NAB convention replay

- 1993 Pick Hits
- Exhibitor highlights
- Engineering Conference report
- NAB in perspective

Special Report

- Developments in mag tape
- Radio on-air automation systems
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NAB CONVENTION REPLAY:
With attendance approaching 65,000, this year's NAB hit a high point in the amount of attendees and exhibitors. Reports indicate that traffic was higher than in previous years, and that customers had their checkbooks open and were ready to buy.

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ON THE COVER:
This year's trek to Las Vegas for the NAB Convention was highlighted with a look at more than broadcast and production equipment. For the first time, multimedia products were shown in an adjacent exhibition area. One often-seen element in multimedia exhibitions are video walls like the one shown. (Photography by Douglas Schwartz Photography, equipment provided by Synelec.)
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By Dawn Hightower, senior associate editor

FCC considers HDTV
Grand Alliance proposal

The Federal Communication’s Advisory Committee on Advanced Television Service (established in 1987) will review a single digital HDTV system proposed by a “Grand Alliance” of entities that had sponsored the four remaining competitive HDTV systems.

The companies (AT&T, the David Sarnoff Research Center, General Instrument, Massachusetts Institute of Technology, North American Philips, Thomson Consumer Electronics and Zenith Electronics) have reached a business and technical agreement and have submitted a merged system proposal.

If the proposed system is recommended by the Advisory Committee and adopted by the FCC, it could place the United States in the forefront of high-definition video technology. An all-digital standard that would enable interoperability among broadcasting, cable, computer and telecommunications technologies has worldwide potential.

Important aspects of the Grand Alliance technical proposal include the employment of progressive scan transmission (where entire picture frames are transmitted sequentially) and the use of so-called “square pixels” (where the dots on a TV screen are arranged in equally spaced rows and columns). These design aspects are important for the interoperability of HDTV with computers, telecommunications and other media and applications. Interlaced scan transmission also would be accommodated in the initial deployment.

The proponents agree that all large-screen HDTV receivers (34 inches in diagonal and above) will incorporate a 60-frame-per-second, 787.5-line or higher progressive scan display mode. Progressive display would be optional for smaller screen receivers. The proponents also concurred that all transmission of film material will be in a progressive scan format when HDTV service begins.

The Grand Alliance proponents endorse the objective of migrating the standard to a high line number (i.e., thousand-line plus) progressive scan transmission, as soon as feasible, and will work together to eliminate interlaced scanning format from the transmission path in the future.

To support multiple transmission formats, the merged system will feature source adaptive processing. To promote system flexibility and extensibility, the merged system also will feature a prioritized, packetized data transport structure. The Grand Alliance agrees to support the proposed HDTV compression system in the International Standards Organization as the MPEG-2 HDTV profile.

DAR Subcommittee go-ahead for NASA DAR testing site

The Electronic Industries Association’s (EIA) Digital Audio Radio (DAR) Subcommittee has accepted the National Aeronautics and Space Administration’s (NASA) offer to use its Lewis Research Center in Cleveland for the testing of DAR proposals.

The subcommittee also has extended its testing timetable to allow for the completion of propagation tests in Charlotte, NC, and Seattle. It also will allow potential in-band, on-channel (IBOC) system proponents time to respond to the call for proposals issued by the National Radio Systems Committee (NRSC). Responses were due June 18.

The DAR system testing is scheduled to begin in early October at NASA’s Lewis Research Center. In addition, the center will supply testing equipment and personnel to assist in testing.

FCC should use terrestrial DAB for digital radio

According to the National Association of Broadcasters (NAB), the introduction of a new satellite radio service, with 30 to as many as 200 channels, could harm local radio stations.

In comments to the Federal Communications Commission (FCC), NAB urged the commission to focus on implementing DAB throughout the existing terrestrial radio services as the most efficient way to introduce DAB to U.S. consumers.

NAB also said that there has been significant progress in the development of terrestrial in-band, on-channel DAB. Nevertheless, it is premature for the commission to set standards for in-band, on-channel DAB because the development process is far from complete. Once development has stabilized, broadcasters and receiver manufacturers will have to test and evaluate these systems.
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To find out more or for our complete brochure, call 800-NIKON-US or (516) 547-4355 or write: Nikon Electronic Imaging, Dept. D1, 101 Cleveland Avenue, Bayshore, NY 11706.
Editorial

Which fork to the streets of gold?

Yogi Berra once said, "When you come to a fork in the road, take it." Well, if broadcasters were looking for advice on which fork to take in the search for their future, this year's NAB keynote speaker certainly didn't help them decide.

Apple's CEO John Sculley was the speaker at the opening day. In what has traditionally been a position reserved for broadcast or political VIPs, Sculley was neither. And what Sculley said to the attending audience was not encouraging.

His opinions provided neither hope nor encouragement about the attendees' future. In fact, he challenged broadcasters to overthrow the FCC's plan for HDTV.

Outlining his view of the future, he talked of a convergence of the media, publishing, telecommunications and the computer industry into a single interrelated industry.

Sculley suggested that this shift toward interrelation would parallel the changes that resulted when this nation converted from steam power to the internal combustion engine, or from Morse Code transmission to analog telephones. The resulting technological changes will force broadcasters to compete in a world of satellite-delivered signals, 500-channel cable systems and CD-ROM technology.

Enough of the bad news. What was Sculley's suggested solution? It was radical, to say the least. He encouraged TV stations not to focus on a high-definition (HDTV) future, but instead to become a multichannel digital delivery system.

He proposed that broadcasters begin by convincing the FCC to abandon HDTV and divide their 6MHz of spectrum into several digital channels. This space would then be used to create an "intelligent data screen" providing the audience a variety of interactive choices.

Sculley claimed that because of the limited spectrum available to broadcasters, they will have fewer options than other services. "Do you want to sit this revolution out or do you seize the moment by urging the FCC to turn that 6MHz bandwidth into a new digital service?" he asked. "The choice is yours."

Sculley's presentation was not the kind of rousing, go-get-'em address this group was accustomed to hearing. He told TV broadcasters the future is bleak unless they jump on the computer industry's version of the future. The fact that his approach flies in the face of the FCC's plans doesn't help either.

Broadcasters understand that they have choices to make ahead of them. Most thought the primary choice was when (not if) to adopt HDTV. Now, a widely respected member of the computer industry has just told an entire industry to take different fork in the road.

All we have to do now is figure out which fork leads to the streets of gold.

By Brad Dick, editor
Stations Are Profiting From It.

FM stations around the world are finding more sophisticated ways to keep their listeners from cruising the dial. And OPTIMOD-FM 8200 has become a critical part of their strategy. Why? Because the 8200 is a technological breakthrough with bottom line impact. It lets you create a distinct, powerful sound that results in larger audiences, higher ratings and improved profitability.

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FCC Update

Must-carry found constitutional

By Harry C. Martin

On April 8, a 3-judge panel of the U.S. District Court for the District of Columbia upheld the constitutionality of the 1992 Cable Act’s must-carry provisions.

Regulations “content-neutral.” The court has decided that the must-carry provisions of the Cable Act are “content-neutral” and subject to more relaxed First Amendment scrutiny.

Economic vs. ideologic purpose. The court, after finding the regulations content-neutral, said the government’s intention is economic. The court’s reasoning is based upon the fact that must-carry is an economic regulation that was designed to create competitive balance in the video industry and to remedy the effects of cable operators’ anti-competitive practices.

Cable dominance cited. After determining that a significant government interest is served by the must-carry provisions, the court deferred to Congress’ finding that cable operators have obtained a dominant position in the video signal distribution market. They have incentive and the ability to block non-cable programmers’ access to the bulk of any prospective viewing audience.

Regulations not overly intrusive. Cable’s plaintiffs claim that must-carry infringes on programming choices when alternative remedies, such as requiring installation of an “A/B” selector switch (to provide viewers a free choice between broadcast and cable programming) would remedy the impaired marketplace, but less intrusively. According to the court, the government does not need to demonstrate that it has used the least-restrictive means to accomplish what is primarily economic regulation of an industry that delivers video signals.

Current status. On April 15, the cable plaintiffs’ efforts to obtain an injunction from the 3-judge court pending appeal were rebuffed. Under federal law, appeals from the decision of a special 3-judge court denying a constitutional challenge may be taken directly to the Supreme Court.

In the meantime, the FCC’s must-carry rules, implementing the must-carry provisions of the 1992 Cable Act, were scheduled to become effective June 2.

The effect of must-carry on cable

With the reregulation and must-carry rules affecting the video delivery marketplace, cable companies have been affected in additional ways. The must-carry rules force cable companies to carry TV signals as part of a basic cable package. Also, cable companies have never had to pay to carry a TV station. However, after Oct. 6 when the retransmit regulations go into effect, cable companies will have to pay or they will lose their right to carry the TV station. In addition, cable companies must carry stations that want to be on cable.

AM expanded band filing window open

The filing window for migration to the AM expanded band (1,605-1,705kHz) opened on May 3 and will close on June 30. Eligibility for expanded band allotments is limited to existing AM licensees. Petitions for migration should be addressed to the AM Branch of the FCC at 1919 M Street, N.W., Washington, DC 20554. The petition must include:

- a statement as to whether the petitioner intends to use AM stereo.

LPTV rules to be amended

The FCC is proposing to amend its rules for the LPTV service by doing the following:

1. Abandoning its “letter perfect” acceptability standard.
2. Narrowing the definition of a “major” change.
3. Expanding the circumstances where terrain shielding can be used to show the absence of objectionable interference.
4. Permitting LPTV operators to use standard 4-letter call signs.

Currently, applications must be “letter perfect” at the close of a filing window or they are returned as defective. Applicants must wait until the next filing window to resubmit their corrected applications. Also, the modified service contour of a facility must be completely encompassed within its authorized service contour in order to qualify as a “minor” change and be eligible for processing without regard to filing window deadlines. The commission also has limited terrain-shielding showings to applications that aren’t mutually exclusive, and has required the use of 2-digit, 3-letter call signs for LPTV.

Important dates for must-carry

June 17. Each TV station must decide whether it wants its relationship with local cable systems to be governed by must-carry or retransmission consent. Also, the date by which stations electing must-carry status must notify cable operators of their preferred channel positions.

Sept. 6. Cable operators who wish to drop the signals of stations with which they failed to reach retransmission consent agreements must notify subscribers of the signals being dropped.

Oct. 6. The effective date of the retransmission consent and channel-positioning requirements.
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Strictly HDTV

Implementation

By Steve Epstein, technical editor, and Curtis Chan

HDTV and its specific terrestrial broadcasting term advanced television (ATV) are the subject of many discussions. The terms ATV and HDTV have been used interchangeably to indicate a 16:9 picture. However, the two terms mean something quite different.

HDTV defines a 16:9 picture with at least twice the horizontal and vertical resolution of NTSC. ATV describes the transmission standard that will be adopted by the FCC for the delivery of 16:9 pictures. Unlike HDTV, which is the production system, ATV defines only the transmission system.

The Association for Maximum Service Television (MSTV) recently released a study titled The Transition to Advanced Television. The purpose of this report is to assist TV station owners, managers and engineers to plan for the transition to advanced television. The report details four phases for conversion from NTSC to ATV:

### Phase 1: Pass-through of ATV programming
1. Satellite receivers, demodulators, decoder
2. Character generators/strip-store, 20" monitors (2)
3. Routing switcher (10x10), master control
4. STL subsystem

### Phase 2: Add local commercials
1. NTSC upconverter, line doubler/tripler
2. ATV-to-NTSC downconverter
3. 17" monitors (7), decoders (6)
4. ATV encoder

### Phase 3: Add local programming
1. ATV modulator, ATV exciter
2. ATV transmission subsystem, including:
   - ATV transmitter ($300)
   - Transmission line, antenna ($300)
   - Off-air monitoring and test equipment ($125.5)

### Phase 4: Full ATV operation
1. Equipment will have to be purchased to begin implementation of phase 1. A satellite receiver, demodulator and decoder would be used to acquire ATV programming. A small routing switcher (10x10) would distribute the signal, and possibly a master switcher would be used to switch it into the STL. The current STL could possibly multiplex NTSC and ATV, or another STL might be needed for the ATV link. At the transmitter site, an ATV modulator, exciter, transmitter, transmission line and antenna would be added to current transmitting equipment. Stations also would need additional HDTV monitors and test equipment. Depending on individual needs, as stations enter phase 2, recording and playback facilities could be added, mainly for commercial insertion, but also for programming flexibility.

In order to develop these estimates, certain assumptions were made about existing facilities, including:

1. Existing tower has sufficient capacity to support a new antenna and transmission line, so a new tower would not be needed.
2. Current facility has sufficient capacity for new equipment, so additional racks, floor space and cooling would not be required.
3. Stereo audio facilities already exist.

The coming of ATV

The decoupling of the transmission and production standards of ATV offers several advantages to the broadcaster. They will be able to choose a production format, independent of the broadcast standard. This will allow broadcasters to continue to use and upgrade existing facilities without the fear that tomorrow they will be unusable. Plans and purchases also can be made today that can be integrated into tomorrow's HDTV facility. When the FCC makes a decision on an ATV system, broadcasters can be ready. Current production equipment need not be discarded, but simply integrated into the broadcast system.

---

**Table 1. Phases 1 and 2 and the cost to broadcasters to implement ATV.**

<table>
<thead>
<tr>
<th>Subsystem</th>
<th>Cost ranges (Thousands)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satellite receivers, demodulators, decoder</td>
<td>$13.5</td>
</tr>
<tr>
<td>Character generators/strip-store, 20&quot; monitors (2)</td>
<td>$200</td>
</tr>
<tr>
<td>Routing switcher (10x10), master control</td>
<td>$12.5</td>
</tr>
<tr>
<td>NTSC upconverter, line doubler/tripler</td>
<td>$19-$24</td>
</tr>
<tr>
<td>ATV-to-NTSC downconverter</td>
<td>$15-$20</td>
</tr>
<tr>
<td>17&quot; monitors (7), decoders (6)</td>
<td>$10-$119</td>
</tr>
<tr>
<td>ATV encoder</td>
<td>$200-$280</td>
</tr>
<tr>
<td>STL subsystem</td>
<td>$92.5</td>
</tr>
<tr>
<td>ATV modulator, ATV exciter</td>
<td>$30-$35</td>
</tr>
<tr>
<td>ATV transmission subsystem, including:</td>
<td>$72.5</td>
</tr>
<tr>
<td>ATV transmitter ($300)</td>
<td></td>
</tr>
<tr>
<td>Transmission line, antenna ($300)</td>
<td></td>
</tr>
<tr>
<td>Off-air monitoring and test equipment ($125.5)</td>
<td></td>
</tr>
</tbody>
</table>

**Total:** $1,700.5-$1,804.5

---

**Acknowledgment:** Thanks to the Association for Maximum Service Television, Inc.
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Digital radio progress at NAB '93

By Skip Pizzi, technical editor

For the past few years, semi-annual milestones in the digital radio environment have been provided by the NAB spring convention and the fall NAB Radio show. NAB '93 was no exception, with several significant events defining new territory.

IBOC developments

In-band/on-channel (IBOC) formats were displayed and demonstrated on-air by USA Digital, in its Acorn FM and Acorn AM systems. The FM-IBOC system was featured in a broadcast test as it was in New Orleans for the NAB Radio '92 show last September. A planned mobile demonstration of the FM system was not presented because of last-minute hardware failure in the prototype mobile receiver. The failure was apparently precipitated by difficulties in the power supply to the mobile receiver.

The Acorn AM system was demonstrated over the air in a true on-channel form for the first time.

The demonstration used an unoccupied AM tower several miles north of the Las Vegas Convention Center for an omnidirectional 200W AM broadcast on 1,660kHz (in the as-yet-unoccupied expanded band). The same audio program was simulcast in standard analog AM and digital IBOC-AM forms on the channel.

The digital signal’s multiple carriers were placed approximately 25dB below the AM carrier, putting their effective power at 8W to 10W. Although the system’s processing delayed the digital signal by several seconds behind the analog (making direct A/B comparison a bit difficult), the digital AM signal exhibited high-fidelity audio (15kHz stereo, 96dB S/N), greatly improved over the subjective quality of the analog AM signal. A single, fixed receiver was available for auditioning the digital signal, but the analog signal could be heard on any expanded-band AM receiver.

Unlike the Acorn FM system (see “re: Radio;” December 1992), the Acorn AM design uses the same transmitter for analog and digital signals, thus simplifying transition and reducing implementation costs. The current design goal is to make the Acorn AM system’s encoder/exciter a direct plug-in replacement for an AM station’s existing C-QUAM exciter.

The Acorn AM system includes active RF equalization and digital noise blanking. It also allows for eventual termination of the standard analog AM signal on the channel and retention of the digital signal without difficulty (unlike current plans for the FM system).

USA Digital hinted that at least some existing FM transmitters might be modified to allow their use for IBOC-FM broadcasts. This would eliminate the need for a low-power and linear second transmitter (plus RF combiner) as employed in the Acorn AM system.

The only other digital radio proponent identified with IBOC system design is Amati/AT&T. This proponent did not demonstrate a system at NAB, but presented a paper detailing its approach. The Amati/AT&T system is IBOC in only the broadest sense. It uses just the fringes of an active FM channel’s bandwidth, without the complex signal extraction techniques that lie at the heart of the Acorn AM system. The Amati/AT&T format can more readily be applied as an interstitial (or adjacent-channel) FM in-band system, where it provides a highly flexible approach. Amati/AT&T’s development of an IBOCAM system was rumored at the show, although there was no confirmation.

New band systems

Two presentations at NAB '93 shed light on new band (NB, or out-of-band) digital radio systems. The first reported Canadian progress with single-frequency network (SFN) testing of the Eureka 147/DAB system at L-band frequencies. These tests involved two co-channel transmitters separated by approximately 80km (in Toronto and Barrie, Ontario). They mapped the coverage for fixed and mobile reception between the two transmission sites. A guard interval (or blanking period) optimized for SFN application at L-band was used, and mobile reception in the crossover area between the two locations along a radial line between the two sites was examined. Results met or exceeded predicted expectations. Canadian SFN tests will continue, with the planned addition of more overlapping, co-channel transmission sites.

Development status of the NASA/VOA direct broadcast satellite radio (DBS-R) system also was presented. Work is progressing on the design of a modular receiver for narrowband-channel use at L-band, S-band or even in-band frequencies. Tests will be conducted later this year using a NASA satellite that operates space-to-earth spot beams at frequencies close to the U.S. S-band digital radio spectrum. (See “re: Radio;” March 1993.) Some building penetration is expected, using small set-top antennas. Space-diversity reception may be required.

Progress on U.S. testing

With the EIA/NAB tempest over digital radio format testing essentially settled in the form of joint NRSC/EIA tests (see "News," May 1993), the atmosphere was primed for reports on the planned tests. Two papers at NAB '93 considered this topic — one discussed the revised digital radio format testing criteria and the other described the location and logistics of upcoming EIA multipath tests. The latter will be conducted at the Charlotte, NC, test site to be used for ATV tests, in the VHF TV Channel 6 spectrum (85MHz). A 4MHz-wide pseudorandom noise source will be used as a test signal, with sampling of received signal level tentatively planned to be taken at 0.1 wavelength spacings. Horizontal and vertical polarization data will be recorded separately (and nearly simultaneously) at each test point. The data will be applied to multipath simulation programming for lab tests of proposed digital radio formats.

Another paper described multipath as a statistical phenomenon, requiring specific and massive testing to characterize it properly. The report examined the physics and research of multipath, and lamented the lack of multipath test data in the VHF band. This presentation further underscored the value of the upcoming EIA multipath tests.

The activities at NAB '93 indicated that the radio industry is moving steadily, yet prudently, forward toward digital delivery. With signposts such as these meetings to guide the way, broadcasters can follow the transition process closely and carefully.
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The Portable One Plus...the single instrument solution for both your bench and portable audio testing.
The thinking worker

What kind of employees do you need?

By Judith E.A. Perkinson

Many manager's jobs would go much smoother if they knew how to bring out the best in their employees and make them thinking workers. Thinking employees can contribute positively to the workforce and enhance job performance. This 4-part series will take a look at how managers can provide the type of work environment that helps productive, thinking workers thrive.

Managing your employees

John just spent two days undoing the damage of his technician who should have foreseen a problem but didn't. The small problem then became a major incident, resulting in equipment damage and major downtime. John knew he would be in trouble with his boss and bemoaned the fact that he couldn't find a decent employee. He couldn't understand why his staff didn't take pride in their work, didn't seem to care, and didn't use common sense to avoid problems. John wondered what in the world had happened to the work ethic.

