

Audio Equipment

Aphex Systems, Ltd., developed the Aphex 107 "Thermionic" (tube) dual-channel microphone preamplifier, which introduces a combination of tube and solid-state circuitry. Designed to be used in place of a console's mic preamp, the Model 107 radically improves detail, imaging, and transient performance. Applications include main dialogue, music, and Foley stage.

Electrosonic, Ltd., introduced the Esta II line of tapeless audio products. The range consists of stereo modules, four-channel modules, and a stereo playback module with integrated amplifier. Each module stores audio on a PCMCIA rerecordable flash memory card, with a range of sizes up to 64 Mbytes.

New from Jensen Transformers, Inc., are the Jensen 68JT Twin Servo record amplifiers. These amplifiers, which are 100% plug-compatible upgrades for Magna-Tech film transports, offer vastly improved audio performance and timing stability. Conversion kits are also available for existing 68B or 68C units.

Lectrosonics, Inc., created the modular UHF wireless multicoupler. This 19-in., rack-mounted RF multicoupler solves problems with intermodulation and crosstalk in multichannel wireless microphone systems. Modular filters are utilized to provide excellent third-order intercept performance and frequency switchability. "Strip line" coupling transfers power to the appropriate RF filter without the losses incurred in conventional passive splitters.

NHK (Japan Broadcasting Corp.) introduced the direct broadcast satellite (DBS) receiver adapter (Fig. AE-1). Consisting of a magnetostatic wave

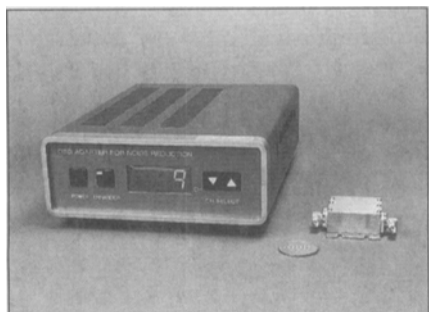


Figure AE-1. DBS receiver adapter (L) and MSW signal-to-noise enhancer from NHK.

(MSW) signal-to-noise enhancer and frequency converters, the adapter is placed between the indoor unit and the outdoor unit in the receiving system. The signal-to-noise ratio (SNR) in any channel signal in the 1 to 1.3-GHz range transmitted from the outdoor unit can be increased by 2 to 5 dB. This adapter effectively operates as a noise reducer in DBS reception using small antennas.

NHK's MSW signal-to-noise enhancer has low loss for large signals (desired signals) and high loss for small signals (noise), and it operates frequency selectively. The device can reduce the noise in microwave signals, thus increasing the SNR of the input signals.

Roland Corp. U.S. developed the Roland DM-800 digital audio workstation. The eight-track hard-disk recorder is housed in a compact 12.4-lb package and offers nondestructive editing and recording, optional ADAT and DA-88 communication bus, video display output, 300 virtual tracks, full dynamic automation, MIDI integration, and time compression.

Sonosax USA, Inc., made available the Stelladat portable-production digital audio recorder. Lightweight, rugged, and portable, the Stelladat has built-in SMPTE time code capability and a two-channel mixer.

Sony Corp. and Sony Dynamic Digital Sound, Inc., announced the DFP-2000 digital sound film player system, which provides five sound channels in front, two for the back, and one for the subwoofer. The digitized sound signals recorded on the film are reproduced as a powerful surround sound in the theater by means of a DFP-R2000 reader and DFP-D2000 decoder unit with sampling frequency of 44.1 kHz. Sony Dynamic Digital Sound provides a recording format of four channels on both sides of the film for each. In addition, on each side two complementary subchannels are prepared for compensating error correction. The system provides the compatibility for the recorded analog signal so that analog interpolation is available.

Tektronix, Inc., introduced the AM70 digital audio analyzer/generator (Fig. AE-2), a handheld, programmable digital audio analyzer and genera-

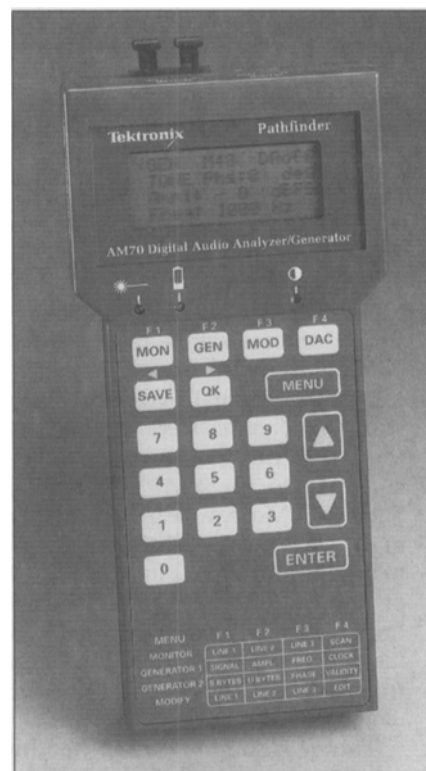


Figure AE-2. The AM70 digital audio analyzer/generator from Tektronix, Inc.

tor featuring analog and digital outputs as well as digital inputs. The AM70 operates in three modes: generator mode, serving as a source for analog and digital test signals; monitor mode, displaying important aspects of a digital signal; and modify mode, letting the user perform real-time editing of digital audio data.

Also new from Tektronix is the AM700 audio measurement set (Fig. AE-3). The AM700 is an integrated test instrument with on-board digital capability, programmability, and rapid-access interface, which provides the ability to satisfy the testing and measurement demands of "cradle-to-grave" audio product applications. The set comes with such capabilities as two-channel FFT, graphic plotting, multi-tone measurements, and both an analog and digital signal generator.

Tektronix has made available the ASW-100 Series of audio switchers. The ASW-100F and ASW-100M measurement grade switchers are two analog multiplexers for audio measurement applications, developed to accompany Tektronix's other audio

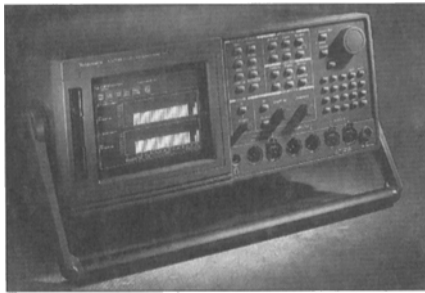


Figure AE-3. Tektronix, Inc.'s AM700 audio measurement set.

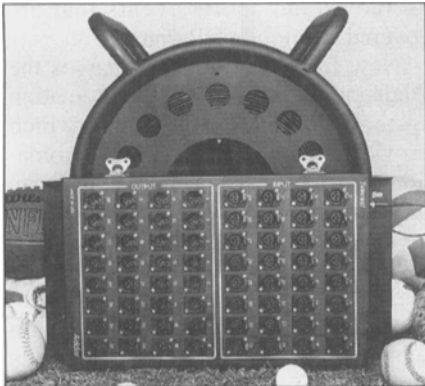


Figure AE-4. The Telecast Adder from Telecast Fiber Systems.

testing instruments. They serve as routing switchers, permitting the inputs and outputs of analog audio test equipment to be switched between multiple signal sources and destinations without signal degradation.

Telecast Fiber Systems delivered the Telecast Adder (Fig. AE-4), which turns virtually any cable — either a single optical fiber, coax, or triax — into a portable 64-channel digital audio snake. The compact system accepts mic or line inputs, and then digitizes and multiplexes them for optical or electrical transmission. The frequency response is 20 Hz to 20 kHz; SNR > 80 dB; the range is up to 20 km.

Also new from Telecast Fiber Systems is the Adder 882 digital fiber-optic audio/data multiplexer (Fig. AE-5). The Adder 882 transmits 16 audio and 16 RS-422 data channels (8 audio plus 8 data in both directions) over a single optical fiber (multimode or single mode). Ranging up to 20 km, the frequency response is 20 Hz to 20 kHz; SNR > 85 dB; the range is up to 20 km.

Wohler Technologies introduced a number of new products in 1994. The AMP-SUR is a 2-RU-powered monitor speaker unit that reveals decoding errors caused by gain or phase imbalances in a surround-encoded source's

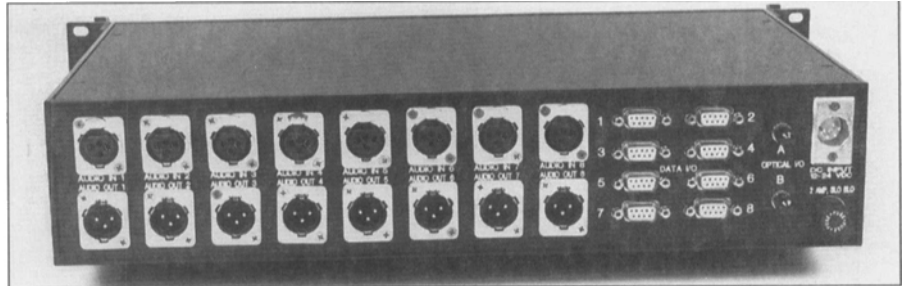


Figure AE-5. The Adder 882 from Telecast Fiber Systems.

signal path. The speaker complement is similar to the company's AMP-2, providing a very high-fidelity, full-bandwidth acoustic reproduction as well as visual and audible indication of signal channel imbalances.

Wohler Technologies' DLM-1 and DLM-2 are AES-3-input, 10 and 24-segment LED bar graph level meter modules that fit into the company's existing 1 and 2-RU multichannel indicator chassis (MSM-1 and MSM-2). Analog and digital input modules may be combined in the same frame, which has a maximum capacity of 20 channels. Eight user-selectable display modes are provided, including VU, PPM, peak hold, or combinations of these. Also provided are indications of signal absence/loss and an expanded scale around the reference level for line-up purposes.

Also new from Wohler Technologies is the PKH-1, a peak hold function that is now available for all of the company's analog LED meters. When engaged and until manually reset, the circuit will maintain the bar graph at the highest level attained.

The ALRM-1, ALIN-4, and SNS-10 make up a multichannel loss-of-audio alarm system from Wohler Technologies developed for use with the company's MSM units or as a standalone system. Up to 80 channels of alarm indication fit into a 1-RU enclosure. Level detector modules (10 inputs per module) are also available for systems without MSM units. Enabling, time delay, and threshold level may be individually set for each channel.

The SDAE-1 from Wohler Technologies is an audio "demux" module that extracts the embedded audio from a component serial digital video signal conforming to SMPTE 272M. The module's output is an AES-3-compliant digital audio signal. It is normally installed in an AMP-series monitor speaker combined with one of the

company's AES-to-analog interfaces, thus enabling direct audio monitoring in a serial digital environment. Monitoring the audio portion of an SDV signal can provide a simple form of "early warning" of an impending interface failure, because experience indicates that the audio portion of an SDV signal is less tolerant of a degraded transmission link than the video portion.

Cables and Connectors

Bi-Tronics, Inc., has recently introduced the first panel-mount, female-to-female feed-through S-VHS connector; absolutely no soldering is necessary. The connector is available in bulk, or pre-loaded in 8, 12, or 16-port single-space rack panels.

Canare Cable, Inc., introduced several new products in 1994. The DT12 broadcast standard snake systems, which conform to industry specifications, all possess snake trunks, fantails, and junction boxes on FK37 multipin connectors.

Canare Cable's F connectors are for use with terminating 75-Ω coaxial cables and are capable of passing "smart home" frequencies. With a crimp-center gold contact and crimp sleeve, the connectors use the same hand tools and stripper as BNC.

The impedance transformer from Canare Cable is for coaxial transmission of AES/EBU digital audio signals. The small, passive adapter converts 110-Ω XLR3 twisted pair I/Os to 75-Ω BNC coaxial I/Os.

Canare's serial digital video 75-Ω coaxial cable is usable for the 360-MHz high-definition bandwidth. Features include flexible jackets, ten-color selection, foam-core PE dielectric, a solid copper center conductor, and a foil shield with overall braid. The cable is also available in 3, 4, and 5-channel multisnake versions.

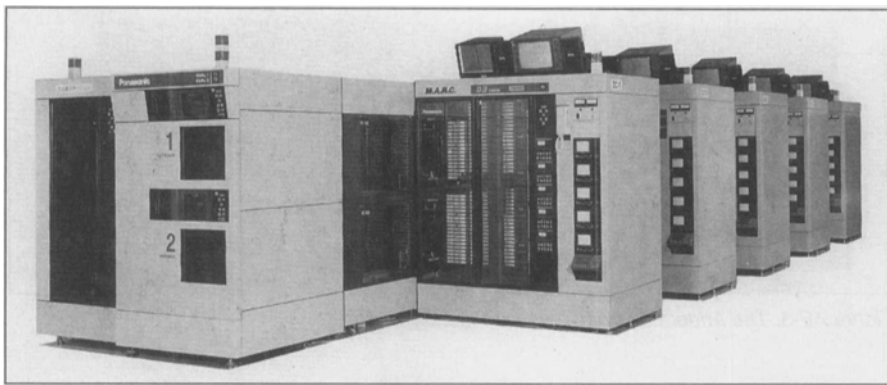


Figure CM-1. The D3-Bank video cart system from NHK.

The AES/EBU 110- Ω twisted pair cable series from Canare Cable ranges from single-channel to 8-channel and includes such features as flexible jackets for rack wiring and internal PE rods to help maintain constant impedance. The cables are usable with punch-down-type patchbay terminal blocks.

Intelvideo, Inc., introduced the co-channel filter Model CF. This is a digital signal processing system that can reduce the 10-kHz or 20-kHz co-channel beats from off-air broadcast signals by up to 30 dB. In addition, it reduces other random noise and interference by up to 9 dB. It can restore video synchronization even when co-channel interference is so high that most receivers experience loss of sync.

Cart Machines

The D3-Bank (Fig. CM-1), developed by NHK, is a large-capacity video cart system in which packaged programs for four television broadcasting channels (about 300 programs a day) can be sent out automatically. The system is composed of five VTR playback carts, five cassette-storing carts, an I/O station, and two shuttles (compact cassette accessors driven by batteries) to exchange cassettes between the units at random. The cassettes are stored and managed by a data-base system. After each cassette is registered in the program, information, and control system, it can be picked up from the carts and replayed for broadcasting at any registered time without human operation.

Odetics Broadcast introduced the CacheMachine, which integrates disk and tape to maximize the benefits of each media type. The cart machine stores and plays program tapes direct-to-air, as well as serves as an archive for spot-length material. Spots are

automatically cached to disk prior to their subsequent integration with the program material.

Control Systems

Asahi National Broadcasting Co., Ltd., developed a control system for wireless TV cameras. Because two microwave channels are normally used in the operation of a wireless camera, microwave shortage, first for the shot signals of video and audio and then for remote control signals on aired picture and sound, can result. In order to avoid microwave channel shortage the remote control signals, such as iris, tally indication, gain of red and blue, and pedestal adjusting, are multiplexed on the intercommunication signal by different carriers of 8.3, 10, and 12

kHz for each camera. Protection procedures, such as an alarm for weak field intensity and memory of previous data, are provided at the camera.

BTS-Broadcast Television Systems GmbH has introduced the LDK 4609 master control panel (MCP) (Fig. CS-1). The LDK 4609 was designed to provide direct access to a maximum of 15 cameras in a studio, where the MCP is a part of an operational camera control area. Its small size and low weight make it suitable for applications such as shows and sports events that are covered by mobile OB vans.

New from Odetics Broadcast is the Digispot multichannel disk automation system. The Digispot system, which provides low-cost, disk-based automation for up to four on-air channels, can be configured for either regional break-away or independent channels. ScheduleChek software adjusts the breakaway duration of each channel to ensure a smooth return to the main schedule; the software also controls tape decks for program replay, automates still image recall, and switches both to and from a network feed.

Pro-Bel, Ltd., introduced Compass, an automated playout system controlling a variety of cart machine VTRs, disk servers, still stores, and character generators. User-friendly Windows-based terminals are employed with extensive tools for schedule manipulation and editing.

