long, 2" wide safety belt **\$34**



LSK SECURITY SYSTEM
6-foot cable, two mounting plates and lock **\$32**



TVS-54



TVS-48C



TVS-554



TVS-54C

TVS-54 Standard base table with 4" casters. 32"W x 20"D x 54"H. Wt. 55 lbs. **\$307**

TVS-48 With 4" casters. 32"W x 20"D x 48"H. Wt. 54 lbs. **\$299**

TVS-44 With 2" casters. 32"W x 20"D x 44"H. Wt. 49 lbs. **\$292**

TVS-34 With 2" casters. 32"W x 20"D x 34"H. Wt. 48 lbs. **\$278**

TVS-54C Standard base table with locking cabinet and 4" casters. 32"W x 20"D x 54"H. Wt. 83 lbs. **\$564**

TVS-48C With 4" casters. 32"W x 20"D x 48"H. Wt. 82 lbs. **\$558**

TVS-44C With 2" casters. 32"W x 20"D x 44"H. Wt. 77 lbs. **\$549**

TVS-34C With 2" casters. 32"W x 20"D x 34"H. Wt. 76 lbs. **\$527**

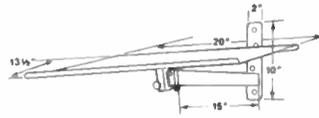
TVS-554 Standard base table with 4" casters. 32"W x 20"D x 54"H. Wt. 81 lbs. **\$377**

TVS-54C Standard base table with locking cabinet and 4" casters. 32"W x 20"D x 54"H. Wt. 96 lbs. **\$620**

ECONOMOUNT TV AND VCR MOUNTING SYSTEMS

Economount TV and VCR mounting systems are designed to provide strength and durability, yet compliment any environment they are used in. Their easy installation and economical price provide an exceptional value.

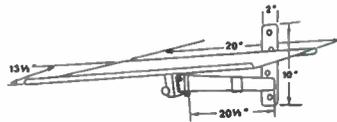
- Heavy-gauge steel tube/plate assembly.
- Arc-welded joints for maximum strength.
- Baked-on powder coat paint for durability.
- Ship U.P.S.
- Safety strap included with all Economount TV mounts.
- Mounting systems accommodate 19" to 27" monitors.
- Installations vary; therefore, mounting hardware is not included.



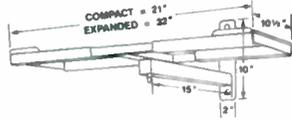
LTE-1 is a platform wall mount. It will accommodate most 19" and 20" TV receivers. TV rests on 20" wide by 13 1/2" deep heavy-gauge steel platform with 1/2" front retainer lip. Maximum forward tilt 15° and 240° swivel capability. Load capacity 90 lbs. Wt. 18 lbs. **.\$112**

LTE-2 Same as above with 26" wide platform. It will accommodate most 25" to 27" TV receivers. Load capacity 110 lbs. Wt. 20 lbs. **.\$117**

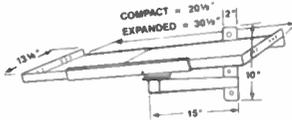
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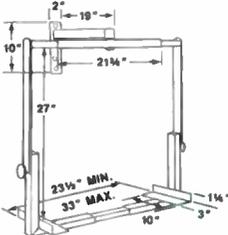
LTE-1PA is a platform wall mount with dual pivoting arm. It will accommodate most 19" and 20" TV receivers. TV rests on 20" wide by 13 1/2" deep heavy-gauge steel platform with 1/2" front retainer lip. Safety strap included. Maximum forward tilt 15° and 240° swivel capability. Installations vary; therefore, mounting hardware is not included. Load capacity 90 lbs. Weight 20 lbs. **.\$129**



LTE-3 is an adjustable platform wall mount. It will accommodate most 19" to 27" TV receivers. TV rests on a 10 1/2" deep platform with a 3/8" front retainer lip which adjusts up to 32" wide. This mount features 240° swivel and 0° tilt. Load capacity 110 lbs. Wt. 16 lbs. **.\$157**

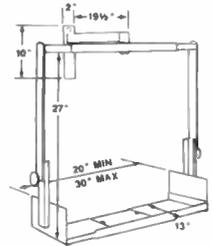
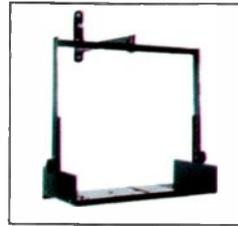


LTE-4 is an adjustable, full platform wall mount. It will accommodate most 19" to 27" TV receivers. TV rests on a 13 1/4" deep platform, with a full 1" front retainer lip, which adjusts up to 30 1/2" wide. Platform is perforated to allow the monitor to be bolted down for added security. Maximum forward tilt 15° and 240° swivel capability. Load capacity 110 lbs. Wt. 20 lbs. **.\$135**



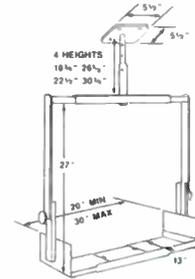
LTE-5 is an adjustable yoke-style wall mount. It will accommodate most 19" to 27" TV receivers. Adjust from 21 1/2" to 33" without LTEV accessory VCR shelf, or 23 1/2" to 33" with LTEV. Heavy-gauge tubular steel construction with 3" wide by 10" long steel supporters, covered in non-skid material. Maximum forward tilt 15° and 240° swivel capability. Load capacity 110 lbs. Wt. 25 lbs. **.\$191**

LTE-6 Same as above as a ceiling mount. Distance between ceiling and top of mount has four settings, 18 3/4", 22 1/2", 26 5/8" and 30 3/4". Wt. 27 lbs. **.\$191**



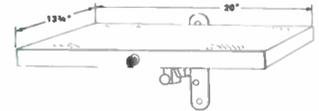
LTE-7 is an adjustable, full platform, yoke-style wall mount. It will accommodate most 19" to 29" diagonal screen TV receivers. TV rests on a 13" deep platform, with a full 1" front retainer lip, which adjusts up to 30" wide. Platform is perforated to allow the monitor to be bolted down for added security. Safety strap included. Maximum forward tilt 10° and 360° swivel capability. Load capacity 110 lbs. Wt. 36 lbs. **.\$23**

LTE-7D Same as above with 18" deep platform. Wt. 38 lbs. **.\$24**

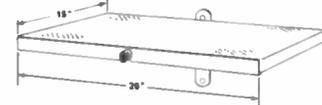
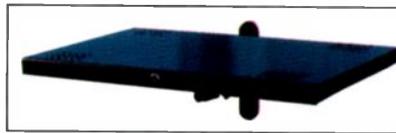


LTE-8 is an adjustable, full platform, yoke-style ceiling mount. It will accommodate most 19" to 29" diagonal screen TV receivers. TV rests on a 13" deep platform, with a full 1" front retainer lip, which adjusts up to 30" wide. Platform is perforated to allow the monitor to be bolted down for added security. Maximum forward tilt 10° and 360° swivel capability. Load capacity 110 lbs. Wt. 36 lbs. **.\$237**

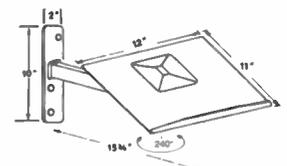
LTE-8D Same as above with 18" deep platform. Wt. 38 lbs. **.\$247**



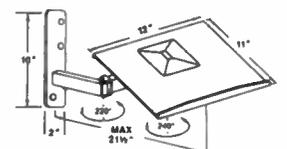
LTE-9 is a full platform, locking, wall mount. It will accommodate most 19" and 20" TV receivers. TV rests on a 13 3/4" deep platform. Maximum forward tilt of 15° and 240° swivel capability. Platform is perforated to allow the monitor to be bolted down and locked in place for added security. Load capacity 90 lbs. Wt. 21 lbs. **.\$147**



LTE-10 is a full platform, locking, wall mount. It will accommodate most 25" to 27" TV receivers. TV rests on a 15" deep platform. Maximum forward tilt of 15° and 240° swivel capability. Platform is perforated to allow the monitor to be bolted down and locked in place for added security. Load capacity 110 lbs. Wt. 26 lbs. **.\$158**

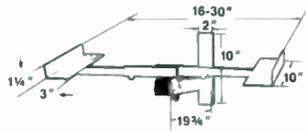


LTE-11 is a platform wall mount. It will accommodate up to a 14" TV receiver. TV rests on a 12" wide by 11" deep heavy-gauge steel platform with 1/2" front retainer lip. Maximum forward tilt 15° and 240° swivel capability. Load capacity 66 lbs. Wt. 11 lbs. **.\$61**

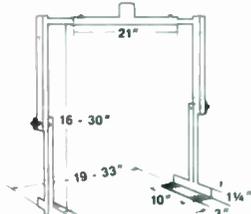


LTE-12 is a platform wall mount with a pivoting arm. It will accommodate up to a 14" TV receiver. TV rests on a 12" wide by 11" deep heavy-gauge steel platform with 1/2" front retainer lip. Maximum forward tilt 15° and 240° swivel capability. Pivot arm has a 220° swivel capability. Load capacity 66 lbs. Wt. 12 lbs. **.\$68**

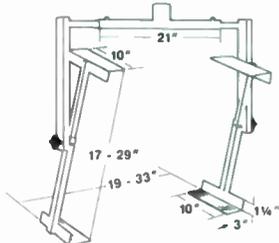
PROMOUNT TV & VCR MOUNTING SYSTEMS



FM-1 is a wall mount. It will accommodate most 19" to 27" TV receivers. Adjusts from 16" to 30" height in 2" increments. TV rests on 3" wide 1/8" steel supports which are slotted. Super bond adhesive strips and safety strap included. TV bolts, bonds and straps to mount. Maximum forward tilt: 10° and 180° swivel capability. Mount to wood, brick or concrete surfaces. Installations vary; therefore, mounting hardware is not included. Ships in 1 carton. Weight 17 lbs. **\$155**

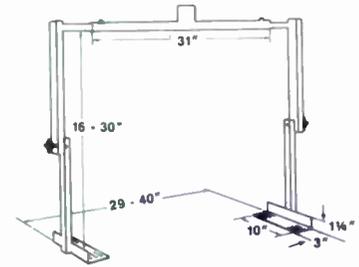


TM-2 is a ceiling or wall mount. It will accommodate most 19" to 27" TV receivers. Adjusts from 19" to 33" width and from 16" to 30" height in 2" increments. TV rests on 3" wide 1/8" steel supports which are slotted. Super bond adhesive strips included. TV bolts and bonds to mount. 10° maximum forward tilt recommended. 360° swivel capability. Select the Luxor wall or ceiling mounting bracket suitable for your installation. Fastens to 1/2" N.P.S. threaded pipe for ceiling installation. Pipe provided by installer. Ships in 1 carton. Weight 21 lbs. **\$237**

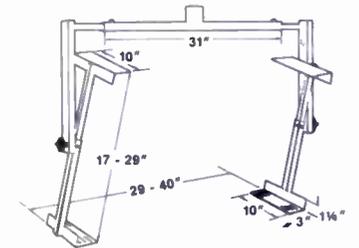


LTM-2 is a ceiling or wall mount having the same features as the LTM-2 model. In addition, it features an adjustable clamp grip system. TV rests on 3" wide 1/8" steel supports which are slotted. TV is also secured by the same 3" wide support at the top which clamps the TV in position. Super bond adhesive strips included. This mounting system is recommended for maximum security and for installations where a forward tilt greater than 10° is required. It adjusts from 19" to 33" width and from 17" to 29" in height in 2" increments. Select the Luxor wall or ceiling mounting bracket suitable for your installation. Fastens to 1/2" N.P.S. threaded pipe for ceiling installation. Pipe provided by installer. Ships in 2 cartons. Wt: 30 lbs. **\$340**

- Heavy-gauge steel tube combined with solid steel bar construction.
- Arc-welded joints for maximum strength.
- Infinite adjustability within minimum and maximum widths.
- Durable textured baked-on powder coat finish. Satin black color.
- Provisions to secure monitor with screws by adhesive bond or with adjustable grip clamps.
- Options include single- or double-stud mounting plates for ceiling and wall installations.