Well, John has the workforce he deserves. They are a product of his management style. John's management technique is from the old school. He knows only how to boss his employees, not how to manage them.

The chief engineer must be a team leader and develop a work environment in which a thinking worker can exist and thrive.

When John was moving up in the job ranks, he did what he was told and didn't question his supervisor. That approach to management worked when the world was simpler, and before the technological revolution. In the early days, technicians and operators were little more than arms and legs on machines that were coordinated by a boss. Now engineers and technicians need to do more and be more. They must be thinking workers.

Thinking workers need a leader

The technology of radio and TV stations has changed drastically. Equipment is more sophisticated and stations are cutting back on the number of personnel. This has increased the workload, and employees are expected to be multidimensional with multiple skills. These changes affect the way that managers must approach the task of managing their employees and their workload. Being knowledgeable in maintaining equipment is not enough. Having the greatest number of years of experience is not enough. Now the chief engineer must be a team leader and develop a work environment in which a thinking worker can exist and thrive.

When managers feel that they have to make all of the decisions and be in control, because they are in charge, they're setting themselves up for frustration, overwork and disappointment. Managers can be more effective when they learn to tap into the knowledge and reasoning abilities of their employees, delegate responsibility and share the decision-making and problem-solving.

What do you want from your employees?

It's time to take stock of what you need and want from your staff. Good work habits, such as showing up to work on time and staying until the job is done are not enough. More important than being there is the quality of the job performance. It's important for employees to be cooperative and follow instructions. But there are times when employees need to feel free to ask questions and come up with solutions in order to contribute to the decision-making and problem-solving efforts.

The choice is yours

Many managers continue to hold on to the management style of "being the boss" because they do not know how to change, don't want to change or are afraid to change. It's not an easy transition. Our management styles are often modeled after the people who managed us. Unfortunately, we pick up good and bad habits of those models. If you have never worked in a participative work environment, it is hard to know where to start.

If you want to create a positive working environment, you need to prepare your workforce to think and work together as a team. Next month's column will focus on creating that team environment.
When you've had enough of unreliable "warmed-over" consumer decks, we've got a professional R-DAT for you at an affordable price.

Our new DTR-90 delivers the rock-solid reliability and superb sound that have made Otari audio machines the choice of professionals everywhere, and at the same time delivers all the performance and features you'll ever need.

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For the complete story on this quality-built and affordable R-DAT, call Otari at (415) 341-5900.
PLD basics

Logic description file

By John T. McGaughey

In the final part of this series on PLD basics, the system requirements (described in Part 3) will be translated into a logic description file.

At this point, the input and output signals have been determined and named. (See Table 1.) These signals are adequate to begin working on the logic equations section of the file. Although the actual levels required at each pin are not yet defined, they aren't needed to begin work on the equations. The actual levels at the pins as determined by external constraints will be handled in the pin declaration section. Figure 1 shows the four basic logic operators used in the compiler. Parentheses also are allowed to force evaluation of a logic expression in a particular way or to make the expression easily readable.

Network alarms

The first group of equations to be written involves the network alert alarm LEDs. Because all four will function identically, only one network alert will be examined. Recall in Part 3 that when a network alert alarm is active, the LED will flash. In addition, if a lamp test is requested, it should be turned on steadily. The first equation in Figure 2 describes this action for the network alert 1 LED. The term in parentheses causes the LED to flash when the network alert 1 alarm is active. This is logically or'd with the lamp test to keep the LED on continuously when requested.

The other three equations are identical in form, but simply use their respective input and output signal names.

The next step involves generating the enable signal for the sonalert system. The specifications for this section are more complex than the LED drive but can be described fairly easily. First, consider that, in general, the alarm will sound if any of the network alert alarms are active unless masked. Next, if the EBS input or lamp test is active, the alarm should sound. However, if any microphones are active, the alarm should not activate because the sound will be broadcast.

The compiler allows creation of logic equations that are not assigned to specific pins. These are called intermediate variables, and they allow complex expressions to be broken down into smaller parts. An intermediate variable called MIC-ACTIVE is created as shown in Figure 2. It will be active if any microphone is on. In this way, the intermediate variable can be used in other equations. Figure 2 shows the final equations for the audio alarm and on-air outputs. The intermediate variable appears in both equations.

Figure 1. The four basic logic operators used in the compiler.

Figure 2. The final logic equations for the audio alarm and on-air outputs.

What if it is necessary at this point to add an unforeseen input to the system, such as from a weather alert radio? If this is a TTL-based design, the equation may have to be started over. Because two extra pins are available on the PLD, one for the input and one for the LED, the only change requires adding a new equation and changing another.

A good question to ask is how much was saved by using a PLD over a gate-based design? By reverse-designing the system in TTL, seven IC packages were needed before the change and nine afterward. This results in a smaller and easily constructed system with greater reliability.

<table>
<thead>
<tr>
<th>INPUTS</th>
<th>OUTPUTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pin 1 = Network Alert 1</td>
<td>Pin 16 = Network Alert 1 LED</td>
</tr>
<tr>
<td>Pin 2 = Network Alert 2</td>
<td>Pin 17 = Network Alert 2 LED</td>
</tr>
<tr>
<td>Pin 3 = Network Alert 3</td>
<td>Pin 18 = Network Alert 3 LED</td>
</tr>
<tr>
<td>Pin 4 = Network Alert 4</td>
<td>Pin 19 = Network Alert 4 LED</td>
</tr>
<tr>
<td>Pin 11 = Network Alert_1_EN</td>
<td>Pin 15 = On-Air</td>
</tr>
<tr>
<td>Pin 13 = Network Alert_2_EN</td>
<td>Pin 14 = Audio_Alarm</td>
</tr>
<tr>
<td>Pin 21 = Network Alert_3_EN</td>
<td></td>
</tr>
<tr>
<td>Pin 22 = Network Alert_4_EN</td>
<td></td>
</tr>
<tr>
<td>Pin 5 = EBS</td>
<td></td>
</tr>
<tr>
<td>Pin 6 = Mic_1</td>
<td></td>
</tr>
<tr>
<td>Pin 7 = Mic_2</td>
<td></td>
</tr>
<tr>
<td>Pin 8 = Mic_3</td>
<td></td>
</tr>
<tr>
<td>Pin 9 = Flash</td>
<td></td>
</tr>
<tr>
<td>Pin 10 = Lamp Test</td>
<td></td>
</tr>
</tbody>
</table>

Table 1. The input and output signals for the logic compiler.
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+ 3 line Comb filter
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Troubleshooting

Care and feeding of coaxial transmission lines

*Transmission lines*

By Dean W. Sargent

Now that your system has been installed and it can be pressurized, it’s ready to go on the air, right? Not yet. That line has been in all kinds of places and weather conditions since it was made and installed. It is full of unwanted air. For years, engineers have put dry nitrogen in the line, thinking it would soak up the contaminants. It was just a matter of opening a valve on the antenna or cracking a flange and letting the dry nitrogen run through for a little while. However, that won’t get the job done right.

Moisture, and whatever else is in the atmosphere, will “hide” in all kinds of places inside a line, especially at connectors and insulators. A better approach is to put a vacuum pump on the system and evacuate it to approximately 24 inches of mercury. The pump should run all day. Without opening the system to air, close the pump and open the line to a nitrogen supply. It is surprising how much nitrogen the line takes when there is nothing else in it.

Figure 1 shows a gassing system. This system uses a gas barrier at the top of the vertical run as well as the usual one in the input of the line. The top gas barrier is located just before the elbow complex. It will allow the line to be opened at the complex for termination purposes without losing pressure in the main line.

**The gassing system**

The copper tube at the top will allow the upper section and the antenna to be re-evacuated and then re-pressurized after measurements are completed.

When the gas barrier is installed at the top of the vertical run, a section of transmission line should be placed approximately one foot long between it and the elbow complex. This will allow you to remove the elbow complex without having the gas barrier coming apart.

So, why is a separate copper tube run from the top? Why not just evacuate everything? The answer is time. It takes a long time to evacuate a long transmission line, but a relatively short time to evacuate only the antenna.

It is possible for a component to be faulty and cause a line to be destroyed, but this is extremely rare. The majority of all line failures are a result of contamination. Few line failures are the result of lightning, and these are usually near misses, not direct hits. The best insurance policy is to keep the line clean and use only dry nitrogen.

Another common question: “How often should I change a bullet or a watchband spring?” It all depends on how much power is being run, how often the transmitter is turned on and off, ambient temperature differential (both cause expansion and contraction of the inner on the bullet or spring), and whether the line is contaminated. If the history of the line is not known, it’s a safe bet to have it changed every 10 years.

It is rare to have a line fail in less than 10 years. Many lines will last for 15 or 20 years. If maintained properly, the watchband spring or bellows line should last indefinitely. If the line is opened for any reason, the O rings should be changed.

When installing new line with spring hangers, the hangers should be properly tensioned or there will be problems down the line. Springs are tensioned with temperature and line length considered. Make a board of the proper spring length and use it to set each spring. That way all springs will at least be tensioned the same.
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Super LCDs and IC cubing

By Curtis Chan

Flat-panel displays and integrated circuits have been the subject of technological investigations and international sanctions. The potential market for low-cost, high-resolution, flat-panel displays and dense, low-cost ICs is staggering. This month's column centers on two recent advances in flat-panel liquid crystal display (LCD) and IC development.

Faster, denser, high-resolution LCDs

Low cost, high-resolution flat-panel color and gray scale LCDs have been produced using a new fabrication process similar to standard semiconductor processing techniques. The displays will start with a 640 x 480 pixel LCD followed by a 1,280 x 1,024 pixel version. Standard IC fabrication techniques are used to place control transistors for the LCD pixels onto a silicon wafer. This is in contrast to the factories needed for thin-film transistor fabrication on glass, currently used for active-matrix flat-panel displays.

The 2-step process involves taking the top layer of an IC wafer (3μm - 5μm thick), with the thin-film transistors on it, and placing it on a piece of glass. The glass subassembly is then assembled into a flat-panel LCD. In contrast, the normal production method involves growing silicon on glass, in a process similar to epitaxy (a process of growing one crystal layer upon another).

Epitaxially grown silicon is amorphous. It provides no regular crystalline orientation on which to base the growth of the new silicon layers.

The mobility of electrons in amorphous silicon is about 1/500 of the electron mobility in single-crystal silicon (used for standard IC wafers). Thin-film transistors grown in single-crystal silicon are 500 times faster than those grown in amorphous silicon. LCDs made from this process will be fast enough to display videorate information without ghosting or showing artifacts common with present LCD technology.

Epitaxial growth reduces driving power, coupled with increased capacitance and minimizing I/O drive currents. The benefit of the cubing process is higher throughput and reduced manufacturing costs because of the elimination of several levels of packaging.

Two cubing varieties have been developed: full stack and short stack. In full stacks, as many as 100 chips are mounted in a 1/2-inch-high cube. Short stacks contain up to 10 chips. A 3-D memory short stack 4Mbit SRAM (static random-access-memory) package measuring 1,171mm x 1,157mm and 1.5mm high has already been produced. Further developments target reducing parallel processing modules to the size of a microcassette and offering packaged and unpackaged designs. The unpackaged stacks will affect hybrid multichip modules and chip-on-board packaging techniques.

Benefits galore

Benefits to broadcasters are numerous. Manufacturers will be able to take advantage of reduced board space and increased processing power. The increase in processing power, coupled with increased capability and lower-priced memory stacks, may significantly enhance onboard intelligence. Such features as interactive intelligence, enhanced diagnostics and internal add-on options are possible. Production workstations could have near-supercomputer processing capabilities with dramatic increases in memory capacity for a fraction of the cost.

These two technologies are nearing commercial viability at a time when broadcasters are looking toward HDTV. The potential size and weight reductions offered by super LCDs and IC cubing could have an impact on the design, manufacture and cost of future HDTV equipment. Cost savings to broadcasters and their audience could mean HDTV becomes a reality even sooner than predicted.

Acknowledgment: The author would like to thank these two companies for their assistance: Kopin Corporation, Taunton, MA, for LCD technology and Irvine Sensors Corporation, Los Angeles, CA, for 3-D cubing.
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For additional information please visit your JVC dealer or call 1-800-JVC-5825.
From the show floor:

NAB took the high road this year with record attendance, buying fever and more new products than ever.

By Brad Dick, editor
I recall the excitement that used to accompany a trip to the NAB convention when AM stereo was the hot issue. That controversy faded and then there was LPTV. Recently, HDTV has been a primary focus for attendees. The technical and political posturing that accompanies these and other advances are always fun to cover.

This year's NAB was different on several fronts. First, an attendance record was set with more than 64,000 rallying at the Las Vegas Convention Center. Second, the three giants in the VTR business rolled out their wares for battle on the tape format front. Third, the addition of the multimedia exhibition gave an additional flavor to the overall show. For most attendees, the multimedia exhibition had little to do with their jobs. After all, isn't multimedia something used in the latest Sega or Nintendo game? Not so, according to multimedia proponents. If you believe their scenarios, broadcasting will either become a provider of multimedia entertainment or as obsolete as the dinosaur.

Finally, widening evidence points to ATV as a reality in our lifetime. Manufacturers lined up to provide products to help in that transition.
This year in Las Vegas, no one had to gamble on the future.

At Sony we deliver innovative products compatible with your needs today, as well as tomorrow. Proof is your response to the introduction of Digital Betacam VTRs, which contributed to Sony’s most successful NAB ever. Digital Betacam VTRs deliver the reliable, cost-effective digital component quality you want, while remaining compatible with analog Betacam—the format of choice in the broadcast and production community.

So if you want to gamble, play blackjack. But for a sure bet on the digital component future, look to Sony. For more information call 1-800-635-SONY, ext. A500.

Innovation at work.
Coming in droves

Although the attendance set a record, it is not known exactly how many were traditional NAB attendees and how many came only because of the multimedia exhibition. It doesn't really matter, because this same successful package can be expected next year.

Attendees showed an upbeat mood as they toured the exhibition. Budgets were available for new products and many were buying right from the show floor. Exhibitor after exhibitor talked of selling products based on booth demonstrations. One exhibitor had to order replacement components because his systems were sold from under him. Not a bad way to finish the day.

The crowds concentrated on the exhibit floor. Although the session rooms had healthy attendance, it was the equipment that drew most of the attention. The air of buying was everywhere as exhibitors bragged of making sales and signing contracts.

Tape formats

The battle of VTR giants began on day one. Ampex, Panasonic and Sony each had new VTR technology. Traditionally, these companies arrange their press conferences to consecutively run on the same day. This allows the press to see the new products from all three companies in one day.

On Sunday, Ampex, Panasonic and Sony offered their solutions to today's and tomorrow's videotape recording needs. Although Ampex officially unveiled its DCT digital component production system at last year's NAB, working systems did not appear until last summer's IBC Convention in Amsterdam. The demonstrations at this year's NAB were convincing in that DCT really does work.

The machine will handle three sizes of cassettes, providing up to three hours of record time. It uses the 19mm, D-2 cassettes. One important feature is its ability, within seconds, to switch between 525 and 625 recording formats. According to company-provided information, DCT tape drives have already been sold to several production houses and are being well accepted. (For a complete description of the DCT drive, see page 68 in the February 1993 issue of Broadcast Engineering.)

The battle of tape formats from Japanese-based manufacturers Panasonic and Sony got off to a rousing start on Sunday afternoon. Panasonic unveiled its long-talked-about and recently named tape format, D-5. The series of machines will record in three modes: 10-bit 4:2:2; 8-bit 13.5MHz; and 18MHz 16:9.

Sony unveiled its Digital Betacam format. The format launch includes four machines, two recorder/players and two players. One unique feature is that two of the VTRs are capable of not only recording/playing digital signals, but also playing back standard analog Betacam tapes.

Compression headache

Of significance is the difference in Panasonic's signal compression compared with the Ampex and Sony approaches. The Ampex and Sony formats rely on some form of video signal compression before recording. The Panasonic format does not. Sony calls its scheme coefficient recording. (See page 160 in the March 1993 issue of Broadcast Engineering for a description of the Digital Betacam format.)

The area of video signal compression is not fully understood by many users. Certainly the mere fact that each of the companies has developed its own approach to recording the digital component signals is cause for careful study.

At each company press conference, questions dealt with the effects of compression. Would the viewer be able to see it? How many times could a signal be re-recorded before the compression artifacts became noticeable? The companies provided assurances that their approaches had none of the limitations for which video compression has been labeled. Or in the case of Panasonic, the assurance was that non-compression was the only safe approach.

Whether video compression equates to any quality degradation is a point the industry doesn't fully understand. Although the manufacturers may provide their positions on the compression issue, the users will ultimately decide whether compression is a factor in their selection of new tape recorders. Only time and the sale of machines will answer the question.

Multimedia invades NAB

The third unique aspect of this year's convention was the arrival of the PC and Mac computer types, otherwise known as multimedia. Although the exact definition of multimedia remains manufacturer-specific, the overall direction is clear. Multimedia represents the computer industry's version of tomorrow — which would be com-
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The QTR-600 beltpack remotes are extremely easy to use and provide operation similar to that of hard-wired intercom beltpacks. They are compatible with popular dynamic or electret headsets, such as Beyer, Clear-Com, and Telex. The cases are welded aircraft aluminum alloy with a high-impact, molded Cycolac (ABS) control panel that will withstand the roughest use.

One QX-600 master station supports up to six QTR-600 remotes with “hands-free” two-way communications, and an unlimited number of PL-2 receivers for listen-only users. Circuitry is provided to interface external line audio with the system or to link two QX-600s into a 12-user system. The master station is directly compatible with all standard wired intercom systems such as Clear-Com, RTS, ROH, Telex, and many others via internal programming switches. A local headset position and extensive control, adjustment, and monitoring provisions are also included.

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ATV in your future
The rumors of HDTV developments continue, but one aspect has not been lost on broadcasters. A second, and widely discussed, issue this year’s show was ATV. In other words, a digital transmission system capable of...
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By Brad Dick, editor

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IOT efficiency with HDTV capability. That's what you'll get with the all-new Harris Sigma™ Series, a family of 15–240 kW UHF TV transmitters.

Designed from the ground up specifically for the HDTV transition, Sigma sums Harris' experience in broadcast transmission innovation, digital technology, solid state design and total systems integration.

Sigma provides you with exceptional redundancy, headroom and protection with such features as main/standby exciters, EEV-approved thyratron crowbar protection for the IOT and reserve IPA power.

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Like a well-oiled machine, Broadcast Engineering’s team of master technical managers again combed the exhibition floor at NAB in search of the best and brightest new products. This year featured the largest Pick Hits panel ever assembled, reflecting the growing diversity of the industry (see the related article, “Judges and Rules,” on pg. 42).

Although some panelists noted a drop in the number of new products at this year’s show, there were still enough to make selection of the top 10 difficult. As always, the radio and audio experts cast their votes for 10 new radio products, while the video and TV veterans selected 10 new TV products.

For radio, the judges included network, station, group and consulting engineers and managers. The TV panelists represented stations, cable and broadcast networks, video post facilities and consulting companies. The fruits of their labor represent this year’s best of show at NAB ’93, listed in alphabetical order.

**Radio Pick Hits**

**Corporate Computer Systems: CDQ-1000 digital audio codec**

This codec is designed for use on Switched-56 and ISDN telco services, offering outputs at 56kbit/s and 64kbit/s. It is the first to provide CCITT G.722 and MUSICAM data-reduction algorithms in a single box. MUSICAM can be operated with standard 48kHz sampling (providing 8.2kHz mono audio into 56/64kbit/s paths, decodable by any ISO/MPEG Layer II decoder), or at a unique 24kHz sampling rate (providing 10kHz audio decodable by another CDQ-1000). The widely used G.722 system (7.5kHz audio) also is onboard, providing a versatile interface for switched digital audio transmission. Full-duplex operation, automatic synchronization and rate/algorithm sensing, high error tolerance and Delta/Sigma A/D-D/A converters are included.

圈 (300) on Reply Card

**CRL Systems/Circuit Research Lab DAA-100 digital audio analyzer**

This portable audio test-signal generator and path analyzer provides two independent outputs in either analog or A EBU modes, for testing of analog or digital gear. Each generator channel can be independently set to sine, triangle or square wave functions, selectable in 1Hz increments (1Hz to 22kHz) and 1° inter channel phase steps (0° to 359°). The generator section can be set to 32kHz, 44.1kHz or 48kHz sampling rates or to an external clock. The analyzer section can lock to a sampling rate from 25kHz to 55kHz, deci ng and A/D converting AES/EBU or SPI data. An LCD screen displays all channel status bits, user bits, incoming sample rate and link errors. A speaker, headphn
WITHOUT LEAVING THE PRESENT BEHIND.
Sony unveils a full line of Digital Betacam® VTRs to give you a high performance, workhorse format with the ability to record a 10-bit SMPTE-259M signal.
BVM-191I
Sony combines the quality and reliability of the BVM monitor series with the flexibility of either 4:3 or 16:9, set-up or no set-up, contact closure control or RS-422A control, and more.