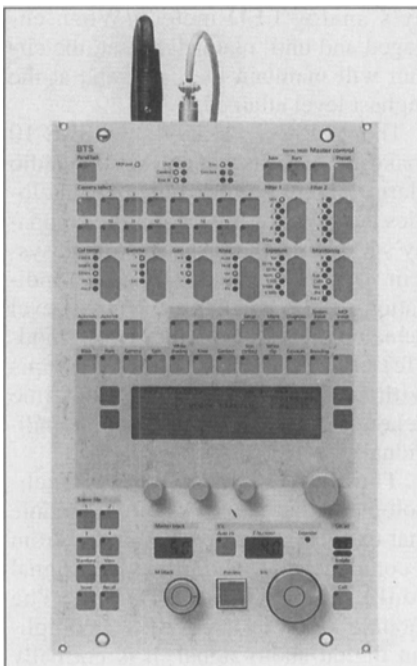


Fig. CS-1. The LDK 4609 master control panel from BTS.

Desktop Video

Prime Image, Inc., introduced the Passport 4000 (Fig. DV-1), the latest desktop video product for use with the Amiga 4000 computer and the NewTek Video Toaster. An all-digital, multipurpose standards converter, the Passport 4000 also incorporates time base correction and synchronization. Inputs include PAL, PAL-N, and SECAM, with outputs to PAL and PAL-N.



Figure DV-1. The Passport 4000 standards converter from Prime Image, Inc.

Editing Equipment — Film

Moviecode/Jastram Filmtechnik has introduced the Moviecode cut matrix system. The system transforms key number EDLs with white ink to 16mm or 35mm black spacing. Cuts are indicated and specified by key numbers and scene identifications. Periodically running digits give reference to negative or print footage. Open-data base structure supports any kind of data format (e.g., OMFI files).

Editing Equipment — Video

Bi-Tronics, Inc., has recently introduced a low-cost one-in/three-out S-VHS distribution amplifier for professional video applications (Fig. EEV-1). Taking a single S-VHS input and splitting it into as many as three S-VHS outputs without significant signal loss or degradation in picture quality, the amplifier can be used for multiple recording or multiple monitor playback.

The Grass Valley Group has developed the Sabre 4100S dynamic editing system. Featuring the SGI Indy platform, the Sabre 4100S provides advanced editing features and capabilities that can adapt to a variety of post-production environments. Suitable for linear or nonlinear applications, the Sabre can operate in various modes and styles to meet the exact needs of the user.

Matrox Electronic Systems, Ltd., developed the Matrox Studio, a hybrid desktop video editing suite offering nonlinear, random access editing, and on-line production from the same system. Featured is the Super F/X option,

which adds a fourth DVE channel to the graphics layer of the Matrox Studio, allowing users to create flying graphics with the alpha channel keys. The option also provides the potential to control the Pinnacle Alladin Media Printer and allows users to create state-of-the-art 3-D effects within the Matrox Studio editing environment.

Quantel, Ltd., has introduced the Newsbox on-line nonlinear news editing system. While loading footage, Scene Select allows the selection of clips; with its random access store, video and audio edits are made instantly without dubbing. These edits are free to be changed, and so different versions of a story can be cut without using extra storage space.

Facilities

Broadcast Video, Inc.

Broadcast Video, Inc., developed two new facilities in 1994. The 7,500 sq. ft. sound stage, located near the North Miami, Fla., facility, is acoustically treated with 50 ft x 55 ft x 19 ft hard cyclorama; a two-tiered grid measuring 16 ft, 6 in. at the center and 18 ft, 2 in. at cyc; two 200-amp, 3-phase disconnects with a Cam-Lok connector; a studio floor measuring 75 ft x 75 ft; an additional table top/Ultimate area; a client lounge; an office; and a green room.

The Coconut Grove facility developed by Broadcast Video consists of two 10,000 sq. ft. floors located in Miami. The new facility features a digital component Betacam edit suite, a Solid State Logic screen sound digital audio workstation, a Rank Cintel Turbo 2 telecine, an Avid offline, and an SGI-based computer graphics system including Flame software.

Hessischer Rundfunk (Germany)

The Hessian public broadcaster, Hessischer Rundfunk (HR) opened its new television studio in Kassel. The studio, with production control rooms and monitoring area, is part of a large building project aimed at separating the production units for radio and television. The latest image-processing system in digital serial component (DSC) technology is being used for the first time, contributing to optimal production possibilities with minimal technical staff. The use of digital technology in the video equipment allows a

continuous digital picture transmission from the camera control unit all the way to the outgoing signal.

The studio, with its 300 sq. m. floor space currently has four connection points for CCD cameras. The video vision control is equipped with a three-level video mixer, a digital video effect (DVE) machine, a caption generator, and a still store. The latter can also be operated from other rooms, such as the graphic design or VTR areas. In the camera control unit the complete configuration of the monitor walls and control panels is operated by a PC. Apart from a small breakdown matrix (24 x 8) in PAL standard, the studio is equipped with a digital matrix with 64 inputs and 128 outputs. Through this matrix it is possible to connect — apart from cameras, VTR machines, etc. — analog equipment that must go through an analog-to-digital (A/D) converter. Synchronizers provide a corresponding pulse synchronization and the necessary synchronism of picture and sound.

In the graphic design department 2-D and 3-D animations for titles, graphics, and diagrams are prepared and can be fed directly to the studio. The sound control system is equipped with an analog sound mixing console having 56 input channels. There are also various special effects devices, a microport unit with 14 channels, and analog and digital tape machines. The VTR area provides an eight-channel sound mixing console as well as a small digital video mixer that can be used either as a premixer for the larger device or as a breakdown mixer. These devices are coupled to the VTR machines via a control system. Because HR transmissions still use analog technology, Betacam SP standard is used to make analog recordings. Since a decision has been made by the public broadcasting union (ARD) to introduce a digital recording standard format, these machines will eventually be exchanged for standard-format VTRs.

Apart from the wide connecting possibilities for camera, vision, and sound in the new Kassel TV studio, there are additional terminal boxes at various points of the building complex, enabling the staff to record open-air TV productions as well.

NHK (Japanese Broadcasting Corp.)

NHK has developed and is operating the world's first studio for the simulta-

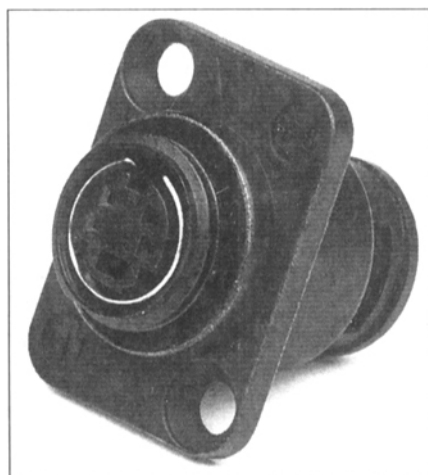


Figure EEV-1. Bi-Tronics' S-VHS distribution amplifier.

neous production of HDTV and NTSC programs (Fig. F-1). An HDTV switcher is used for video switching; the output is downconverted into an NTSC signal to realize the live broadcasting of both HDTV and NTSC programs at the same time.

In addition to HDTV cameras and VTRs, the use of an upconverter allows the use of NTSC materials. The difference in the aspect ratio between HDTV (16:9) and NTSC (4:3) is effectively dealt with by using a DVE device capable of switching aspect ratios, or a captioning system that can be controlled independently for HDTV and NTSC.

Motion-adaptive processing by the upconverter and the downconverter effectively handles field-frequency differences between NTSC and HDTV to realize smooth conversion. The studio produces high-quality HDTV and NTSC programs, significantly enriching program software.

Southern German Broadcasting Corp. (SDR)

Stuttgart's PK4 is now transmitting the ARD program using the new digital/serial studio standard DSC 270.

New equipment includes a software-controlled T-series audio mixer from Calrec (U.K.). The desk is provided with 72 faders, which may be assigned to any of the 56 mono channels and the eight stereo channels or groups. The individual configuration of the desk is achieved by PC control. Audio storage facilities include one Otari DTR 900 digital 32-track recorder, three Otari DTR 90 DAT-recorders, one Akai DD 1000S MOD recorder, and one Beta-SP recorder. All the equipment is synchronized by time code. A small DMX E2000 Sony sound mixer is available for mixing in the digital domain, and a CD player and a cassette recorder may also be connected. The unique characteristic of this video concept is the relatively large, centrally located digital video crossbar, around which the remaining video equipment is arranged. A digital crossbar with 96 x 128 crosspoints from Pro-Bel, Ltd. (U.K.), was used.

Five LDK 9 cameras from BTS are located in the 550 sq. m. studio; these have analog signal processing but digital outputs. New Barco monitors with built-in digital inputs are located in the monitor walls. A DD30 video mixer from BTS is used, together with a



Figure F-1. New NHK studio for simultaneous HDTV/NTSC production.

DPM 700 video-effect unit from the Grass Valley Group, and an Aston Motif is available for caption generation. With this new digital concept higher flexibility for changing production requirements was achieved.

Technicolor Film Services London

Technicolor Film Services London has expanded its 70mm facilities and is now capable of processing and printing 65mm negatives and intermediates, including large-format "special venue" negatives. This is in addition to the established facility for the production of 70mm prints from 35mm original negatives and duplicates. Additionally, optical printing facilities are available to allow 35mm 4-perf. rush prints to be produced from 15-perf. 65mm negatives.

The facilities of the Sound Services Dept. have also been expanded. Technicolor Film Services is able to offer services for the production of optical sound negatives in 35mm analog, Dolby SRD, and DTS formats, together with expansion of the existing printing facilities to allow front-end and release printing in these formats. These services are in addition to those already available in the 16mm, Super 16mm, and 35mm formats for television, features, and commercials.

ZDF (Germany)

The new ZDF post-production complex is fully digitized in audio and video. Video processing is done in 10-

bit resolution with serial component interfacing and a resulting data rate of 270 Mbits/sec. Some highlights of the video editing unit are five VTRs (four digital and one analog); the CMX Omni 1000E editing system; the BTS DD30 production mixer; the Questech Charisma Cleo Plus four-channel video effects generator; the Aston 4 caption generator; and the Sony DMX E3000 audio console. The production mixer is equipped with 32 inputs, two MEs with two keyers each, and a program/preset stage with two downstream keyers. It is switchable to layer mode and has a montage processor with two frame stores. All components in the post-production suite are switchable to 16:9 mode to allow the production of PALplus material. The audio mixer allows work in a standalone mode in the video area.

The AMS Logic 2 audio console is a fully digital four-layer console with 28 channels in each layer. The signals from the DVTRS, two R-DAT recorders, two analog magnetic tape machines, and a CD player are fed to it. With the integrated AMS Audiofile it is possible to store and to edit digital audio of up to 2 hrs on a hard-disk platform. Provisions are made to equip the video complex as well with a RAM or disk-based system.

Film

Eastman Kodak Co. introduced two new films. The Eastman EXR 200T 5287 color negative film (ultra latitude) is a medium to high-speed, tung-

sten-balanced color negative camera film with micro-fine grain, very high sharpness, and resolving power. With lower overall contrast and an additional reduction in toe contrast, it provides increased underexposure latitude and shadow detail. For telecine transfers, it can be rated at EI 320 to 500 to produce satisfactory results.

The Eastman EXR 500T 5298 color negative film from Eastman Kodak Co. is a high-speed, tungsten-balanced color negative camera film with micro-fine grain, high sharpness, and high resolving power. It features wide-exposure latitude with crisper, richer blacks; whiter whites; and accurate color and flesh-to-neutral tone reproduction. It offers improved blue-to-green separation for easier special effects.

Fuji Photo Film Co. announced a new line of motion-picture color films called the Super F Series system, in addition to four new color negative films. High-speed color negative films F-250 35mm 8551/16mm 8651 (EI 250 tungsten type) and F-250 D 8561/8661 (EI 250 daylight type) feature high sensitivity and fine grain; the result is an extended exposure latitude with especially fine grain in areas of shadow and rich blacks. The F-125 medium-speed color negative film 8531/8631 (EI 125 tungsten type) features more natural color reproduction characteristics. The fourth new film, F-64 D, is a low-speed color negative film 8521/8621 (EI 64 daylight type). The principal feature of this film is more natural color renditions in daylight shooting.

The Ilford black-and-white motion-picture film has been announced by Studio Film and Tape. The 50-tungsten, 125-tungsten, and 400-tungsten motion-picture films are primarily used for technical recording applications, which benefit from the sharpness and resolution advantages of black-and-white film. HP 5 (500T) is especially suited for high-speed cinematography. Other competitive features include high-resolution and sharpness, wide-exposure latitude, and contrast that can be easily controlled.

Film Cameras and Accessories

Arriflex Corp. debuted many new products during 1994. The Arriflex 435 high-speed MOS camera has a double-axis pivotable finder, dual-pin registration, pull-down claw movement, a forward and reverse at 1

frame/sec to 130 frames/sec, and a video-only configuration for Steadicam. The time-code-equipped camera is adaptable to Super 35 format. Optional features include Arriflow and an electronically controlled mirror shutter while the camera is running.

The Arriflex Corp. also introduced a lightweight magazine for the Arriflex 535, especially for Steadicam applications. The magazine uses a magnesium-and-carbon fiber laminate, and special isolating elements are used for low noise level.

The production matte box (MB-18) by the Arriflex Corp. was especially designed for Super 16 format, accommodating all lenses from 6mm focal length upwards. The standard model is equipped with three filter stages; filters can be rotated or pushed through, and graduated filters can be driven in and out with a rotary knob or by remote control via a flexible shaft.

The RCU-1 remote control and programming unit from Arriflex Corp. automatically adapts to the range of functions of each new generation camera type. Features include an electronic remote setting of a running speed to 0.001 frame/sec accuracy, an electronically adjustable mirror shutter to 0.1° accuracy, synchronization of speed with opening of mirror shutter, and a manual remote setting of speed and shutter angle. An illuminated LCD shows set values and camera status with all warning indications.

Arriflex Corp.'s FE-3 finder extender, an accessory for the Arriflex 535B and 435 systems, extends the standard finder by 300 mm and has an integrated magnifier that can be switched on without loss of image.

The AVF-1 and AVF-2 anamorphic finders are two other accessories for the Arriflex 535B and 435 systems that were introduced by the Arriflex Corp. These finders can be exchanged with the standard finder following a modular concept. For exact focusing, anamorphic desqueezing can be switched back to the cylindrical system.

Cinema Products Corp. introduced the Vidiflex, a device that consists of a tapered coherent fiber bundle, the larger front face of which replaces the ground glass in a 16mm or 35mm film camera. A high-resolution CCD chip is bonded to the reduced rear face, producing a high-resolution color or monochrome video image for critical focus, matting, and editing applications.

Film Laboratory Equipment

The Allen Products Co. introduced the High-Particulate Air Filter, which reduces the amount of dirt on color negative film. The filter has several elements that reduce the size of the dirt particle that is allowed through. The film output is improved for film-to-tape transfer.

Eastman Kodak Co. introduced the Eastman ECN-2 kit chemistry, a new method of packaging Kodak processing chemicals for Eastman color negative process. The kit makes it easier to mix solutions that meet the correct ECN-2 processing aim. Less work in the lab is needed to give consistent top-quality processing results to filmmakers.

New from Evertz Microsystems, Ltd., are the KK-16, KK-35, and KK-16/35 keycode reader heads, for use on a telecine or other film transport to recover keycode numbers from 16, Super 16, or 35mm film. The self-aligning, floating head design allows the entire head assembly to move laterally on precision guides to maintain a proper film path over the optical centers. When used with the Evertz 5500 keycode decoder, the heads allow automatic sensor gain control for tracking various film densities on a single roll.