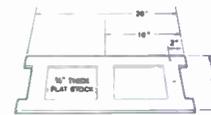
LTM-4 is a ceiling or wall mount. It is a larger version of the LTM-2 having the same features. It will accommodate most 27" to 35" TV receivers. Adjusts from 29" to 40" width and from 16" to 30" height in 2" increments. Select the Luxor wall or ceiling mounting bracket suitable for your installation. Fastens to 1/2" N.P.S. threaded pipe for ceiling installations. Pipe provided by installer. Ships in 1 carton. Wt: 22 lbs. **\$248**



LTM-5 is a ceiling or wall mount. It is a larger version of the LTM-3 having the same features. It will accommodate most 27" to 35" TV receivers. Adjusts from 29" to 40" width and from 17" to 39" height in 2" increments. Select the Luxor wall or ceiling mounting bracket suitable for your installation. Fastens to 1/2" N.P.S. threaded pipe for ceiling installations. Pipe provided by installer. Ships in 2 cartons. Wt: 31 lbs. **\$351**



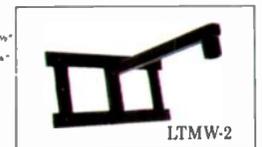
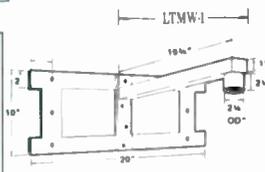
LTMFP is an adjustable full platform which will fit Luxor LTM-2, LTM-3, LTM-4 and LTM-5 series mounts. Platform is 15" deep and will adjust from 19" to 33" wide, with a 1" front safety lip and has perforations to allow the monitor to be bolted down for added security. Weight 11 lbs. **\$72**



LTDS is a heavy-duty, double stud mounting plate that works with any Luxor LTE Economount wall mount. Allows fastening to two wall studs for added support and safety. Arc welded and constructed of 3/8" steel plate. Mounting hardware not included. Weight 13 lbs. **\$81**



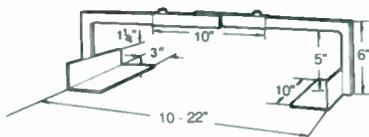
LTVS Safety kit for television mounts. Includes 2" heavy-duty safety strap and two self-adhesive corners which attach to monitor case and serve as a track for safety strap. Weight 2 lbs. **\$35**



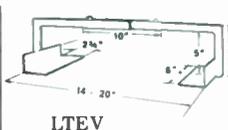
LTMW-1 is a single-stud, wall mounting arm. It is arc-welded and constructed of 3/8" steel plate and 11-gauge 1/2" steel tube. Complete with coupling for fitting to mount. Wt. 9 lbs. **\$83**

LTMW-2 is a heavy-duty, double stud, wall mounting arm. Recommended for receivers weighing more than 100 lbs. It is arc-welded and constructed of 3/8" steel plate and 11-gauge 1/2" steel tube. Complete with coupling for fitting to mount. Wt. 22 lbs. **\$160**

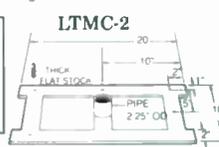
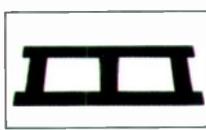
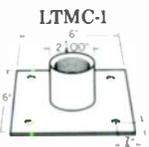
Accessories



LVR-1 is a VCR bracket which may be fitted to any Luxor LTM series TV mount. Adjusts from 10" to 22" width to accommodate any front loading recorder. VCR rests on 3" x 10" brackets. Super bond adhesive strips secure VCR to brackets. Swivels independently of TV mount. All mounting hardware included. Weight 11 lbs. **\$92**



LTEV is a VCR bracket which fits all Luxor LTE Economount-type TV mounts. Adjusts from 14" to 20" width to accommodate most front loading recorders. VCR rests on 2 3/4" x 6" brackets. Swivels independently of TV mount. All mounting hardware included. Weight 5 lbs. **\$55**



LTMW-1 is a ceiling plate for drop height installations intended for mounting on concrete slab, steel beam or other steel structure. Screw in coupling is arc-welded to 3/8" steel plate. Mount fastens to 1/2" N.P.S. threaded pipe. Three lengths of pipe available, order separately. Wt. 3 lbs. **\$62**

LTMW-2 is a heavy-duty joist ceiling mounting plate for installations over plaster board or other material covering ceiling joists. Screw in coupling is arc-welded to 1/8" steel plate. Mount fastens to 1/2" N.P.S. threaded pipe. Three lengths of pipe available, order separately. Wt. 15 lbs. **\$83**

NEW

HEAVY DUTY UTILITY CARTS

Choose from either all tub shelf models or models with tub shelves and flat shelves.

- Push handle molded into top shelf.
- Easy and quiet rolling.
- Easy assembly with rubber mallet included.
- Available in black or gray color.
- Carts available with 2, 3, or 4 shelves.
- Lifetime guarantee!

18" Deep x 24" Wide
 2 1/4" deep tubs, 300 lb. capacity.
 Steel bar reinforced.



STC-11 Two tub shelf utility cart with 4" casters, two with locking brake. 24"Wx18"D x38 1/2"H, 2 1/4" deep tubs. Shelf clearance 26". Wt. 25 lbs. Black or gray color. **\$114**



STC-111 Three tub shelf utility cart with 4" casters, two with locking brake. 24"Wx18"D x40 1/2"H, 2 1/4" deep tubs. Shelf clearance 12". Wt. 30 lbs. Black or gray color. **\$135**



STC-211 Top flat shelf and middle and bottom tub shelf utility cart with 4" casters, two with locking brake. 24"W x18"Dx38"H, 2 1/4" deep tubs. Shelf clearance 12". Wt. 28 lbs. Black or gray color. **\$131**

Shown with optional big wheel Model STBW.



STC-221 Top and middle flat shelf and bottom tub shelf utility cart with 4" casters, two with locking brake and 24"Wx18"D x35 1/2"H, 2 1/4" deep tubs. Shelf clearance 12". Wt. 28 lbs. Black or gray color. **\$126**

OPTIONS



LPCSA 3-outlet, 15 electrical assembly UL & CSA listed. . . \$45



STBW 8" big wheel assembly for STC models. \$45



C5 5" casters in lieu of 4" casters add \$24, or as a separate unit \$46

LTBW 8" big wheel assembly for TC models. \$45



TC-11 Two tub shelf utility cart with 4" casters, two with locking brake. 32"Wx24"Dx37 1/2"H, 2 1/4" deep tubs. Shelf clearance 25". Wt. 48 lbs. Black or gray color. **\$214**



TC-211 Top flat shelf and middle and bottom tub shelf utility cart with 4" casters, two with locking brake. 32"Wx24"Dx37"H, 2 1/4" deep tubs. Shelf clearance 11". Wt. 70 lbs. Black or gray color. **\$271**

24" Deep x 32" Wide
 2 1/4" deep tubs, 400 lb. capacity.
 Steel bar reinforced.



TC-221 Top and middle flat shelf and bottom tub shelf utility cart with 4" casters, two with locking brake. 32"Wx24"Dx35 1/2"H, 2 1/4" deep tubs. Shelf clearance 11". Wt. 60 lbs. **\$261**



PTC-111 Three tub shelf utility cart with 8" pneumatic wheels, two fixed, two swivel with brake. 32"Wx24"Dx42 1/2"H, 2 1/4" deep tubs. Shelf clearance 11". Wt. 81 lbs. Black or gray color. **\$512**

PTC-11 Same as above with two tub shelves. 32"Wx24"Dx39"H. Shelf clearance 25". Wt. 73 lbs. **\$462**

Model #	Height	Shelf Clearance	Weight	List Price	Model #	Height	Shelf Clearance	Weight	List Price	Model #	Height	Shelf Clearance	Weight	List Price
STC-12	36"	26"	24 lbs.	\$110	STC-121	38"	12"	29 lbs.	\$131	STC-2111	44 1/2"	8 1/4"	39 lbs.	\$164
TC-12	36"	25"	42 lbs.	\$203	TC-121	37"	11"	61 lbs.	\$271	TC-2111	43"	8"	91 lbs.	\$342
STC-21	36"	26"	24 lbs.	\$110	STC-122	35 1/2"	12"	28 lbs.	\$126					
TC-21	36"	25"	47 lbs.	\$203	TC-122	35 1/2"	11"	55 lbs.	\$261					
TC-111	38 1/2"	11"	71 lbs.	\$282	STC-212	35 1/2"	12"	28 lbs.	\$126					
					TC-212	35 1/2"	11"	64 lbs.	\$261					
STC-112	38"	12"	29 lbs.	\$131	STC-1111	46 1/4"	8 3/4"	40 lbs.	\$168					
TC-112	37"	11"	65 lbs.	\$271	TC-1111	44 1/2"	8"	92 lbs.	\$352					

Key:
STC = 18"Dx24"W Utility Carts
TC = 24"Dx32"W Utility Carts

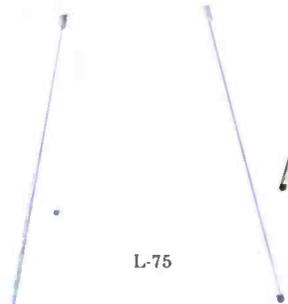
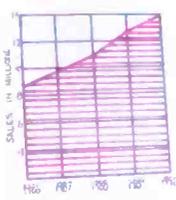
Sample: STC-112

Tub Cart	Top Tub Shelf	Middle Tub Shelf	Bottom Flat Shelf
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1 = Tub Shelf
 2 = Flat Shelf

PRESENTATION EASELS

SALES



L-75



L-250

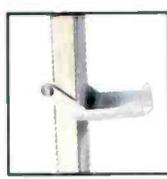
L-200



C-200



Folds For Compact Storage.