BVW-400A
Sony Betacam SP® analog component acquisition products are ideal thanks to their small size, light weight, low power consumption and high quality images, giving you component signal integrity throughout the production process.
MOVE INTO THE FUTURE OF TELEVISION.
INTRODUCING
THE SONY INTEGRATED
DIGITAL COMPONENT SYSTEM.
BACK-PROOF. FUTURE-PROOF.
WITH ECONOMIC PROOF.

BVE-2000
The BVE-2000 editor connects to as many as 12 VTRs, controlling up to 6 in any one edit. Plus it features Advanced List Management capabilities.

DVS-2000C
This compact one mix/effects component digital video switcher offers 12 inputs. Its high performance processor provides superior Chroma Key and Frame Memory capability.
DMX-E3000
Designed for the digital editing environment, our DMX-E3000 audio mixer ensures advanced audio-follow-video performance. Features include 16 inputs, 4-channel audio, standard 24-bit AES/EBU digital I/O, analog monitoring outputs and built-in preview switcher.

DME-3000
The DME-3000 digital effects system offers a powerful combination of 10-bit frame-processing and high quality digital effects such as page turns, lighting and ripple.
Picture the superior quality of digital component. Sharp colors, clean keys, dazzling effects and outstanding multi-generational copies. Now picture it in a full line of products. Products that are compatible with your existing analog component equipment; that complement each other and let you build an all-digital suite at your own pace — one piece at a time or all at once. Products that will take you into the future of television.

Introducing Sony's affordable line of digital production products. Now, you can move into digital component without abandoning your current investment.

**BACK-PROOF**

Although the world of television is evolving, one thing is certain: analog acquisition and archive material will be around for years to come. That's why with our new digital component system, going forward doesn't mean leaving the past behind. Take our breakthrough line of Digital Betacam recorders and players. The DVW-A500, for instance, provides full playback capability with Betacam and Betacam SP tapes, bringing your analog material into the digital domain. Additionally, analog component source VTRs can be directly interfaced to the DVS-2000C switcher and DME-3000 digital effects system.

**FUTURE-PROOF**

Since all current Advanced Television transmission proposals combine a component digital signal and a wide screen aspect ratio, your production system will be better prepared for the future if it has the ability to match this combination. Our Digital Betacam recorders and players bring you the superior quality of digital component recording, and as with all Sony VTRs, are at home in both 4:3 and 16:9 aspect ratios. For viewing, the BVM-1911 monitor has also been designed to display either aspect ratio. Similarly, the DVS-2000C switcher and DME-3000 digital effects unit are software switchable between both ratios.

**ECONOMIC PROOF**

Perhaps the best feature of our new digital component equipment is its price-to-performance* ratio. These products were designed to make digital component quality available to a wide range of industry users at a cost comparable to current analog component systems — and a value comparable to high-end production systems.

Sony has accomplished this not through compromise, but through innovative use of today's technology. Each system component has the features you've come to expect. For example, the Digital Betacam VTRs come complete with built-in standard analog interfaces and video/audio pre-read. They also utilize Coefficient Recording — our unique, cost-effective implementation of Bit Rate Reduction technology. And every component has Serial Digital Interface, which makes installing your system both simple and economical by using a single coaxial cable. Furthermore, we offer you the flexibility to build a system at your own pace — all at once or piece by piece. All in all, making the transition to digital component without abandoning your current investment, is now an affordable reality.


For details and more information, call 1-800-635-SONY, ext. 2200.

**INNOVATION AT WORK.**

*Based on manufacturer's suggested retail price.

Sony, Betacam, Betacam SP and the Digital Betacam logo are trademarks of Sony.
Pick Hits of NAB '93

jack and line output are provided for audio monitoring.

Circle (301) on Reply Card

Cylink: *AirLink wireless modem*

The judges were impressed by the novel nature of this wireless modem that uses BPSK spread-spectrum transmission in the 902-928MHz band. No FCC licensing or common-carrier intervention is required for its operation. The product includes a family of devices, operating at synchronous data rates of 64kbit/s, 128kbit/s and 256kbit/s. RF bandwidths for the spread-spectrum transmissions are 5MHz, 10MHz and 20MHz, respectively. A 6-inch omni whip antenna is used for short haul (<1,000 feet) transmissions; a 24-inch optional yagi antenna offers path lengths of 10 miles or more. Combined with data-reduction codecs, a pair of AirLinks can offer a bidirectional digital audio RPU system. User-selectable frequencies allow multiple units to share the same line-of-sight paths.

Circle (302) on Reply Card

ENCO Systems: *DAD486x digital audio delivery system*

Operating on a standard 486 PC platform, this user-friendly digital audio storage/automation system offers an intuitive touchscreen interface and flexible design. Modular hardware and user-configurable software allow the product to be customized to each station’s needs and growth. Automation accommodates simple live assist or total walkaway. Optional modules provide interface to popular traffic/billing systems, outboard machine control, satellite recording and audio switching. Audio storage can be mixed between linear PCM and Dolby AC-2, ISO/MPEG Layer II or other data-reduction modes. Simple editing is accomplished on a touchscreen displaying graphic waveforms. Networked operation is supported along with text display for announcer or news copy. Sigma-Delta conversion is used, with 64x oversampling on A/D and 8x oversampling on D/A.

Circle (303) on Reply Card

Modulation Sciences: *Model RDS-1 RDS/RBDS generator*

Using a somewhat different approach to RDS generation than most, this device takes the form of a PC plug-in card for IBM and compatible computers. The transmitted RDS data is software controlled, allowing phase-in of features following increased audience demand, or as a station desires. It also provides a simple method of dynamic programming and continual reconfiguration of the RDS datastream, to allow changes with dayparts or programming types, or for toggling of certain displays between alternating messages. The system supports the European RDS and U.S. RBDS standards. Changes can be entered on the host PC or via modem from a remote PC, using the included remote-control software. Current values of all parameters are continually shown on the PC’s monitor.

Circle (304) on Reply Card

Radio Design Labs: *Rack-Up series*

These products are a series of 24VDC-powered modules that can be adhesively attached, bracket-mounted (flush or under-cabinet) or rack-mounted (three to a 1-rack unit mount). Current offerings include the RU-MX5, a 5-input audio mixer, with four selectable line/mic inputs and one line-level input, line or mic-level output, phantom powering capability, LED level indication and expandability; RU-DA4D, a 2×4 or 1×8 audio DA with isolated, individually adjustable outputs and LED audio presence indicators; RU-SM12, a precision dual-channel audio meter using horizontal LED display, selectable peak/average or L-R/L-R displays and individual channel calibration. (RU-VD4A, a 1×4 video DA also is available.) Power supply regulation is provided internally by each unit.

Circle (305) on Reply Card

Scientific-Atlanta: *Encore DSR-3610 digital satellite receiver*

Continuing its pioneering in digital satellite distribution, S/A offers this flexible receiver that accepts S/A’s original DATS format and the data-reduced SEDAT system. The single rack-unit device includes two audio output channels with an option for two more. Digital outputs also are provided in AES/EBU and the uncompressed SEDAT/OSI modes. The receiver is agile between 950MHz and 1,450MHz, and can be used with LNBS of ±2MHz stability or better. Each receiver is individually addressable, and its configuration can be downloaded from a central network computer. Configuration data is held in non-volatile memory. Sixteen opto-isolated closures (relays optional) are provided for remote machine control by the network. A printer/text port and headphone output also are fitted.

Circle (306) on Reply Card

Shure: *FP22 stereo+1 headphone amplifier*

Similar to its predecessor, the FP12, this battery-powered belt-box is a headphone amplifier, but adds stereo and 16dB qui-
eter performance. The FP22 also incorporates a unique feature that allows mixing of another mono source (mic/line switchable) into the stereo headphone feed, with separately adjustable mix levels between the two signals. Because the device provides a balance control for the stereo input and a mono switch for the headphones, three separate audio sources could be mixed to a mono headphone feed. The amplifier offers more than 80dB of gain to two sets of headphones (either 1/4-inch or miniphone stereo), and includes a 30dB pad on the stereo input. Inputs are bridging with loop-through jacks. External power jack accepts 12-24VDC.

Circle (307) on Reply Card

Tascam: DA-88 digital multitrack recorder

This 8-track digital audio recorder uses Hi8 cassettes at just a little more than standard speed for 100 minutes of recording on a 120-minute 8mm tape. Operating in fairly familiar tape-recorder fashion, the deck offers seamless, automatic punch-in/out with rehearsal, and an 80-second maximum fast-wind time from one end to another of a tape. Multiple DA-88s can be ganged together synchronously to increase tracks in increments of eight, up to a total of 128 tracks. Sampling rates of 44.1kHz and 48kHz are supported. Varispeed of ±6% and Delta-Sigma converters are included. Options include a full-function remote control that can accommodate up to six DA-88s (48 tracks), video synchronization and AES/EBU or SPDIF digital audio interfaces.

Circle (308) on Reply Card

Telos: Zephyr digital network audio transceiver

This innovative unit combines an ISDN terminal adapter (TA, the equivalent of the telephone instrument for an ISDN line) and an ISO/MPEG Layer III codec to provide 15kHz stereo plus auxiliary data and 7.5kHz backhaul audio over one ISDN line (2B+D), all in a single box. The 2-rack unit device also is compatible with Switched-56. Each unit can operate at either end of a transmission path. Mic/line-level analog audio inputs are provided, along with send and receive level meters, an LCD status display, autodialer and front-panel DTMF keypad. An RS-232 remote-control port and headphone output also are fitted. Line output is switchable between -10dBV and +4dBm. The product is useful for remote feeds or as a backup STL.

Circle (309) on Reply Card

Nautel AM transmitters keep you on the air with an unmatched combination of value, performance and reliability.

Low cost of ownership — with typical efficiency ratings up to 80 percent, a totally solid state Nautel transmitter pays for itself in tube replacement and utility.

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The thing is just impossible to screw up! The DM-80's non-destructive editing is the only way to go, and revisions are extremely easy and very quick!

—David Esch, Director of Commercial Production
WPNT Chicago

We looked at DAWs for a year—no other product could even come close to the DM-80's price/performance ratio.

—Bill Robinson, Production Director
WQCD N.Y., NY

I love this machine! It's reliable, and user friendly. I can edit in 1/3 the time, and I wasn't familiar with disk recorders--the DM-80 is easy to learn and use.

—Michael Cook, Program Director
KJJJ/KPRB Redmond, OR

The DM-80's editing is much more precise than the other DAW we own. We also like the convenient EQ settings right on the fader unit.

—Rob Thomas, Chief Engineer
WKRX, Pittston, PA

We couldn't say it any better.

Call (213) 685-5141, Ext. 337, or FAX (213) 722-0911 for more information about the DM-80 Digital Audio Workstation for the magic of hard disk recording and random access editing at your fingertips.
TV Pick Hits

Dielectric: 7000 series calorimeter

Looking for an easy way to make RF power measurements? The Dielectric 7000 series calorimetric sensor works with any fluid compatible with copper, nylon, brass or stainless steel. The unit self-adjusts for fluid property changes with temperature variations. A convenient front-panel LCD display shows power, flow rate and temperature in English or metric units. Options include a remote display and an RS-232 interface. Sensors are available in three flow rates, up to 30GPM, and use 3/4-inch hose barbs for input and output connections. The display unit contains a flow computer that can be set up to display heat flow with an overall accuracy of 0.25%. Features include non-volatile RAM and self-diagnostics. It is available in 115V and 230V configurations.

Circle (310) on Reply Card

Dynatech: D2S2 digital storage system

The Digistore is a multichannel digital storage unit that allows instant access to video, with a variety of quality standards, from component digital to Beta-SP and S-VHS. Each DigiStore can perform any combination of playback, record or off-line archive functions simultaneously, and on multiple output channels. A single unit can hold more than 30 minutes of video spots and program segments. Because it is digital, internal editing, sequencing and off-line archiving can be accomplished with no generation loss. An automated program delay feature allows the same machine to play back video with a variable time shift, hours or seconds after it is recorded. Optional software modules allow connections for ad insertion, newsroom systems and master control automation.

Circle (311) on Reply Card

Hewlett Packard: QA100 Quality Advisor video test device

The QA100 is a real time digital measurement, monitor and correction device with a variety of cable test options and video test equipment for cable television. It is designed to test cables to the highest standards of quality and reliability.

Circle (22) on Reply Card

Clark Listens...

Clark listens to its customers and designs its complete line of audio/video cable accordingly. Now you can listen to Clark’s new 700 Series snakes that are designed, as usual, with the customer in mind.

Why not give Clark a listen?

Cables available cut to length and terminated to your specs.

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Circle (22) on Reply Card
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It's the first TRUE Video Synchronizer on a PC® card, giving you an affordable way to synchronize any direct color video signal including satellite, network, mobile and ENG feeds. Unlike infinite window TBCs with their performance-limiting Y/C separator circuits, the MicroSYNC utilizes 4-Field Composite Processing for transparent NTSC performance.

Merely insert one or more MicroSYNC cards into a DPS ES-2200 Dual Channel or ES-2000 12 Channel Rackmount Expansion System. Both provide power and control for any combination of DPS MicroSYNC, Personal TBC®, V-SCOPE™, VDATM or Routing Switcher cards. Or choose the AVS-2400 MicroSYNC AV system which combines both audio and video synchronizers in one convenient frame.

You'll find that the MicroSYNC performs like the real thing, with digitally controlled proc amp settings, black clip, nonvolatile memory, adjustable vertical blanking width, two clamp speeds and a choice of hot switch modes. Production effects include Freeze Frame, Freeze Field and Variable Strobe.

Now more than ever, the video industry is keeping a close eye on the bottom line. Which makes this high-quality synchronizer a smart buy for TV stations, mobile operators, production facilities and cable companies alike. So call DPS today and get the lowdown on the new MicroSYNC.

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serial and parallel digital I/O designed to ensure legal video levels. Component and composite analog outputs are provided. It can operate in two modes, monitor only “Show Illegal,” or auto-correct “Make Legal.” Based on operator-adjustable limits, saturation is reduced to produce legal picture levels, resulting in a clean signal, as close to the original video as possible. A cursor on a component monitor output provides pixel-specific data in one of five user-selectable formats. The cursor is activated by front-panel keys or a PC-compatible serial mouse. Remote control is possible with an optional remote panel or a computer using RS-422.

Circle (312) on Reply Card

ImMix: VideoCube media processor

A Macintosh-based real time media processor, with two video channels, four audio channels and an independent title track. New compression technology allows capture of up to one hour of broadcast-quality video (60 fields/s) and up to two hours of CD-quality stereo audio on a hard disk drive. Expansion modules provide up to an additional five hours of video and 10 hours of audio. Features include 35 pre-built effects and the capability to build more. Two independent keyers provide chroma-keying, full linear keying, and a choice of video or matte fills. The VideoCube includes an integrated, 3-axis rotational digital video effects generator. The character generator is an internal graphics board, which provides access to the extensive library of TrueType fonts available for the Mac.

Circle (313) on Reply Card

Nova: NovaMate TBC/frame sync

A plug-in TBC/frame sync card for IBM-PC compatibles and Amiga 2000 computers. Full-function control is provided through an RS-232 port or the optional NovaTrol remote-control unit. The unit is a full bandwidth TBC, up to 6MHz, with 480 lines of resolution and has Y/C and composite I/O ports. Sampling is 8-bit component, with Y and C processing. Freeze frame, field one and two modes with variable strobe are provided. An adaptive digital comb filter reduces cross color and chroma noise. Included is a master gen-lock card with blackburst and advanced sync. The NovaMate is configured in single, dual or up to 14 channel configurations. A 3-rack unit NovaFrame can accommodate up to 15 NovaCards.

Circle (314) on Reply Card

NVision: NV5000 universal sync generator

The NV5000 is a 1-rack unit chassis providing a common timing reference for simultaneously locking NTSC video, PAL video, AES/EBU digital audio and SDIF-2 digital audio to a common reference. All outputs are locked together and available simultaneously. It can function as a free-running master sync generator or can be locked to an external 5MHz rubidium timing reference or external NTSC or PAL video source. The AES/EBU and SDIF-2 word clock outputs are simultaneously available in three sampling rates: 48kHz, 44.1kHz and 44.056kHz. Alignment tone output level and frequency can be selected independently for each sampling frequency. Video color bars and blackburst for NTSC and PAL outputs also are selectable from the front panel.

Circle (315) on Reply Card

Odetics: Omnicart multichannel automation system

This highly integrated multichannel automation system is able to run up to eight lists concurrently. Lists may be assigned for automated recording, compiling or on-air replay. The system manages all functions, including recording, inventory management, break tape compilation and on-air integration of spots and program material. Omnicart provides storage for 300 multicut cassettes, using a maximum of 14 VTRs. External devices, including switchers, still-stores, character generators and other VTRs, can be controlled by the system. Omnicart may be used to source two or more separate station feeds or can coordinate regional spot insertion on up to six feeds of a network signal. Accurate time line control permits synchronized replay of events even when the events are in different lists.

Circle (316) on Reply Card

Philips: Ghost-cancellation system (implemented on the Tektronix 1910 and 200 VITS inserters)

Ghost canceling is the first major improvement to NTSC broadcasting since color. To implement the system, Philips has developed two generations of advanced digital filter chips and a new family of ghost-cancellation hardware platforms and corresponding software algorithms.

TV receivers with built-in ghost-canceler modules were demonstrated at NAB '93. Set-top ghost cancelers that can be added to existing televisions also are being developed. The Koo GCR (Ghost Cancellation Reference, invented by David Koo, Philips Laboratories) is broadcast on line 19 of the vertical blanking interval. In addition, Philips intends to adapt ghost-cancelation technology to provide the channel equalization required by tomorrow's digital TV systems. (Editor's note: Tektronix and Leitch have received non-exclusive...
The problem with slow motion is that athletes rarely wait for it to finish. While the commentator is admiring the performance in replay, the show continues. What are you missing? With the Digital Slow Motion from EVS the answer is... Nothing.

Digital Live Slow Motion is a new powerful 4:2:2 digital tool that uses the very latest generation of RAM capabilities to continue recording even while you are showing a replay. Because everything is RAM stored digitally, you get instant access, instant replay and superb quality images.

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- Component digital and composite input/output in PAL or NTSC.
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- Auto fading.
- Library with instant access to several hundred still pictures for use as a backdrop to score round-ups, player biographies or title sequences.

Perfect for outside broadcasts and easy to use. Digital Live Slow Motion will give you the best of live TV. All of it.

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Fax: 32/41/22 22 98

Circle (25) on Reply Card
The DVW series of component digital VTRs makes possible the recording of component digital signals, including four channels of 20-bit digital audio that can be independently edited, within a Betacam-size VTR. The DVW-500 and A500 are digital playback/recorders; the A500 also can play back, but not record, current Beta-SP tapes. The DVW-510 and A510 are digital playback-only machines, with the A510 also capable of Beta-SP playback. All four machines have dynamic tracking playback.

The DVW series is equipped with serial digital interface (SDI) that conforms to the SMPTE 259M. This format allows a 4:2:2 component digital video signal embedded with digital audio to be carried via a single coaxial cable and interconnected with other SDI-equipped devices.

Sony: Digital Betacam series of VTRs

Tektronix: Pathfinder TSG90 NTSC signal generator

A powerful hand-held combination of test signals, ID capabilities and audio tones. The Pathfinder allows quick and easy access to basic functions, including 16 video test signals, audio tones, or creating an ID message of up to 32 characters. For the more demanding user, the Pathfinder provides menu-driven flexibility to change and store selections. The tone menu allows selection of 13 audio tone frequencies, (from 50Hz to 20kHz), an audio sweep and tone levels (0dBu, +4dBu and +8dBu). From the ID menu choose ID position or the ID cycle, which displays four ID captions in a continuous loop, at a selectable rate. Up to eight sets of ID captions and four unique front-panel configurations can be stored for quick recall.

THE NSi EQUIPMENT TRACKING SYSTEM

Eliminate duplicate acquisitions and save money.

The CBS and NBC Television Networks are tracking and archiving over 25,000 pieces of equipment and assets for the broadcast of the 1992 Olympics. To help them perform this task they chose The NSi Equipment Tracking System.

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KEY FEATURES

- PC-based system
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Circle (317) on Reply Card

Circle (318) on Reply Card

Circle (319) on Reply Card

Circle (26) on Reply Card
MICROTOM is moving ahead... in Realtime Online.