RTI/Lipsner-Smith Co. has created the CF-3000 Mk VI film cleaning machine (Fig. FLE-1), which can be used with new cleaning agents once the solvent traditionally used to clean

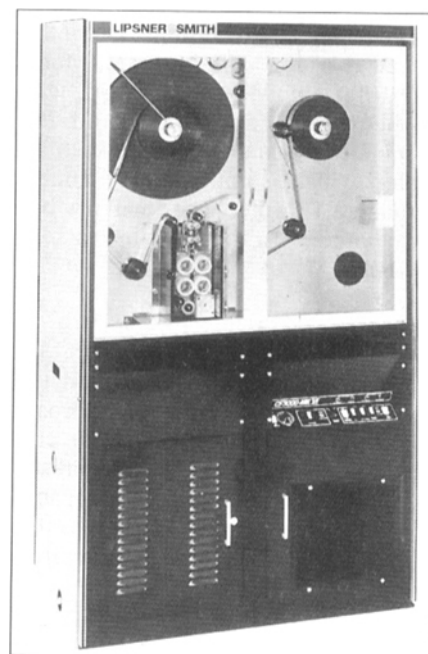


Figure FLE-1. The CF-3000 Mk VI film cleaning machine from RTI/Lipsner-Smith.

film is phased out of production at the end of 1995. Alternate solvents can be used safely with the Mk VI to confidently clean camera-original and other delicate films. The Mk VI uses ultrasonic energy to effectively cavitate the cleaning solvent, providing the impingement scrubbing action needed to remove fingerprints, dirt, and oils from the film's surface. In addition, the Mk VI features an optionally engaged, 4-roller, submerged rotary buffer system to assist in removing impacted dirt. The Mk VI cleans at speeds of up to 200 ft/min. The machine recycles the solvent it uses; vapors are condensed to liquid on chilled coils and returned to the system, and contaminated solvent is reclaimed by an internal distillation unit.

The Excel 900 nonimmersion film cleaning machine from RTI/Lipsner-Smith Co. uses particle transfer rollers and wetted rotary buffers to effectively remove contaminants from the film's surface. Two softnap buffers are wetted with a choice of tested, environmentally responsible solvents, including low-cost isopropanol (IPA). New DuPont HFC and 3M PFC solvents can also be used with the Excel 900. The machine features ergonomic design with straight line threading. Cleaning mechanisms electronically engage at the operator's command. Cleaning speed, buffer wetness, and film tension are microprocessor-controlled. The compact, free-standing unit requires less than 6 sq. ft. of floor space.

Technical Film Systems has introduced two new film cleaners, Model FC-1000 and Model FC-2000, with respective speeds of 100 and 200 ft/min. The cleaning agent is distilled water, which is continuously filtered through a 1- μ filter. The small dry box associated with the machine is self-loading.

Graphics and Special Effects

Digital Graphix developed the TypeDeko, a Windows-based, broadcast-quality character generator currently ported to a DEC Alpha workstation. It provides the power and capability of formerly proprietary designs that have been used for broadcast applications.

Eastman Kodak Co. introduced the Cineon Genesis 35 and 65 digital film scanners, which provide high-resolution scanning for digital film post-pro-

duction and visual effects. The scanner is available as a 35mm or 65mm model, supporting all standard film apertures. The same imaging technology as the high-end Lightning scanner is used, including a 4-K trilinear CCD image sensor with custom color dichroic filter.

Cineon digital film software version 2.3 from Eastman Kodak Co. incorporates enhanced speed, creative film manipulation tools, and increased video functionality into a comprehensive application for image manipulation and compositing. New features include stabilization, motion tracking, enhanced animation curves, and a unique de grain/regrain tool for managing film grain.

The Grass Valley Group has developed the Krystal 4300 digital picture manipulator, featuring the next generation of digital effects. Quality images are achieved via proprietary filtering techniques and user interface is enhanced with more direct buttons and controls, partial keyframes, and greater display bandwidth.

Leitch, Inc., has introduced the LogoMotion logo generator and inserter for animating station identifications. LogoMotion is a device that stores up to 50 different static logos or up to 14 seconds of animated logos and keys them over NTSC video. Logo contents are easily reprogrammed by downloading graphic files through the serial port. Logo contents can be grabbed directly from video and positioned freely anywhere on screen; they can also be recalled easily from a control panel or automation system.

Matrox Electronic Systems, Ltd., developed the Matrox Animation Xpress (MAX). MAX is a real-time, digital animation recorder that records and plays back 3-D animations directly from the hard disk in full CCIR 601 resolution at 30 frames/sec (60 fields/sec) in true 24-bit color. It simplifies rotoscoping on live video, supports a full range of editing capabilities, outputs broadcast-quality video, and runs all the leading videographics software.

Also new from Matrox Electronic Systems, Ltd., is the Illuminator-PRO, a 32-bit videographics board that is used to create broadcast-quality graphics, titles, and animations for video productions. It has analog component and D-1 input and output support and provides the basis for a low-cost, top-

quality character generation, paint, and animation system for the PC.

Using a sound-image distance control method, NHK has developed a new version of an autostereoscopic, 70-in., diagonal, 3-D HDTV display system without the need for special (autostereoscopic) glasses. The key technologies supporting the system are high-performance HDTV liquid crystal (LC) video projectors with extremely high resolution, totaling 2880 (H) x 1024 (V) x 3 (RGB) pixels; a newly designed double-lenticular screen; the super 3-D sound system using a sound-image distance control method; and advanced computer graphics techniques for 3-D HDTV. The system has widespread applications over a broad range of fields, including a future home display, entertainment, medicine, education, and virtual reality environment systems.

Shot View, a real-time locus indication system for a golf ball in flight, is new from NHK. Using the motion angles of two cameras to track the ball, the system detects the 3-D position of the ball according to triangulation principles and indicates the locus on a course layout background generated by computer graphics. One of the useful features of the system is that the angles of two cameras are detected from gyro sensors, which are easily attachable to the cameras and used for the outdoor sports broadcasts. The Shot View has been applied to long-distance shots during several golf broadcasts in Japan.

Prime Image, Inc., created the Prime Image logo insertion still card. This product captures, stores, and keys logos and other still images over program video instantly and on-site; it conforms to NTSC, PAL, or PAL-M standards. In less than ten seconds, the still card captures and stores images at the production site for immediate use.

Quantel, Ltd., developed the Auto-Lock-Follow (ALF), an image processing technique that follows selected objects over a series of pictures to sub-pixel accuracy. Applications include stabilizing film weave or camera shake, positioning a traveling matte, or making another object track the first. ALF has been made available in Henry, Hal, and Domino systems.

Strata, Inc., introduced the Strata MediaForge for use in multimedia applications. MediaForge for DOS provides a versatile authoring environ-

ment with powerful object editors and scripting capabilities. With dynamic linking support and robust hyper linking capabilities, MediaForge supports a variety of audio, graphics, video, and animation formats.

Lenses

ARRI introduced a completely new lens system, developed in cooperation with Carl Zeiss. The variable primes offer higher quality resolution, contrast, freedom of distortion, and vignetting, even compared with fixed focal range lenses. With just three high-speed lenses, a focal range from 16 to 105mm can be covered continuously. This allows more time for creative image composition, which can be achieved faster, more simply, and with a greater flexibility. The prime lens system consists of the following focal lengths: VP 1, 16 to 30 mm; VP 2, 29 to 60 mm; and VP 3, 55 to 105 mm.

Canon, Inc., developed three new types of lenses: the J13a x 9b KRS-V optical image stabilizing zoom lens, the PJ-21 studio zoom lens, and the PJ-70 2/3-in. field zoom lens. The J13a has 9mm focal length for wide frame with high image stability. The PJ-21X Super IF is also good for wide frame, with 7mm focal length and three groups of optical units that can be used for EDTV-II with high picture quality. The PJ-70X Super is a manual push-



Figure L-1. The HDZ-1222 HDTV zoom lens from Elmo Co., Ltd.



Figure L-2. The S15x8.5BI-III lens from Nikon Electronic Imaging.

and-pull zoom-type lens for domestic use that provides changeable torque by liquid viscosity.

Century Precision Optics has introduced the .6X aspheric wide-angle adapter. Created especially for use with the newest generation of ENG/EFP video zoom lenses, this new adapter utilizes a single element with two aspheric surfaces, ensuring a level of performance better than that achieved by conventional single element adapters. The resulting system minimizes distortion and reduces chromatic aberration while dramatically increasing edge resolution.

Elmo Co., Ltd., announced the HDZ-1222 zoom lens (Fig. L-1), for use in a 2/3-in. Japanese HDTV (Hi-Vision) camera. The lens provides extra diffusion and eliminates chromatic aberration. The design is tailored for a handheld CCD camera and weighs only 2.1 kg. Although it functions well enough for HDTV, the use of a floating focus technique prevents enlargement of the diameter of the lens.

The S15x8.5BI-III Standard ENG/EFP lens from Nikon Electronic Imaging (Fig. L-2) is a third-generation lens that is the smallest, lightest, and most compact with the longest focal length in its class. The S15 utilizes aspheric lens technology for high performance with minimal chromatic aberrations. It offers a 0.55 MOD, zoom-speed adjustment knob, and a user-adjustable zoom torque extender. The lens is also available in a full-servo option.

Also new from Nikon Electronic Imaging is the S9x5.5BI-II Super Wide-Angle Lens. The S9 is a second-generation, ultra-wide angle with internal focus and aspheric lens technology. It is 11% lighter and 4% smaller than its predecessor. Features include a user-adjustable zoom speed and 200 m



Figure L-3. Zoom lenses for 2/3-in. TV cameras (L, S9 x 5.5 II; R, S15 x 8.5 III) from Nippon Kogaku.

torque. The lens is available in full and semi-servo options.

Nippon Kogaku K.K. developed two new model zoom lenses, the S15 x 8.5III and the S9 x 5.5II (Figure L-3), designed for application in 2/3-in. TV cameras for ENG and EFP use. In spite of their small size and light weight, they provide high optical quality, clear picture, and improved resolution, especially at the fringe area, by means of a nonspherical lens and an internal focusing system with effective filter work that suppresses ghost and flare effectively. The lenses can be used for the EDTV-II 16:9 frame because of their better fringe area characteristics and flat modulation transfer function (MTF) curve. For manual zooming, either light or heavy torque can be selected by switching; the lenses are also designed for easy holding, switching, and zooming. Operation noise is significantly reduced, and an all-servo-type focus servo mechanism is available.

Lighting Equipment

BTS announced the new Arrisun 12-Plus, designed for quick use wherever a great deal of light is called for. To optimally exploit the light capacity the single-ended, discharge 1200-W bulb can be precisely adjusted from the outside. The four lenses, exclusively manufactured for ARRI, and the reflector were computer-designed in conjunction with each other, as in the Arrisun 40/25. The large-sized 250-mm lens diameter maximizes the light output of the bulb. The ARRI-designed G38 lockable lampsockets are also used in the Arrisun 12-Plus. A modified starter guarantees a reliable ignition and hot restrike. The Arrisun 12-Plus can be used with any 1200-W ballasts.

BTS also introduced the ARRI Plus Series of luminaires, which were specially designed for use on location and in the "mini" studio. New lenses of higher efficiency provide better light output. With the new design the entire range has been made even more user-friendly; all components are now screwed together, allowing easier maintenance. The concept of lightweight but extremely stable luminaires was retained; the body is made of aluminum extrusion with a front and rear of diecast aluminum. Its ribbed extrusions provide a large surface area to dissipate the heat and prolong lamp life. The ARRI Plus 300W, 650W, and



Figure LE-1. The Frezzi Mini-Fill from Frezzolini Electronics.



Figure LE-2. The Fren-L 650 from Lowel-Light Manufacturing.

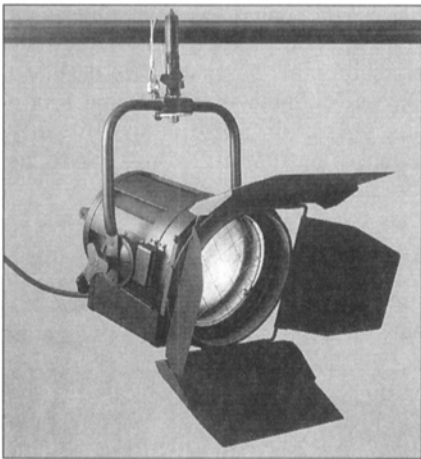


Figure LE-3. Marumo Electric Co., Ltd.'s FQH spotlight.

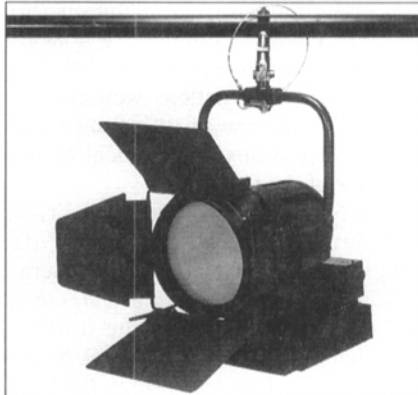


Figure LE-4. New HMI spotlight with liquid crystal dimmer from NHK.

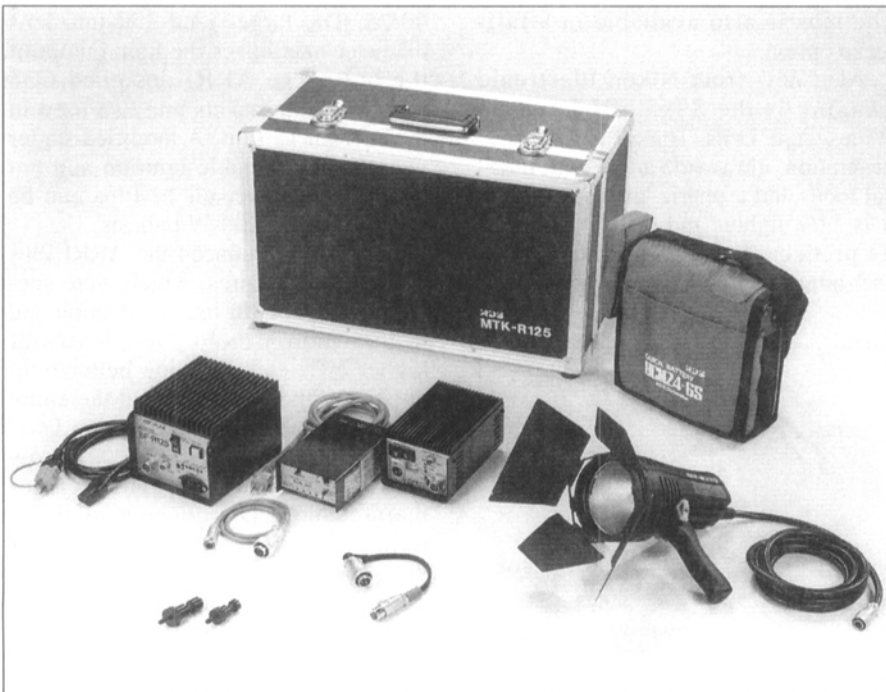


Figure LE-5. The Beam Spotlight Mighty Rupo Kit MTK-R125 from RDS Corp.

1000W are designed for manual use. The series is completed by 2,000-W and 5,000-W versions.

The ARRI Daylight 18/12 kW from BTS extends the range of daylight luminaires with a particularly versatile and high-capacity model. An 18-kW or a 12-kW bulb can be used as desired. With the largest Fresnel lens diameters in each of their lenses, the ARRI Daylights achieve a particularly even and intense light. The outstanding design permits indefinite periods of use. The stirrup can be adjusted for optimum balance when used with various accessories. The new ARRI stirrup lock-off system is highly efficient, requiring minimal pressure. Bulb changing is carried out from the rear, thus eliminating the balance shift otherwise brought about by the opening of a heavy lens door. With a tilting focusing carriage the lamp holder, reflector, electrical attachments, and focusing mechanics are easily accessible.