Adjustable chart holder.



L-150



L-100



Model L-150 has adjustable chart holder and leg bar.

C-200 Nylon carrying case accommodates Models L-200 and L-250. Wt. 5 lbs. **\$47**

L-75 Portable aluminum economy poster easel, with chart holder and easel pad hanger. Push button leg release allows for easy height adjustment and compact storage size, 68"H. Weight 3 lbs. ... **\$98**

L-200 Portable aluminum poster easel, with fold-out adjustable chart holder. Push button leg release allows for easy height adjustment and compact storage size, 68"H. Wt. 5 lbs. **\$113**

L-250 Same as L-200 with quick release easel pad clamps. 68"H. Wt. 12 lbs. **\$160**

L-150 Heavy-duty hardwood poster easel. Solid mahogany A-frame construction with a satin finish. Adjustable chart-holder. Folds flat for storage. 63"H. Assembly required. Wt. 11 lbs. **\$79**

L-100 Hardwood poster easel constructed of solid mahogany with a satin finish. Lightweight yet sturdy, 65"H. Assembly required. Wt. 5 lbs. **\$36**

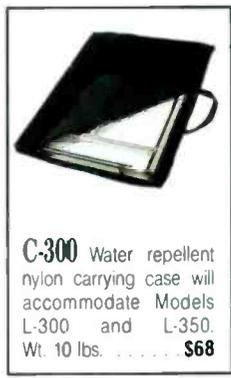


L-300

L-300 Lecturer's pad/projection easel features aluminum tubular frame, a white board surface which can be used with dry erase markers or for a slide presentation. Includes 24" marker tray and will accommodate easel pad. Push button leg release allows for easy height adjustment and compact storage size. Floor or table top application, 72"H. Wt. 15 lbs. **\$229**



L-350



C-300 Water repellent nylon carrying case will accommodate Models L-300 and L-350. Wt. 10 lbs. **\$68**



L-350 Lecturer's pad/projection easel, features aluminum tubular frame, a white board surface which can be used with dry erase markers or for a slide presentation. Reverse side has a gray velcro surface. Floor or table top application. Folds flat for compact storage. 72"H. Wt. 18 lbs. **\$318**



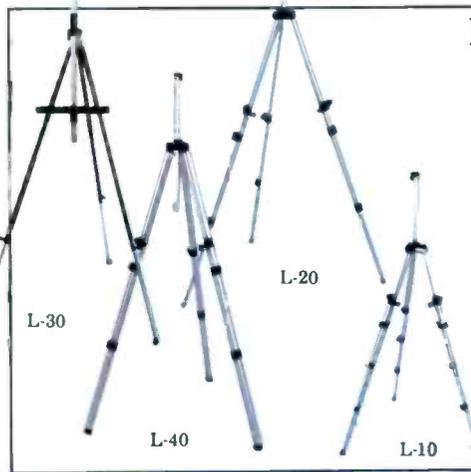
P-50-4

P-50-4 Package of 4 easel pads, 50 sheets each. 27"W x 34"H. Wt. 20 lbs. **\$69**



LX-50

LX-50 Steel lectern with black finish. Tilts back on rear wheels for easy mobility. Ships assembled. 46 1/2"H. Wt. 43 lbs. **\$162**



L-30

L-20

L-40

L-10

Portable Artist Easels

- Ultra compact and light for easy portability!
- Designed for painting, displays, exhibitions and meetings.
- Fluted tubular legs for added stability.
- Adjustable locking center post.
- Spring top holder for drawing board.
- Quick release leg locks.

L-10 Four-section aluminum easel. 58"H. Wt. 7 lbs. **\$47**

L-20 Three-section aluminum easel. 63"H. Wt. 9 lbs. **\$58**

L-30 Two-section, tilt application aluminum easel. 82"H. Wt. 18 lbs. **\$95**

L-40 Three-section heavy-duty easel. 61"H. Wt. 12 lbs. **\$68**

HI-TECH COMPUTER WORKSTATIONS AND PRINTER STANDS



TL-24-35

TL-24-35 Workstation with two shelves. Specify black or gray frame. 24"W x 30"D x 35"H. Assembly required. Weight 55 lbs. **\$277**



TL-24-28

TL-24-28 Workstation with two shelves. Specify black or gray frame. 24"W x 30"D x 28"H. Assembly required. Weight 53 lbs. **\$277**



TL-36-28

TL-36-28 Workstation with two shelves. Specify black or gray frame. 36"W x 30"D x 28"H. Assembly required. Weight 68 lbs. **\$315**

TL-48-28 Workstation with two shelves. Specify black or gray frame. 48"W x 30"D x 28"H. Assembly required. Weight 85 lbs. **\$387**



TL-36-28

The top shelf of this Hi-Tech model provides a spacious work area while the lower shelf helps organize references and software.



TL-48-35

TL-48-35 Workstation with two shelves. Specify black or gray frame. 48"W x 30"D x 35"H. Assembly required. Weight 87 lbs. **\$387**

TL-36-35 Workstation with two shelves. Specify black or gray frame. 36"W x 30"D x 35"H. Assembly required. Weight 70 lbs. **\$315**

New Accessories



PULL-OUT KEYBOARD SHELF

TL-KB Fits all Hi-Tech workstations. Dual adjustment for added comfort, and convenient, covered storage compartment. Wt. 19 lbs. **\$88**



CHROME WIRE PRINTOUT BASKET

TL-PC for 24" wide models only. Attaches to printer shelf. Weight 3 lbs. **\$40**



SWING-OUT STORAGE BASKET

TL-SB attaches to right leg tube only. Adjustable up/down in 1" increments. Measures 13" x 10 1/2" x 4". Wt. 15 lbs. **\$42**



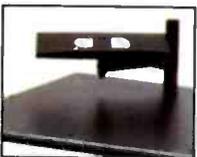
SWING-OUT PRINTER SHELF WITH BASKET

TL-PS Weight limit 20 lbs. Attaches to right leg tube only. Adjustable up/down in 1" increments. Measures 18" x 14" x 4". Weight 5 lbs. **\$90**



CHROME WIRE COPY HOLDER

TL-CH1 attaches to upright tube at any shelf level on left or right side. For Hi-Tech computer workstation models TL-24-52 and TL-24-54 only. 12" x 10". Wt. 2 lbs. **\$32**
TL-CH2 same as above but for all other Hi-Tech workstations. Weight 2 lbs. **\$32**



TLMA fits all TL24, 36, 48 and 60 series workstations. Allows easy side-to-side movement of monitor and adds to usable surface area of workstation. Platform height adjustable in 1" increments. Monitor platform is 13 3/4" wide by 11" deep. Monitor arm is black. Specify color of upright, gray or black. Weight 7 lbs. **\$75**



CASTERS

TL-4 4" dual wheel furniture caster. Not recommended for high mobility. **\$50**
 In lieu of standard casters, add suffix "TL-4" and **\$40** to unit cost



TL-24-54



Improve convenience by adding optional copy holder, storage basket or print-out basket.

TL-24-54 Computer center with four shelves. Specify black or gray frame. 24"W x 19"D x 50"H. Assembly required. Weight 84 lbs. **\$411**

TL-24-52 Computer center with two shelves. Specify black or gray frame. 24"W x 19"D x 50"H. Assembly required. Weight 60 lbs. **\$315**



TL-24-P4

TL-24-P4 Printer stand with four shelves. Specify black or gray frame. 24"W x 19"D x 37"H. Assembly required. Weight 74 lbs. **\$390**

TL-24-P2 Printer stand with two shelves. Specify black or gray frame. 24"W x 19"D x 30"H. Assembly required. Weight 50 lbs. **\$265**

HI-TECH COMPUTER & TRAINING ROOM FURNITURE



TL-60-35

TL-60-35 60" wide workstation with two shelves. Specify black or gray frame. Assembly required. 60"W x 30"D x 5"H. Wt. 103 lbs. **\$529**



TL-16-PS



TL-16-PS 22" wide printer stand with two shelves. Specify black or gray frame. Designed to fit under 35" Hi-Tech units and other selected models. Assembly required. Height 16". Weight 26 lbs. **\$154**



TL-60-28

TL-60-28 60" wide workstation with two shelves. Specify black or gray frame. Assembly required. 60"W x 30"D x 28"H. Wt. 100 lbs. **\$529**



TL-36-W



TL-36-W 36" wide wheelchair workstation. Specify black or gray frame. Assembly required. Adjustable to 35" in 1" increments. 36"W x 30"D x 35"H. Wt. 54 lbs. . . . **\$260**



TL-36-W Pictured with optional S-36 top shelf. Workstation provides a spacious work area for computer hardware while top shelf accommodates your monitor and software.



TL-48-W



TL-48-W 48" wide wheelchair workstation. Specify black or gray frame. Assembly required. Adjustable to 35" in 1" increments. 48"W x 30"D x 35"H. Wt. 66 lbs. . . . **\$346**

These workstations may be arranged to create a computer learning lab in any classroom area.

Accessories



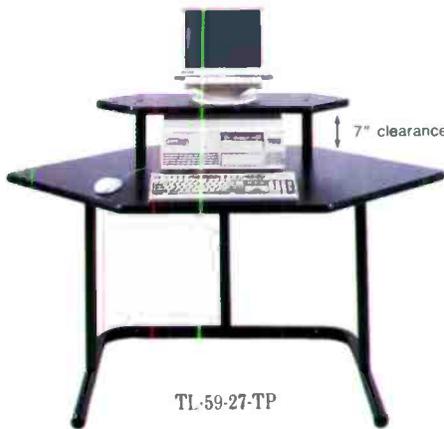
CPU BRACKET

TL-CPU Adjustable bracket designed to hold your CPU unit. Attaches on inside or outside of Hi-Tech workstation. Black color. Wt. 9 lbs. **\$70**



MOUSE SHELF

TL-MS For added work space, slide-out mouse shelf. Attaches on left or right side of table. Black color. Wt. 8 lbs. **\$38**



TL-59-27-TP

TL-59-27TP 59" wide corner/cluster computer workstation with terminal platform. Complete with adjustable leveler glides. Specify black or gray frame. 59"W x 35"D x 35"H. Assembly required. Wt. 74 lbs. **\$429**

Pictured with optional S-36 shelf. Order separately \$63.