With the acquisition of new facilities in California and a powerful new COMPOSIUM™ partner for our IMPACT™ Multi-source Digital Effects system, the new Microtime moves to the forefront of realtime online creative video production for broadcast and post.

In mid-July, we'll introduce the newest Composium software, Version 4.5, and exciting enhancements for our IMPACT Digital Effects Systems. Microtime will provide full engineering support and service for all currently installed systems.

"With 22 years of video leadership and a solid product base, we're committed to continuing the performance innovations and engineering support that are Microtime."

David E. Acker  
President, Microtime

In mid-July, we'll introduce the newest Composium software, Version 4.5, and exciting enhancements for our IMPACT Digital Effects Systems. Microtime will provide full engineering support and service for all currently installed systems.

"Congratulations! This is the kind of impact we've been waiting for."

Ed Ackerman  
Absolute Post, Burbank, CA

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See Microtime Realtime Online at Montreux...Booth A431

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- Full-featured Paint System
- Unsurpassed 4:4:4:4 Image Quality
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- Multi-format I/Os

See Microtime Realtime Online at Montreux...Booth A431

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Atlanta (404) 972-1852 • Chicago (708) 253-6868 • Dallas (214) 644-0232

Circle (27) on Reply Card
# Pick Hits of NAB '93

## Judges

### Radio judges:

<table>
<thead>
<tr>
<th>Name</th>
<th>Title/Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>John Battison, P.E.</td>
<td>Consulting Engineer, Battison &amp; Associates, Loudonville, OH</td>
</tr>
<tr>
<td>Gerry Dalton</td>
<td>Chief Engineer, KKDA-AM/FM, Dallas, TX</td>
</tr>
<tr>
<td>Chris Durso</td>
<td>Chief Engineer, KPBS-FM, San Diego, CA</td>
</tr>
<tr>
<td>Kirk Harnack</td>
<td>President, Harnack Engineering, Memphis, TN</td>
</tr>
<tr>
<td>Ray Klotz</td>
<td>General Manager, KCNQ, Lake Isabella, CA</td>
</tr>
<tr>
<td>Chriss Scherer</td>
<td>Assistant Engineer, WDOK/WRMR, Cleveland, OH</td>
</tr>
<tr>
<td>Milford Smith</td>
<td>Vice President, Radio Engineering, Greater Media, East Brunswick, NJ</td>
</tr>
<tr>
<td>Herb Squire</td>
<td>Chief Engineer, WQEW/WQXR, New York</td>
</tr>
<tr>
<td>Mike Starling</td>
<td>Director, Technical Operations, National Public Radio, Washington, DC</td>
</tr>
<tr>
<td>Andy Vallon</td>
<td>Manager, Technical Services, CBS Radio Network, New York</td>
</tr>
</tbody>
</table>

### TV judges:

<table>
<thead>
<tr>
<th>Name</th>
<th>Title/Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marvin Born</td>
<td>Vice President, Engineering, WBNS-TV, Columbus, OH</td>
</tr>
<tr>
<td>Ken Hunold</td>
<td>Audio/Video Project Engineer, ABC Engineering Laboratory, New York</td>
</tr>
<tr>
<td>Mark McKeen</td>
<td>Director of Engineering, The Weather Channel, Atlanta, GA</td>
</tr>
<tr>
<td>Phil Mendelson</td>
<td>Chief Engineer, Digital Magic, Santa Monica, CA</td>
</tr>
<tr>
<td>John C. O'Donnell</td>
<td>Director of Engineering, WQED, Pittsburgh, PA</td>
</tr>
</tbody>
</table>

### WQED judges:

<table>
<thead>
<tr>
<th>Name</th>
<th>Title/Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>Karl Renwanz</td>
<td>Vice President, Director of Broadcast Operations, WHDH-TV, Boston, MA</td>
</tr>
<tr>
<td>Dean Sargent</td>
<td>President, D W. Sargent Broadcast Service, Inc, Cherry Hill, NJ</td>
</tr>
<tr>
<td>Joe Snelson</td>
<td>Group Director of Engineering, Meredith Corp./KCTV, Kansas City, MO</td>
</tr>
<tr>
<td>Roy Trumbull</td>
<td>Assistant Chief Engineer, KRON-TV, San Francisco, CA</td>
</tr>
</tbody>
</table>

### Rules

*BE's Pick Hits judges operate anonymously. Each year they look for new products that meet the following criteria:*

1. **Products must be new and not shown at a previous NAB.** In some cases, distinguishing a new product from a modified older one is difficult. For Pick Hits purposes, a new product is one with a new model number or designation.

2. **Products must have some positive impact on the user's everyday work.** Judges search for equipment that will be used on a regular basis. Products should provide new solutions to common problems.

3. **Products must offer substantial improvement over previous technology.** Unique circuit architecture need not be included, but some new approach or application must be involved in the product's design.

4. **The prices of the products must be within reach of their intended users.** The judges seek products appropriate to a wide range of facilities.

5. **The products must be available for purchase within calendar 1993.** Equipment must be on display on the show floor and currently (or imminently) in production. Judges take the exhibitor's word on availability dates. Products demonstrated in private showings do not qualify.
Video On Tape Is Ancient History.
Introducing The $D^2S^2$ Di

The world's first digit

Here's where evolution can take you: To a revolutionary storage system with digital superiority. D'S - Dynatech
Digital Storage Systems – from Dynatech.

Imagine Instant Random Access At Your Fingertips

D'S DigiStore is the only video storage medium that can record a 30-second spot 15 seconds before it runs. It's the only medium that allows a news producer to reorder a rundown at will, even during the newscast. DigiStore's “ping-pong” delay allows an affiliate to simultaneously record and play back a live feed with an automated time delay – from several hours to a few seconds. And imagine the potential for remotes, where a single machine can record, play back and archive simultaneously.

Use it for spot insertion, news playback, feed recording, post-production or program delivery. With DigiStore's simultaneous playback and record capability, you'll no longer have to fight to find an available tape deck at air time. And you can run back-to-back without fear of exceeding cart machine speeds.

The D'S DigiStore System stores hours of video in a digitally based format allowing instant on-line random access to any spot, news package or program recorded on the system. No rewinds. No pre-rolls. No TRELs. No last-minute, tape-coordinator sprints. Just professional ease and instant access run by your fingertips, not your feet.
Calculate Low Lifecycle Costs

Minute-for-minute, DS's initial cost is significantly less than any electro-mechanical tape-based system of comparable video quality. Our "plug and play" installation will save you time from the beginning. And you'll save labor costs with DigiStore's Windows-based random-access playlist, cart emulation software and interfaces to Dynatech newsroom and automation systems.

Maintaining, rebuilding and replacing electro-mechanical decks is a heavy investment. Compare that cost to the 25-year Mean-Time-Between-Failure on the DigiStore's hard disks. What do you spend on videotapes? Not anymore. Imagine no missed revenue from spot make-goods, botched as-run validations and miscued feeds.

Capture High Quality Video Imagery And Broadcast-Quality Stereo Audio

No compromises. Dynatech's unique Parallel Processing Compression optimizes video and audio quality at a price point that suits your needs. All information is recorded without alternate field drop. Each field recording is automatically adjusted for maximum clarity. Your video record and playback performs at a breakthrough level—the kind of quality you expect from Dynatech's leadership in digital technology.

Move your operation into the new age with DS's DigiStore. Walk upright. Make history.

The best professional video in the world
Compare The Power of D\(^2\)S\(^2\) With Decks and Carts

Videotape Decks And Cart Machines

- Delayed Gratification
  
  *Rewinds, fast-forward and pre-rolls mean slow response to changing playlists and edit decisions.*

- Maintenance And Support Overhead
  
  *Electro-mechanical devices require ongoing maintenance. Shuffling cassettes tie up technicians and tape coordinators.*

- One Channel Per VTR, One Operation At A Time
  
  *Videotape machines were designed to record or to play back on a single channel.*

- No Remedy For On-Air Failure
  
  *If a VTR fails to play back properly, on-line backup is rarely available.*

- Fixed Duration
  
  *Most tapes store no more than 30 minutes of video, and to ensure flexibility, most operations store no more than one piece of video per cassette.*

- Generation Loss
  
  *Re-recording original analog tape to change formats, edit or make copies results in visual degradation.*

- Linear Playback
  
  *In order to play back video, you must record and rewind.*

- Dedicated Function
  
  *VTR and cart machines are typically configured for a single-purpose use within a facility.*

- Broadcast-Quality Stereo Audio

- "Plug And Play" Protocols

Dynatech Digital Storage System

- Instant Access
  
  *The power of non-linear access in the vertical interval enables instant changes in cueing for playback and recording.*

- Low Lifecycle Costs
  
  *Disk drives with a MTBF of 25 years require little maintenance, and ending the tape shuffle reduces engineering overhead by hundreds of man-hours per year.*

- Multi-Channel, Simultaneous Input, Output, Archive
  
  *Multi-channel design allows instant access to video within your facility. Each DigStore can perform any combination of playback, record or offline archive simultaneously—and on multiple output channels.*

- Field Accurate On-Line Redundancy
  
  *For high-end operations choosing this feature, digital mirroring and timing of video storage ensures fault-tolerant playback.*

- Expandable Mass Storage
  
  *On-line disk stores hours of video. A single unit holds scores of spots and program segments. Modular disk arrays add archiving and program output.*

- Digital Dubbing
  
  *Internal editing and sequencing and offline archiving of digitally stored data result in no generation loss.*

- "Ping-Pong" Playback
  
  *Automated program delay feature allows the same machine to play back video with a variable time shift, hours or seconds after it's recorded.*

- Multi-Function Interfaces
  
  *CartWare, NewsWare and AdWare modules create flexible, intimate software linkages with ad insertion, newsroom systems and master control automation.*

- CD-Quality Stereo Audio

- "Plug And Play" Protocols

D\(^2\)S\(^2\) DigStore's singular place in digital video is a result of natural selection. DigStore evolved from the synergy of Dynatech's video group, a dynamic consortium of high technology companies with proven expertise in taking the next step up.

Circle (28) on Reply Card

D\(^2\)S\(^2\) digistore

DYNATECH DIGITAL STORAGE SYSTEM

6400 Enterprise Lane, Madison, WI 5379 U.S.A. 608-276-4680
The decidely upbeat mood at NAB '93 was reflected in a record number of attendees at the show. The official figure of 64,510 is a whopping 22% increase over last year. International attendance, which has been the only real growth area in the last two years, was up by 33% over 1992. At 11,523, international registration accounted for 18% of total attendance.

Aside from the massive show floor at the Las Vegas Convention Center, the conference also featured an unprecedented number of parallel conference tracks. Among these were the traditional Broadcast Engineering Conference and HDTV World. They were joined by the debut of Multimedia World, which was accompanied by its own separate exhibit floor at the adjacent Las Vegas Hilton (dubbed the digital suburbs by some attendees).

**Major issues**

- **Datacasting:** Opportunities in non-audio/non-video broadcasting were never more apparent at a broadcast convention. Auxiliary data transmissions using subcarriers or in the VBI were emphasized in the short term, with the open-ended nature of future digital broadcast transmissions providing great potential for further growth. A full day of sessions provided introductory tutorials on the subjects (a half-day each for radio and TV applications). Several demonstration booths between the session rooms and the exhibition floor ran radio and TV examples of datacasting throughout the convention.

  For radio, the RBDS system was on the air on most FM stations in Las Vegas. Most of these stations have been running RBDS since last January's Consumer Electronics Show in Las Vegas. Receivers were on hand to demonstrate how a full FM dial of RBDS works.

  TV data discussions and demonstrations considered enhanced closed-captioning features and other proposed VBI services for program-related data. The latter allows broadcasters to transmit programming data (about the current and upcoming programs) on line 21, field 2, for display through a properly equipped receiver's closed-caption decoder. The now standardized ghost-canceling system, which also uses the VBI (line 19) was demonstrated. (Before the convention, the FCC accepted an amendment to the VBI rules authorizing these systems in a Report and Order on Docket 92-305. It was adopted on May 5.)

  The new program-related data protocol is contained in EIA's proposed Extended Data Services (EDS), a voluntary standard for all line 21 data near completion, under the draft standard EIA-608. It will allow on-screen data about the station and current program to be displayed almost imme-
Introducing the 3M BC-Metal videocassette. The hot, new Betacam SP* tape designed to raise the standards by which all others are judged and destined to popularity. In fact, we wouldn't be surprised if you've already heard about it. But if you haven't, rest assured, you will.
Introducing New 3M BC-Metal Videocassettes
Given the outstanding performance, unsurpassed reliability and competitive pricing of our new Betacam SP™ videocassettes, they're a value all by themselves.

But as an introductory offer, when you purchase at least one case of BC-Metal between July 1 and August 31, 1993, you’ll receive an additional case of equal or lesser value absolutely FREE. No kidding!

What’s more, with a copy of your invoice from the introductory offer, you’ll also receive an exclusively-designed, 100% cotton T-shirt.

Call your 3M distributor for full details. Or call 1-800-752-0732 for your nearest 3M sales office (1-800-831-8726 in area code 703). Or simply complete this card and drop it in the mail. But hurry, because it will probably be a long time before an offer this great comes along again.

Yes. Please send me full details on the 3M BC-Metal introductory offer.

Name

Position

Company

Address

City/State/Zip

Telephone (_______)


Audio and Video Markets Division
St. Paul, MN 55144-1000
EBS at NAB

During the SBE's EBS Summit at NAB '93, no one disagreed that the current EBS system needs help, but a pair of proponents vigorously disagreed on just how to do it. TFT and Sage Alerting Systems emerged as champions of two different approaches. The former advocates an overhaul and enhancement of the existing system; the latter calls for an RBDS-based replacement.

Both of the systems propose to replace the existing daisy-chain configuration with a web distribution system, providing added robustness and multiple entry points. Station-based receivers for both systems also can be programmed to scan multiple sources for data input.

TFT calls its method the Emergency Information System (EIS). It allows the use of relatively inexpensive upgrades to existing EBS receivers at stations. The system combines the signaling protocol of the National Weather Service's Weather Radio Specific Area Message Encoder (WRSAME) system with the web architecture of the Emergency Alerting System (EAS), also known as the Improved Colorado Emergency Broadcasting System, (CEBS) and the datacapacity of the Emergency Data Information System (EDIS). It also preserves the audible warning tones of current EBS and NOAA weather radios. EIS can be compatibly fitted with an RBDS component to augment its standard on-air alerting approach. It also is compatible with closed-captioning, teletext and other alerting systems.

The Sage system would allow longer messages in its strictly RBDS approach. It also envisions alerting on alternate devices, such as a smoke detector-like alarm with a built-in RBDS receiver, or a television that automatically turns on when it receives an emergency message in its VBI.

The FCC will conduct tests of 16 different proposed systems (including the two previously described) beginning this summer in Denver. The commission hopes to have a new system selected by the end of the year, and expects that different elements from several proposals may be incorporated into the final recommendation.

An on-air demonstration of a full in-band/on-channel (IBOC) AM system was presented for the first time

may be encouraged to stay with a channel even if they tune in during a commercial or other program breaks. Channel grazers

standard is scheduled to be set in 1994. Discussion of the lack of single-frame access to MPEG and other systems generated some concern among attendees. Objective testing of video compression algorithms also was discussed. This area will see even closer examination in view of the tape format battle between Ampex, Panasonic and Sony. Although Panasonic's D-5 uses no compression, the Ampex and Sony recording schemes do. You can expect to see a lot of posturing and discussion on this issue within the next year.

Audio compression: Although several new hardware applications of audio data-reduction algorithms were well received at the show (see "Pick Hits," on page 32), concern mounted over multigenerational coding artifacts (see "re: Radio," September 1992). Progress also was reported on objective testing of data-reduction algorithm performance.

Digital radio broadcasting: A full day was devoted to the subject of digital radio broadcasting, allowing in-depth discussion of the field's current status. Most terrestrial proponents made presentations, along with a report from DBS system proponent NASA/VOA. Other papers covered multipath analysis, upcoming on-air comparative testing, plans for consumer receivers, potential implementation costs and current tests of the Eureka 147/DAB format in Canada. USA Digital presented an on-air demonstration of a full in-band/on-channel (IBOC) AM system for the first time. However, the company was unable to present its planned mobile IBOC FM demonstration because of equipment shipping and installation problems. Meanwhile, rumors persisted that a competing AM IBOC system was going to be announced. (See "re: Radio," page 12, for more details.)

Sculley questioned the wisdom of broadcast TV's pursuit of HDTV.

- HDTV: At the 3rd HDTV World conference, updates and demonstrations were presented on HDTV production techniques from around the world. U.S. transmission system discussions took place in a context that preceded the May 1993 announcement of the so-called Grand Alliance of ATV proponents, but nevertheless detailed the testing (objective and subjective) and channel allotment processes from over-the-air and cable perspectives. (See "News," page 4.)

- Multimedia: The first Multimedia World conference at NAB logically concentrated on basic, tutorial discussions of the technology. It also featured a series of sessions devoted to production techniques for multimedia projects. Specific potential connections of multimedia to broadcasting also were highlighted. The large number of highly placed speakers from multimedia-related industries on the conference program gave testimony to the potential importance of a broadcast component to the future of multimedia.

Many of these sessions were accompanied by printed papers. Three separate proceedings have been published by NAB for the Broadcast Engineering, HDTV World and Multimedia World conferences. Recordings of most sessions also are available on audiocassette. Getting all of this under your belt will certainly take some time — probably right up until it's time to get ready for the 1994 convention. The earlier date for next year's show (March 28-24, in Las Vegas again) puts your preparation time for NAB '94 less than nine months away.
The following list provides an overview of the new products introduced at NAB '93. This year's Pick Hits are identified in the text and are discussed in greater detail, beginning on page 32. To receive information about any of the products in the listing, circle the appropriate Reader Service Number.