The ARRI Studio 20-kW from BTS can achieve the highest lighting capacity — 20 kW. The large 625-mm diameter lens, in conjunction with a new reflector, produces an extremely even wide light beam down to an intense narrow spot. The special design of the housing, with its large volume, guarantees the excellent air flow and cooling, which keeps the bulb well within the manufacturer's temperature specifications. Bulb changing is carried out from the rear, eliminating the balance shift otherwise brought about by the opening of a heavy lens door. With a tilting focusing carriage the lamp holder, reflector, electrical attachments, and focusing mechanics are easily accessible, and the stirrup can be adjusted for optimum balance when used with various accessories. The Studio 20 kW is manually operated; pole-operated, motorized, and remote-controlled versions will be available at a later date.

The Frezzi Mini-Fill on-camera light (Fig. LE-1) is available from Frezzolini Electronics, Inc., with a built-in dimmer control as Model MFIC. Used by news teams worldwide, the Mini-Fill is adaptable to any 12 to 14.4-V power battery (at least 2 A h). Mini-Fill lights can accept bulbs from 20 to 100 W and are supplied with a bulb of choice. Using the MFIC dimmer-controlled light provides the advantage of a wide lighting range without the need to change bulbs. The optional MF dichroic filter accessory provides daylight color

correction for outdoor video shooting.

LEL, Inc., announced the CAT-20 caster flat light device, which provides twin fluorescent lamps and is designed for the compact news studio. It can be used with little heat radiation (compared to halogen lamp light), and its small size and light weight allow it to be positioned close to an announcer or commentator. Other features include 100 V + 10% input voltage; 18 W power consumption; and 3200° K color temperature, with 800° K and 5500° K available.

Lowel-Light Manufacturing, Inc., introduced the Fren-L 650 (Fig. LE-2), the first in what will be a family of Fresnel fixtures. The Fren-L 650 features a smooth, rack-and-pinion lamp carriage; 7:1 focusing range; sharp-shadow quality; and double-wall convection cooling. The new Fren-L also uses many Lowel mounting and light control accessories that professionals may already own.

Marumo Electric Co., Ltd., announced the Light Series FQH Spotlight series (Fig. LE-3), a meniscus hives lens made of Pyrex glass in which the pitch of the Fresnel's lens prism becomes smaller and its thickness thinner. As a result, its weight is lighter and anti-heat characteristics are obtained. Two types of FQH series were introduced; S-1 and S-2 are designed for different usage by various lenses. The goal of the S-1 is efficient brightness at spot focusing, while the S-2 is designed to produce soft light. The lights are available in wattages of 0.5, 1, 1.5, 2, 3, and 5 kW; lens diameters of 6, 8, 10, and 12 in.; and weights of 4, 6.4, 8.4, 11.1, and 11.9 kg.

NHK, in cooperation with Marumo Electric Co., Ltd., and Sumitomo Electric Industries, has developed an HMI spotlight (Fig. LE-4) for TV studios that uses a liquid crystal dimmer. The new spotlight has an HMI 575-W single-ended lamp, a 6-in. lightweight meniscus-type Fresnel lens, and a focus control mechanism. An 8-in.-diameter composite film of liquid crystal and polymer is mounted in front of the lens and works as a dimmer by controlling the light-scattering effect. It is controlled with PWM to decrease the drop in color temperature while dimming. The output illumination can be controlled between 14,000 lux and 150 lux at a 5-m distance. The heat resistance of the composite film is more than 150° C, and the dimming

signal input is DMX-512, for use with an ordinary controller. An electronic ballast without a cooling fan is integrated to the spotlight body.

RDS Corp. announced its new Beam Spotlight Mighty Rupo Kit MTK-R 125 (Fig. LE-5), Beam Spot 575, BSM-5, and COM Beam Spot BCM-5. The MTK-R125 is designed for handheld operation and can use both AC and DC power sources. Its high-bright reflector gives sufficient light volume in spite of low battery consumption, which is indicated by an attached volt meter. More than 45 min of lighting can be achieved with a 6-A h battery. The BSM-5 gives sharp beam light by means of a highly efficient parabolic reflector and an HMI-575 single-end lamp. If a flat light is necessary, this kit can exchange the front lens. An ultraviolet eliminating filter excludes the light of 350 nm, and relighting is carried out instantaneously without flicker.

Mobile Vehicles

BTS introduced the digital serial component (DSC) system 2002 for OB vans. Optimum flexibility in operation has been achieved using the Jupiter facilities control system together with a Venus router. System configurations can be stored and retrieved according to the task and the operating crew. Costly setup time is saved; the system configuration can be modified rapidly, even during a running production. Numerous advantages are achieved by computer-based system management when compared with conventional layouts. Even more flexibility can be provided by a split-screen display, allowing the presentation of several freely assignable signals on one monitor. System setup is performed via a central system setup control position and includes assignment of inputs and outputs, control functions, and monitors. Under-monitor displays show the current assignment of monitors for each individual setup. Tally information is routed according to the selected assignment. Other OB vans using the system can be connected to increase operating power while system setup is still performed from one central control position for all vehicles.

ZDF has put into service its first digital OB van, the ö1, used either for ZDF or 3sat productions. This is a 16.5-m, 34-ton truck with a "drawer" to extend the room for the staff. It is equipped

with six cameras, six digital VTRs, and 102 video monitors. The trailer is divided into five areas: a VTR room, an equipment room, a video engineering room, a vision control room, and a sound control room. The video technique, based on digital serial components, has the ability to produce either in 4:3 or 16:9 aspect ratio. Therefore the optical block of the two Ikegami HK 355 P ENG cameras and the four Ikegami HK 355 D studio cameras can be exchanged. Altogether there are three video mixers: one GVG 1000 (14 channels) located in the VTR room and another GVG 1000 (16 input channels) and the Sony DVS 8000 (24 input channels) video mixers in the vision control room. The VTR room contains all the facilities to produce a tape ready for transmission. To convert signals from analog to digital and vice versa, ten Snell & Wilcox Prism codecs are used. The sound control room is equipped with two audio tape machines (Studer A810), two audio tape recorders (Studer A721), a CD player, a DAT recorder, an optical disc recorder (Akai DD 1000), various effects devices, and a 40-channel standard Studer series 900 mixer.

Multimedia

Eastman Kodak Co. has introduced the Eastman Exchange, an on-line service for the entertainment industry. Easy-to-use GUI software provides powerful searching of panoramic location images from around the world. Locations can be viewed in various resolutions and contain associated logistical information. Messaging and bulletin board capabilities support communication needs.

Magni Systems, Inc., developed the RG-400 multimedia video reference generator, the first video test signal generator designed specifically for multimedia and desktop video applications. A reference overlay mode combines internally generated color bars with a video source, allowing quick check of levels and color fidelity. The RG-400 output is also switchable between test signals and a program video input, allowing test signals to be switched in and out of the video path without an external switcher.

New from Matrox Electronic Systems, Inc., is the Matrox Marvel II multipurpose video/audio controller. It features real-time MPEG audio and

video decoding, live video-in-a-window with high-quality scaling, video for Windows (AVI) capture and accelerated playback, analog and digital audio, a high-performance graphics accelerator, real-time frame capture, and a digital video expansion bus in a single PCI slot.

Strata, Inc., introduced the Studio Pro 1.5 comprehensive 3-D program. Developed for design and animation professionals, Studio Pro has a fully integrated 3-D environment including spline-based modeling, RayPainter rendering, and an event-based animation system. Special effects include explode, shatter, and atomize.

Receivers

Grundig introduced its first television set for PALplus, the M 82-169/9 PALplus model, equipped with an 8-cm Megatron tube with 16:9 side ratio (visible picture: 79 cm), flicker-free 100-Hz technology, and Dolby Surround Sound with Prologic. PALplus allows programs to be received in cinema format without annoying black bars and with the full number of lines (side ratio 16:9). By means of letterbox conversion and helper transmission in the black masking zones, the PALplus receiver recovers the 16:9 picture with the full number of lines (575 visible lines). Color encoding and decoding with the Colorplus process provides fault-free separation of brightness and color information, avoiding cross-color and cross-luminance problems. There are no more rainbow colors at high-frequency black/white transitions, and the bandwidth of the transmission channel is fully utilized.

An extensive range of satellite reception products has been launched by Grundig. The STC 850 head station is designed for stereo and two-channel reception. Each desired channel requires a channel cassette; the basic version of the STC 850 includes four stereo channel cassettes, and four further cassettes can be individually retrofitted. The satellite cassettes work in the frequency range from 910 to 2,050 MHz and receive the sound subcarrier (5 MHz to 9.99 MHz). They automatically distinguish between stereo, two-channel, and mono broadcasts. The conversion for feeding the signal into the antenna system takes place in the VHF band III frequency range (channels 5 to 12), includ-

ing the special channel range (channels S8 to S20). The STC 850 is suitable for adjacent channel operation. All reception parameters and the output channel can be set using the processor-controlled operating unit, and the output level of each channel can also be adjusted individually.

Grundig also introduced new antenna decoders and combination units. The frequency range of the ME 700 SAT for terrestrial reception covers 44.75 to 859.25 MHz in the VHF, VHF special channels, hyperband, and UHF bands. For satellite reception, the receiver works in the range of 950 to 2,050 MHz. The menu-driven operating unit allows direct input of frequencies and channels in the terrestrial and satellite ranges, and 200-channel memories are available. The picture can be visually assessed on the 6-in. monitor.

The ME 900 from Grundig is also designed for the 44.75 to 859.25-MHz band, with 200 channel memories available. Besides its menu-driven operation using soft keys, this unit also has an analyzer function. A cursor enables the user to read and compare frequency-related amplitude values from the range analyzer display directly on the 6-in. screen. A built-in clock and a videotext decoder are also included. Measurement logs required for documentation purposes can be created with the standard printer. The combination unit ME 900 SAT has a satellite section for the frequency range 950 to 2,050 MHz with LNC supply of 0, 14, or 18 V and an AC offset (200 Hz to 30 kHz) for switching relays. The frequency of the sound subcarrier can be selected from the 5.0 to 8.88-MHz range.

Extension options are available for Grundig's ME 900 and ME 700 (for terrestrial reception) and for the combination units ME 900 SAT and ME 700

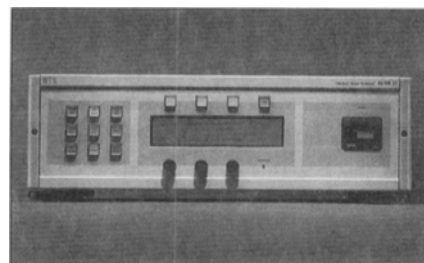


Figure SP-1. The MNR 11 median noise reducer from BTS.

SAT (terrestrial and satellite reception). These include a videotext decoder, RS 232 interface, polarizer control including 12-V connection, SAT baseband, bi-standard version (ME 700 and ME 700 SAT), NICAM decoder, and IEEE 488 interface (ME 900 and ME 900 SAT).

Signal Processing

The DSC 1110 SDV multistandard signal corrector from Avitel Electronics, Ltd., controls at component level; Y, Cb, Cr amplitudes; and Y gamma. H/V edge cropping, bypass, 50 memory sets, and gamut error warning complete the facilities.

BTS launched the MNR 11 median noise reducer (Fig. SP-1). The new noise reducer is the first one on the market to offer an additional filter for removing fixed longitudinal film, or "tram-line," scratches. A powerful digital wet gate for film applications is also featured. Used in such applications as film-to-tape transfers, MPEG coding, satellite links, tape-to-tape transfers, or wherever noise reduction is required, the MNR 11 solves such problems as scratches on film and distortions or dropouts; it also synchronizes video, converts between different formats, and enhances the contour or softens the picture.

Electrosonic, Ltd., released the

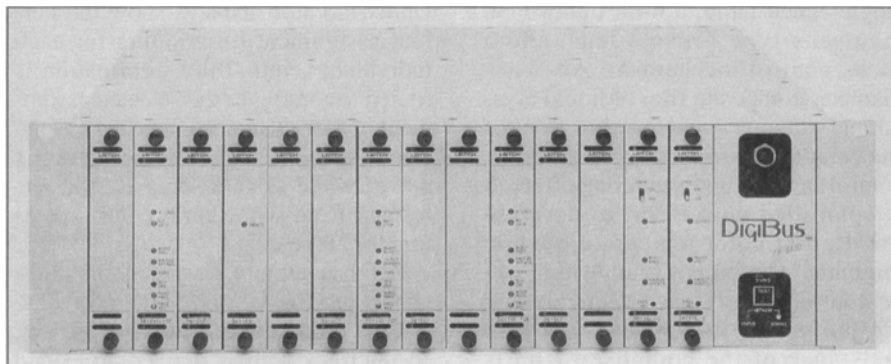


Figure SP-2. The DigiBus frame synchronizers from Leitch, Inc.

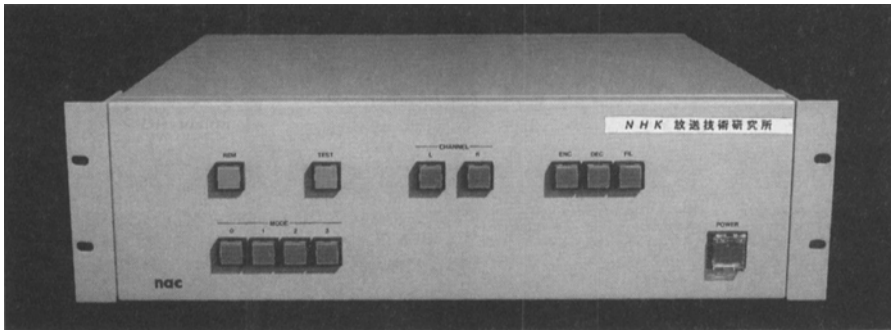


Figure SP-3. 3-D HD compression processor from NHK.

Imagestar Videowall Processor, which contains new features especially designed for permanent displays using rear-screen production systems. Imagestar incorporates the latest interpolation and digital comb filtering technology from Electrosonic.

Evertz Microsystems, Ltd., introduced the Model 8025 digital video keyer. The Model 8025 keys VITC into the digital video bit stream and accepts 525 or 625 component (4:2:2) or NTSC composite ($4 f_{sc}$) digital video signals. The basic unit has parallel in and out and 8 or 10-bit resolution. An optional serial input provides automatic cable equalization up to 200 m.

Intelvideo, Inc., developed the picture-quality restorer Model HQ, a digital processing system for video signals that eliminates most electrical impulse noise, drop-outs, and FM threshold noise. It also suppresses random noise and other interference by up to 9 dB. The device is ideal for the restoration of picture quality of video signals from old tapes or old films. It is also useful as a threshold extension system for microwave or satellite links.

The Grass Valley Group introduced the M9422 20-bit serial digital audio D/A and the M9136D multistandard serial digital D/A. These products will enable customers to meet the demands of multistandard and multiformat environments.

The DigiBus frame synchronizers (Fig. SP-2) are new from Leitch, Inc. The synchronizers can be equipped with NTSC, 4:2:2 (D-1), or $4 f_{sc}$ (D-2) outputs. They have the ability to process audio and video in the same frame, thus eliminating troublesome lip-sync problems. For systems equipped with audio and digital video outputs, the frame synchronizers can be configured to embed the delayed audio in the digital output video stream. A powerful remote control net-

work allows control of multiple synchronizer channels from a single panel.

NHK has developed the 3-D high-definition (HD) compression processor (Fig. SP-3) for the recording and reproduction of 3-D HD programs using a single HDTV digital VTR. The processor compresses two HDTV signals for the left and right eyes (two to one for each), converts them to a single HDTV signal, and records that signal to a single HDTV digital VTR. The processor expands this to two HDTV signals, consisting of the left and right, horizontally compressed HDTV signals. In addition, variable-speed reproduction of 3-D HD programs is possible for the first time.