TL-59-27



TL-59-27 Corner/cluster computer workstation with tubular steel construction and ebony granite melamine finish on shelves. Complete with adjustable leveler glides. Specify black or gray frame. Assembly required. 59"W x 35"D x 27"H. Wt. 62 lbs. **\$347**

HI-TECH AUDIO VISUAL TABLE



TL-37-TV



TL-37-TV Audio visual table with black tubular steel construction and ebony granite melamine finish on shelves. Complete with 2" furniture casters, two with brake. Assembly required. 24"W x 19"D x 37"H. Wt. 45 lbs. **\$265**

COMPUTER WORKSTATION



CSC-58

CSC-58 Locking steel, mobile computer security center. Roll-out keyboard shelf, adjusts from 28" to 34" in 1 1/2" increments. Includes 3-outlet, 15' surge suppressing electric assembly U.L. and C.S.A. listed, ventilation louvers in back panel and heavy-duty, 4" ball-bearing casters, two with brake. Cabinet ships assembled. Shelf installation required. Wt. 126 lbs. . . . \$750



AVJ-OH48MM

AVJ-OH48MM 48" extra wide, all steel, adjustable height multi-media center with pull-out keyboard shelf. Work surface adjusts from 30" to 46" in 1" increments. Middle shelf is also adjustable to allow for a variety of equipment, including a CPU Tower. This unit includes 8" pneumatic tires and 3-outlet 15' UL and CSA listed electric assembly. Available in black color only. Assembly required. Wt. 121 lbs. . . . \$596



LEM-32P

LEM-32P Heavy-duty mobile workstation with pull-out keyboard shelf. Complete with surge electric and 8" pneumatic tires for transporting delicate equipment. Specify putty, black or gray color. Assembly required. Wt. 70 lbs. . . . \$529



LEM-32PT

LEM-32PT Heavy-duty mobile workstation with full top shelf and pull-out keyboard shelf. Complete with surge electric and 8" pneumatic tires for transporting delicate equipment. Specify putty, black or gray color. Assembly required. Wt. 84 lbs. . . . \$515

ENDURA COMPUTER WORKSTATIONS



LE-MST

LE-MST 24" wide Endura workstation with terminal platform, and leg room cutout. Specify putty, black or gray color. 24"W x 18"D x 35"H. Wt. 28 lbs. . . . \$208



LE-MFP

LE-MFP 24" wide Endura workstation with pull-out keyboard shelf and fixed printer shelf. Specify putty, black or gray color. 24"W x 18"D x 35"H. Wt. 38 lbs. . . . \$283

LE-MS 24" wide Endura workstation with leg room cutout. Specify putty, black or gray color. 24"W x 18"D x 26"H. Wt. 22 lbs. . . . \$174



LEM-32TS

LEM-32TS 32" wide Endura workstation with printer stand. Mobile printer stand stores under workstation and locks into position for safe, easy mobility and rolls out for convenient use. 2" casters, two with brakes. Specify putty, black or gray color. 32"W x 24"D x 36"H. Printer stand 24"W x 15 3/4"D x 14"H. Wt. 57 lbs. . . . \$413

LEM-32S Same as above but without terminal platform. 32"W x 24"D x 27"H. Wt. 49 lbs. . . . \$362



LEM-32T

LEM-32T 32" wide Endura workstation with legroom cut-out and monitor platform. Complete with surge electric and 4" casters, 2 with brake. Specify putty, black or gray color. 32"W x 24"D x 36"H. Wt. 42 lbs. . . . \$313

LEM-32 Same as above but without terminal platform. 32"W x 24"D x 27"H. Wt. 34 lbs. . . . \$262



LEM-32TWR

LEM-32TWR Workstation designed for CPU Tower user. Lower shelf includes 9 1/2"W x 20"D side area with built-in tower support plates for safety. Complete with surge electric and five 2" casters, two with brake. Specify putty, black or gray color. Assembly required. Wt. 44 lbs. . . . \$292

LEM-32TWR Same as above with monitor platform. Wt. 52 lbs. . . . \$343



LEM-32K

LEM-32K Interactive video cart with pull-out keyboard shelf. Complete with surge electric and 4" casters, 2 with brake. Specify putty, black or gray color. 32"W x 24"D x 32"H. Wt. 41 lbs. . . . \$346

- Lifetime warranty.
- Integral safety push handle is molded into top shelf.
- 3-outlet, 15 ft. surge suppressing electric assembly. U.L. & C.S.A. listed.



• Molded cord wrap attaches around table leg and swings out for easy access.

Option T-9 print out basket. \$32.

EMS Slide out Mouse shelf. Order separately.



SIDE SHELF
LE-S 12"W x 18"D. Fits on top side of 18"D workstations. . . . \$15



SAFETY STRAP
LSS 10" safety strap with easy lock buckle. . . . \$1
LSS-2 Same as above but 12" . . . \$1

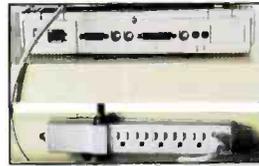


SUPPLY BASKETS
T-5 For use with 24" wide workstations. . . . \$3



EMCA-48T

- Steel finished with durable baked on silicone enamel.
- Electric assembly.
- Large cable management tray.
- 4" ball bearing casters, two with locking brake.



S models feature a 6-outlet, 15 foot surge suppressing electric assembly with remote on/off switch. U.L. listed.



EMCA-36T

EMCA-48T All steel adjustable height workstation with terminal platform that adjusts and tilts in 1" increments. Terminal platform can be installed on left or right side of workstation. Work surface adjusts from 26 1/4" to 39 3/4". 3-outlet, 15' electric assembly. U.L. & C.S.A. listed. Putty color. Assembly required. Weight 78 lbs. 48"W x 24"D x 51 3/4"H. **\$431**

EMCA-48 Same as above without terminal platform. Weight 72 lbs. **\$395**

Accessories



SECURITY SYSTEM

- LCK** 3 foot cable, two mounting plates and lock. **\$30**
- LSO** Optional-two additional mounting plates. **\$13**

EMCA-36T All steel, adjustable height workstation with full terminal platform that adjusts and tilts in 1" increments. Work surface adjusts from 26 1/4" to 39 3/4". 3-outlet, 15' electric assembly. U.L. & C.S.A. listed. Putty color. Assembly required. Weight 66 lbs. 36"W x 24"D x 51 3/4"H. **\$410**

EMCA-36 Same as above without terminal platform. Weight 60 lbs. **\$368**

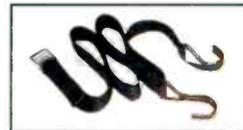


EMC-60T



SAFETY STRAP

- LSS** 10-foot safety strap with easy lock buckle. **\$14**
- LSS-2** Same as above, 12-foot. **\$19**



SAFETY BELT

- LSB** 8-foot strap with "J" hooks and easy lock buckle. **\$28**



EMC-36T

EMC-60T All steel workstation with monitor platform. Monitor platform height adjustable. Complete with 4" casters, 2 with brake and 3-outlet, 15' electric assembly. U.L. & C.S.A. listed. Putty or black color. 60"W x 24"D x 36"H. Wt. 80 lbs. **\$576**

EMC-60 All steel workstation. Complete with 4" casters, 2 with brake and 3-outlet, 15' electric assembly. U.L. & C.S.A. listed. Putty or black color. Assembly required. 60"W x 24"D x 27"H. Wt. 67 lbs. **\$493**

EMC-36T All steel workstation with monitor platform. Monitor platform height adjustable. Complete with 4" casters, 2 with brake and 3-outlet, 15' electric assembly. U.L. & C.S.A. listed. Putty or black color. Assembly required. 36"W x 24"D x 36"H. Wt. 56 lbs. **\$447**

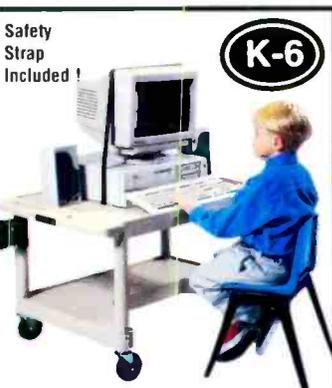
EMC-36 All steel workstation. Complete with 4" casters, 2 with brake and 3-outlet, 15' electric assembly. U.L. & C.S.A. listed. Putty or black color. Assembly required. 36"W x 24"D x 27"H. Wt. 45 lbs. **\$395**

EMC-60TS Same as above with U.L. listed 6-outlet, 15' surge protector in lieu of regular electric assembly. Wt. 81 lbs. **\$641**

EMC-60S Same as above with U.L. listed 6-outlet, 15' surge protector in lieu of regular electric assembly. Wt. 68 lbs. **\$545**

EMC-36TS Same as above with U.L. listed 6-outlet, 15' surge protector in lieu of regular electric assembly. Wt. 57 lbs. **\$510**

EMC-36S Same as above with U.L. listed 6-outlet, 15' surge protector in lieu of regular electric assembly. Wt. 46 lbs. **\$450**



LEM-32DUO Workstation with leg room cut-out. Complete with surge electric and 4" casters, two with brake. Unit is multi-height, assemble to your choice 22" or 24" Wt. 35 lbs. **\$268**

- Lifetime warranty, molded shelves and legs. Won't stain, scratch, dent or rust.
- Retaining lip and sure grip safety pads prevent equipment from sliding.
- 2" furniture casters.
- Assembly required.

Endura Printer Stands



OEPS-26

OEPS-26 Two-shelf printer stand. Includes heavy-duty chrome wire printout basket. Standard with 2" casters, two with locking brakes. Specify putty or black color. 24"W x 18"D x 26"H. Wt. 27 lbs. **\$142**



OEPS-32

OEPS-32 Three-shelf printer stand. Includes heavy-duty chrome wire printout basket. Standard with 2" casters, two with locking brakes. Specify putty or black color. 24"W x 18"D x 32"H. Wt. 32 lbs. **\$174**



OEPS-30

OEPS-30 Four-shelf printer stand with chrome wire paper guide and 2" casters, 2 with locking brake. Specify putty or black color. Assembly required. 24"W x 18"D x 27"H. Wt. 30 lbs. **\$208**

OEPS-20 Three-shelf printer stand with chrome wire paper guide and 2" casters, 2 with locking brake. Specify putty or black color. 24"W x 18"D x 20"H. Wt. 20 lbs. **\$174**

MEDIA STORAGE CABINETS



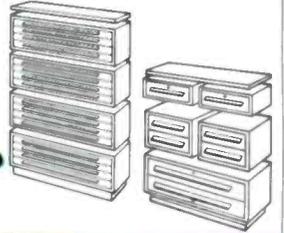
- Sound Filmstrips
- Cassettes
- Slides
- Filmstrips

COLOR CHOICES



Specify color choice by adding letter suffix to model no:

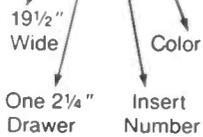
- G = Gold
- B = Blue
- T = Tangerine
- P = Putty
- W = Walnut



HOW TO ORDER

MODEL NUMBERS

19 - 12 - 37 - G



Accessories are ordered by separate Model No. as individual item.