AAVS/Advanced Audio Visual Systems
EVA: complete automation control system for broadcast stations, network master controls and video libraries; based on ESbus. S-90 MOSSAIC: video multiplexer places 4, 13-, or 16-image matrix on screen from any of 36 asynchronous inputs.
Access 2000: cable industry program guide and promotion system.
Model S-310: all-format digital video analyzer.
Circle (350) on Reader Service Card

Abekas Video Systems
A51 effects: true 3-D perspective, rotation, location, corner-pinning, 16-input source selector.
A57 effects system: 10-bit frame-based; maximizes limited switcher M/E resources with input pre-transform and background keys.
A66 recorder options: SCSI/Ethernet interface for file transfers; conforms to CCIR-601.
A72 filter: instant font access, character sizing and attribute adjustment; keyframe animation.
A82 production switcher: composite digital processing; ASP1K adaptive sub-pixel intelligent keying; networking capability; two digital keyers.
A84 component digital switcher: features framestore-based layered video architecture; 4-, 6-, 8-layer configurations; 10 or 8-bit CCIR-601 I/O.
A42 digital still store: compact storage of high-quality images; easy operation.
A34 SOLO production system: combines TBC, audio/video switching, mixing, two channels of digital effects and time code in integrated package.
A29 Video Legalsizer: ensures that the wider range of color available in component video is properly limited when converted to NTSC broadcast specifications.
A27D to D-1 converter: decodes, converts NTSC digital composite with associated key signal to digital component video and key; parallel or serial input; D-2-reference, composite analog/reference and 5-2 serial/reference output.
A63 component digital switcher: three mix/effects modules, for post-production, broadcast; user-definable inputs; signal system networking.
A65/66 Ethernet interface enhancements: window transfer feature for Ethernet image file transfers between computers and the A65/66 digital disk recorders.
A65/66 VideoTools package: for SCSI and Ethernet applications; specifically designed for Silicon Graphics workstations; includes a GUI and a new SCSI driver.
A57 video combiner: combines two A57 effects channels in the digital domain over live background without using switcher keyer resources.
A51 effects: enhanced A51 includes Superwarp effects options with ripple, single-pass page turn; allows existing A51 channels to be upgraded.
A28 D-1 to D-2 converter: decodes, converts digital component video with associated key to digital composite video and key.
A26 D/A converter: converts digital component video with key to analog component video with key; optional parallel or serial I/O.
A25 A/D converter: takes analog component video with key to digital component video with key optional parallel or serial I/O.
Software options for DDRs: Segments Playback lets users randomly play back video from disk in real time.
Circle (352) on Reader Service Card

ACC/OM
Axial 2020: visual on-line editing system.
Digital Image Store: for video and key.
ICM 4224 Image Compositing module: provides 4:2:2 switching and layering.
RTD 4224: real-time 10-bit video, key data recorder.
RTD 4200: composite digital, real time 10-bit disk recorder.
WSD workstation disk: desktop real time disk recorder.
RAVE: non-linear, on-line editing system with 10-bit D1 and D2 image quality.
Circle (353) on Reader Service Card

Accu-Weather
Accu-Call 900: service for weather, sports information, horoscopes and other features as revenue source based on charges paid by callers.
The Weather Show: presentations in 15 seconds or longer segments prepared by Accu-Weather to focus on conditions in stations area.
UltraGraphix 386/486: PC HR graphics access, paint, display system.
UltraGraphix Plus: PC graphics access, paint, display system; uses highest resolution of 8-, 16-, 24- or 32-bit graphics systems.
NEARAD: products using NEARAD radar system.
Circle (354) on Reader Service Card

Accurate Sound Corporation
Model 315/925: high-speed audio duplicator electronics; amplifiers, bias generator.
Model 4000: cassette recorder, twin drive permits two recordings or sequential taping; logging, time delay with 24 hours on a single c-90 cassette.
Circle (355) on Reader Service Card

Acoustic Systems
Series BB: voice-over booths; 3'x3'x7' to 8'x8'x7' internal dimensions.
BB/Econoline series: voice-over booths.
BB/Proline series: standard-sized voice-over booths.
Circle (356) on Reader Service Card

Acoustical Solutions/Alpha Audio
Acoustical forms: in pyramidal, wedge-shaped forms.
Alphasorb: fiberglass panels, fabric covered.
Sound Barrier: absorber in blanket, vinyl barrier forms.
Soundtext: acoustical wall fabric.
Circle (357) on Reader Service Card

Acrodyne Industries
ADAM: "Acrodyne Digital Amplitude Modulation" demonstration of VHF and UHF broadcasting; 10-bit analog/digital converter, instantaneously switched solid-state power amplifiers provide ultra-high efficiency; universal compatibility with CCIR, color and HDTV system formats.
TLL/1K system: solid-state 1kW VHF TV translator/translator.
TRU/100SE: solid-state 100W UHF TV translator.
TRU/1KSC: solid-state UHF TV translator/translator, 1kW output rating.
TRU/20K: single-tetrode 30kW UHF TV translator/translator.
TRH/1K and TRH/2K: 1kW/2kW solid-state VHF TV transmitters.
Circle (358) on Reader Service Card

Adams-Smith
Q-GEN: generates ADR talent cue displays; multiformat time-code unit inserts LTC, MIDI code into video.
Serial Manager: inter-product interface via RS-232/-422 and MIDI I/O.
Circle (359) on Reader Service Card

ADC Telecommunications
Digital Audio Patch Bay: digital ready audio patching; standard designs accommodate AES/EBU digital audio signals.
KS-422 Patch by Exception: 9-pin bay allows cost-effective patching of any digital signal using 9-pin connectors.
Circle (360) on Reader Service Card

ADM Systems
PostPro: post-production console; 8/12/16 input with 4x1 preselectors; 3-band EQ; VCA control.
Chromatec TCV-10: in-picture audio level meter.
Chromatec TCV-25: in-picture audio level meter.
Circle (361) on Reader Service Card

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Chromatec TCV-25: in-picture audio level meter.
Circle (361) on Reader Service Card

By Stefanie Kure, associate editor
Broadcast's Premier Telephone System!

No other telephone system on the market has the versatility and expandability of the PeopleLink System.

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Circle (31) on Reply Card

AS-101 Audio Switcher

- Illuminated and legendable control buttons
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- Front panel accessible level controls
- Options include: RS-232 interface, remote control, relay-follow-switch outputs
- Network proven quality and reliability

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- Call us for a free color catalog.

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Tel: (413) 665-2163, Fax: (413) 665-8061

Circle (33) on Reply Card

NAB '93 - Show of Shows

Chromatec TVD-35: in-picture audio level meter.
Chromatec TVD-35C: component video version of the TVD-35.
Bel BDE-3000S: stereo broadcast proficiency delay unit.
Bel BDE-6000SF/S: digital audio lay-off recorders.
Bel BDE-7000SD/SDA: digital audio delay synchronizers.
Bel BDE-8000S: 8-channel audio frame delay synchronizer.
Post-Pro: audio console for 1", on-line editing suite.
Post-Pro II: audio console designed for needs of the D-2 suite.
RM11010: stereo switching matrix designed to be inserted between a line level stereo source and its load.
RM1168: mix-minus matrix; features 16 inputs to eight outputs.
RM1140: metering system; features 0.5dB resolution per segment.

Circle (361) on Reader Service Card

Adrienne Electronics
AEC-Box 8/18/28: stand-alone LTC/VITC generators.
AEC-Box 89: parallel adapter for serial remote VTRs.
MC/LTC, MC/VITC, MC/CMTC, LTC/VITC: plug-in cards for IBM PS/2 PCs.
VTR emulator mode: for AEC-Box 2/10/20 time-code readers.

Circle (362) on Reader Service Card

Adtec Productions
Active 6416 multi-channel controller: automates playback, record and commercial insertion for 16 transports over 16 channels.
Active 6416/Telecaster 4A: combined system incorporates up to 4 integral character generators.
ARC series: line of table-top racks for head-ends or vans where space and weight are of concern.
LINE-ING: low-cost playback controller capable of controlling eight transports on two channels.
Telecaster 4: low-cost character generator.
Telecaster 4A: low-cost playback controller can control 16 transports over 5 channels.

Circle (363) on Reader Service Card

Advanced Broadcast Systems
Smart One: UHF Computer Supervised transmitter with intelligent interfaces. ATV/HDTV ready.
HEP3/HEP3A: solid-state pulsing systems designed for use with the BCD, ABC or ACE elements of the new generation klystrons.

Circle (365) on Reader Service Card

Advanced Designs
ADPRAD 32: Collins turbulence detection with DOPRAD, time-lapping, 32-bit graphics with VISTA board, display control, map builder.
DOPRAD II: Collins turbulence detection weather radar system.
WIND weather data display systems: custom configurations for end-user specifications.
DOPRAD/Storm Path analyzer option: integrated option to DOPRAD weather radar system.

Circle (366) on Reader Service Card

Advanced Digital Imaging
Digital Magic: D-1, Betacam, MII component compatible digital disk recording system for Macintosh.

Circle (367) on Reader Service Card

52 Broadcast Engineering June 1993
Three-Way Access To The Digital World.

Whether it's digital audio, digital video or machine control between VTRs and edit controllers, ADC's digital patch panels provide for the access, monitor and test of digital circuits throughout your studio or station.

**Digital Video Panels**
All ADC coax video jack panels are designed for composite analog, HDTV and serial digital video circuits, including D1, D2 and D3.

**Digital Audio Panels**
ADC's fully-normalled digital jackfields patch AES/EBU signals up to 100 meters. High-speed, data-grade cabling assures error-free transfer of the digital signal. The patented QCP split cylinder contact ensures gas-tight connections that can be reconfigured up to 200 times.

**Machine Control Panels**
ADC Patch By Exception bays allow you to cost-effectively increase the number of ports available for your edit controllers and handle data applications up to 20 Mb/s, including 10 Mb/s Ethernet, T1 and ISDN.

For more information on ensuring the quality of your digital signal with ADC's full line of digital patching products, circle the reader service number below or call us at 1800 726-4266.
EVER WONDER WHAT SYSTEM CAN MAKE YOU MORE CREATIVE AND MORE COMPETITIVE?

Just when you thought your edit suite was complete, someone comes along and introduces “a better way” of doing things.

Your clients tell you they want it because it will give them more creative freedom.

Your business sense tells you if you don’t buy it, your clients will go down the street to the post house that did buy it.

The trouble is, creativity has its price. D-1 digital component systems can cost a small fortune—and demand high maintenance while delivering low editability.

On the other hand, disk-based systems are powerful creative tools, but sources have to be transferred in real-time and the systems are limited to specific applications of short duration.

And perhaps worst of all is that gnawing concern that the technology you buy today may not be the technology you need tomorrow.

Not just a new product, a new perspective.

Ampex takes a different approach.

We looked at how best to apply the creative power of digital component technology to the practical competitive needs of your business—today and tomorrow.

The result is the Ampex DCT® system.

It gives your clients whole new worlds of creative freedom to explore, yet it gives you the flexibility to use the system in a full range of post-production applications.

So, for example, you can use it to produce a complex multilayered commercial in the morning, then turn right around and use it to edit a full-length television feature in the afternoon.

No other system in the world gives you that kind of capability.

And instead of gathering dust waiting for the right client to come along, it’s generating revenue meeting the needs of all your clients all the time.

There are systems and there are “systems.”

DCT from Ampex is the first complete digital component system available from one manufacturer.

And it is the only digital component system designed as a system.

It’s an entirely new solution that, for the first time, makes digital component technology practical.

Each component has a full CCIR-601 industry-standard digital component interface, so it fits seamlessly with any other digital component equipment you might have or might acquire, from digital effects systems to real-time disk controllers to graphics systems to character generators.

In fact, DCT from Ampex can be the “glue” that pulls all your digital component devices together into a cohesive, flexible, powerful system.

Yet if you haven’t made an investment in digital component technology, the DCT system is also the perfect entry point to this exciting resource. Every component in the system is optimized to match the operational characteristics of the other components, resulting in unprecedented levels of integration, performance, and efficiency.

It includes every element you need to implement a full CCIR-601 capability:

- DCT 700d Tape Drive
- DCT 700t Tape Cartridges
- DCT 700s Post-Production Switcher
- DCT 700e Edit Controller
- DCT 500a ADO® Digital Effects
- DCT 700i Analog Interface
- DCT 710i Distribution Amplifier

And every component offers you unmatched power, performance, and reliability.

The DCT 700d Tape Drive, for instance, is simply the best editing tape drive in the world. It is built
for demanding professionals, and employs the most advanced tape transport mechanism ever designed.

The DCT 700t Tape Cartridges were designed in parallel with the drive to provide unprecedented performance, consistency, and interchange, delivering a level of compatibility unmatched by any other post-production system on the market today.

The DCT 700s Post-Production Switcher may well be the first sensible digital switcher ever designed, offering big-switcher performance and versatility in a small package, with unrivaled transparency in a full 4:2:2 digital component signal system.

The DCT system even includes the key interconnect equipment, because we knew these devices would otherwise be unavailable on the market.

The fact is, we thought of everything.

So not only do you get the convenience of buying from one manufacturer, but you also get the security of knowing your system will actually work together when it's installed.

The Ampex DCT system is compact, sophisticated, and powerful. It was conceived and designed expressly to meet the demands of post production in a digital component environment, and to meet both the creative and competitive demands of your business.

It's not where you are, it's where you're going.

DCT is the digital component system from Ampex, the company that has been creating video solutions longer than anyone in the world.

The company that has been the leader in applying technical innovation to solve practical problems.

That's why the DCT system today is already more than a generation ahead of any other digital component system on the market—or on the drawing board.

So while other people keep waiting for the "next" millennium, you can seize all the advantages of this one now.

With DCT from Ampex.
Advent Communications

Lynx 2000A: lightweight, fast vehicle with Man- tilly flyaway package.

Manitis 1500, Manitis 1900 Ku-band: compact SNG terminals.

NewSculpt: satellite earth terminal designed to be transported by station wagon, 4-wheel drive ve- hicle or minivan.

AVR 3550 satellite receiver: designed for profes- sional FM satellite TV applications.

Circle (368) on Reader Service Card

AEQ

CRU remote control console: for Systel-3000, Systel-3000: digital multicasting telephony system; enhanced design supports 16 telephone lines in full duplex.

BC 500 broadcast mixing desk: designed for small broadcast stations, very complete at a small price.

Automatic recording system

TLE-02: portable frequency extender, digital hy- brid

Line distribution amplifier:

AM-03 audio monitor: stereo design, self-pow- ered with input selector, phase display.

TH-02 Ext: enhanced version of TH-02 digital hy- brid

"European Standard" modular system: for au- dio signal processing, open system allows new compatible modules to be incorporated later; available in six modules.

Circle (369) on Reader Service Card

AF Associates

Product line includes: Turnkey systems design, engineering and fabrication; consulting engineer- ing services; Radamec-EPO camera robotics, RP-2 pedestal, See-and-Select video touch-screen con- troller.

Circle (370) on Reader Service Card

AKAI

S2800/S2800 Studio/S2000 and S2200 model samplers: all feature a 32-voice capacity. 16- bit (64x oversampling) A/D conversion, 20-bit (8x oversampling) D/A, and a compression/expanded program editing capabilities.

CD3000 sampler: world's first sampler to include a built-in CD-ROM drive, also includes five CD-ROM discs: 800 standard memory, expandable to 16Gb; SCSI port allows connection to external hard disks and other compatible devices.

DIDO1000 version 3.0 software: for use with DD1000, DD1000s and DD1000s; incorporates two new DSP functions: Pitch Shift and Varspeed.

QMacH editing software: for use with DD1000, DD1000s and DD1000s; can control up to six DD1000s; allowing play commands to be sent to all units simultaneously.

DR 4D hard disk recorder: 4-track hard disk re- corder allows for affordable multitrack digital au- dio recording.

Circle (371) on Reader Service Card

AKG Acoustics

Blue Line: modular mics; ModuLock positive bayo- net coupling, TransAct transducer capsules.

C 547 boundary mic: hypercardioid, non-reflec- tive, low profile, visually unobtrusive.

C 641 gooseneck mic: studio mic with gooseneck mount; high-gain before feedback, hypercardioid pattern.

DSE 7000 Ver 3.0/3.5 software/hardware op- tions: for use with DSE-7000, DSV 1200s and DSV 1600s; incorporates two new DSP functions: "copy edit length" functions.

Quested Q108 speakers: integrated processor, amplifier with optimized transient response.

Tri-Power series: additional models to the line of microphones.

C5900, C5600: condenser microphones.

C522/MS: dedicated M/S stereo microphone sys- tem for location production.

Circle (372) on Reader Service Card

AKM

AVR 3950 satellite receiver: designed for profes- sional FM satellite TV applications.

CD48/ULS: double barrel shotgun capsule for use with C460B modular mic system.

AK-CE: Figure-8 condenser capsule for use with Blue Line modular mic system.

Circle (373) on Reader Service Card

Alamar USA

Novell Gateway: permits automation, media man- agement, net delay, time shifts and satellite record- ing and control to be performed via terminals of a Novell LAN.

Interface controller card: ES/9000 permits MC-2075 communication with BTS machine control- lers.

MC-2075: automatic system for 486 MHz PC with XENIX/OS.

MC-900: controls four automation channels, 64 devices.

MC-908FX: automation uses Sony Flexicart, other VTRs, laser disk recorders, master control switch- ing, routers, still-stores, titlers.

Media Manager IV: central library management on RISC computer, bar code media tracking.

Mini-Media Manager: library management cata- log all media within the facility.

NDP-106SX: net delay for automatic time shift of 1 minute to 24 hours with 866 SX:20 under XENIX/OS.

SC2100: dual-interface, general purpose device programs; each controller handles two serial de- vices.

SPO-106SX: satellite resource management auto- mates dish position, receiver frequency, audio subcarrier tuning, routing, VTR record/playback functions.

Circle (373) on Reader Service Card

Alcatel Network Systems/Telspace

1741 VC 2400 videocodec: for transmission of high-definition TV signals (1250/50 and 1125/60 stan- dards) with reduced bit rate.

1718 VC (DIVA 1) videocodec: designed for telecom networks; select from electrical interfaces 140Mbit/s or 155Mbit/s.

Circle (374) on Reader Service Card

AKM

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NAB '93 - Show of Shows

Alden Electronics
WSR-86, ALRAD: Doppler radar units with PC software for NEXRAD data acquisition.
MSAT-90 software program: menu-driven, window-based software system provides access to all of the data from the National Weather Service.
LPATS data service: lightning position and tracking service.

Video Information System: used to display LPATS data.

C-Band Satellite Data System: consists of a 2m antenna system and an Alden network receiver.

NEXRAD Information Dissemination Service: disseminates NEXRAD products for private sector.

Circle (375) on Reader Service Card

Alesis
ADAT: 8-track digital recorder uses SVHS media; 16 units for 128 tracks; SMPTE TC; proprietary timing reference.
AI-1 interface: for ADAT to AES/EBU and S/PDIF with sample rate converter.
AI-2: single-rack space SMPTE/EBU time-code synchronizer for the ADAT digital multitrack recorder.
RMB option: 32-channel remote meter bridge for ADAT.
X2 recording console: 24-channel, 24-tape monitor, 8-channel recording mixer.
BRC: master remote control for the ADAT digital recording system.

Circle (376) on Reader Service Card

Alexander Batteries
BPI-11: 13.2V, 1.5Ah replacement for Sony NP1.
BPIA: 12V, 1.8Ah for Sony NP1.
BP1B: 12V, 2.2Ah for Sony NP1 and NP.
Personal Smart Charger: microprocessor-based Rapid Charger/Conditioner.

Circle (377) on Reader Service Card

Alias
SCD Volume 1: CD-ROM content library with hundreds of megabytes of 3-D models.

Open Digital Studio: provides open interfaces to the Alias modeling format and rendering functions.

Circle (378) on Reader Service Card

Allen Avionics
AIS filters: miniature packaged, LP video filters.

Isolation transformers:
Model 2873: zero-loss active video delays.
TDL-487: video delay lines for Video Toaster.
AIS series miniature low-pass video filters

Circle (379) on Reader Service Card

Allen Osborne Associates
Telescopic Hilmasts: include NH, NK, NL, NX, NY series of pneumatically operated mobile telescoping masts.

Circle (380) on Reader Service Card

Allied Tower
Product line includes: communications towers

Circle (381) on Reader Service Card

Alpha Image
Alphie: digital production switcher.

Circle (382) on Reader Service Card

Alpha Lynecom/Panamaat
Product line includes: Program distribution, transmission.

Circle (383) on Reader Service Card

ALTA Group
AP-30 production system: 4:2:2 analog video component switcher, effects, linear keyer, accessories; recording to videotape.

Centaurus SSR-1 still store: for 179 fields, 85 frames on removable hard drive.

Circle (384) on Reader Service Card

Altec Lansing
Model 8553B equalizer: tamper proof, programmable room EQ for control rooms, studios.

Model 1674C mixer: hands-off automatic operation; gain sharing, multiple mic system.
M190 loudspeakers: compact, 2-way monitor loudspeaker.
168A mixer: expandable automatic microphone mixer.
1712A limiter: high-performance compressor limiter uses a feed-forward design.
9441A amp: 100W, dual-channel power amplifier.
9442A amp: 150W dual-channel power amplifier.

Circle (385) on Reader Service Card

Altronic Research
Air-cooled loads: 6700 series 5-75kW; Omegaline 6400 series 1-5kW.

Circle (386) on Reader Service Card

Amber Electro Design
Amber 700C: analog, digital audio generator, analyzer on 386/40MHz computer under Windows; digital processing, FFT analysis.

Circle (387) on Reader Service Card

AMCO Engineering
Catalog 450 Rev A: contains illustrations and descriptions of Amco's monitoring enclosures.
Catalog 500B: three styles of 19", 24" consoles.

Monitoring enclosures: single, multibay configurations, accessories; pedestal bases, sloped front and vertical frames.

Circle (388) on Reader Service Card

AMEK Consoles/TAC
BCII modules: include BC348 for four mono mix-minus outputs; BC344-into-2 monitor mixer; BC324 quad group module.

EINSTEIN: automated mixer; compact, comprehensive metering, monitoring; 64 inputs, 4-band EQ; 24 balanced group outputs and tape returns.

Big by Langley: superconsole system; combines an on-board automation system with a recall system and in-line flexibility.

Circle (389) on Reader Service Card

NidaTeaches Your PC to Speak Engineer

Create cable in 10 Sec in Dwg & dBase
Cable labels, runlists, bill-of-materials
Draw system interconnects from dBase
Front/rear jack panels from dBase

Full 3-D architectural tool set
Extensive 3-D furniture library
Auto cable length calculations
2-D & 3-D ergonomic analysis tools

Making Design into Reality
Facilities design and documentation software so fast, flexible and easy to use. You don't need to be an AutoCAD expert, draftsman, clerk-typist or programmer.

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Circle (37) on Reply Card

June 1993 Broadcast Engineering 57
American Broadcast Systems

**MicroCart 100:** PC-based automation in Windows environment.

*Circle (390)* on Reader Service Card

American Studio Equipment

CA04: small grip head. ME160: 12K ear extensions; set of three.

*Circle (391)* on Reader Service Card

Amplex Corporation

**DCT system:** CCIR-601 digital component production system; high-quality multi-generation, digital layering capability for post-production; includes a new format 19mm digital component tape drive DCT 700D, DCT 700s post production switcher, DCT 700s edit controller, DCT 500a ADO digital effects system. **DST 600 series tape drive:** single, stand-alone tape drive based on a robust 19mm helical-scan format; used for storing and retrieving large amounts of data; moves data at very high transfer rates.