Also new from NHK is an NTSC/HDTV upconverter that converts NTSC signals into high-quality HDTV signals (Fig. SP-4). Its built-in NTSC decoder with 3-D YC separation minimizes cross-color interference, and a conversion of the number of scanning lines by motion-adaptive processing produces high-quality HDTV output. Motion-adaptive 1-field interpolation is carried out for still pictures and during scene changes, enabling natural conversion from NTSC 59.94-MHz signals into HDTV 60-MHz signals. The aspect ratio can also be changed to various sizes, and an NTSC image can be

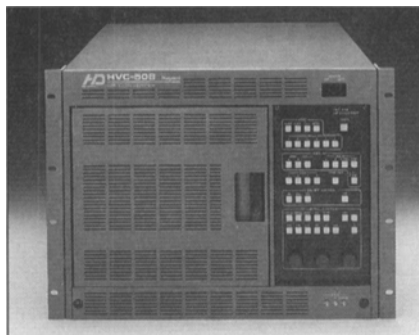


Figure SP-4. The new NTSC/HDTV upconverter from NHK.

inserted anywhere in an HDTV picture. Further, the image enhancer built into the converter performs picture-quality compensation by varying boost frequencies.

Vistek Electronics, Ltd., delivered the V4228 digital Varicomb decoder. The V4228 decodes analog NTSC and PAL and digital D-2 and D-3 to component digital (D-1) and analog (Y, R-Y, B-Y, and RGB) formats. The decoding is performed using Vistek's proprietary Varicomb adaptive 2-D algorithm, giving freedom from cross-color and cross-luminance artifacts. A 3-D frame comb is available as an option.

Also new from Vistek Electronics, Ltd., is the Telcor TV345 digital compression codec. The TV345 meets the requirements of the ETS 300 174 specification for digital compression codecs. Advanced subpixel motion estimation is used for maximum signal integrity for television network contribution and distribution. High-performance interfaces give flexibility in both video and audio interfacing. The compression meets ITU-R Rec. 723 and 724 requirements.

Software

Autodesk, Inc., has introduced the 3-D Studio Release 4 (Fig. S-1), a 3-D visualization and animation software for 386/486 and Pentium-based personal computers. This software can be used for creating photo-realistic 3-D images and animation for professional applications, including broadcast animation, industrial design visualization, accident reenactments, architectural walk-throughs, education, and training. The Studio Release 4 software is a complete "studio" for creating 3-D graphics on the PC.

According to Broadcast Video, Inc., Discreet Logic has released The Flame, a new software package that combines an edit suite with high-end graphics in one system. The Flame runs on a Silicon Graphics superstation and offers precision digital keying, integrated compositing, professional performance paint, color correction, full-feature editing, optical effects, 3-D visual effects, and accelerated image processing.

Clark & Associates, Ltd., introduced the Novell Network time code synchronization package, which locks a file server's clock to SMPTE (25 or 30

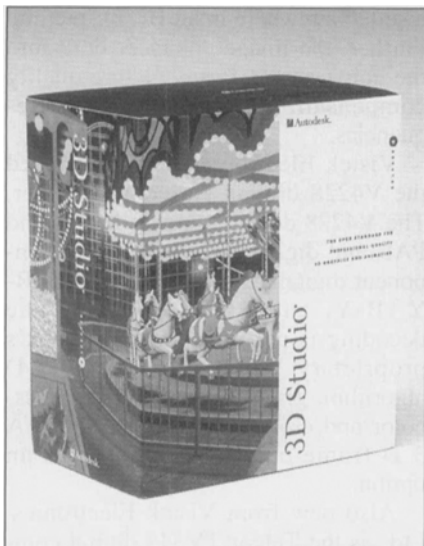


Figure S-1. The 3-D Studio Release 4 from Autodesk, Inc.

frames/sec) or IRIG-B(1) time code as read by a TCR-200 reader card. The package is available as an NLM that runs in the file server or as a DOS/Windows program that runs in a supervisor workstation.

Electrosonic, Ltd., released the latest version of its C-Through + Plus, its computer program for the control of videowall display. Offered is a selection of 11 color VGA programming pages that provide control of every aspect of show presentation. Other features include auto-configuration of the PICBLOC processor; control commands from COM port, PC, or laptop; clear, easy-to-read color VGA graphic page displays; powerful control of videowall effects, video source equipment, and all display setup operations; totally integrated, frame-accurate control of all videowall and auxiliary show activities; comprehensive on-screen show pre-

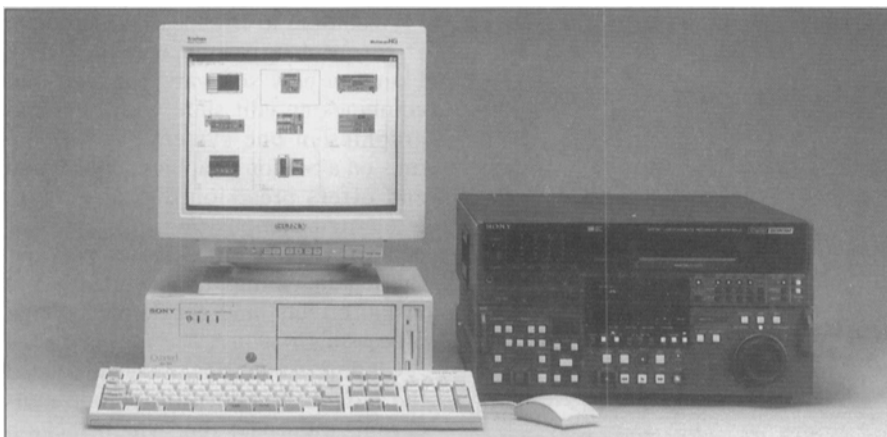


Figure S-2. Interactive status report software ISR BZI-500 J from Sony Corp.

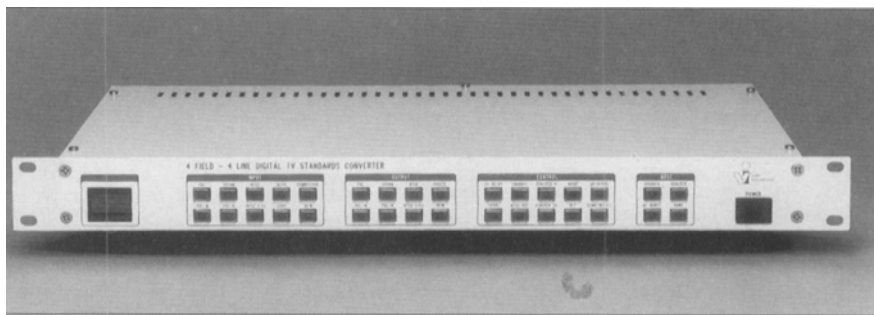


Figure SC-1. The DTC 1600P5 standards converter from Video International Development.

view and program output references; and fast, icon-driven show program and editing facilities.

Sony Corp. announced the ISR BZI-500 J, a new interactive status reporting software, ISR BZI-500 J (Fig. S-2), designed for simplified maintenance of complicated audio and video equipment systems installed at broadcast station or production studios. The software program enables simultaneous monitoring on a display of up to eight pieces of equipment by means of a personal computer and the RS 232 C interface. The operation of BZI-500 J is managed by a mouse. An error or warning concerning a piece of equipment is indicated by turning an icon off and on automatically. The communication protocol between ISR software and each device is the same as that proposed by the SMPTE Standards Committee.

VidCAD, introduced by VDP, Inc., is a communications system design and documentation software for engineers. VidCAD enables the user to make important decisions quickly and accurately without typing or drafting. The software links drawings of cables, equipment, and jacks with engineering data bases to increase productivity.

Standards Converters

Central Dynamics' Universal video serializer facilitates parallel-to-serial conversion with one model able to accommodate all standards — 4:2:2 (4:3 or 16:9) or 4 f_{sc} (525 or 625). This compact design attaches directly onto the back of any equipment; has automatic equalization for cable lengths up to 1,000 ft/300 m; and operates with 8, 9, and 10-bit resolution. The Universal video deserializer, which accomplishes serial-to-parallel conversion, offers the same features.

Also new from Central Dynamics is the Navagus 1500 D-1 to NTSC/PAL encoder, which has automatic NTSC/PAL selection; 1,000-ft/300-m automatic cable equalization; 10-bit D/A conversion; and 2X oversampling. It is offered as a single standalone unit or in a compact rack mount (8 units in a 1-RU frame). The Navagus has one serial 4:2:2 input; available outputs include two serial 4:2:2 (fully regenerated/reclocked), one composite (NTSC/PAL) or C (modulated S/C), and one Y (luminance with sync).

Video International Development, Inc., introduced the DTC 1600, a one-way digital television broadcast standard converter with motion-adaptive 4-field/4-line interpolation. With a choice of four input and output standards, this 19-in. rack/40-W unit provides a way to convert preprocessed signals with SMPTE/EBU standard processing in satellite and cable applications.

Video International Development, Inc., also introduced the DTC 1600P5 (Fig. SC-1), a bi-directional digital television broadcast standards converter with motion-adaptive 4-field/4-line interpolation. With all broadcast standards, this 19-in. rack/40-W unit features noise reduction, component interface, and optional D-1 serial interface with SMPTE/EBU standard processing.

Still Stores

NHK has installed the center-video information processing system (C-VIPS), a still-picture system using 3.5-in. magneto-optical (MO) disks. Still pictures are recorded on MO disks, together with data for sequential transmission. The producer checks the contents and changes the sequence, if necessary, by an editing device in his office. The only operation in the studio is to set the disk on the playback device. The top picture is read out and displayed on the NEXT screen within 0.5 sec, which is selected for broadcasting by pushing TAKE. A studio editing device similar to the one in the producer's office is connected to the playback device. The operator of either device can rearrange the sequence of any of nine pictures displayed simultaneously. This random selection can also be performed on-air. The time to be set for scrolling is shown digitally and can be adjusted from the panel. Pictures can be transmitted from the recording room's editing device to the studio editing device through Ethernet.

Support Equipment

Cartoni USA introduced the Delta fluid head. Capable of holding up to 42 lb, the head is ideal for dockable camcorders with large battery packs and fully-rigged EFP cameras. In addition to the illuminated bubble level, the Delta offers two easy-to-read LED displays that indicate precise counterbalance and tilt drag values even in night exteriors or on darkened sets.

Cinema Products Corp. developed the Master Series (Fig. SE-1), a new design of the classic Steadicam. It features a high-intensity widescreen monitor; a 5-A h, 12-V battery with fuel gauge indicators; high-efficiency 12 to 24-V converter; a motorized stage with wireless control from hand grip; and a precision-aligned gimbal with micronic vertical adjustment. The newly-designed vest provides a full range of adjustments with quick-acting snap latches. The new arm is easily adjustable when mounted, providing iso-elastic support over a range of camera weights from 15 to 45 lb.

The Miller Series II ENG/EFP tripods from Miller Fluid Heads feature the Pro-Lok torque-limited leg clamp that provides a self-adjusting single-turn clamp and release acting for quick setup in the field. There are



Figure SE-1. The Master Series from Cinema Products Corp.

three models available in the series: the Lightweight, the Single-Stage, and the Two-Stage.

Also new from Miller Fluid Heads is the Miller Pro-Jib, a lightweight and versatile camera jib for location and studio use. Pro-Jib provides a cost-effective means of enhancing the shot selection of camera operators by adding tracking and elevation to the traditional actions of pan and tilt. The device extends to nearly 6 ft from its

support pivot, yet folds down to about 4 ft for easy transportation.

Switchers

Abekas Video Systems, Inc., introduced the ASWR8100 component digital switcher, which offers 10-bit CCIR-601 processing, 4:4:4 chroma keying, and an easier to use operator interface. The 8100 features full control over keyframe-based effects and time lines for flawless, repeatable, and adjustable effects. The 8100 can be configured to accept a variety of input formats; up to 16 inputs are possible, in any combination of serial digital, parallel digital, component analog, RGB, or YUV. Three keys are standard and can operate in 4:2:2 or 4:4:4 chroma bandwidths.

BTS released the Saturn multiformat, multichannel master control switcher (Fig. SW-1). For multiformat operations, digital or analog video is combined with up to six channels of digital or analog audio to create a single program stream. For multichannel operations, up to 15 independent program streams can be controlled from a single control panel.

Central Dynamics has developed a new Sahara 16X series of expandable, 16 x 16 switchers for serial digital video, analog wideband video, and analog audio applications. These 1-RU routers operate with a powerful and adaptive software-based control system. The standard control system features virtual matrix mapping, 50 salvos, 50-group switching, locks, nine-sequence switching, panel formats, panel on-line diagnostics, defin-

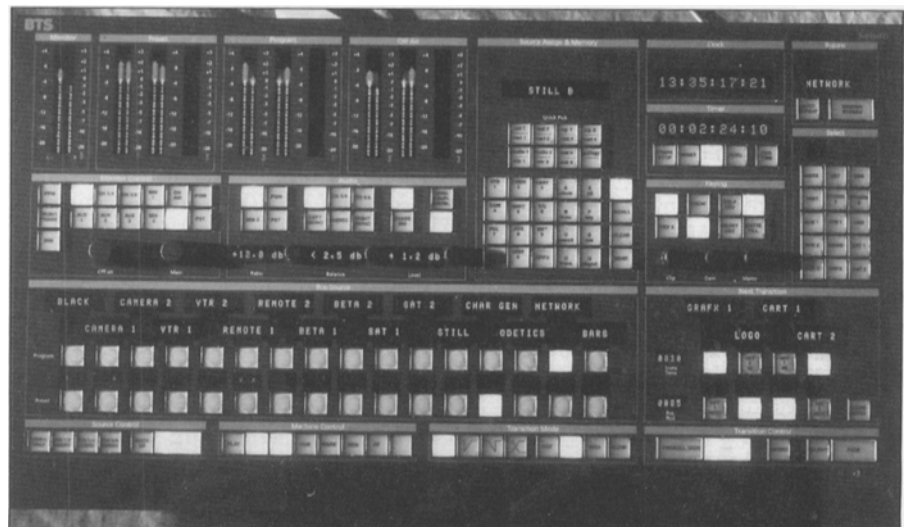


Figure SW-1. The Saturn master control switcher from BTS.

able defaults, screen displays, and disk backup.

The Utah-300 from Dynatech Video Group is a format-friendly routing system, featuring "smart architecture" enhancements designed for efficiency and maintenance-free operations in a medium to large routing switcher. The Utah 300 handles analog composite, analog component video (PAL or NTSC), digital composite video, digital component video (525, 625, or ATV), analog audio, and digital AES/EBU audio. The controller system has optionally redundant control cards and supplies, high-speed matrix bus for fast control path, and backwards-compatible control support for existing Utah systems. Other features include analog and digital signals in the same frame for efficient upgrading from analog to digital, analog audio swap-sum modules for optional audio control in various applications, and dynamic digital video signal relocking on the output modules for optimal signal performance.

The Grass Valley Group has introduced the Model 1200 component digital switcher, which features high-end capability including auto-setup, Chromatte chroma-key, and integrated disk for storage of effects and setup. The control panel reflects the latest in user interface development with fast access to all functions and control via a unique configuration screen.

Also new from the Grass Valley Group is the Model 2200 component digital switcher. The Model 2200 is a midrange switcher that has the power and sophistication of the Model 4000. It features two M/Es as well as a two-channel version of GVG's newest DVE, Krystal. Processing in the Model 2200 is 10-bit component and keying is through GVG's Chromatte chroma-key system, which is also featured on Grass Valley's high-end switchers.

Pro-Bel, Ltd., introduced the TX-220 digital master control switcher. Providing component 10-bit video mixing and AES/EBU audio processing, the TX-220 is intended for broadcast, cable, and satellite applications. The switcher has built-in machine control facilities as well as comprehensive audio processing and monitoring.