Files individual slides in 2 1/4" drawers. Each cavity slot holds up to three ready-mount slides or a single glass-mount. Index and file slides in numbered slots. 636 up to 1908 slides per 39" drawer; 318 up to 954 per 19 1/2" drawer.
Order code No. 37



Files 2" x 2" cardboard, glass or plastic mounted slides in groups in 2 1/4" drawers. 48 fiber dividers per 39" drawer; 24 per 19 1/2" drawer. 2,800 ready-mount or 1,400 glass-mount slides per 39" drawer; 1,400 ready-mounts or 700 glass-mounts per 19 1/2" drawer.
Order code No. 63



For filmstrips. Individual filing in numbered compartments in 2 1/4" drawers. Storage capacity is 200 filmstrips per 39" drawer; 100 per 19 1/2" drawer.
Order code No. 50



For filmstrips. Side-slip (Dewey) filing in 2 1/4" drawers. Storage capacity is 200 filmstrips per 39" drawer; 100 per 19 1/2" drawer.
Order code No. 51



Files cassette/filmstrip sets (without boxes) side-by-side in numbered compartments in 2 1/4" drawers. 72 sets of cassettes and filmstrips per 39" drawer; 36 per 19 1/2" drawer.
Order code No. 18



Files cassettes without boxes in individual slots in 2 1/4" drawers. Storage capacity is 144 cassettes per 39" drawer; 72 per 19 1/2" drawer.
Order code No. 19



Files cassettes in boxes horizontally on side in 4" drawers. Includes six dividers to separate cassettes into groups. Storage capacity is 144 cassettes per 39" drawer; 72 per 19 1/2" drawer.
Order code No. 72

OPTIONS



RECESSED BASE raises systems and provides recessed kick plate.

- 19-RB Wt. 15 lbs. \$74
- 17 1/2" w x 15 3/4" d x 3" h.
- 19-RB-C Wt. 16 lbs. \$91
- With 2" casters, 5 1/2" h.
- 39-RB Wt. 25 lbs. \$100
- 36" w x 15 3/4" d x 3" h.
- 39-RB-C Wt. 26 lbs. \$115
- With 2" casters, 5 1/2" h.



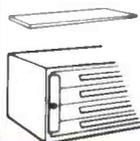
LOCKING EQUIPMENT STORAGE CABINET BASE. Specify color.

- 19-BC-G Wt. 30 lbs. \$303
- With glides 19 1/2" w x 17 1/2" d x 15 1/2" h.
- 19-BC-C Wt. 32 lbs. \$314
- With 2" casters, 18" h.
- 39-BC-G Wt. 64 lbs. \$467
- With glides, 39" w x 17 1/2" d x 19 1/2" h.
- 39-BC-C Wt. 66 lbs. \$479
- With 2" casters, 22" h.



WALNUT LAMINATE ACCESSORY TOP

- 19-T Wt. 11 lbs. \$41
- For 19 1/2" w modules, 19 1/2" w x 17 1/2" d x 7/8" thick.
- 39-T Wt. 20 lbs. \$66
- For 39" w modules, 39" w x 17 1/2" d x 7/8" thick.



ACCESSORY LOCK ASSEMBLY

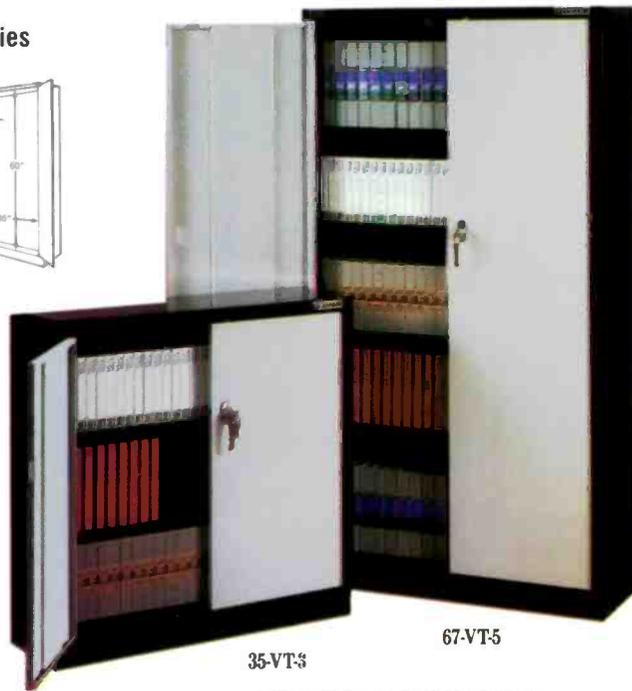
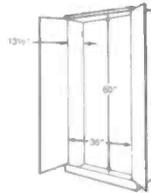
- For locking three or four drawer modules. Field installed.
- 19-L Wt. 1 lb. \$36
- 39-L Wt. 1 lb. \$36

19 Series Modules — 19 1/2" wide x 17 1/2" deep.

39 Series Modules — 39" wide x 17 1/2" deep.

MEDIA STORAGE	19 Series Modules — 19 1/2" wide x 17 1/2" deep.				39 Series Modules — 39" wide x 17 1/2" deep.		
	2 1/4" Drawer 3 1/2" H	2 1/4" Drawer 6" H	2 1/4" Drawer 10 3/4" H	4" Drawer 13 1/4" H	2 1/4" Drawer 8 3/4" H	2 1/4" Drawer 11 1/4" H	4" Drawer 13 1/2" H
Prices	\$221	\$309	\$456	\$516	\$683	\$796	\$986
Individual Slides No. 37	No. 19-12-37 318 to 954	No. 19-22-37 636 to 1908	No. 19-42-37 1272 to 3816	—	No. 39-32-37 1908 to 5724	No. 39-42-37 2544 to 7632	—
Slide Groups No. 63	No. 19-12-63 700 to 1400	No. 19-22-63 1400 to 2800	No. 19-42-63 2800 to 5600	—	No. 39-32-63 4200 to 8400	No. 39-42-63 5600 to 11,200	—
Individual Filmstrips No. 50	No. 19-12-50 100	No. 19-22-50 200	No. 19-42-50 400	—	No. 39-32-50 600	No. 39-42-50 800	—
Dewey Filmstrips No. 51	No. 19-12-51 100	No. 19-22-51 200	No. 19-42-51 400	—	No. 39-32-51 600	No. 39-42-51 800	—
Sound/Filmstrips No. 18	No. 19-12-18 36 Sets	No. 19-22-18 72 Sets	No. 19-42-18 144 Sets	—	No. 39-32-18 216 Sets	No. 39-42-18 288 Sets	—
Cassettes w/o Boxes No. 19	No. 19-12-19 72	No. 19-22-19 144	No. 19-42-19 288	—	No. 39-32-19 432	No. 39-42-19 576	—
Cassettes in Boxes No. 72	—	—	—	No. 19-34-72 216 Box Groups	—	—	No. 39-34-72 432 Box Groups
Empty Drawers No. 01	No. 19-12-01	No. 19-22-01	No. 19-42-01	No. 19-34-01	No. 39-32-01	No. 39-42-01	—

- Video Tapes
- Cassettes
- Audio Tape Reels
- Records
- Audio Discs
- Floppy Discs
- Overhead Transparencys



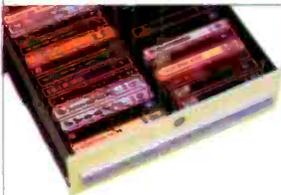
35-VT-3

67-VT-5

VIDEO TAPE SECURITY CABINET

File like books on shelves. Capacity is about 30 videocassettes per shelf depending on cassette dimension. Charcoal with gray color doors. Last digit in model no. indicates number of shelves.

- 35-VT-2 \$ 478
- 35-VT-3 \$ 543
- 67-VT-4 \$1074
- 67-VT-5 \$1163
- 67-VT-6 \$1256
- 67-VT-7 \$1361



Files 72 Beta or 60 VHS tapes in slip cases per 39" drawer; 36 Beta or 30 VHS per 19 1/2" drawer.
Order code No. 12



Files 60 video tapes in padded cases per 39" drawer; 22-1/2" per 19 1/2" drawer; 33 to 44-3/4" tapes per 39" drawer; 14 to 16-3/4" per 19" drawer.
Order code No. 14



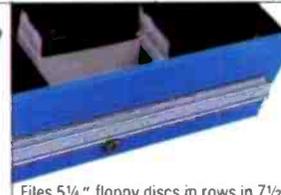
Files cassettes w/o boxes on end in individual numbered slots in 5" drawers. Numeral labels furnished. 320 per 39" drawer; 160 per 19 1/2" drawer.
Order code No. 60



Files cassettes in boxes on end in groups w/bookend followers in 5" drawers; 284 per 39" drawer; 142 per 19 1/2" drawer.
Order code No. 61



Files compact discs in rows in 7 1/2" drawers. Includes row dividers and followers. 240 per 39" drawer; 120 per 19 1/2" drawer.
Order code No. 85



Files 5 1/4" floppy discs in rows in 7 1/2" drawers. Includes row and mylar group dividers, followers and out file markers. 800 per 39" drawer; 400 per 19 1/2" drawer.
Order code No. 80



Files 5" and 7" audio tape reels in rows w/ dividers in 7 1/2" drawers. 175-5" or 135-7" per 39" drawer; 88-5" or 68-7" per 19" drawer.
Order code No. 65

MEDIA STORAGE	19 Series Modules — 19 1/2" wide x 17 1/2" deep.				39 Series Modules — 39" wide x 17 1/2" deep.			
	5" Drawer 6 1/2" H	5" Drawer 11 1/4" H	7 1/2" Drawer 9" H	Door Cabinet	5" Drawer 11 1/4" H	7 1/4" Drawer 9" H	Door Cabinet	
Prices	\$275	\$389	\$309	No. D \$303 No. DE \$362	\$789	\$516	No. D \$755 No. DE \$895	
For Video Tape No. 12	No. 19-15-12 30 VHS or 36 Beta	No. 19-25-12 60 VHS or 72 Beta	—	RECORD & TRANSPARENCY STORAGE for filing unmounted and mounted overhead transparencies, disc records with or without jackets, and study prints. Locking doors. 19 1/2" w x 17 1/2" d x 17 1/4" h. Supplied with master index system. D Model has 4 compartments. D-E Model has 160 swing out envelopes.	No. 39-25-12 120 VHS or 144 Beta	—	RECORD & TRANSPARENCY STORAGE Locking doors. Door opening 35" x 15 1/2" with dust guard. 39" w x 17 1/2" d x 19 1/2" h. Available with glides or casters. Add suffix letter G or C to model no. Supplied with master index system. D Model has nine compartments. DE Model has 320 swing out envelopes.	
For Video Tape No. 14	—	—	No. 19-17-14 22-1/2" or 16-3/4"		—	No. 39-17-14 44-1/2" or 32-3/4"		—
Cassettes w/o Boxes No. 60	No. 19-15-60 160	No. 19-25-60 320	—		No. 39-25-60 640 cassettes w/o boxes	—		—
Cassettes in Boxes No. 61	No. 19-15-61 142	No. 19-25-61 284	—		No. 39-25-61 572 cassettes	—		—
Compact Audio Discs No. 85	—	—	No. 19-17-85 120		—	No. 39-17-85 240		—
Floppy Discs No. 80	—	—	No. 19-17-80 400 Add \$25		—	No. 39-17-80 800 Add \$26		—
Audio Tape Reels No. 65	—	—	No. 19-17-65 88-5" or 68-7" reels		—	No. 39-17-65 157-5" or 135-7" reels		—
Records And Overhead Transparencys No. D	—	—	—		No. 19-D 225 Trans. or 100 LPs	—		—	No. 39-D 450 Trans. or LPs
Records And Overhead Transparencys No. DE	—	—	—	No. 19-D-E 160 Trans. or LPs	—	—	No. 39-DE 320 Trans. or LPs	



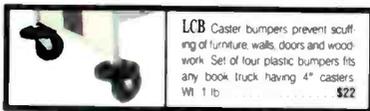
DISPLAY RACKS

Luxor Literature Display Racks are designed for an attractive display of magazines, brochures, forms or any other literature needs. Luxor offers several models to choose from for maximum floor, wall and desk top space.