*Circle (392)* on Reader Service Card

Amplex Recording Media

**Product line:** Video, audio recording media in all popular formats.

*Circle (393)* on Reader Service Card

AMS Neve

**AMS Logic 2:** includes built-in surround sound and optional joystick. **AMS Logic 3:** dynamically automated mixing console with integral digital workstation, assignable control surface. **New 55 series:** cost-effective broadcast analog consoles 24x6, 24x8, 36x6. **Neve Capricorn:** compact digital mixing console for music recording.

*Circle (394)* on Reader Service Card

AMX Corporation

**Master port:** expander. **AX/MLCD unimount:** mini-LCD panel. **Softkeys:** liquid crystal touch panel. **AMX/Prism media retrieval system:** manages media equipment operation and classroom program routing from a central location.

*Circle (395)* on Reader Service Card

Anchor/ROH

**HME 3:** standard intercom. **Passive audio monitor:** 1-, 2-, 4-channel configurations in 3.5” high panels. **THX digital spectrum analyzer:** analyzes sound systems’ frequency response, theater’s background noise and reverberation. **AN-100 powered monitor:** features line-level RCA inputs, plus 4” phone inputs for microphones or musical instruments.

*Circle (396)* on Reader Service Card

Andrew Corporation

2.4M, 3.6M ESSA systems: motorized and complete with controllers and receivers. **3.7M, 4.6M ES Antennas:** carry Inletsat F-1 type approvals (F-1 for 4.6M); significantly reduces field test costs, expedites system turn on.

*Circle (397)* on Reader Service Card

Apex Systems

**Model 400 Digital Cord:** FM stereo generator; HP limit, LP filter; digital control, analog processing. **Model 8126:** modular audio DA; no transformers; out by 1 m; servo balanced. **Model 9901:** parametric EQ uses tone shaping with overlapping filter bands for multiple EQ settings in a given bandwidth. **Dominator F:** single-channel multiband peak limiter with zero crossover.

*Circle (400)* on Reader Service Card

Applied Digital Technology

**SST option:** sequence store option for the VSS.D1 digital disk recorder. **VSS.D.1:** digital disk recorder; provides six to eight minutes of real time video record or playback plus storage for 150 stills.

*Circle (401)* on Reader Service Card

Applied Memory Technology

**Model 7422 component video recorder:** digital system with 108a-disc-based, real time, 4.22: storage.

*Circle (402)* on Reader Service Card

Arrakis Systems

**Digilink audio system:** includes units to replace standard cart machines, cassette/reeel recorders in live, automated radio. **TrakStar-8:** multitrack hard disk recorder. **TrakStar-2:** digital recorder/EDITOR for multibuffer audio program production.

*Circle (403)* on Reader Service Card

Artilex

**Electronic Ballast:** for 575W, 1.2kW, 400W, 600W, 12kW. **ArriSoft/Frenset:** portable light kit includes ArriSoft 1000, ARRI 650 Fresnels; ArriSoft accepts 500/750/1kW lamps; interchangeable reflector. **ArriSun HMI:** fits for 2.5kW, 400W. **Compact HMI fixtures:** 575W, 1.2kW, 2.5kW. **ArriSoft 1000, 2000:** softlights, interchangeable reflectors. **165R3 camera:** 54mm FL mount makes it easy to change the format from normal to Super 16 filmmaker. **355B:** lightweight companion camera to 355. **Geared Head 2:** smaller, lighter version of Geared Head.

*Circle (404)* on Reader Service Card

ART/Applied Research & Technology

**The Phantom series:** 16-, 34-input recording consoles. **Multicore LTX:** includes 250 multiple effects combinations; three simultaneous effects, 16-bit processing. **SGX series:** production processors; SGX-T2 multilegistor, pitch transposer, programmable preamp; SGX-LT preamp and effects processor. **STX2000/SGX/Nightlies:** integrated digital effects designed to provide extensive effects for guitar, bass guitar players; uses 12AX7 tube preamp stage. **DRX 2100 Wonder Processor:** studio and live sound 24-bit digital audio processor. **SGX/Nitra:** high rack-mounted signal processor/preamp/pitch transposer/tuner.

*Circle (405)* on Reader Service Card

ASACha Siboku

**AD725D automatic distortion analyser:** capable of analysing -120dB distortion; digital filter provided. **AG31A audio analyser:** numerous digital signals available for evaluating any kind of digital audio equipment. **AUS50 audio D/A converter:** for AG31A; when combined with model AX50A input adapter, it is possible to accept a large number of channels. **CC81B1 color encoder:** capable of RGB or Y, R-Y, B-Y component signal with gen-lock. **CM22C6 HDTV 20” color monitor:** 31mm dot pitch, in-line CRT; more than 850 lines of resolution; quality sharpness and luminance. **CM205N:** 20” HR (900 TV lines) auto setup monitor. **CM206N:** 20” HR (900 TV lines) multistandard
With Panasonic’s S-VHS newsgathering systems you can lower the cost of being there without lowering the quality of your look on-air.

Panasonic Digital Signal Processing cameras dock directly to our S-VHS VTRs. DSP gives camera operators the benefit of Panasonic Emmy award winning technology: near-instant set-up on the scene or in the newsroom; on a pedestal or on your shoulder; outdoors, indoors, day or night.

Panasonic’s AG-7000 and AG-5000 Series S-VHS VTRs provide news departments with rugged, fully featured edit bay systems with multiple audio tracks, S-component video, and available SMPTE Time Code.

Need tape stock in the field? S-VHS and VHS are so widely available, it’s virtually impossible to be caught without stock.

You can even roll “amateur” VHS video into your program.

S-VHS from Panasonic. It’s everywhere and anywhere. Think of it as the next best thing to a bigger budget.

For more information call: 1-800-528-8601 (Upon request, enter product code 14)
One Panasonic Way, Secaucus, NJ 07094.
When it’s air time, and you have to worry about a fast-paced camera sequence, unpredictable sequence timing, audience reaction, VTR cuts and commercial breaks – clean, clear, efficient communication shouldn’t be among your concerns.

It’s Basic

When it’s air time, and you have to worry about a fast-paced camera sequence, unpredictable sequence timing, audience reaction, VTR cuts and commercial breaks – clean, clear, efficient communication shouldn’t be among your concerns.

NAB ‘93 - Show of Shows

auto setup monitor.

RTB1A multichannel signal generator: wide bandwidth range of 30-2,100MHz; accepts M, B, G, D/K, I, L formats.

TG21A TV test signal generator: able to configure PAL, component, Y/C and test pattern signals.

TG33A6 HDTV test signal generator: can generate high-resolution test pattern.

TG94C TV test signal generator (EDTV/NTSC): advanced NTSC aspect ratio of 16:9 and 4:3, generates 12 different test signals.

7P22AX: NTSC/PAL pattern generator (monoscope) equipped with gen-lock.

ASC Audio Video Corporation

ASC Clean & Trace software: PC-based software with facilities for clean and trace functions of all industry-standard EDL formats.

Linear and Non-Linear Editing System: expandable, upgradable off-line system for videotape or Virtual Recorder.

Virtual Recorder: emulates videotape machine without the tape; capacity for 1/2-hour video, two audio tracks and SMPTE time code.

Case 3.0 Edit Controller: the ability to manage up to seven bins of 1,000 edits each.

Audio Accessories Inc.

DCE/Audio Accessories AES/EBU patchbay: digital audio patchbay; guarantees proper AES/EBU 1101 line impedance, termination and waveform.

Audio Action

FLEX 01-10 Sound Effects Library: digitally mastered material; wide range of effects.

Joseph Weinberger Ltd. series: 10 CDs include ethnic, classic, jazz, guitar, other types.

KOKA Media: CDs of music, effects.

Zzebras series: CDs include new age, jazz, pop, world music, dance, rap, R&B, Funk, Sitcom Comedy materials.

Audio Developments

AD006-13 Flex-EQ The Ultimate Equalizer: parametric design with non-interacting control over all parameters.

AD146 on-location mixer: 4-output with M/S decoding; 6-12 inputs with mic/line modules.

Audio Precision

ATS-1: GPIB-controlled auto test set for general purpose audio testing.

Enhanced FAST TRIG: software demonstration yielding up to 160 measurements with a stimulus of less than one second.

Audio Processing Technology Ltd.

ACE100 PC expansion card: includes simultaneous playback record features.
"Great shot!"  "Nice move!"

Quality Production, Quality Intercom...

No Coincidence!

Anyone who's been on the working side of a hectic control room knows that the relationship between communication and a successful production is basic. So, as production demands increase, make sure you're basing your most basic piece of equipment, the intercom, on the one that broadcasters the world over rank best — an RTS Intercom System!

Check out the new modular series, it has all the quality and reliability that RTS is famous for, with system costs that fit just about any budget. And as always, you'll benefit from the same knowledgeable customer support on which the industry has come to rely. In New York, call (201) 891-6002: in the Midwest: (313) 360-0430; in Burbank, CA: (818) 566-6700.

When it comes to communication, let's get down to basics.
Aydin Corporation-HPA/Magnetics

FMRR-1A/FMRR4 receivers: for FM rebroadcast; -4 frequency agile.

Favag Cristaltime: master and secondary clocks

Benchmark Media Systems

Jr. Audio Director: combines mode and level control functions as well as selections for left only, right only monitor, stereo reverse, right channel.

Bogden Photo

Product line includes: camera support; Mini-Pro tripods.

Bogen Broadcast Service

Product line includes: replacement parts for RCA automated cart equipment.

Bogden Photo

Product line includes: camera support; Mini-Pro tripods.

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Bretford Manufacturing
TVYM: mount brackets for TV monitors.
TVYW208K: wall/yoke TV mount for 20" monitor.
TVMP: ceiling/wall plate for TV mounts.
TVPW27R-BK: platform/wall TV mount with VCR bracket.
1952 Product Guide: furniture for computer workstations, libraries, editing stations, etc.
TVC35T-BK: ceiling yoke TV mount for monitors to 35".
Circle (459) on Reader Service Card

Broadcast Automation Inc.
Product line includes: Radio automation equipment.
Circle (460) on Reader Service Card

Broadcast Electronic Services
Betabox BBS-900.
Bittree RS422: patch panel.
TBC/r remote control: presets for unity gain of video, chroma, hue, setup control.
Circle (461) on Reader Service Card

Broadcast Electronics
Air Trak 100: configurable linear console.
AM series: AM transmitters with Class F PAs; AM-1 kW, AM-5 kW, AM-10 10kW; full solid-state; C-QUAM stereo.
AM-25: 2.5kW addition to line of AM stereo transmitters; features Call E amplifiers delivers overall efficiency of 77%.
Disc Trak: digital cart machines uses 3½" floppy drives; 112s full-band stereo per disc; 16-bit sampling.
FM 1IC: 1kW FM solid-state transmitter based on FSK6 exciter.
FM 100C: low-power, solid-state FM transmitter for main or emergency backup applications.
FM 300C transmitter: features a 500W solid-state combined broadband RF power module; output is variable from 0 to full-rated power.

VMC16: remote control provides full transmitter and facilities monitoring and control via touch-tone phone lines or a built-in computer modem.
Circle (462) on Reader Service Card

Broadcast Microwave Services
Guardian III system: transmitter management software for 1,000 sites of 50 types; supports Guardian I, Gentner, Burk Technology, SYS Computer interface on single phone and/or computer line.
Guardian system: senses conditions at the transmitter plant; shows status on CRT with failure alarm, restoration and in-tolerance conditions.
SYS computer interface: links remote capability with 16-256 input status/measurement channels, 8 to 128 output control channels.
Circle (463) on Reader Service Card

Broadcast Supply West/BSW
Productline includes: Distributor, approximately 200 lines of professional audio, RF/radio products.
Circle (464) on Reader Service Card

Broadcast Video Systems/BVS
CARDKEY: linear keyer. fits in GVG, Leitch Video DA frames.
CP600: video proc amp, fits in GVG, Leitch Video DA frames.
VM-400: 4x1 video switch matrix; fits GVG, Leitch Video DA frames.
VM-40: 4x1 video mixer; fits in Leitch Video Matrixing system.
VM400: 4x1 video switch matrix; fits GVG, Leitch Video DA frames.
VMC-16: remote control provides full transmitter and facilities monitoring and control via touch-tone phone lines or a built-in computer modem.
Circle (465) on Reader Service Card

Broadcasters General Store
CRL event timer: produces timed relay closures for day-parting with Audio Signature unit.
Miltronics MCS: multilingual coordinating system; cardframe holds 18 auto coupling phone cards or combination of cards with DAs.
Rodman/Brown Desk Jockey: PC-based, hard disk commercial storage/satellite automation system; complete, total automation for 14-day walk-away time.
5709 VTR controller: by DNF Industries.
CFT Tower Sentry: 24-hour a day, 7 days a week service for monitoring of tower lights.
Circle (466) on Reader Service Card

Bryston
4BNP power amp: 250W/channel stereo uses soft-start circuit.
8B: 4-channel power amplifier.
Circle (467) on Reader Service Card

BSS/AKG Acoustics
PCS 920/920 Varicurve: parametric EQ/analyzer system; 296 features full digital control of 12 parametric EQ sections.
Circle (468) on Reader Service Card

BTS Broadcast Television Systems
Alamari: master control switcher.
BCS-3000/PC master control: PC-based version BCS 3000 control system.
Betacam SP equipment: VTRs, camcorders, players, peripherals.
DCK 300: D1 VTR includes integral A/D, D/A converters as found in DCR 500.
LDK-910SK, LDK-491: mid-studio camera and ENG/EFP camcorder.
LDK-9SSR, LDK 9PSR: studio and companion portable cameras; features FT-SSR CCD sensors; top-of-the-line systems.
LDK-9SSR: frame transfer CCD ENG/EFP camera system.
MARS router: 25x8 matrix; input/output expandable; 3MHz bandwidth; RAM stores configuration with battery backup.
MRN:9: noise reduction system with 3-D median

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filter leaves U/V bandwidth intact. motion detection
cuts motion smear, dual 4:2:2 frame stores;
gain reduction.

**DVR 500:** D1 VTR for post-production; no external
A/D, D/A converters needed; setup cards for cus-
tom operation menus, four units in parallel record
HDTV.

**Nytod2 keyer:** for D2 VTRs, permits unlimited
digital layering.

**F-Lips:** desktop video production system.

**FDL90** telecine: CCD system with switchable as-
pect ratios; 4:3, 16:9 in 525/625-lines.

**Motif:** filter uses PostScript Type 1 fonts; dynamic
motion rolls, crawls; developed with Falcor,
Axtron Electronics; Vector display effects.

**Prism DVE:** full-featured broadcast/post-
production DVE with DVEator 3-D graphics maps.

**Enhanced Venus:** high-density router; 2,048 au-
dio, 1,024 video crosspoints per unit; intermix
HDTV video, 400Mbit/s serial digital video, stereo
analog audio and AES digital audio.

**Diamond digital series:** family of serial compo-
ent production systems.

**Jupiter:** PC-based control system; includes a fam-
ily of flexible control panels, intelligent interface
boxes, and protocols and electrical interfaces

**Philips Vector Video Echo Canceler:**

**Model ESL:** enhanced speech interface unit for the

**LX-1:**

**Burst Electronics**

**VDA4:** video DA 1x4 gain adjust, 25MHz BW.

**PVS-100:** production switcher 4-in, prv out, pgm
out, key in (TTL), key fill in, GVG 100 protocol.

**VDS:** video detector/switch 2-in/1-out, tally out
detects loss of video on A, switches to B.

**VMF-2:** 2-channel video mixer/lader 2-in/1-out, dis-
solve A to B, B to A fade to black, "take" 0.2 to 6
second GPI digital control.

**Circle (471) on Reader Service Card**

**Cablewave Systems/RF Systems**

**Bogner directional antennas:** for low-power,
medium-power TV.

**E-30 waveguide, connectors:** for MMDS/ITS.

**Expanded Flexwell line:** new sizes of coaxial
cable and elliptical waveguide.

**FM power divider:** for directional antenna use

**PAT 865:** single-polarized, standard trimmed
design antenna; 6,875-1,125MHz range.

**Circle (472) on Reader Service Card**

**Calaway Editing**

**CE-400:** on-line, of-line edit control; 3,048SX CPU,
4MByte memory, VGA color display; 12 RS-422 VTR
ports; 9,998-line main EDL memory.

**Circle (473) on Reader Service Card**

**California Amplifier**

**Low-noise downconverter and Yagi Antenna:**

**Mod; 50mm with macro at wide end.**

**Model E52:** enhanced speech interface unit for the

**ARC-16 transmitter remote control system.**

**Bruck Technology**

**LX-1; input stereo audio selector.**

**Model E52:** enhanced speech interface unit for the

**Storeel can help!**

**Whatever the size...Worldwide, Storeel can help!**

**Storeel Systems offer optimum flex-
bility, maximum efficiency for stor-
ing broadcast tapes and films.

**Customized systems of top-quality
steel or high-impact plastic.**
In 20x10 and 20x20 Switching, Datatek has it all.

Digital Video • Digital Audio
Analog Video • Analog Audio

Digital or analog, audio or video, Datatek has a 20x10 or 20x20 switcher to fill your complete needs. Datatek’s extensive line of switchers may be used independently of each other or in combination to form flexible and coordinated digital and analog routing systems.

- The D-2530 Serial Digital Video Switcher for D1, D2 and D3 signals (10x10, 20x10, or 20x20 in 2 Rack Units only).
- The companion D-2540 Digital Audio Switcher routes AES/EBU or consumer format signals with sample frequencies to 48 kHz.

For more information, call or Fax:

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- The D-2511 Analog Video Switcher features a 40 MHz bandwidth and 20x10 switching in 1 RU or 20x22 switching in 2 RU.
- The D-2535 Wideband Video Switcher is a 100 MHz system for 20x10 in 1 RU.
- The D-2520 Stereo Switcher features matched left and right channel performance with 0.05% THD at ±26 dBu (20x10 in 1 RU or 20x22 in 2 RU).

Each of these cost-effective switchers includes RS-232 and RS-422 control as standard for computer or modem control. A wide selection of control panels is also available for reprogrammable, X-Y, alphanumeric, keypad, pushbutton per source, etc.

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Please call or Fax Datatek for more information.
Carousel Video
Carousel-pellet: label remover solution; odorless; no clouding or damage to cassette shells.
ST3: waterproof stopwatch.
T-120: VHS videotape cassettes.

Circle (486) on Reader Service Card

Cartonl USA/Century Precision Ltd.
Product line includes: Fluid head and tripod camera support products, the Beta and C series.

Circle (481) on Reader Service Card

CBI Custom Business Systems
Agency Management System: expanded, improved management of radio stations' business with agencies.

Circle (482) on Reader Service Card

CEI Electronics
P184 converter: provides D-2/D-3 digital output from PAL composite analog input; 8-bit processing.
P186 converter: switchable dual CCIR 601 4:2:2 digital inputs; dual YUV, YCrCb or RGB outputs; 8-10-bit processing.
P163-RAM: upgrade for Maurice Minor hard-key controller expands effects sequence memory with external memory cards for archiving.
P171 digital video converter.

ImageCon: PC package converting among graphic standards and TV/video; supports TIF, IFF, FIR, TARGA; optimizes and converts between image standards.

Myriad-Ex: image manipulation system; 525-line version.
P722 router: signal distribution with 12 inputs by 5x dual outputs; D-1 or D-2 signals; parallel CCIR 625/601 standard; clocks regenerated.

Worldmaster/P256: standards converter.

Meridian: digital video 3D effects system; D-1 signal processing.

Circle (485) on Reader Service Card

Cellcast Communications Products
Product line includes: Remote broadcast equipment for radio.

Circle (1202) on Reader Service Card

Central Tower
Scatter-free tower: Central Tower and Jampro Antennas collaborated in this design; antenna sig-

nals pass through tower members; consistent azimutth pattern circularity.

Circle (486) on Reader Service Card

Century Precision Optics
WA-XXCV: 0.8x wide-angle converter attaches to front of zoom lens; 75mm, 80mm 85mm slip-on step-up rings.

Circle (487) on Reader Service Card

Channelmatic
ADCART Plus: random access ad insertion shares four VCRs on two channels; electronic directory editor; ROS event mode for sequential insertion.

Adcart/D: digital local ad insertion replaces VCRs with digitized A/V data for analog playback.

CompEdit: compiler-editor; auto preparation of ad copy; spot relies on traffic schedule with one VCR; Vbase software.