Telecine

The Ursa Gold digital telecine from Broadcast Video, Inc., features da

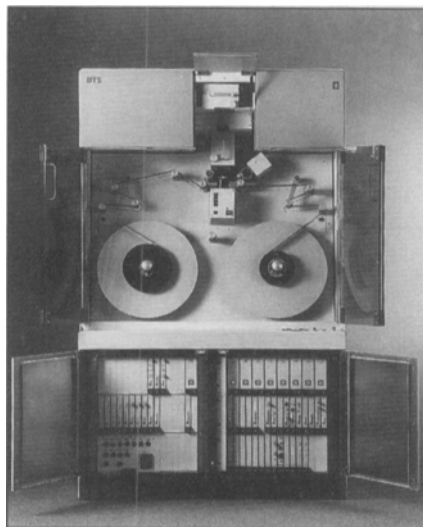


Figure T-1. The FDL Quadra CCD telecine from BTS.

Vinci renaissance 8:8:8 color corrector, kilovector secondary color correction, variable speeds of 5 to 30 frames/sec, "silk scan" smooth pans, Power Windows special effects, "jump free" steady film, and Digital Vision's 4:4:4 noise reduction with scratch remover.

The FLH 1000 telecine, a joint development of BTS and Eastman Kodak Co. for post-production and transfer, has been designed to meet future requirements. The FLH 1000 features sharp, clean, and natural pictures and direct access picture manipulations. The development incorporates the experience of Kodak in CCD sensor technology and colorimetry and that of BTS in film handling and digital video processing. This results in a CCD telecine designed to translate all the subtle qualities of the film into a digital high-resolution signal without destroying the mystique of the film look, regardless of the lighting situation.

BTS has also launched the FDL Quadra (Fig. T-1). The new telecine's design criteria are specifically oriented to faithful reproduction of colors and negative film material, as well as high resolution and steadiness of picture. Transfer systems for feature films, serials, documentaries, and rushes can be put together with the use of the internal post store processing and audio scanning kit. In conjunction with a remote control panel or a telecine controller programmer, it provides a cost-effective way of achieving high-quality results, in such varied formats as 4:3, 16:9, PanScan, or in different film stocks, such as positive, negative, or intermediate.

Test and Measuring Equipment

Advanced Audio Video Systems introduced the DSA 309 digital signal analyzer. The DSA 309 has a user-friendly, graphic, touch-screen interface and menu system. It tests composite and component serial digital video signals in both 525 and 625-line formats. It performs real-time, continuous, on-line monitoring of all key parameters including serial jitter, color levels, EDH errors, signal amplitude, TRS errors, and others.

Asahi National Broadcasting Co., Ltd., has developed measuring devices for audio signal delay that occurs during TV standard conversion, digital signal processing, and frame synchronization. The new method is based on the detection of scene change at a variation of the video signal. A test signal is multiplexed with the audio signal at the time of detection in order to measure its delay time; this differs from the former method in that a test signal is inserted in a blanking period. The VTR tape on which the signal is recorded is also used for transmission thus reducing the cost of the system.

The Fluke Corp. developed the PM5410 Series of television signal generators (Fig. TME-1), which provide cost-efficient integrated tests for TV, VCR, and video products. RF coverage is from 32 to 900 MHz, with over 100 test patterns for NTSC, PAL, and SECAM in 4:3 and 16:9 format. Options include NICAM, BTSC, PDC-NPS, CC, Teletext, and GPIB programmability.

Hoei Sangyo Co., Ltd., announced its new 2-D animation system, Retas! Pro (Fig. TME-2). This is the first computerized cel-animation production utilizing Macintosh software; "Trace Man"

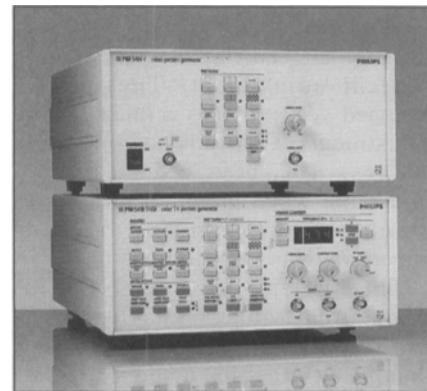


Figure TME-1. Fluke Corp.'s PM5410 Series of television signal generators.

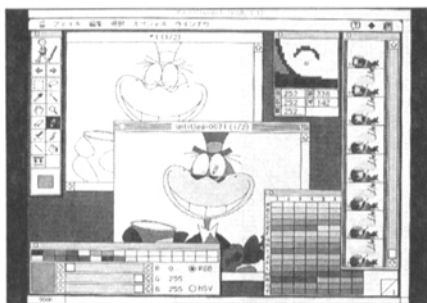


Figure TME-2. Animation system Retas Pro from Hwei Sangyo.

renders not only the background picture but also hand-draws a moving one, "Paint Man" colors and composes the picture, and "Core Retas" composes and controls the time sheet and recording. The computers on which the software is installed form a network that assists the production system. The trimming process can be done interactively although it carries out high-speed prescanning. Up to eight colors of lined pictures are stored at the same time on different planes.

The Model 5212 from Leader Instruments Corp. (Fig. TME-3) is a three-channel vectorscope that handles NTSC and PAL signals. It can overlay the vectors of three signals plus an external reference. Other features include high-resolution DG and DP measurements, X-Y monitoring for stereo, line-select control from Model 5222 waveform monitor, and storage/recall of ten instrument setups.

Leader Instruments Corp. also introduced the Model 5222 (Fig. TME-4), an eight-channel waveform monitor that operates in NTSC, PAL, and SECAM systems. Composite and component signals are accommodated, and operating features include picture display, interchannel timing tests, line select with 525/60 and 525/50 notation, 0.5% cursor measurements, remote control, and storage/recall of ten test setups.

The Model 5836A surround-sound monitor from Leader Instruments Corp. (Fig. TME-5) displays a 2-D sound image for 4 and 5-channel surround-sound, with level indicators for each channel. Other displays include stereo phase-plus level and up to six Lissajous patterns to show relative phase between signal pairs. The unit handles AES/EBU digital signals as well as balanced/unbalanced feeds.

New from Leitch, Inc., is the VTG-6800 4:2:2 serial test generator, a com-



Figure TME-3. Model 5212 vectorscope from Leader Instruments Corp.

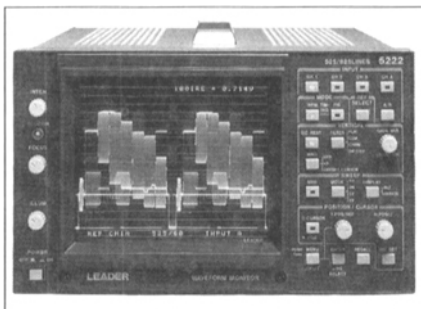


Figure TME-4. Model 5222 waveform monitor from Leader Instruments Corp.

plete 4:2:2 serial test generator on a DA-sized card. The VTG includes a selection of 32 test signals, EDH encoding, and four channels of embedded audio tones. It supports both 270 Mbit/sec and 360 Mbit/sec operation, making it ideal for applications involving standard 4:3 or 16:9 aspect ratio component digital systems. The compact card fits into any Leitch 6800 or 7000 Series serial DA frame. Control may be affected from the card edge or from an optional control panel.

Magni Systems, Inc., released the VIT-700 VITS inserter. With this inserter, the user is offered the choice between FCC or NTC7 VITS sets. Both sets include the ghost canceling reference (GCR) signal developed by Philips. Other features of the VIT-700 include a full-field insertion mode in which color bars are inserted as a full-field signal for continuity checking.

The TSG-700 test signal generator from Magni Systems, Inc., offers 12 precision video test signals and is fully genlockable. It also has both NTSC and Y/C video outputs and can be used as the main test generator for teleproduction, broadcast stations, and cable television facilities. A 1-kHz stereo audio test tone output is also included.

Magni Systems, Inc.'s WVM-710 automated video signal monitor is a rasterizing waveform monitor and vec-

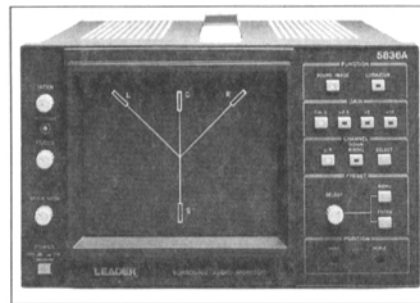


Figure TME-5. Leader Instruments Corp.'s Model 5836A monitor.

torscope with auto-measure capability. Two separate automated measurement sets are available for studio and RF transmission applications. The transmission measurement set includes SNR, differential gain and phase, chroma gain and delay, and pulse-to-bar ratio. Logbook, an optional Windows-based software, provides a PC-WVM RS 232 interface for remote monitoring and signal performance documentation.

The new VCA digital video component analyzer (Fig. TME-6) from Rohde & Schwarz provides innovative and comprehensive measurement facilities for operation, servicing, and development of digital studio equipment. VCA is the first purely digital waveform monitor and analyzer in one unit to detect errors in signal transmission and interference sources, indicate bit errors, and check the sync frame. In addition, VCA monitors camera signals, signal generation, and signal distribution in the studio, and ensures maximum accuracy in carrying out measurements on digital studio equipment. It is provided with a parallel and a serial input/output as well as with the SCOPE (waveform monitor), data frame analyzer, and data contents analyzer functions, which enable it to monitor the digital video signal at all transfer points of a TV studio. In addition to the waveform mode that allows the digital video signal to be displayed, VCA offers the numeric dump function, permitting the video signal to be shown at the bit level. Errors specific to digital signals can thus be detected without any problems. The built-in RS 232/422 interface allows the VCA to be remote-controlled and integrated into any existing monitoring system. All measurement results are displayed on the instrument's large screen.

The VSA video measurement system (Fig. TME-7), also presented by Rohde

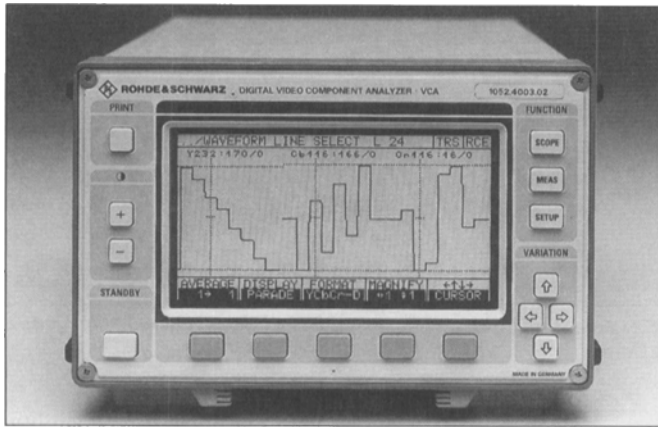


Figure TME-6. The new VCA digital video component analyzer from Rohde & Schwarz.

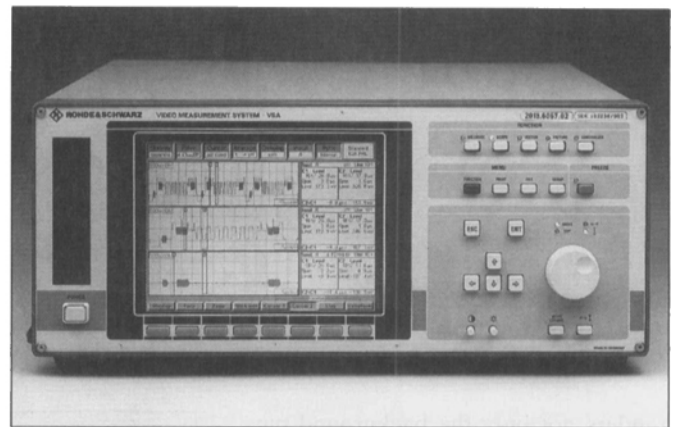


Figure TME-7. The VSA video measurement system from Rohde & Schwarz.

& Schwarz, provides digital TV measurements for current and future use. It combines the functions of a video analyzer, vectorscope, oscilloscope, monitor, and process controller in a single unit, thus covering a wide field of applications. With the system controller integrated in the VSA, automatic measurement and monitoring systems for TV transmitters or cable networks can be implemented with extremely high efficiency. No external controller is required for system control. The built-in hard disk allows a very large number of measurement results and graphics to be stored for later evaluation. VSA can perform up to five complete measurement cycles per second with a built-in multiprocessor system, which provides fully digital signal processing with high measurement accuracy and controls all system interfaces. The video and FFT analyzer of the VSA calculates up to 150 different signal parameters from the input signal applied and provides automatic limit monitoring with the aid of two independent sets of limit values.

The new SFM TV test transmitter from Rohde & Schwarz supplies visual and sound signals in compliance with all normal television standards for the IF range from 32 to 46 MHz and the RF range from 5 to 1,000 MHz. The SFM combines modulator and transposer in a single unit based on a completely new modular concept. With the aid of various plug-ins it can be individually configured to meet the specific requirements of the user. All plug-ins of the SFM are controlled by an ultramodern internal processor system. TV receivers, video recorders, TV transposers, and their modules can be operated with the TV test transmitter

and checked for EMI emissions. All information is displayed on a large-size graphics LCD. For integration into automated production systems the SFM is fitted with an IEC/IEEE-bus interface complying with the SCPI standard, as well as with an RS 232 C interface. The use of a PCMCIA memory card allows convenient storage of instrument configurations. Software updates can be implemented via the serial interface or the memory card interface.

The RFM90 SignalMini handheld signal level meter from Tektronix, Inc., is tailored to meet the requirements of fundamental cable TV installation applications. This instrument includes a 49 to 861-MHz frequency range and up to 64 user-definable frequency programs, as well as a host of key features including worldwide compatibility options, in-service carrier-to-noise measurement, and multiformat compatibility.

Tektronix's RFM150 SignalScout signal level meter (Fig. TME-8) is designed to meet the requirements of cable television applications. The SignalScout has a 5-MHz to 1-GHz frequency range and maintains signal accuracy of ± 1 dB over temperatures ranging from 0 to 50° C. The SignalScout measures in-service carrier-to-noise and hum, the frequency spectrum of a channel, and FM deviation.

The SDA601 handheld serial digital analyzer from Tektronix, Inc. (Fig. TME-9), analyzes the digital video signals for data errors and the presence and status of ancillary data, performing four categories of analysis: video format, data format, transport layer, and video content.

Tektronix introduced the TPG20 test



Figure TME-8. The RFM150 SignalScout signal level meter from Tektronix, Inc.

pattern generator, which is a multiformat test signal, pattern, and picture generator that supports non-HDTV analog and digital component and composite video formats. The instrument's analog, parallel, and serial digital outputs eliminate the need for external format conversion devices. Additionally, the TPG20 has the ability to generate complex frame-length patterns and reference pictures with movement on selected areas.

Also from Tektronix is the TSG95, a handheld PAL/NTSC dual-standard signal generator designed for use in installation and maintenance of analog composite video systems. The generator supports PAL, NTSC, and Japanese NTSC operating standards. The TSG95 also features stereo audio outputs with L/R identification and video character ID for circuit identification.

The TSG601 handheld serial component generator (Fig. TME-9) from Tektronix provides a complement of 16 test signals selected for their utility in installation and maintenance applications. The generator provides serial digital interface checkfield test signals

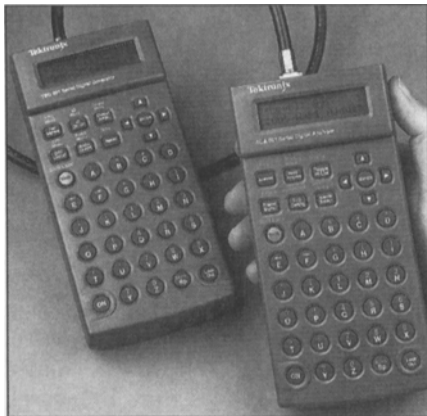


Figure TME-9. The TSG601 serial component generator (L) and the SDA601 serial digital analyzer from Tektronix, Inc.