- Available in light executive gray color.
- Pockets made from durable, injection molded plastic, mounted on tubular steel frames.
- Standard pocket size of 12 $\frac{5}{8}$ "W x 9 $\frac{1}{4}$ "H x 1"D.
- For easy mobility, several models come complete with 2" casters, two with locking brake.
- Assembly Required.

LD-1	Two-pocket desk-top literature holder. 12 $\frac{5}{8}$ "W x 8"D x 13 $\frac{3}{4}$ "H. Wt. 3 lbs.	\$7
LD-2	Eight-pocket free standing literature holder with base. 12 $\frac{5}{8}$ "W x 10"D x 42" Wt. 17 lbs.	\$12
LD-3	Twelve-pocket mobile literature holder with 2" casters, two with brake. 15 $\frac{1}{4}$ "W x 14 $\frac{1}{2}$ "D x 54" Wt. 21 lbs.	\$14
LD-4	Eight-pocket mobile literature holder with 2" casters, two with locking brake. 14 $\frac{1}{2}$ "W x 12" x 34 $\frac{1}{2}$ "H. Wt. 16 lbs.	\$10
LD-5	Sixteen-pocket mobile literature holder with 2" casters, two with locking brake. 28 $\frac{3}{4}$ "W x 12" x 34 $\frac{1}{2}$ "H. Wt. 22 lbs.	\$15
LD-6	Twenty-four-pocket mobile literature holder with 2" casters, two with locking brake. 40 $\frac{3}{4}$ "W 12"D x 35"H. Wt. 27 lbs.	\$20
LD-7	Sixteen-pocket mobile literature holder with 2" casters, two with locking brake and two paper/file hanging racks below. Unit will accommodate four hanging racks. 30 $\frac{1}{2}$ "W x 13"D x 55 $\frac{1}{2}$ "H- Wt. 31 lbs.	\$18
LD-PH	Additional paper/file hanger. 26 $\frac{1}{2}$ "W x 10 $\frac{3}{4}$ "D. Wt. 2 lbs.	\$1
LD-8	Four-pocket wall-mounted literature holder. 12 $\frac{3}{4}$ "W x 4"D x 20"H. Wt. 15 lbs.	\$3
LD-9	Eight-pocket partition style literature rack. 12 $\frac{3}{4}$ "W x 4"D x 31 $\frac{1}{2}$ "H. Wt. 14 lbs.	\$6
LD-10	Three-pocket mobile file/literature rack. 28"W x 24"D x 25"H. Wt. 16 lbs.	\$11

Accessories



LIBRARY BOOK TRUCKS

- Heavy gauge steel construction.
- Baked-on enamel finish.
- Patented knockdown construction.
- Patented big wheel assembly.
- 4" swivel casters.
- 8" big wheel models available.
- Assembly required.
- 11" between shelves, excluding MT-2.

MT-222	6 slanted shelf truck provides three 7" deep shelves on each side. 28"W x 17"D x 46"H Wt. 66 lbs.	\$387
MTB-222	With 8" big wheels on one end. Wt. 70 lbs.	\$436
MT-12	2 slanted and 1 flat shelf truck. One double-slanted 7" deep shelf on each side. Flat shelf may be inverted to assemble as a tray. 28"W x 17"D x 36"H. Wt. 44 lbs.	\$302
MTB-12	With 8" big wheels on one end. Wt. 48 lbs.	\$351
MT-111	3 shelf utility truck. Assemble as three flat shelves or invert any shelf to assemble as tray. 28"W x 17"D x 46"H. Wt. 55 lbs.	\$351
MTB-111	With 8" big wheels on one end. Wt. 59 lbs.	\$386
MT-112	2 slanted and 2 flat shelf truck. One double-slanted 7" deep shelf on each side. Flat shelves may be inverted to assemble as trays. 28"W x 17"D x 46"H. Wt. 53 lbs.	\$346
MTB-112	With 8" big wheels on one end. Wt. 57 lbs.	\$395
MT-2	2 slanted shelf truck. Provides two 9 $\frac{1}{4}$ " deep shelves. 11 $\frac{3}{4}$ " between shelves. 2" casters. 28"W x 13"D x 27"H. Ships set-up. Wt. 29 lbs.	\$164
MT-11	2 shelf utility truck. Assemble as flat shelves or invert any shelf to assemble as a tray. 28"W x 17"D x 36"H. Wt. 41 lbs.	\$292
MTB-11	With 8" big wheels on one end. Wt. 45 lbs.	\$342
MT-3	Big wheel book caddy. Three single-slanted shelves provide three 7 $\frac{3}{4}$ " deep shelves on one side of truck. Two 4" casters on front with 8" big wheels on back for easier mobility. 17 $\frac{1}{2}$ "W x 13"D x 43 $\frac{1}{2}$ "H. Ships set-up. Wt. 33 lbs.	\$328
MT-22	4 slanted shelf truck provides two 7" deep shelves on each side of truck. 28"W x 17"D x 36"H. Wt. 47 lbs.	\$309
MTB-22	With 8" big wheels on one end. Wt. 51 lbs.	\$359
MT-122	4 slanted and 1 flat shelf truck provides two 7" deep shelves on each side. Flat shelf may be inverted to assemble as a tray. 28"W x 17"D x 46"H. Wt. 63 lbs.	\$371
MTB-122	With 8" big wheels on one end. Wt. 67 lbs.	\$419



90%
of all orders
shipped
within
24 hours

Winsted®

VIDEO



Model K8551

A Modular System/85 Consoles. Utilizing this modular component system design you can create an ergonomic, cost-effective, expandable console to fit your needs. A full line of integrated system oriented consoles go hand-in-hand with the operation of your electronics. A full range of accessories provide a whole spectrum of options to complete your console.

SECURITY



Model K3459

B Security and Surveillance Consoles. Modular design makes consoles easy to reconfigure or expand as needs change. Welded *Instant Assembly Frames* offer exceptional strength and ease of assembly. All modular components are ergonomically engineered for user comfort. The Pro-Grey color schemes create visual excitement.

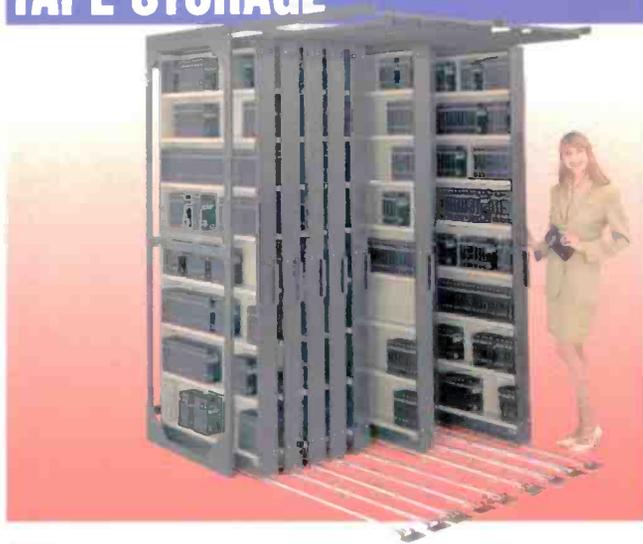
MULTIMEDIA



Model E4523

C Multimedia Video Consoles. Choose between conventional rack mount cabinet desks, adjustable open shelving desks or the new *Digital Desks™*. These multi-functional workstations are ergonomically designed to integrate with your system. A system console ideal for non-linear and linear editing systems that is usable for years to come. Highlight your electronics with the new contour trim inserts.

TAPE STORAGE



D Space Saving Pull-Out Cabinets. Ideal for "high access" tape storage. May be installed in room alcoves or set-backs. Save floor space by eliminating unnecessary aisles. Supplies 100% storage space efficiency. Units bolt together for easy expansion. Cabinets roll effortlessly on low-profile steel tracks. Price depends on final size of systems.

Video • Security • Multimedia • Tape Storage

The Winsted Corporation 10901 Hampshire Avenue South, Minneapolis, MN 55438-2385 U.S.A.

VIDEO



A G8628
\$5571.00



B K8527
\$9404.00



C K8669
\$3593.00



A Four Bay Corner Console. 14" Slope racks for decks and edit control equipment. Three upper 10-1/2" monitor racks tilted forward for effortless viewing. One upper vertical rack for a VTR. 18"D Dove Grey work surface with accent contour trim. Pearl Grey and Dove Grey enamel finish.

Model G8628 complete. Shpg. wt. 773 lbs. \$5571.00

B 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. Work shelf has a beveled oak edge for comfort and durability.

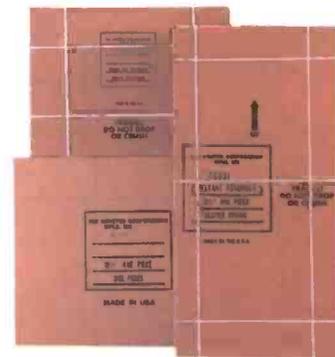
Model K8527 complete. Shpg. wt. 821 lbs. \$9404.00

C Four Bay Rack Console with Flip-Down Shelves. 19-1/4" Slope racks with three 19-1/4" rack mount flip-down shelves. Console can be rolled through doorways when the shelf is lowered. Shelf can be flat or tilted 11° for operator comfort. End rack console for VTRs. Pearl Grey and Dove Grey enamel finish.

Model K8669 complete. Shpg. wt. 483 lbs. \$3593.00

Save Freight Charges!

Winsted products come ready to assemble, drastically reducing freight charges. Winsted's exclusive *Instant Assembly Rack Frames* allow a complete System/85 console to be assembled in just minutes. All items come with easy to understand instructions with a toll-free technical support calling line. All Winsted products are constructed of heavy gauge steel to ensure a lifetime of service.



Call today for free 148 page full line catalog.