Circle (488) on Reader Service Card

Chimera
CronieCones: collapsible units for VideoPro and Daylites Jr. single lights.

Quarts, Daylite Rings: for multiple ARR, Desisti lights to 46kW open face; second model to 10-12kW.

Circle (489) on Reader Service Card

Chris Electric
CASP/1200, CASP/2000: universal battery support systems.

Circle (490) on Reader Service Card

Chromatek, Inc.
9135 HDTV scan converter: built-in NTSC and PAL decoder; accepts RGB, Betacam and Mill signals.

9101 scan converter: provides true NTSC (RS-170A) output.

9120 downconverter: high-quality conversion of analog raster-type sources to RS-170-A-timed TV broadcast signals.

9125 downconverter: same features as the 9120 plus support of the SMPTE-approved 1125/60HDTV format.

Circle (491) on Reader Service Card

Chyron
MAXINE: single-channel, single-user titler and graphics system; compatible with INFINTIT! and MAX!; fully anti-aliased, full color.

Centaur video adapter: produces video output from Silicon Graphics IRISIndigo workstation; PAL, NTSC; installs in R-3000 or R-4000 CPU-based systems.

CODI Font Maker: font-rendering software; additional 3rd-party software packages include CODI MATE, CDI control panel for PCs; CODI-X for Silicon Graphics Indigo and ZFX for Macintosh.

Synesis CG: 3rd-party software package for CODI operation; integral command, test file editor to create/import text from PC-compatible word processors.

Software: for INFINTIT! and MAX! graphics systems; features message compose editing, flash font and function key enhancements.

Circle (492) on Reader Service Card

Cine 60
Spider-Lite: portable lighting system: 12V light.

MiniSun-Gun: DC light beam can be camera-mounted or hand-held; 25W, 30W, 75W,ONCS filter.

Simultaneous charger: 4-channel system charges 4 batteries in 1 hour.

The VAMP: volt/amp meter tests battery characteristics during use.

Circle (493) on Reader Service Card

Cinema Products
Video 5K system: low-cost Steadicam for 8-17lb, professional video cameras.

Circle (494) on Reader Service Card

Cinemills
Super 4000W lighting fixture: single-ended lighting system with reflective mirror.


Circle (495) on Reader Service Card

Cipher Digital
Product line includes: Time-code products, transport synchronizers; random access digital audio recorder CDI-328.

Circle (496) on Reader Service Card

Clark Wire & Cable
590 series: low-loss RGB cables with 3, 4, 5conductors.

690 series: mini-subminiature RGB cables with 3, 4, 5 conductors.

Composite cables: for remote; three video, four audio circuits with or without power cable.

Pipgy pack: camera-mounted unit supplying power, gen-lock, mic; line audio, Intercom, video input, tally with single composite cable.

TV559 SuperFlex: TG-59-style cable; triax, stranded center conductor; five colors available.

ADAT/DA-88 cable harnesses: and components for AESis ADAT; Tascam DA-88 digital multitrack audio recorders; custom preparation of signal data and control harnesses.

Circle (497) on Reader Service Card

Clips Products
Product line includes: Utility, equipment carts.

Circle (498) on Reader Service Card

CMX
CMX Cinema: non-linear editing for video and film; flexibility of high-quality, compressed digital video with 2-full-frame moving image displays.

OMNI 1000E: editing system for high-end on-line applications; multi-processor architecture for speed, performance; dynamic motion memory.

OMNI 500: online, off-line editing control; high-end features for mid-end applications.

AEGIS: high-end editing system with new controls.

Circle (500) on Reader Service Card

Cole Wire and Cable
Product line includes: Audio and video cable, video systems control, ENG/SNG-composites, fiber optics and stage lighting cable.

Circle (1205) on Reader Service Card

ColorGraphics Systems
Digital effects loops: option for DP/ MAX system; integrates external digital effects device into the compositing workstation.

DP/MAX upgrades: software, hardware and software development for real time animation.

DP/Mosaic-C: to 8 minutes of digital disk record time with D-1, component analog input, output.

Enhanced chroma processor: includes soft, blur, positioning control of chroma-key mattes for DP/MAX keying capabilities.

Expanded layered software: unlimited numbers of live and still layers; scripting, compositing.

On-line editor software: includes disk cache editing; full-featured editing software with EDL, import, modification.

VMAX2.1 software: release in on-going software development for DP series.

Circle (502) on Reader Service Card

Colortran
ENR 45 Rolling Rack: dimmer system: 48 units for 2.4kW; 4x96 or 4x92 patch panel; 300-400A breaker; DMX, AMX, VMX, 6-10VDC control.

Pro Pak: portable lighting kits have 100-961 Mini Pro, 164-341 Mini Broad instruments; stands, barndoor attachments.

Circle (503) on Reader Service Card
Scenaria
Digital Audio/Video Production System

Audio Recording, Editing, Sweetening and Mixing
- 38-channel, automated digital mixing system
- Digital EQ and dynamics on every channel
- Integral 24-track random access recorder/player
- Multitrack digital audio editor

Random Access Video Storage
- Integral VisorTrack system

Control of External Devices
- Multiple ATR/VTR serial machine control
- Automated audio/control routing

System Compatibility
- Compatible with ScreenSound and SoundNet
- Multi-user networking capability

Solid State Logic
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Darmstadt (6151) 93 86 60 • Tokyo (3) 54 74 11 44
New York (212) 315 1111 • Los Angeles (213) 463 4444
Circle (43) on Reply Card

One of three Scenarios at Post Perfect/Mixed Nuts, New York
Digital audio is here.

We get it there.

2 miles on FDDI multimode. 25 miles on singlemode
64 channels bi-directional full bandwidth audio

Fail-Safe FTRCTM 
Signal Integrity

BEC manufactures
fully modular fiber
optic digital audio
transmission systems for:

- STLs
- Production Facilities
- Satellite Links
- Mobile Production

Comprompter
NetVid: network video software; captures video and sends it down the network as data directly to workstation.
ENR upgrad.es: GraphicMaster link to titler; specifies screen locations; CaptionMaster software; ArcMaster extended archive software; StillMaster still store.
ENR V.4 enhancements: full VGA color prompter; changed user group and user/desk group utilities.
PC/LAN compatible: full-featured network software.
PSS Production Prompting System: for ad. agencies, production houses, corporate production facilities.
TOTAIPROMPTER portable: production prompting systems for laptop and notebook computers.

Circle (509) on Reader Service Card

Computer Concepts
Editing option: for DCS digital commercial system automation.
Circle (511) on Reader Service Card

Computer Engineering Associates
CEA newssheet system enhancements: full-function system with wire/capture, assignments, scripting, prompting, inventory, personnel management, and machine control interfacing.
Circle (512) on Reader Service Card

Computer Prompting & Captioning Co.
CPC-600 CaptionMaker: closed and open captioning system.
CPC-700 CaptionMaker Plus: SMPTE, time-code-based closed and open captioning system.
Circle (513) on Reader Service Card

Comrex
Talk Console: talk studio in portable package; 1 or 2 phone lines, 2 mic channels; self-adjusting hybrids, mix-minus circuit; dial-cue feature.
Circle (514) on Reader Service Card

Comsat World Systems
Digital Audio Distribution: international digital service through Intelsat network, backhaul and international spread deliveries.
Intelsat-K: network through Ku-band satellite.
TV scheduling service: short-term, occasional-use, videoconferencing services through satellite network.
Circle (515) on Reader Service Card

ComStream Corporation
ABR200: digital audio receiver; 20kHz stereo from Ku-/C-band; multirate, multimode integrated receiver; Musicom (ISO/MPEG) compression.
CM236: digital modulator for video networks by satellite; RS-232/485 remote-control port.
Audio Network Management System (ANMS): PC-based, monitor and control system.
DACS600: audio codec/multiplexer for satellite uplinks or point-to-point communications.
Circle (516) on Reader Service Card

Conectech Antenna Systems
1.8m flyaway: portable, transmit-capable Ku-band antenna.
EC8: satellite antenna controller.
Circle (517) on Reader Service Card

ComTek
High-fidelity IFB products: base station transmitter, high-performance personal receivers; wireless-to-the-ear promoting, cuing systems.
MRC-52P: miniature high-fidelity receiver; IFB, personal communications use.
Circle (518) on Reader Service Card

Contactronix Systems
Product line includes: solid-state RF amplifiers for broadcast, communications, military, laboratory, and education.
Circle (519) on Reader Service Card

Concept Productions
CAPS-CR computer-assisted programming system; complete audio storage and playback for live or automated radio stations.
Circle (520) on Reader Service Card

Concept W Systems
CP-301 series: universal camera multiplexing systems for NTSC and PAL.
PDC-340HP: intelligent remote power system for cameras using coax.
RVS-230: return video switcher.
Circle (521) on Reader Service Card

Conifer
Integrated receivers: 1-piece antenna/downconverters with 32-52dB gains, noise figures of 1.5dB.
Receiving antennas: 12dB, 16dB, 24dB gains.
Circle (522) on Reader Service Card

Connectronics
JBi600 patchbay system: T/T'Bantam connectors on front panel; high density; 3 normalizing options.
XB modular patch panels: uses XLR connectors; 2 rows, 16 connectors or 1 row, 16 connectors.
Circle (523) on Reader Service Card

Continental Electronics
419G/420C: shortwave transmitters for 300kW, 500kW, standard. CCM-controlled carrier level modulation or SSB, RS-232/422 remote control; tetrode PAs.
802B FM exciter: low-power transmitter or 5-50W source for high-power transmitter system, PLL frequency control.
SSM series modulators: provides high-level digital modulation from 16-module circuit; supplies controlled DC plate current based on number of

Circle (44) on Reply Card
modules active in accordance with audio input levels.

**Time AM:** transmitters with solid-state modules; 312T 300W; 314T 1kW; 31T-1 2.5kW; 315T 5kW; broadband, synthesized frequency control. 516R series: 21.5, 25, 27.5 and 35kW broadcast transmitters.

**Circle (524) on Reader Service Card**

**Control Concepts**

**LI, LG series:** surge and power protection systems.

**Circle (525) on Reader Service Card**

**Corporate Computer Systems**

**CQ91000:** codec transmitting 10kHz digital audio over 1 switched digital circuit (50 or 64 kbps). (See Pick Hts.)

**Circle (526) on Reader Service Card**

**CQD-2000:** multirate ISDN Musicam codec; transmits stereo or mono digital audio.

**Circle (527) on Reader Service Card**

**PACT:** ed
casting workstation for digital audio.

**Circle (527) on Reader Service Card**

**Cortana Corporation**

**Product line:** Lightning, static protection products; Stat-Stat, Stati-Kitty and Stati-TomCat.

**Circle (528) on Reader Service Card**

**Countryman Associates**

**Product line:** Microphones, the EMW series.

**Circle (529) on Reader Service Card**

**COSA/Company of Science & Art**

**CoSA After Effects** special effects application for Mac users; provides high-end capabilities.

**Circle (530) on Reader Service Card**

**CRI Systems/Circuit Research Labs**

**Amigo AM:** matrix stereo audio processing system; dual-band AGC; 3-band matrix limiter; NRSC output filtering. SC-100: generates RDS signals or RDS signals by 100% digital signal processing.

**Circle (531) on Reader Service Card**

**DDA-100, DAA-50:** 100 is a 2-channel function generator and AES/EBU audio link analyzer; 50 is a digital audio interface analyzer. (See Pick Hts.)

**Circle (532) on Reader Service Card**

**RBDS & subcarrier:** generator system.

**TVS-3005:** SAP generator.

**PMC/RF AM:** mono audio processor; 2 output filters; can be switched back and forth remotely.

**Circle (531) on Reader Service Card**

**Crown International**

**Product line includes:** power distribution panel systems and connectors.

**Circle (1264) on Reader Service Card**

**Crown-Kinzey Company**

**360 Systems Digicart:** random-access digital audio recorder.

**AKG TruPower series:** stage microphones for vocal, instrumental applications.

**Audio Arts R 8:** 10-channel audio console.

**Ramsay WP-1200:** monitor.

**Sony DPP-M7:** digital sonicty effects system.

**Telos hybrids:** Telos 100 Delta, One-plus-One.

**Circle (532) on Reader Service Card**

**Crown International**

**SASS-P 1kHz:** stereo ambience microphone.

**IQ-2000:** computer-controlled audio system.

**LM301, LM300Z:** mini dual gooseneck condenser microphones.

**PCC-170:** multifunction supercardioid boundary mic.

**CM 311 "differd" headcard condenser microphone:** rejection of backgroundambience encountered at sporting events.

**SMX-6:** digital 8x programmable mixer.

**Circle (533) on Reader Service Card**

**Crystal Graphics**

**TOPAS Professional and TOPAS for the Mac:** for the Mac; fully integrated for production of broadcast-quality 3-D animations.

**Desktop Animator:** fully integrated modeling, rendering and animation package.

**Circle (533) on Reader Service Card**

**3D Designer:** integrated 3-D modeling, rendering.

**Circle (534) on Reader Service Card**

**CSI Camera Support International**

**System 40 tripod, head, dolly:** for EFP/studio applications.

**Data systems:** pan/tilt, tripods supporting 8- to 50-pound loads; single, double-handle options; tilt, pan locks.

**ENG tripod:** lightweight with 80-lb overruled height.

**SoSo, hard cases:** for all Cilli/DARA systems.

**Datovc dollys:** professional tripod leg locks; locks: from 25- to 75-pound load; polyurethane tires, roller bearings.

**Models APT-30DCII and APT-30DCP2, MHV-20:** remote-control pan/tilt heads.

**Circle (535) on Reader Service Card**

**Crite International**

**S/22: exciter:** mono, stereo per FCC, CCIR, CRT specifications; 20W from modular, redundant design.

**VL1/500:** kW solid-state FM amp with four MOSFET 250W modules; protection, diagnostic features; 25-30W/RF drive.

**VL3/30:** exciter output per FCC, CCIR specifications; program via RS-232 port to control transmitter from a remote PC.

**Circle (536) on Reader Service Card**

**Cycle Sat**

**Automation Protocol Converter:** routes 38.4kbps data from Cypher receiver for direct scan data interfaces in TV station automation system.

**The Flat Antenna:** agreement in principle with the Flat Antenna Company; flat antenna, approx. 1’ thick, available in 1.1, 1.5, 2 and 2.5 meter diameters.

**Circle (537) on Reader Service Card**

**Cylinder**

**Airlink:** point-to-point wireless connectivity; no FCC licensing required; max. range of 30 miles; supports synchronous data up to 256kbps; asynchronous to 38.4kbps or an analog voice. (See Pick Hts.)

**Circle (538) on Reader Service Card**

**Da-Lite Screen Company**

**Model D:** automatic mixing controller assists sound operators with multiple live microphones; 8-channel array; 100MHz bandwidth.

**Circle (539) on Reader Service Card**

**Da-Lite Digital Media System**

**Audicro Starter Kit:** Plug and play digital audio system, live assist and playback; Windows-based user-friendly interface; multitasking system; simultaneous record/playback capabilities.

**Circle (539) on Reader Service Card**

**Da-Lite Screen Company**

**The Tensioned Cosmopolitan Electrolyt:** electric tensioned screen.

**Circle (540) on Reader Service Card**

**Dan Dugan Sound Design**

**Model II:** automatic mixing controller assists sound operators with multiple live microphones; 8-channel VCA unit patches into audio console.

**Circle (541) on Reader Service Card**

**Daines Publishing Group**

**Product line:** Publications list broadcast equipment technical data, applications information.

**Circle (542) on Reader Service Card**

**Data Center Management**

**DCM-PC:** distributed processing version of newsroom computer.

**Circle (543) on Reader Service Card**

**Data Security Inc.**

**Type IIA:** only deaeraser approved by Department of Defense to purge classified info from S-VHS Type II-A: only degausser approved by Department of Defense for permanent erasing.

**Circle (544) on Reader Service Card**

**DataTek**

**D-2530:** serial digital video router with 20x10 to 64x64 interfaces in TV station automation system.

**Circle (545) on Reader Service Card**

**Data Translation**

**Media 100:** on-line, non-linear video production system; 60-field video output quality.

**Circle (546) on Reader Service Card**

**Datworld**

**FM allocation map book:** FM, FM translators and FM boosters with pictorial data, licensed facilities and technical data; applications and construction permits are represented.

**LMA/duopoly contour study:** available 24 hours a day, 7 days a week via on-line computer system.

**Circle (547) on Reader Service Card**

**David Sarnoff Research Center**

**Advanced Digital HDTV (AD-HDTV):** a digital simulcast HDTV system providing high video and audio quality; features include MPEG-2 compression, packetized data structure.

**Circle (548) on Reader Service Card**

**Davinci**

**3/2 edit package:** for Davinci and Renaissance series; operates with telecine with recording VTR.

**EDIT/2V, /3V options:** VTR/telecine editing facilities; various configurations of recording VTRs with tape and telecine source transports.

**Renaissance 8/8:** component digital color correction with enhancements.

**Circle (549) on Reader Service Card**

**DBX/AGK Acoustics**

**Model 172 Supergate:** uses 24dB/octave voltage-controlled filters for precise isolation of signals requiring gating; parametric controls.

**Model 1024:** dual buffer amplifier.

**Project 1 series:** dual compressor/gate (model 205), dual expander/gate (model 274), dual spectral enhancer (model 296).

**Model 706X:** dual mic pre-amp; 0.14dB distortion at 20kHz, 20kHz bandwidth; has built-in overload indicator, 48V phantom power.

**Model 1290P:** subharmonic synthesizer; for sound reinforcement, production, mobile DJs.

**Circle (550) on Reader Service Card**

**DBA/Mark IV**

**DDB Interface:** audio production console.

**Interface console:** 2, 4-32 channel mixers; 4 group buses, 6 auxiliary buses; optional 1/0 transformers.

**QIR:** mixing console featuring true left-center-right (LCR) panning and four LCR submix groups.

**Circle (551) on Reader Service Card**

**Dedotec USA**

**DSET-5:** location lighting kit; weighs less than 30 pounds with four Dedolight heads, stands, projection attachment.

**Circle (552) on Reader Service Card**

**Delta Electronics**

**ASE-Z:** low cost, high-performance AM stereo exciter generates C-QUAM format.

**Circle (553) on Reader Service Card**

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Circle (554) on Reader Service Card

DENON

DN-1200F: CD changer; 200-disc capacity.
DN-720R cassette deck: variable pitch, adjustable record and bias levels; real time counter.
DN-851FA: CD cart player in-on-air CD playback system: AutoTrack selection mode: streamline profile, rugged transport operation.
DN-961FA CD player: drawer loader.
TU-680NAB: MAX AM broadcast monitor, per NISC, selectable bandwidth 8F, CQAM stereo.
Circle (555) on Reader Service Card

Disquest Inc.

ANIMAQ/UX: software video animation controller for UNIX workstations.
Mac ImageNode: networked video input and output system; functions as a frame accurate video gateway between Silicon Graphics and Macintosh platforms.

Circle (556) on Reader Service Card

DIC Digital

Betacam SP cassettes: 5-, 10-, 20-, 30-minute lengths.
Recordable compact disc: CD changer; 200-disc capacity.
Model 430:
Model 740 spectral processor:
equalizer; raises low-level signals in three bands by 2 dB.

Circle (557) on Reader Service Card

Dielectric Communications

Model 7000 series calorimeter: works with any fluid compatible with copper, nylon, brass or stainless steel; self adjusts for fluid property changes with temperature variations. (See Pick Hits)
Broadband UHF water column load: for use within the 420-868MHz band; operates with a water/ethylene glycol mixture coolant.

Circle (558) on Reader Service Card

Digidesign

The Session 8 XL: low-cost professional quality hard disk recording system; based on Windows platform.
SampleCell II: stereo 16-bit, 32/voice, 32MBYTE sample playback card for the Macintosh II; Centri and Quatra computers.
Pro Tools 2.0: software upgrade and enhancements to the Pro Tools systems.

Circle (559) on Reader Service Card

Digital F/X

Waveframe 1000: for creating CDs; records digital audio directly to Yamaha YMF-301 encoder and YPR-251 recorder.
Waveframe 401: digital audio recording system: includes IVTC sync, digital I/O, mixing, multitrack punch recording.
Hirose: stand-alone non-linear diskless editor; works with video on Macintosh hard drive: 640x480 pixel array at 30fps.
TidalWave: 6-track software only on hard disk recorders, editor using SGI Indigo platform.