Figure TME-10. The WFM90 waveform/vector/audio monitor from Tektronix.

that stress receiver clock recovery and phase lock loop circuitry. Additionally, data signal launch amplitude may be varied over the SMPTE specification range.

The TV110 CableScout from Tektronix is a metallic time domain reflectometer optimized for testing coaxial cable used by cable TV operators. It features CATV-specific software and settings for cable type, waveforms, and pulsewidths. Highly automated, the CableScout also has a dedicated 75- Ω front-panel F connector.

Tektronix also developed the WFM90/91 handheld waveform/vector/picture/audio monitor. The WFM90 (Fig. TME-10) is a waveform/vector/audio monitor with a color picture display, designed for audio and NTSC video monitoring in field production

applications. The WFM91 is for PAL applications. Both instruments combine the capabilities of four products — TFT color picture monitor; waveform monitor with 1H, 2H, 2F, and magnified displays; composite vectorscope with 5X magnification; and voltage-versus-time audio monitor — into one palmtop unit.

The WFM601i is a serial component monitor developed by Tektronix. The WFM601i extends the error-checking capabilities of the WFM601 and adds an eye pattern display for evaluating transmission path integrity. The WFM601i's strength is monitoring the serial digital component signal for data, format, and transmission errors to SMPTE RP 165 standards, and then reporting detected errors on both a status screen and a format screen.

The 2715 cable television spectrum analyzer from Tektronix, Inc., delivers automated in-service radio frequency (RF) measurements, enabling engineers and technicians to take accurate measurements while minimizing the time test channels that must be removed from service. In-service tests include carrier-to-noise, composite second order (CSO) distortion, and in-channel frequency response.

Time Code Readers and Generators

Clark & Associates, Ltd., has developed time code reader cards for personal computers that read SMPTE (25 or 30 frames/sec) or IRIG-B. The cards lock PC clocks to TC; an optional generator generates TC locked to PC clock. Cards are compatible with UNIX, OS-2, and other operating systems. Eight and 16-bit models are available.

Evertz Microsystems, Ltd., introduced the Model 5010 linear time code generator, reader, and character inserter. The dual-standard device (NTSC and PAL) generates time code in accordance with SMPTE 12M-1992 and reads LTC from 1/30 to 7X play speed. Other features include a built-in character inserter with high-resolution characters and on-screen programming menu and multiple jam-sync modes. Time and user bits can be preset from the front panel.

Also new from Evertz Microsystems, Ltd., is the Model 5010-VITC LTC and VITC time code generator, reader, and character inserter. The generator is

dual-standard (NTSC and PAL) and reads LTC from 1/30 to 7X play speed and VITC over the full shuttle range of most VTRs. There is a built-in character inserter with high-resolution characters and on-screen programming menu, and the generator can translate LTC to VITC or VITC to LTC.

The Model 5950 is a VITC and LTC time code generator, reader, and character inserter from Evertz Microsystems, Ltd. The generator is dual standard (NTSC and PAL) with a built-in character inserter with high-resolution characters, an on-screen programming menu, a full-speed VITC reader with line select, and an LTC reshaper/regenerator. The device reads LTC from 1/30th play.

Transmission/Distribution Systems

New from the Grass Valley Group is the J Series multichannel DS-3 codec. It features JPEG compression and a modular packaging design that provides users with the ability to design and reconfigure a system quickly and economically. The product is ideally suited for entertainment, video conferencing, security, or surveillance.

The Grass Valley Group also introduced the DVC 2.0 T1/E1 codec for applications such as video conferencing, telemedicine, and Interactive Distance Learning (IDL). The DVC 2.0 can also transmit over sub-T1/E1 rates such as ISDN, switched 56, and fractional T1.

The MCF multichannel fiber-optic transmission system from the Grass Valley Group is capable of transmitting 6 broadcast-quality 10-bit video channels and 24 channels of 18-bit audio over a single fiber.

The HP broadcast video server from Hewlett-Packard Co. is a disk-based delivery system intended for advertising management for broadcast stations. It stores between 6 and 51 hours of material and is designed with hot-standby power supplies, software redundancy, and an optional 6-hour buffer. It uses MPEG-1 compression at 15 Mbits/sec.

NTL (formerly National Transcommunications, Ltd.) developed the NTL 4000, a complete end-to-end MPEG-2 multichannel digital television system fully compliant with European DVB standards. Up to 18 channels can be accommodated within each system, all

individually configurable from a single-control computer. Bit rates are adjustable between 1 and 15 Mbit/sec. The maximum multiplexed output rate is 45 Mbit/sec.

NHK has developed an encoder and decoder for transmitting four multiplexed audio channels to the 10B1C serial digital interface unit (per ITU-R Rec. 656). This allows transmission and demodulation of multiplexed audio inputs in AES/EBU format in the ancillary space provided in 10B1C serial format, developed for in-house video signal transmission. (The multiplexing system is based on SMPTE 272M ratings currently under consideration.) Because this enables a single coaxial cable to carry a composite video channel and four audio channels simultaneously, it could lead to the construction of a compact total digital system in the near future. Major functions and features include multiplexing of two audio inputs in AES/EBU format (resulting in four audio channels) on the D-2 parallel signal input; transmission and demodulation of ID signals for identifying studio name, VTR number, etc.; uninterrupted transmission of audio signals in the absence of a video input by generating the inner clock signal from the AES/EBU audio signal and outputting the 10B1C serial signal; detection of rises in the internal temperature due to power outage or failure of cooling fans, and the generation of an alarm when detection occurs; and an 1.8-msec time delay of the audio signal to the video signal.

NHK has also developed a new type of 10-kW MF transmitter using hybrid modulation, which can produce AM waves directly from digitized audio signals by combining the outputs of switching-type RF power modules and an analog-type RF power module. The transmitter is composed of three 5-kW transmitters; two are operated in parallel and one is for stand-by. The 5-kW transmitter consists of 15 switching-type RF power modules with an output power of 750 W; an analog-type RF power module (750 W); an exciter/control module, including a 14-bit A/D and D/A converter that reconverts digital information (low-order 10 bits) back to analog signals to modulate the analog-type RF power module with carrier PWM techniques; a combiner, a band pass filter, etc.

A prototype 6-MHz bandwidth AW-CDM modulator, which has been con-

structed to investigate some features of the technique, is new from NHK. In the modulator, three layers of hierarchical video and audio signals (layer I: 0.4 Mbits/sec, layer II: 1.4 Mbits/sec, and layer III: 6 Mbits/sec) are divided into orthogonal spread-spectrum subchannels and multiplexed. Each layer is weighted by its power to have a different priority and therefore a different threshold depending on its conspicuousness. Indoor transmission tests proved layers I, II, and III to be retrievable when carrier-to-interference (noise and echoes) ratio (CIR) = 0 dB, 8.3 dB, and 13.2 dB, respectively.

NHK has developed a Ku-band portable digital satellite news gathering (SNG) RF terminal using a flat antenna. This portable terminal uses 16 planar microstrip subarray antennas, each with a solid-state power amplifier (SSPA) and a phase shifter. The flat antenna is the low sidelobe microstrip array that can satisfy the design objectives specified by ITU-R Rec. 580. Phase control of the 16 subarrays ensures that the antenna beam is always directed towards the target satellite regardless of slight unexpected antenna movements. Antenna direction error at the initial setting is tolerated to some extent, enabling rapid deployment and activation. The size of the flat antenna is 60 cm x 60 cm. The SSPAs have an output power of 37 dBm (SW) at 1-dB gain compression point and efficiency of 21%. The uplink EIRP of the system is 54 dBW and the overall carrier-to-noise ratio (CNR) is 13.8 dB. The modulation scheme is a QPSK and a transmission rate is about 18 Mbits/sec.

Nippon Television Network Corp. and LSI Japan Co., Ltd., have jointly developed effective multiplexed audio and video transmitting and receiving equipment using digitalization and compression. To maintain high picture quality during outdoor broadcasting, the sound signal is transmitted by an 800-MHz microwave channel. The application of digitalizing and teletext engineering enables an audio channel in transmission and reception equipment to be provided with a high-quality video signal. In audio signal digitalization, a common unit that compresses a bandwidth of 8.2 kHz audio signal to 64 kbits/sec is applied. This digitalized audio signal is multiplexed and inserted on the video seven vertical blankings of 12 to 18 H.

New from Pro-Bel, Ltd., is the 6830 remote video equalizer. Compatible with Pro-Bel's existing wide range of 6063-based Eurocards, the 6830 provides local or remote control of video signal gain, bar corner, chrominance/luminance relative gain and delay, 2T pulse amplitude, and 2T pulse/lobe symmetry.

Synergistic Technologies, Inc., introduced the TDRS-4 spacecraft. Located at 41° west longitude, the TDRS-4 can provide digital compressed audio transmission services from Pittsburgh to points in Europe and North America. A variety of bit rates and formats can be supported.

Tektronix, Inc., developed the SPG422 component digital sync generator. The SPG422 is designed to integrate digital islands into an analog facility or provide master sync generation in an all-digital facility. Operable in both standard or dual modes, the SPG422 provides up to six independently timeable analog black burst outputs, full-time serial digital bars and black outputs, and clock-locked AES/EBU digital audio outputs.

Tektronix created the ECO422 digital sync changeover unit as a companion product to the SPG422. The ECO422 changeover unit automatically selects a backup sync source in the event a primary sync source fails. The ECO422 has 11 user-configurable channels, each consisting of primary and backup inputs and an output. Additionally, each channel is capable of handling serial digital video, AES/EBU digital audio, and analog black burst.

Video Cameras

The new LDK 10 studio camera and its lightweight portable companion, the LDK 10P (Fig. VC-1) have been developed by BTS. Dynamic pixels management (DPM) CCD sensors eliminate the need to switch aspect ratios by changing optical blocks manually or using digital video effects boxes to accomplish the same task. DPM also establishes a 1,000-pixel standard in both 4:3 and 16:9 formats for crisp film-like images and ensures no change in the angle of view when switching between aspect ratios. The LDK 10 and LDK 10P both have extensive built-in, continuous automatic features such as black levels, black shading, and video levels, without the



Figure VC-1. The new LDK 10P lightweight portable camera from BTS.

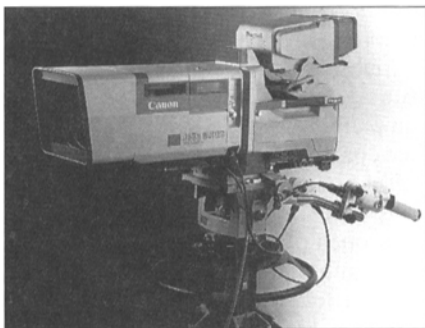


Figure VC-2. The HK-366 CCD camera system from Ikegami Electronics.

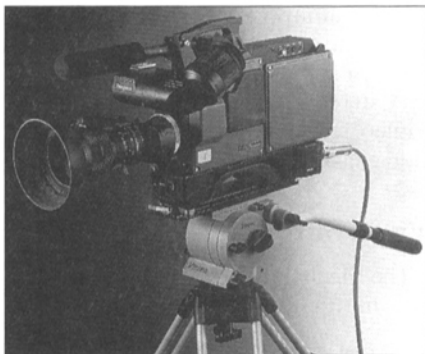


Figure VC-3. Ikegami's HK-366P portable camera system.

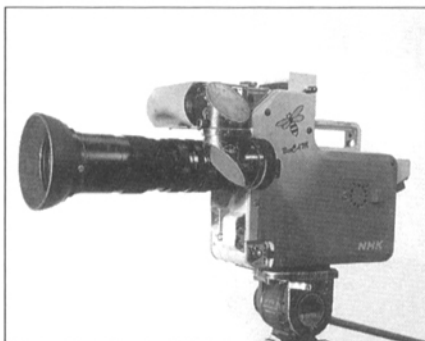


Figure VC-4. The new "Bee-Cam" from NHK.

need for operator intervention. The lens interface on both cameras is the international 2/3-in. standard.

New from Ikegami Electronics (USA), Inc., is the HK-366 wideband studio/field CCD camera system (Fig. VC-2). The camera achieves a horizontal resolution of 800 lines (y-ch), an SNR of 62 dB, and a sensitivity of $f/8$. When an optional intermediate frequency unit is added, the base station can provide a composite serial digital signal (143 Mbit/sec) or a component serial digital signal (270 Mbit/sec) that allows the HK-366 to be interfaced with a variety of digital systems. Exceptional image quality is achieved with 450,000-pixel, 2/3-in. FIT CCDs. Cable runs up to 2,400 m are handled with a new long-range triax system. The HK-366 and its portable companion, the HK-366P (Fig. VC-3), are readily upgradable to a 16:9 aspect ratio.

NHK has developed the "Bee-Cam," a three-tube color camera (Fig. VC-4) to display the wavelength range of the color vision of the honeybee and other insects. Unlike human eyes, their eyes are sensitive to the range from ultraviolet to yellow. A three-wavelength beam-splitter made of quartz with high transmissivity of ultraviolet and a 3X zoom lens made of quartz and fluorite were developed together with a UV-HARP tube featuring high sensitivity to the range from ultraviolet to visible light. Ultraviolet components are displayed in red to accentuate the ultraviolet information, and blue and green components are displayed as they are in order to store the color tones of normal images.

Nippon Television Network Corp., Matsushita Electronics Corp., and Matsushita Electric Industrial Co. Ltd. have jointly developed Clear Vision, a television camera with 525 progressive scanning lines and an aspect ratio of 16:9 (Fig. VC-5), designed for Japanese second-stage enhanced TV (EDTV-II). The camera provides a multiple-frame interline transfer (M-FIT), 2/3-in. CCD, and 520,000 pixels with digital processing units. The CCD was developed by a concept of time-sharing transfer, but its manufacturing process is similar to the conventional one. The parallel processing of the digital signal makes the clock rate lower and enables the use of ordinary large-scale integration (LSI) for the interlaced camera. Three kinds of output are available:

progressive scanning at 16:9, interlaced at 16:9, and 4:3 by switching.

Sony Corp. announced two TV cameras for Japanese EDTV-II: the BVP-700 and BVP-750. The BVP-700 can shoot frames at both 4:3 and 16:9 aspect ratios. The 2/3 in. FIT HyperHAD 1000 CCD has 520,000 pixels that keep 900 TV lines in horizontal resolution and is suitable for both studio and outdoor use. The BVP-750 was designed for handheld operation.

Sony also introduced the DVW-700/DVW-700S, a combination VTR/TV camera. The camera's main processing is digital and in component form. The VTR, features 1/2X digital compression so that the signal is also recorded in digital component form. Its power consumption is only 28 W, enabling continuous shooting for 120 min with a lithium ion battery.

Sony's UVW-100 analog component Betacam-SP camera is part of the UVW series announced last year. Used widely in current news studios, the UVW-100 is a combined camera and VTR (camcorder) that keeps the proper video level responding to lighting for the object; its backspace editing is capable of smooth transition between serial scenes.

Toshiba Corp. announced two new TV cameras, the SC-3000 and SC-3000 H, each of which can select a frame of aspect ratio 4:3 and 16:9 by switching. Both provide 640,000 pixels and 2/3-in. frame interline transfer (FIT) CCD. High resolution of horizontal 900 lines is achieved by means of special techniques of pixel shifting and digital signal processing. The SC-3000 is designed for studio and outdoor use requiring a large-scale digitalized camera, and the SC-3000 H is a compact handheld camera with common CCD.