SECURITY

EXTRA WIDE
racks for large monitors



C K8121
\$4316.00

C Extra Wide Rack Console. Three bay 19-1/4" slope rack console with an extra wide center rack. 22" wide opening in center rack is ideal for 20" monitors. Top modules are tilted forward for proper viewing. 18"D laminated work shelf. Pearl Grey and Dove Grey finish.
Model K8121 Shpg. wt. 620 lbs. \$4316.00



D 96039
\$259.00

D Security Cabinet with Plexiglas Door. Locking steel security cabinet featuring a see-through plexiglas door and metal lift top for easy access. Made to prevent tampering. Cable management ports in the rear for power and camera wiring convenience. Can be purchased with a solid front door.
Model 96039. Shpg. wt. 29 lbs. \$259.00

FRAMES



SUPERIOR STRENGTH



A K8601
\$5927.00

A Four-Bay Corner Console. Features 19-1/4" (11U) slope racks and 19-1/4" (11U) top modules. Ideal design for a security viewing station with wrap-around design and easy-reach controls. Console is modular and easy to expand or reconfigure.
Model K8601 Shpg. wt. 790 lbs. \$5927.00

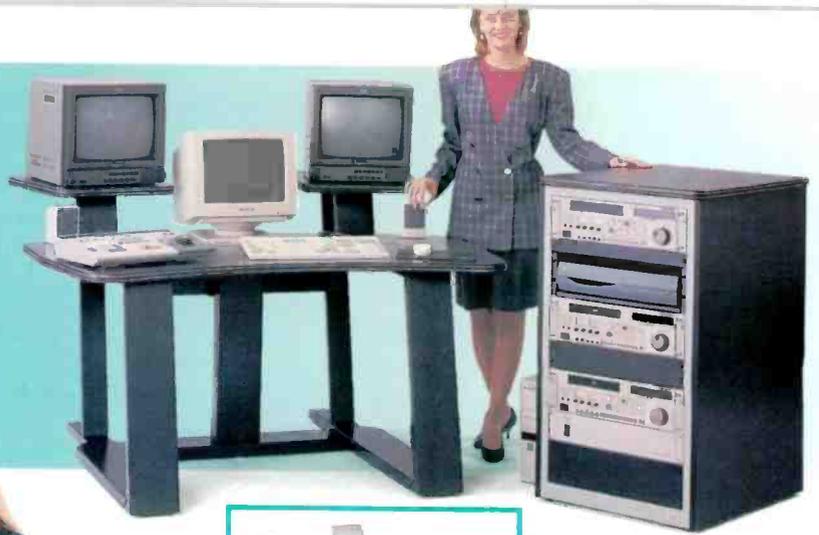


B K8676
\$3509.00

B Four Bay 21" Slope Rack Console. Low profile console leaving a clear view for monitoring. Ideal console to fit under a surveillance window. Four 9" monitors will fit in each 21" rack. Lower end rack console for non-rack mountable electronics.
Model K8676 Shpg. wt. 439 lbs. \$3509.00

Winsted

MULTIMEDIA DESKS



B E4525
\$2307.00



C E4580
\$1872.00



A E4501
\$2010.00

A Digital Desk™ with Dual Monitor Riser. Black Granite laminated curved top with Dove Grey accent trim. Designed to conform to any non-linear editing system. Monitor risers are adjustable. Stylish, steel support frame in a Black enamel finish. A 35"H vertical rack for rack mount electronics sits along side for easy access.

Model E4501 complete. Shpg. wt. 386 lbs. \$2010.00

B Corner Digital Desk™ with Monitor Riser. A perfect workstation for tight corners, corner design makes the best use of space in any room. Both top and riser are Black Granite laminate with a red accent trim. Pullout keyboard tray allows you to tuck away the keyboard for more desk top space. Monitor riser moves monitors to a comfortable viewing height.

Model E4525 complete. Shpg. wt. 465 lbs. \$2307.00

C 94"W Digital Desk™ with Base Console. Large Black Granite laminate work top with Blue accent trim, is curved to wrap around the operator. Adjustable riser top with Blue accent trim for monitors. Under the counter rack mount cabinet to house VTRs and CPUs creating an efficient work space environment.

Model E4580 complete. Shpg. wt. 405 lbs. \$1872.00

OPTIONAL ACCESSORIES



Retractable Cup Holder. Black textured plastic cup holder protects your electronics from spills. Easily slides underneath work shelf when not in use. Overall dimensions: 1-1/2"H (38mm) x 3-3/4"W (95mm) x 7-3/4"D (197mm). Cup opening: 2-1/2" (64mm Dia.).

Model 10760. Shpg. wt. 1 lb. \$24.00



Mini Tower Support Well. 9"W (229mm) x 18"D (457mm) x 17"H (432mm). Black enamel finish.

Model 46255
Shpg. wt. 14 lbs. . . \$76.00

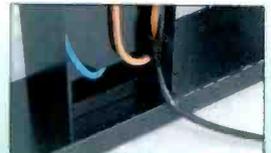


Paper Tray. 10"W (254mm) x 12"D (305mm) x 3"H (76mm). Black enamel finish.

Model 46080
Shpg. wt. 3 lbs. . . \$48.00

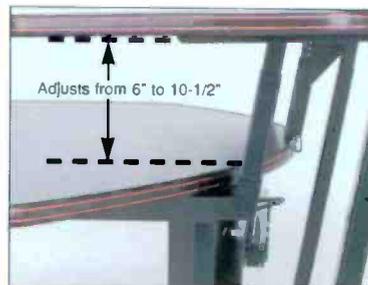


Multi-channels separate video and monitor cables.



Cables exit in rear.

Cable Management System. Gives a clean, professional appearance. Digital Desks retain their professional appearance even when fully loaded with equipment because of a unique system of cable management. Multi-roseways provide logical routing and splitting of video/monitor cards. Wide channels throughout leg and support system exit at a convenient rear point.



Adjustable Monitor Risers. Risers at the rear of table workspace adjust to one inch increments for ergonomic monitor sight lines. Monitor risers come in a variety of styles including small split risers which allow an open view between each independently adjustable riser.



A E4734
\$2473.00



B E4742
\$2837.00



C E4118
\$956.00



D E4767
\$1252.00

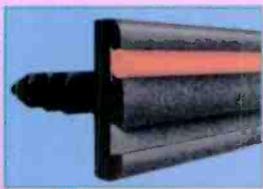
A Right Angle Computer Graphics Desk. 72"W Black Granite laminated table top with a 31"W table top extension. Adjustable riser top for monitors, also adds table top space for electronics below. Keyboard and script shelves adjust 6" in height, tilt 10°, swivel 180° and store under the work surface. Black enamel finish.
Model E4734 complete. Shpg. wt. 352 lbs. \$2473.00

B Extra Deep Dual Cabinet Edit Desk. Set up to fit most controllers. 49" of rack space below the work surface in Dove Grey cabinets for rack mount electronics. Three 19-1/4" vertical racks along the back edge offers space for primary control access and monitors. Black Granite laminate top with Dove Grey accent trim.
Model E4742 complete. Shpg. wt. 513 lbs. \$2837.00

C Compact Mobile Editing Station. 48"W Two bay mini desk is ideal for a simple A/B roll setup. Black Granite laminate top and shelves with Blue accent trim. Shelves adjust vertically in 1" increments. Comes with floor glides and 3" dual wheel casters. Many different sizes available. Black finish.
Model E4118 complete. Shpg. wt. 169 lbs. \$956.00

D 72"W Single Rack Cabinet Edit Desk. A perfect solution to your desk top video system needs. Large Black Granite laminate top with Violet accent trim. 24-1/2"H Dove Grey rack cabinet and mini CPU support well. Table top height is 29" for maximum user comfort.
Model E4767 complete. Shpg. wt. 244 lbs. \$1252.00

Enhance your workplace by accenting Multimedia Desks with color.



Its easy! Just choose your color. Order an accent trim kit and press the insert into the grooves of the special contour edge. Trim inserts are sold in 25 foot sections with a handy trim insert roller also available. Shown here is a cross section of the grooved contour edge with a color insert pressed into place.



DECORATIVE COLORED ACCENT TRIM INSERTS. Select model number from the five color options shown below and determine the number of 25-foot sections needed.
Each 25-foot section \$8.00

- 
Red
46752
- 
Blue
46756
- 
Violet
46757
- 
Dove Grey
46758
- 
Black
46750



Trim Insert Roller. Helps install colored accent trim inserts.
Model 46760.
Shpg. wt. 1 lb \$4.00



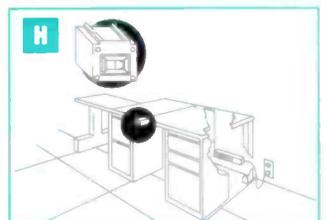
E Formed Black Plastic Pull-out Keyboard Tray. Inside tray size 22"W (559mm) x 9"D (229mm) and pulls out 12" (305mm). Mounts to the underside of any flat desk top.
Model 46250
Shpg. wt. 9 lbs. \$71.00



F Keyboard and Mouse Pull-out Tray. Same as 46250 with space for a mouse pad. Area for mouse 8"W (203mm) x 7-1/2"D (190mm).
Model 46249
Shpg. wt. 13 lbs. \$117.00



G Adjustable Pull-out Keyboard Shelf. Features 10° tilt and 6" (152mm) height adjustment. Shelf swivels 180° and stores under the work surface. Large recessed keyboard area 10"D (254mm) x 22-1/2"W (571mm). Black enamel finish.
Model 47083
Shpg. wt. 13 lbs. \$290.00



H Multi-Feature Electrical Strip. Master On/Off switch can be placed at your fingertips for easy access. 4' (1219mm) cord connects master switch to six outlet electrical strip with surge protection. 15' (4572mm) three-wire cord.
Model 98704
Shpg. wt. 5 lbs. \$149.00



I Electrical Assembly. Bolts to the side of the leg on the console frames. Four outlets with circuit breaker, master switch, pilot light, 15' 3-wire cord and mounting bracket.
Model C5104
Shpg. wt. 3 lbs. \$64.00

VERTICAL RACKS



**Knock Down
Black
Economy
Racks**

*The more
you buy—
the more
you **SAVE!***



Features:

- Fully adjustable rack rails
- Extra heavy-duty welded rack
- Independent lift-off side panels
- Black textured finish
- Open top & bottom with 19" EIA mounting
- Large corner uprights for cable management
- Conduit knock-outs top and bottom
- Optional adjustable leg levelers
- Tapped rack rails—front and rear
- Two grounding lugs
- Mounting holes in top for eye-bolts

D V8831
\$1276.00

A V8802
\$1007.00

B V8811
\$474.00

C V8801
\$608.00

KNOCK DOWN ECONOMY VERTICAL RACKS

A **Double Bay Economy Vertical Rack.** Model V8800 and V8801 combined for 140" (80U) of vertical rack space. Adjustable punched rack rails and vented sides. An open center and base for cabling. Black textured finish. 75-1/2"H (1918mm) x 44-1/8"W (1121mm) x 26"D (660mm).