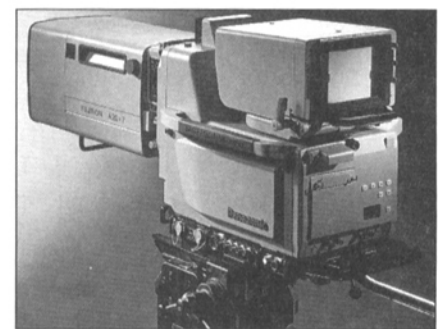


Figure VC-5. Progressive 525-line TV camera from NTV, Matsushita Electronics, and Matsushita Electric Industrial Co.

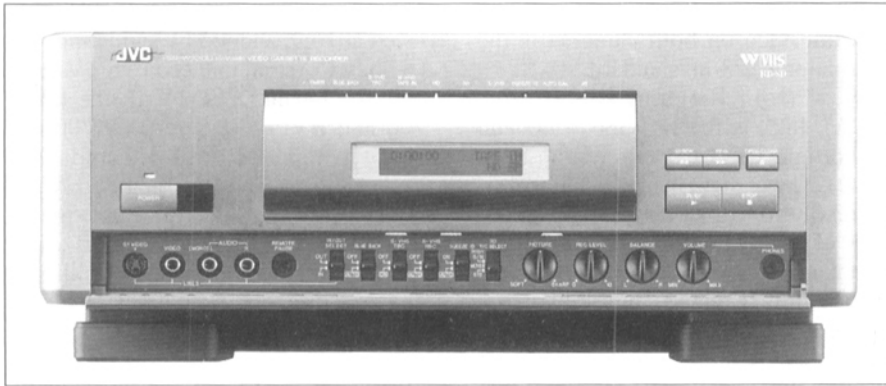


Figure VR-1. The SR-W320U recorder/player from JVC Professional Products.

Video Laboratory Equipment

The Bremson Cine CVIS analyzer from Bremson Data Systems, Inc., features three-chip technology and now offers a video daily package. CVIS's additive lamphouse matches additive printers to produce more accurate color calls from the timer. For optimum color continuity, the Cine CVIS split screen allows several scenes to be viewed simultaneously.

Video Recorders

The DCR 6000 transparent digital HD cassette recorder, jointly developed by BTS and Toshiba Corp., is equipped with a multistandard function capable of handling both 1125 and 1250 HD standards by means of a simple software setting on the control menu. The 1125 standard can run in either 60 or 59.94 fields/sec. Whether shooting on film or video, the DCR 6000 transfers the digital video data directly to the standard workstation through a special interface. With the help of powerful software packages, editing, layering, color correction, and morphing is done rapidly and easily, and the final picture material is sent back to the DCR 6000 to be transferred again to film.

BTS's unique LDK 4062 high-definition (HD) bit-rate reduction unit provides a convenient and cost-effective method of recording and playing HD signals on a standard-definition D-1 digital VCR. Its unique data-compression scheme allows the LDK 4062 to offer excellent picture quality, making it useful in such applications as production, archiving, distribution, or transmission of HD video. Among the unit's features is a small, subsampled picture that can be viewed on a stan-

dard-definition monitor in the D-1 replay mode. Frame cuts, assembly, and inserts can also be handled within the 625 or 525-line domain because the compression scheme is based on intraframe coding. In addition to video processing, four audio channels are provided, together with a range of VTR functions such as shuttle, variable, and jog. As a separate 10-RU rack-mounted unit, it can be conveniently connected to any D-1 machine, with no modification necessary to the VTR.

Hewlett-Packard Co.'s HP video disk recorder is a disk-based 4:2:2 serial digital video recorder intended for highest quality post-production, telecine, and animation applications. It has options for 3, 6, and 12-min storage, uses uncompressed data, and delivers seamless, nonlinear access to video material with no roll, jump, or other anomalies. It emulates industry-standard control protocols.

JVC Professional Products Co. introduced the SR-W320U W-VHS recorder/player (Fig. VR-1). The SR-

W320U has Hi-Vision compatibility with high-definition mode recording and playback of Hi-Vision signals; it also offers NTSC recording and playback via the extended-time standard-definition mode. Compatibility with existing video systems is assured by VHS/S-VHS capability, while a built-in RS 232 C interface facilitates integration in a computer-controlled multimedia or editing system. It has up to five times the bandwidth of standard VHS and uses metal particle videotape.

Prime Image, Inc., introduced the Prime Image Solid State recorder, a fully controllable/fully solid state unit capable of 1.5 min of frame-by-frame or real-time recording and playback at speeds from 0 to $\pm 10X$ with no data compression. Features include a built-in time base corrector and a genlockable synchronizer. The recorder is compatible with Sony BVW 75 interface control protocol.

Tektronix, Inc., released the Profile professional disk recorder. The Profile is an open-platform system for storing and manipulating video and audio. It offers a feature set that supports four capabilities: simultaneous read and write across four bidirectional channels, random access to all stored information through any of the channels, analog composite and serial digital component and composite I/O, and built-in video and audio routing and mix effects. Storage space may be tripled by adding the PDX103 expansion chassis.

Video Storage

The Media Pool from BTS (Fig. VS-1) is a multichannel video server using

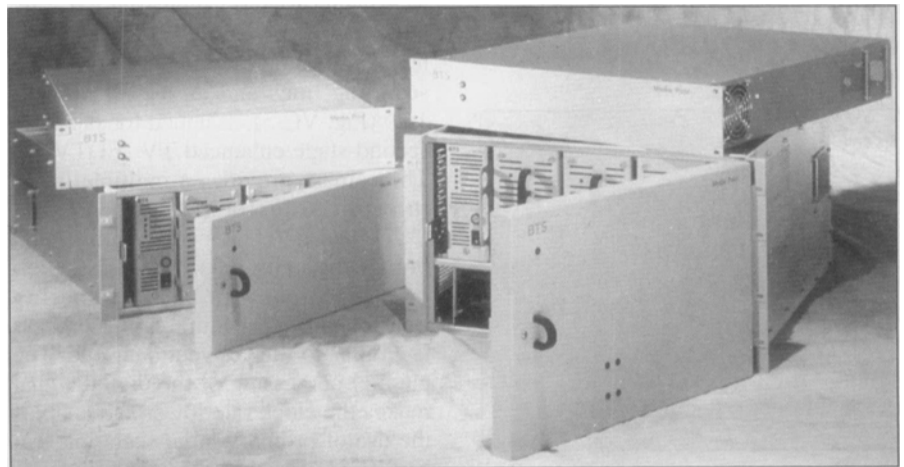


Figure VS-1. The Media Pool multichannel video server from BTS.

redundant arrays of standard computer hard disk drives. Storage time ranges from minutes to hundreds of hours. Expandable channels makes a pool of audio and video information available on 1 to 16 simultaneous record or playback streams, while an expandable bandwidth provides full 10-bit to any level of compressed video and to each channel with variable control and quality preview. A variety of software applications are available, including full-featured VTR emulation and animated spot-playing.

Videotape, Cassettes, and Discs

JVC Professional Products Co. has developed the WT series metal particle tape, a new technology used by W-VHS systems. The thickness is the same as a conventional T-180 (14.4 μ). W-VHS tape gives about 8 dB higher output in the 10-MHz range than that of S-VHS tape. The cassette has the same dimensions as a standard VHS tape and includes a double lid structure to protect the tape from dust.

NHK and Fuji Photo Film Co., Ltd., have collaborated on the development of a thin magnetic layer metal particulate (MP) tape for broadcast use. The tape consists of an upper magnetic layer of 0.2- μ m thickness and a lower nonmagnetic layer of 2.7- μ m thickness, coated together simultaneously on a base film of 10- μ m thickness. The thin magnetic layer, with less than 1/10 thickness of the conventional type, increases reproduced output in a high-frequency region by decreasing the self-demagnetization loss. The non-magnetic layer, composed of very fine TiO₂, allows a smooth surface that decreases space loss and prevents the occurrence of static electricity. The reproduced output is 6 dB higher than normal at a recording wavelength of 0.55 μ m. In recording and reproduction using 150 Mbit/sec digital signals, the byte error rate obtained is 2×10^{-6} when the drum diameter is 76 mm, drum rotational speed is 150 rps, and track width is 18 μ m.

Other

A/V Delay

The A/V Delay from Prime Image, Inc. (Fig. O-1), is a solid-state, digital self-contained audio/video delay unit



Figure O-1. The A/V Delay from Prime Image.

used to delay live broadcasts and switch in alternate audio and video feeds as required. No data compression is required. Features include a built-in genlockable synchronizer. Audio and video may be controlled independently of each other.

Disk Recorders

Abekas Video Systems, Inc., introduced the Diskus, a real-time graphics disk recorder that offers 30 or 60 sec of 10-bit CCIR 601 recording capacity. Diskus can be networked with multiple users having simultaneous access through their workstations. Advanced features include synchronous SCSI-1, fast and wide SCSI-2, VTR control, Targa file format support, and time code in and out. Professional quality composite, S-video, 4:4:4 digital, and 4:2:2:4 I/O are available optionally; this flexibility allows Diskus to integrate easily with the SGI, Mac, and PC computer platforms. A D-1-compatible system, Diskus offers features such as zero preroll and segments for nonlinear random access playback.

Also new from Abekas is the Hexus production disk system, suited for 3-D graphics recording, telecine transfer, and on-line random access editing in the high-end post-production environment. Hexus is a modular system offering from two to six 1-min, 10-bit disk recorder/players. These disks can be reconfigured from the control panel to offer a single 6-min record/play channel, six independent 1-min channels, or any other combination. Any two channels may be locked together so that video and alpha channel information can be stored or recalled in one pass. Hexus can also be configured to store



Figure O-2. RTI's TapeChek Pro-Line 4100.

4:4:4 RGB or wide-band YUV images for further processing by a workstation.

Filters

Sanders Media Adventures, Inc., and C-MAC Microcircuits, Inc., have expanded their product lines to include low-cost, oversampling, and 601 performance filters. Pin-for-pin compatibility between product lines has been a key feature. The filters have high input and low output impedances that can drive 75 Ω . All of the designs are inherently lossless, with gains selectable at either unity or +6 dB.

Film Preservation

The Molecular Sieve Acid Scavenger, developed by the Eastman Kodak Co., has the ability to retard vinegar syndrome reaction. The inclusion of Molecular Sieve with processed motion-picture film in a sealed container has the ability to extend the life of dye images and film support beyond that which is currently considered normal.

The TapeChek Pro-Line 4100 tape



Figure O-3. The Coolprint from Nikon Electronic Imaging.

recycling system (Fig. O-2) by Research Technology International was designed for professional Betacam users. It accommodates both standard and large tape sizes; all cassettes can be recycled with one machine. A tape cleaning module with three vacuum-assisted wiping tissues effectively removes loose oxide and dirt from the tape surface. The precision dual-sapphire burnishing system polishes the recording surface and removes temporary dropouts. An optional erase module provides complete full-width erasure of oxide, SP, and digital tapes. An accurate CCD line array detector scans the tape edge-to-edge to locate edge damage, wrinkles, and creases. The Pro-Line evaluates blank or recorded tapes, and an optional printer provides a comprehensive tape condition report. The device operates at 25X NTSC speed; it cleans, evaluates, erases, and rewinds a 1-hr Betacam cassette in 2-1/2 min.

Miscellaneous

Snell & Wilcox, Ltd., introduced a

wide range of new products in 1994. They include the Com³ component compatible composite encoder and decoder; the Supervisor large-screen optimizer and display processor; the PALPlus TPG20 test pattern image generator; the Pattern Master digital test pattern creation package for the TPG20; the Magus integrated vision mixer and DVE; the DVS1000 widescreen vision mixer; the Roll Call remote control protocol; the MAR1000 digital aspect ratio converter; the MDD1000 precision digital recorder; the Defcon24 HDTV/525-line/625-line converter; the Kudos DNC digital PAL encoder; the Kudos DDC digital PAL decoder; the Kudos DAC digital-to-analog converter; the Kudos ADC analog-to-digital converter; and the Kudos IQ component digital monitoring system.

Other products that were released by Snell & Wilcox are the RD1PS parallel to serial converter; the RDMUX8 serial digital switcher/router; the RD1MON 4:2:2 SDDI monitor; the RD1ENC-2 DAC and encoder; the RD1EDH modular EDH inserter and checker; the RD1FPG logo store and digital frame pattern generator; the RD1AAD advanced analog decoder; the RD1ENC digital to analog converter and encoder; the RD1ADC analog component to digital component converter; the RD1SPG 4:2:2SPG and pattern generator; the RSDSA 4- f_{sc} reclocking serial digital distribution amplifier; the RD2BB composite digital black burst generator; the RAVDA video distribution amplifier with equalizer; and the RD1LPG pattern generator.

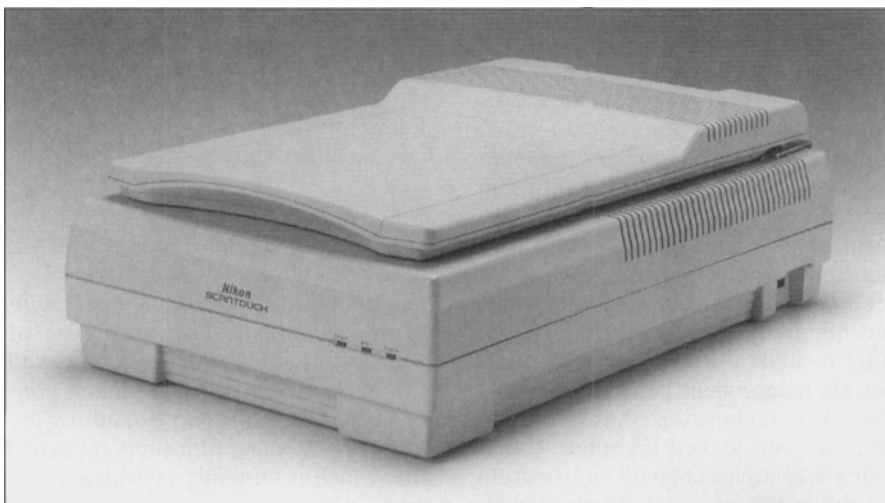


Figure O-4. The Scantouch scanner from Nikon Electronic Imaging.

Printers

New from Hewlett-Packard Co. is the HP VidJet Pro Utilities for Windows, which allows users to combine video images, computer graphics, and text/titles onto a customized storyboard format and print onto plain paper in color or black and white. It operates on a 486/3-MHz PC with 8-Mbit RAM, running Windows 3.1. The HP VidJet Pro print manager has been upgraded during 1994 with new input cards for component RGB and 4:2:2 serial digital video.

The NP-10 Coolprint full-color digital printer from Nikon Electronic Imaging (Fig. O-3) produces standard A6-size photo-quality prints in 60 sec at 142 x 142 dpi resolution. It is Mac or IBM/PC-compatible via SGSI-II interface. Coolprint delivers 256 color gradations in each of C, M, and Y (16.7 million colors).

Scanners

The AX-1200 Scantouch flatbed scanner (Fig O-4) from Nikon Electronic Imaging scans documents up to 8 1/2-in. x 14-in. at 30 bits in a fast three-pass RGB scan of color or black and white. Resolution is 565 x 1200 dpi interpolated to 1200 x 1200 dpi through hardware or 2400 x 2400 dpi through software. An optional adapter scans 35mm, 2-1/4-in. and 4-in. x 5-in. transparencies. It is bundled with Light Sources' OFOTO and Caere's OmniPage Direct.

Video Compression Systems

Minerva Systems' Compressionist system performs the high-quality MPEG encoding demanded by digital video publishers. Its software includes many tools required to achieve the best quality encoding, and its modular architecture provides an easy upgrade path for future features and standards.

Video Sync Generators

The Global Positioning System (GPS) master sync generator by Horita Co. provides absolute sync to coordinated universal time and absolute video sync to other Horita GPS-master sync generators located worldwide. Timekeeping with SMPTE drop-frame time code is exact; there is no slip or drift between time measured by counting television frames and time measured by counting the precise OTC 1 pulse/sec.