Model V8802. Shpg. wt. 202 lbs. **\$1007.00**

B **35" (20U) Starter Vertical Rack.** Comes complete with a top, base and a pair of side panels. (Side panels are not removable.) Vented sides with an open base for cabling. Punched rack rails are adjustable. Black textured finish. 40-1/2"H (1028mm) x 22-1/8"W (562mm) x 26"D (660mm).

Model V8811. Shpg. wt. 84 lbs. **\$474.00**

35" (20U) Add-On Vertical Rack. (Not shown). Comes complete with a top, base and a single open side. Open add-on side for unobstructed cabling between cabinets. Adjustable punched rack rails. Black textured finish.

Model V8810. Shpg. wt. 54 lbs. **\$367.00**

C **70" (40U) Starter Vertical Rack.** Comes complete with a top, base and a pair of side panels. (Side panels are not removable.) Vented side with an open base for cabling. Punched rack rails are adjustable. Black textured finish. 75-1/2"H (1918mm) x 22-1/8"W (562mm) x 26"D (660mm).

Model V8801. Shpg. wt. 129 lbs. **\$608.00**

70" (40U) Add-On Vertical Rack. (Shown as part of Model V8802). Comes complete with top, base and a single open side. Open add-on side for unobstructed cabling between cabinets. Adjustable punched rack rails. Black textured finish.

Model V8800. Shpg. wt. 73 lbs. **\$399.00**

D **78-3/4" (45U) VRx Rack with sides.** Comes complete with heavy-duty frame, set of four side panels, tapped rack rails and punched inner rack rails. Open top and bottom for cable management. Black textured finish. Overall size: 86"H (2184mm) x 24"W (609mm) x 30"D (762mm).

Model V8831. Shpg. wt. 228 lbs. **\$1276.00**

78-3/4" (45U) Basic VRx Rack. Same as V8831 without side panels. For in-line configurations. Always use a starter vertical rack (Model V8831) shown above. Use the basic rack for adding additional racks to your system.

Model V8830. Shpg. wt. 140 lbs. **\$997.00**

STANDARD 26" D VERTICAL RACKS

E **24-1/2" (622mm) Vertical Rack Cabinet.** 26" Deep (660mm) rack cabinet. Dove Grey and Pearl Grey enamel finish with vents in the sides for cooling. Overall size: 31-1/8"H (790mm) x 22-9/16"W (573mm) x 28"D (711mm).

Model V8603. Shpg. wt. 88 lbs. **\$575.00**

F **35" (889mm) Vertical Rack Cabinet.** 26" Deep (660mm) rack cabinet. Dove Grey and Pearl Grey enamel finish with vents in the sides for cooling. Overall size: 42"H x 22-9/16"W (573mm) x 28"D (711mm).

Model V8606. Shpg. wt. 106 lbs. **\$730.00**

G **56" (1422mm) Vertical Rack Cabinet.** 26" Deep (660mm) rack cabinet. Dove Grey and Pearl Grey enamel finish with vents in the sides for cooling. Overall size: 63"H (1600mm) x 22-9/16"W (573mm) x 28"D (711mm).

Model V8632. Shpg. wt. 140 lbs. **\$845.00**

H **70" (1778mm) Vertical Rack Cabinet.** 26" Deep (660mm) rack cabinet. Dove Grey and Pearl Grey enamel finish with a vented top and open base for cooling. Overall size: 78-1/4"H (1988mm) x 22-9/16"W (573mm) x 28"D (711mm).

Model V8601. Shpg. wt. 174 lbs. **\$988.00**

I **78-3/4" (2000mm) Vertical Rack Cabinet.** 26" Deep (660mm) rack cabinet. Dove Grey and Pearl Grey enamel finish with a vented top and open base for cooling. Overall size: 87"H (2210mm) x 22-9/16"W (573mm) x 28"D (711mm).

Model V8691. Shpg. wt. 187 lbs. **\$1141.00**

**Standard
Vertical
Racks**

G V8632
\$845.00



I V8691
\$1141.00



H V8601
\$988.00



E V8603
\$575.00

F V8606
\$730.00

ACCESSORIES

RACK MOUNT SLIDE KITS

Make equipment maintenance safe and easy.



- 1 Model F8106 Rack Slide Kit.** For use with Sony's "PVW" VTRs. Equivalent to Sony's RMM-110 kit. Shpg. wt. 9 lbs. **\$235.00**
- 2 Model F8521 Rack Slide Kit.** For use with Sony's 5000, 7000 and 9000 series VTRs. Equivalent to Sony's RMM-507 kit. Shpg. wt. 9 lbs. **\$260.00**
- 3 Model F8214 Rack Slide Kit.** For use with Panasonic's AG-7150, AG-7350, AG-DS850, AG-DS540 and AG-DS550 VTRs. Shpg. wt. 7 lbs. **\$179.00**
- 4 Model F8208 Rack Slide Kit.** For use with JVC's BRS-622DXU, BRS-822DXU, BRS-522DXU and BR-D80U VTRs. Shpg. wt. 10 lbs. **\$235.00**

Order separately. Not included in console prices. Many more kits available.

Winsted's one-stop shopping and immediate shipping makes it easy to put the finishing touches on your edit console



H

Winsted



A R3303
\$262.00



B R3406
\$477.00

A/V CARTS

Winsted offers a full spectrum of A/V Monitor Carts

- A 34" High Video Stand.** Features three shelves to fit all of your electronics. 11-1/2" (292mm) clearance between shelves leaves plenty of room for equipment access. Measures 34-3/4"H (882mm) x 32"W (812mm) x 22"D (558mm). Additional sizes available. Model R3303. Shpg. wt. 47 lbs. **\$262.00**
- B Full Shelf Low Profile Video Center.** Complete unit can be moved easily from room to room. Top shelf is a full 32"W (812mm) x 22"D (558mm). Lockable base cabinet is 13"H (330mm) x 32"W (812mm) x 22"D (558mm). Overall dimensions: 34-1/4"H (876mm) x 32"W (812mm) x 22"D (558mm). Pearl and Dove Grey finish. Additional sizes available. Model R3406. Shpg. wt. 91 lbs. **\$477.00**

VIDEO RACK ACCESSORIES

- C Cooling Fan.** With 5' (1524mm) cord with plug. Rated at 105 CFM, 115 volts, 43 Decibels. Model 10705. Shpg. wt. 2 lbs. **\$60.00**
Model 10724. 105 CFM, 220 volts. **\$61.00**
Whisper Cooling Fan. Same as the above fan rated at 55 CFM, 115 volts, 18 Decibels. Model 10725. Shpg. wt. 2 lbs. **\$60.00**
- D Six Outlet Power Panel.** Rack mount power panel with 15 amp circuit breaker, On/Off switch and 15' 3-wire power cord. Model 98700. Shpg. wt. 4 lbs. **\$69.00**
Six Outlet Power Panel With Surge Suppressor. (Not shown). Same as Model 98700 with 15' power cord and reset overload protector. Model 98701. Shpg. wt. 4 lbs. **\$98.00**
Six Outlet Power Panel. (Not shown). Same as Model 98700 above with two outlets in front and four outlets in back. Model 98703. Shpg. wt. 4 lbs. **\$69.00**
- E Ten Outlet Power Supply.** 34" (863mm) long. On/Off switch and 15 amp circuit breaker. Mounts to the rear of any base/slope rack combination. Model 10710. Shpg. wt. 4 lbs. **\$110.00**
Ten Outlet Power supply. (Not shown). 68" (1727mm) long. Comes with On/Off switch and 15 amp circuit breaker. Mounts to the rear of vertical racks. Model 10712. Shpg. wt. 6 lbs. **\$114.00**
- F Universal Rack Mount Shelves.** Heavy 14 and 16 gauge steel to assure strength. Fits into any EIA 19"W (482mm) rack. Pearl Grey.
3-1/2"H (2U) Stationary Shelf. 3-1/2"H (88mm) x 19"W (482mm) x 14"D (355mm). Model 87071. Shpg. wt. 7 lbs. **\$52.00**
5-1/4"H (3U) Stationary Shelf. 5-1/4"H (133mm) x 19"W (482mm) x 14"D (355mm). Model 87073. Shpg. wt. 8 lbs. **\$55.00**
8-3/4"H (5U) Stationary Shelf. 8-3/4"H (222mm) x 19"W (482mm) x 14"D (355mm). Model 87075. Shpg. wt. 9 lbs. **\$59.00**
10-1/2"H (6U) Stationary Shelf. 10-1/2"H (266mm) x 19"W (482mm) x 14"D (355mm). Model 87076. Shpg. wt. 9 lbs. **\$62.00**
- G 20" (508mm) Pullout Shelf.** Comes with a vented bottom quick-release latches and feet spacers for a VTR so the height remains an EIA standard rack increment when placed on this shelf. Extends 20" (508mm). Fits any 19"W rack except 16"D (406mm) and slope racks. 1-3/4"H (44mm) x 17-3/4"W (450mm) x 20-3/4"D (527mm). Pearl Grey. Model 85094. Shpg. wt. 19 lbs. **\$203.00**
- H 3-1/2"H (2U) Utility Drawer.** Rack mountable and attaches to the bottom of Winsted editor shelves or work shelves. Inside measurements: 16-1/4"W (413mm) x 13-3/4"D (349mm) x 3-3/8"H (86mm). Model 85323. Shpg. wt. 17 lbs. **\$226.00**

TAPE STORAGE



High Capacity Storage Systems

Provides compact storage in limited space. Available in a full range of cabinet depths and heights. Cabinets move laterally on low-profile rails for instant, easy access to cassettes.



Stationary Tape Cabinets

36" Wide tape storage cabinets in 4-1/2", 6", 7-1/2", 10" and 12" depths. Shelves are adjustable in 1" increments. Cabinets can be bolted together side-by-side. Brown exterior and Beige interior.

7-1/2"D (190mm) Tape Storage Cabinet. Ideal videotape storage system for 3/4" U-matic videocassettes. 7-1/2"D (190mm) cabinet holds 154 videocassettes. Order molded plastic dividers for videocassettes separately. Seven shelves. Overall dimensions: 88"H (2235mm) x 36"W (914mm) x 7-1/2"D (190mm). Inside dimensions: 83"H (2108mm) x 34-1/2"W (876mm). Brown with Beige interior.

Model T7400
Shpg. wt. 121 lbs. . . . \$539.00



Space-Saving Pull-out Cabinets

May be installed in room alcoves or setbacks. Save floor space by eliminating unnecessary aisles. Units bolt together for any length system. Cabinets pull out effortlessly on low-profile tracks.



Super-Density Movable Cabinets

Available in a range of cabinet depths. Front row cabinets move side-to-side on floor tracks for easy access to rear storage.

Plastic Dividers

Winsted offers many different sizes to fit your storage needs. Helps organize and keep the tapes in place while cabinets move.



Molded plastic dividers. Holds 17 3/4" tapes. Beige. 34-3/8"W (873mm).
Model 70983.
Shpg. wt. 2 lbs. \$15.00 ea.

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