Circle (560) on Reader Service Card

Digital Processing Systems

Personal animation recorder: replaces traditional VCR for recording and real time playback of computer animation sequences.
ES-2000 expansion system: rack-mount chassis holds 12 Personal Series cards; redundant power supplies; front panel microprocessor control.
DPS-285: master sync, test signal generator.
TBCs, synchronizers: DPS-295 multiflattent, transcoding TBC/sync; DPS-265 4-field synchronizer; DPS-275 multiflattent, transcoding PAL TBC/sync; DPS-335 PAL, 8-field synchronizer.
VM-2000 personal Vscope: waveform, vector monitor plug-in card for Amiga 2000, IBM PC; compatible. Video Toaster Recorder:
MicroSync A/V: 4-field composite video, stereo audio follow synchronizer; full bandwidth composite video bandwidth.
DPS-710/750: color correctors; available in composite and component configurations, NTSC and PAL formats.
Personal TBC IV: for 5-video I/O, freeze, variable strobe, LTP, color bar generator, control color balance optional; DOC, noise reduction.

Circle (561) on Reader Service Card

Digital Vision

DVACS 1000: conceals effects of positive and negative film dust, certain types of scratches; tape dropouts and FM noise; uses 4:2:2 10-bit digital signal processing.
DVIN1000: color stabilizer corrects unwarranted 2D movement in video images; functions include integral framestore synchronization, horizontal and vertical aperture correction.

Circle (562) on Reader Service Card

Discreet Logic Inc.

FIRE: high-speed paint system for video, print; animated graphic shapes applied to effects; matting, Flame.
VME:3.5: editing system with last feedback; compatible with major 3D systems; for editing, image processing, compositing.
INFERNO: for film effects, compositing capabilities exceed resolutions of 312x128 at 12-bits per channel; digital editing tools; image filtering; 3D perspective viewing.

Circle (563) on Reader Service Card

Data Devices

Datolite LCD-100: projector accessory for smaller projection devices; electronic servo circuit; operating load of 100lbs.

Circle (564) on Reader Service Card

Di-Tech

5886 and 5887 sw Mitches: 5886 is a 4x4 video switcher, part of the Meridian series; uses the same plug-in modules as the 5881 and 5882. 5887 2-level audio switcher is the same size as the 5886 and has the same features.
224 quad video equalizer: provides 4 independent 1 in, 1 out, variable channel equalizers. 225 dual video equalizer DA: 1x3 video DA with 2 separate 1.000 equalizers and differential inputs.
418 A/V display generator: 1 rack unit high; has 16 pushbuttons; equipped with an RS-170 video output signal for distribution to monitors.
419 source display panel: available in single or dual versions; provides 6-character status display in a 1-rack unit housing; adjustable for one or two axis.
46 64 control panels: 461 half-rack panel has 10 input assignable buttons for single button switching; 464 is an X-Y panel with 20 button source and destination prefix sets.

Circle (565) on Reader Service Card

Dolby Labs

DPS900 STL: 950MHz operation; advanced digital and RF techniques for high-quality audio, exceptional signal robustness; modular design.
Model 740 spectral processor: 2-channel dynamic equalizer; raises low-level signals in three bands by as much as 20dB without affecting high-level signals.
SRP multitrack series: 24-track Dolby SR processor; individual control of 1/0 and gain.
Model 430: background noise suppressor for broadband noise reduction in on-location recordings.

Circle (566) on Reader Service Card

Dorrough Electronics

280 and 380 audio meter: AES/EBU 2-channel digital reading meter; selectable peak-hold function; gate-array technology.

Circle (567) on Reader Service Card

Drastic Technologies

Virtual VCR: compression-based videodisk recorder; supports NTSC and EIA-B signals.

Circle (1208) on Reader Service Card

Dubner International

Scene Stealer: PC/AT board with software, accepts NTSC/PAL video, automatically detects and marks cut points while grabbing B/W images.

Circle (568) on Reader Service Card

D/Vision-Pro

ProEdit/2 editing system; combines IBM/PS/2 computer with D/Vision-Pro, turnkey system.

Circle (569) on Reader Service Card

DVS Digital Video Systems

ISP/100: image sequence processor; for high-speed capture; display of HDTV sequences; multistandard capability; combinable with video or computer interfaces.
ISP/400 series: modular solid-state image specification processor; high-speed capture and display of HDTV sequences; multistandard, multi-user capability.

Circle (570) on Reader Service Card

Dwight Cavendish

COPYMASTER 2500: videocassette duplication system, features the 250 series of modules from [18-250]slave VCRs handles PAL, NTSC and SECAM.
VP700: automatic VCR changeover module.
VP738: 10x10 video and stereo audio matrix route switcher.

Circle (571) on Reader Service Card

DNAIR Electronics

DATA Link: combines broadcast-quality video, dual audio and four full-duplex RS-232 signals on one fiber.
DYNA MITE: compact routing switcher with 10x10 video/audio matrix with control in two rack units.
DYNAVSTY routing switchers: 80MHz, 70MHz bandwidth; expandable to 1,000x1,000 matrix.
DYNOPITC: fiber-optic systems for audio, video and data; handles high-resolution signals in D-1 and D-2 formats.

Circle (572) on Reader Service Card

Dynacube Corporation

DYNA-129: serial digital routing switcher; co-developed by Alpha Image and Utah Scientific; 128x128 slave VCRs provides PAL, NTSC and SECAM.
Connectivity: demonstrations on linking NewStar II system to hardware and software packages.
NewStar II: Version 2.2 software package.

Circle (574) on Reader Service Card

Dynatech Corporation

EarthWatch Communications

EarthVision: customized software allows artist to...
Our Commitment Continues...

With the new D/ESAM® 400 we offer a total integration of highly advanced technology and customer requirements.

Efficient and simplified operation

Dependability... with unparalleled support

Long product life

Lower cost

At Graham-Patten Systems our developments are focused toward your needs...

Award winning digital audio technology utilizes highly advanced signal processing developments. Modular architecture offers an upgrade path to handle your changing needs.

Our exclusive Virtual Input Matrix allows analog and digital signals to be intermixed without complicated patching or routing. Adding or changing inputs is easy and inexpensive—giving you long term flexibility.

Complete control using ESM protocol assures compatibility with any major editing system... now and into the future. Familia operation gives editors more capability in less time.

For more information contact:
GRAHAM-PATTEN SYSTEMS, INC.
P.O. Box 1560, Grass Valley, California 95945 USA
Telephone: (+1) 916-273-8412 or 800-422-6662
Fax: (+1) 916-273-7438

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PC -3 video switcher: for broadcast production; card for PCs operates under Windows; standard SMPTE serial interface.

Unifield mixers: analog component and compatible production switchers; in single or dual M/E versions.

PCA board: companion PC card for PC3 switchers; provides audio-follow-video under Windows; standard SMPTE serial interface.

SMPTE serial interface.

Card for PC3 switchers; black finish for ENG/EPF mics designated by B.

7100 stereo power amp: each channel delivers 75W of continuous average power; current-limiting circuit.

Circle (578) on Reader Service Card

Econo Broadcast Service

take line: rebuilt tubes: 4CX3500A, 4CX7500A, 4CX12000A, 4CX20000A/B/C (8990), 4CX20000D.

Circle (577) on Reader Service Card

Edifex Systems

Edifex III digital editing system: non-linear offline editing with 486 platform, hard disk storage, optional compact MO drives, removable storage; graphic user interface, multicamera capability.

Circle (578) on Reader Service Card

Editing Machines Corporation

PrimeTime: professional projects directly from EMEC; CED/DAD 48 1kHz audio available on optical disk and hard drives.

High resolution: picture quality.

Circle (579) on Reader Service Card

Editing Technologies Corporation

ENSEMBLE PRO: high resolution; "EMC2; CD-quality 44.1kHz audio available on optical disk.

EMC print-to-tape: able as kit containing software and add-in cards or complete turnkey editing system.

EMC print-to-tape: master projects directly from EMEC; CED/DAD 48 1kHz audio available on optical disk and hard drives.

High resolution: picture quality.

Circle (579) on Reader Service Card

Edifex Systems

Edifex III digital editing system: non-linear offline editing with 486 platform, hard disk storage, optional compact MO drives, removable storage; graphic user interface, multicamera capability.

Circle (578) on Reader Service Card

EEV

Leddicon camera tubes: for studio, ENG and ENP cameras; 1/2", 1" and 30mm units.

Power tetrodets: 4CX series for AM/FM transmitters: 5kW, 15kW, 35kW power levels; improved mesh filament design provides longer life, reduced noise and eliminates warm-up variations.

Circle (582) on Reader Service Card

Lightning proof: remote control with pan, tilt and roll features; permits flying, swooping, point-of-view shots.

Circle (584) on Reader Service Card

EEV

Leddicon camera tubes: for studio, ENG and ENP cameras; 1/2", 1" and 30mm units.

Power tetrodets: 4CX series for AM/FM transmitters: 5kW, 15kW, 35kW power levels; improved mesh filament design provides longer life, reduced noise and eliminates warm-up variations.

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Circle (582) on Reader Service Card

Lightning proof: remote control with pan, tilt and roll features; permits flying, swooping, point-of-shot photos.
Never Before Have We Made So Much Noise About Something So Quiet.

The original Shure FP32 set the standard in field production for portable stereo mixers. Now, with the new FP32A, you can count on getting even less. Noise, that is...30dB less! In fact, the FP32A is so quiet and improved that it's perfect for use with DAT and other digital recording media.

Professional Mixing You Can Take Anywhere.

The Shure FP32A is a 3-input, 2-output portable mixer specifically designed for:
- Remote audio recording
- Electronic field production
- Electronic news gathering
- Location film production

At just 1.6kg in weight and only 184mm x 161mm x 59mm in size, the FP32A easily goes everywhere. And operation anywhere in the world is never a problem, either. Two 9V alkaline batteries will operate the FP32A for at least 8 hours or it can be powered by any 12 to 30 VDC power supply, such as an automotive battery, rechargeable belt pack, or an AC to DC converter.

So Many Features In So Little Space.

No other portable stereo mixer offers comparable performance and as many features in such a compact package. The new FP32A gives you all the features of the original FP32, plus:
- Dynamic range of over 100dB
- 48V phantom, 12V phantom and 12V T (A-B) power
- LED indicators of input levels, output peaks, limiter action, and low battery
- Pop-up pan pots

Link switch to couple inputs 2 & 3 into a stereo pair
- Mix bus to connect two FP32A mixers together
- Headphone monitoring mode switch and headphone MS stereo matrix
- Monitor switch to route mixer or Monitor In signal to headphones
- Internal DIP switches for over 4000 customized set-ups

Designed And Built In The USA By Shure.

Since 1983, broadcast and production engineers have relied upon Shure Field Production products. All FP products are designed to withstand the most extreme real-life operating conditions. You can depend on every FP product for ruggedness, reliability, and outstanding audio quality.

For the Shure FP dealer nearest you, call 1-800-25-SHURE.
PORTABLE STEREO MIXER

A Host Of Applications:

**Remote Audio Recording**
- Live music
- Sampling
- Nature sounds

**Electronic News Gathering**
- Live events
- Sports
- Satellite Uplinks

**Electronic Field Production**
- Documentaries
- News magazines
- Instructional programs

**Location Film Production**
- Features
- Stereo ambiance
- Samples for post-production

**Supplied Accessories:**

- **Carrying Case**
- **Shoulder Strap**
- **Mix Bus Cable**

**Features:**

**Benefits:**

- Exceptionally low self-noise
- Compatible with digital recording and transmission, At least 30dB quieter than FP32.

- 48V/12V phantom and 12V T(A-B) power
- Will operate all condenser mics available.

- Balanced transformer inputs and outputs
- Superb rejection of hum, RFI, and other interference.

- Wide range input gain controls
- Handle hot levels without pads.

- Input red/green LEDs
- Visual indication of optimal gain settings.

- Switchable mic/line inputs and outputs
- Handle any signal level.

- Input low-cut filters
- Reduce wind and handling noise.

- Pop-up pan pots
- Avoid accidental movement.

- Link switch
- Couples inputs 2 & 3 into a stereo pair.

- 1kHz tone oscillator
- Recording and send level calibration.

- Slate tone and mic
- Mark beginning of production takes.

- Compact VU meters
- Can be seen in all lighting conditions unlike LEDs. Not affected by temperature or altitude like LCDs.

**Specifications:**

**Frequency Response**
- 20 to 20 kHz, ±2dB

**Total Harmonic Distortion**
- ≤0.25% at +4dBm, 50 to 20kHz

**Equivalent Input Noise**
- -127 dBV with 150Ω source; 20 to 20kHz

**Output Noise (input controls full off)**
- Master full on: ≤-100dBV, 20 to 20kHz
- Master full off: ≤-80dBV, 20 to 20kHz

**Low Cut Filters**
- 6dB down at 150Hz; 6dB/octave slope

**Limiters**
- Threshold: 0dBm to +15dBm
- Attack time: 1 msec
- Release time constant: 0.1 sec or 1 sec

**Operating Voltage**
- Internal: Two 9V alkaline batteries
- Battery life: >8 hours for normal use
- External: 12 to 30 VDC
- Current draw: 40mA idle at 18V

**Dimensions and Weight**
- 58mm H x 161mm D x 184mm W;
- (2 1/4" x 6 3/8" x 7 1/4")
- without batteries: 1.6 kg; (3.5 lbs)

[Shure Brothers Incorporated 222 Hartrey Avenue, Evanston, Illinois, U.S.A. 60202-3696 Phone: (708) 866-2200 Fax: (708) 866-2279]
digital animations.

**Video Delay:** RAM-based digital player and simultaneous recorder.

**RAM TEST LT:** compact RAM-based digital recorder.

**LSM:** Instant shot-no-memory system with simultaneous playback and record.

Circle (604) on Reader Service Card

Extron Electronics

**VGT 50 & 100:** video test generators.

**GLI 250:** ground loop isolator.

**Fe 1 200:** peaking amplifier.

System & switcher/projector controller

Circle (351) on Reader Service Card

Fairlight ESP

**Edit Decision List:** for MXF2 digital audio production system.

**MFX Tower:** fully featured multitrack digital audio workstation.

Circle (605) on Reader Service Card

Faraday Technology Ltd.

**Product line includes:** video, RF filters, delay lines for conventional and HDTV.

Circle (606) on Reader Service Card

Faroudja Laboratories

**LD100 line doubler:** accepts NTSC, S-video inputs; also for PAL.

**LD100A/line doubler** multistandard unit for NTSC, PAL.

Circle (607) on Reader Service Card

Farpoint Technologies Inc.

**Information not available.**

Circle (608) on Reader Service Card

FAST Electronics

**Video Machine:** complete A/B editing system with machine control, for PC or Macintosh, composite or S-VHS NTSC, PAL or SECAM video.

Circle (609) on Reader Service Card

Fast Forward Video

**Bandit:** transfer full-screen images from Mac or PC to VCR.

Circle (610) on Reader Service Card

Ferral Industries

**C100 Plus:** TBC/synchronizer; multiple inputs, outputs with transcoding; operates in NTSC and PAL.

**C100 Plus:** TBC/synchronizer with adaptive digital comb filter and automatic DOc; multiple I/O.

**MICRO:** board-level TBC/synchronizer; 4/2 processing, automatic DOc; composite and Y/C I/O, gen-lock.

**Dual 4:2:2 TBC:** stand-alone with RS-232 remote control.

Circle (1207) on Reader Service Card

Fiber Options

**Series 100:** Video systems: 1-4 video channels over a single fiber.

**Series 2000 Data systems:** video plus data, with or without audio, dual or single fiber operation.

**Series 2600 Analog Audio systems:** voice, control voltages, intercom and telephone interfaces available.

**Series 2400 audio/video link:** stereo audio with video on single multimode fiber.

**Series 2900 digital control link:** carries SMPTE 205M 4-wire machine control on single or multimode fiber.

**Series 3120 stereo audio link:** balanced audio over multimode fiber.

Circle (611) on Reader Service Card

Fidelicam

**DCR-1000 Series:** digital cartridge machine, stores spots on 3.5" floppy disk, longer elements on 13.3MByte disks.

**Elite series:** modular furniture for the studio by Murphy.

Circle (612) on Reader Service Card

**MX series:** modular audio consoles.

**Series V:** audio consoles for on-air by Broadcast Audio Division

Circle (612) on Reader Service Card

Flash Technology

**FTS 2100 SMART:** System Monitoring and Reporting Telemetry, a self-evaluating obstruction lighting system.

**EAGLE:** PC beacon monitoring for SMART systems.

Circle (613) on Reader Service Card

Fidelisys

**Airboss automation:** unattended TV on-air switching accepts traffic schedule and ShowTimer cue lines.

**CortDirector robotic controller:** database, control and traffic management for Sony FlexiCart.

**ShowTimer enhancement:** controls satellite dishes, receivers; includes traffic system and LAN workstations.

**TimeShifter:** delay live signals by any time increment from seconds to minutes.

Circle (614) on Reader Service Card

Fidelisys

**FM Systems:**

**ATIS EATER:** filter removes transmitter ID signals to avoid crosstalk in the demodulator.

**Camera Master:** hand-held digital meter for sync, white, iris, focus and color burst.

**VM71 Video Master:** ALC for video signals.

**SPM-I:** for measuring stereo separation.

Circle (615) on Reader Service Card

Fidelisys

**Focus Processing**

**Product line includes:** Professional, educational and reference material for broadcast and electronic media.

Circle (616) on Reader Service Card

Folsom Research

**Otto:** broadcast quality autosync video scan converter.

Circle (617) on Reader Service Card

For-A

**MV 91 Multi-Viewer:** 5x1 split screen presents live 1/9 nonsynchronous images and sixth picture as 4/9 on NTSC monitor.

**PAM-300 audio mixer:** S-input, stereo output system; for audio-follow-video systems; parallel and serial interface capability.

**DVM-400:** 16-input digital component switcher.

Circle (618) on Reader Service Card

Franklynn R. Beemish

**Services include:** system, facility engineering, design, construction.

Circle (621) on Reader Service Card

Freozelloni Electronics

**A304 auto-ranging charger:** fast "smart" NiCad charger for 12-30V, 1-12Ah packs; 4-channels, lightweight; auto line select.

**AR124 charger:** auto-ranging system for 6-15V, 1-12Ah battery packs; 4-channel; fully automatic.

**FNP-15B:** high energy output NiP-1 type battery.

**HMNP, HMP/P:** NiP-1 camera battery conversions, brackets.

**Solar Charger:** ENG battery, super-compact solar charger.

**AR501 charger:** single-channel system; auto-ranging for 12-30V, 1-12Ah NiCad; fully automatic.

**MF-NP1:** mini-fill with NiP-1 battery connector.

**SF1:** 4-channel charger for NiP1 batteries.

Circle (622) on Reader Service Card

Fujinon

**A14x5.7EVM:** hand-held lens for 1/4" cameras, comfortable hand grip and control; 2x extender.

**A18x8.5EVM:** lenses for 1/4" and 1/2" cameras; multiposition servo grip, multistep zoom speed; 2x extender.

**A20x8.6E5M:** 1/2", 1/4" lenses for studio production; reduced chromatic aberration, flare, reflections; improved modulation transfer function; 2x extender.

**A24x11.5ERD:** compact lens for handheld cameras, integral 2x extender.

**A8.5x5.8E5M:** lenses for 1/4" and 1/2" cameras; VM series includes position servo grip, user-selected zoom speeds; 1.7x extender.

**A15x8VEVM, S15x6.5EVM:** aspheric, inner focus lens with "V" grip. High magnification, wide angle.

**A8.5x5.8EVM:** aspheric lens with high magnification and wide angle for ENG/EFP applications.

**A6x8.6E5M, S6x6.7E5M:** world's highest magnification field production lenses.

**A64sx7TESM:** multi-purpose studio lens.

**A20x6.8E5M, S20x6.2E5M:** studio production workhorses.

**EPT-10 pan/tilt head:** supports loads to 22 lbs; 300" pan, 95° tilt range; 90-260V AC power; EOP-20, EOP-30, DOP-50A controllers offer various control modes, including preset.

**EPT-20 pan/tilt head:** fully operable underwater to 20 feet; ±300" pan, ±95° tilt; 9/sec pan and tilt speed; loads to 22 lbs; 24Vdc power required.

**HR22x1.8ES:** high-definition lens with 1/3" aperture maximum; zoom ratio of 10x or 22x; 2x extender.

**HR6x2.1ERD:** HD TV lens for 1" cameras; 2x extender.

**STD on Optics:** 20-page pocket guide to lens selection.

Circle (623) on Reader Service Card

Full Sail Center for Recording Arts

**Courses:** film, video production, post-production, lighting, special effects, make-up, set design, creative writing.

Circle (624) on Reader Service Card
G&M Power Products
GM308 Lighting Belt: sun-gun battery with 30V 4Ah rating.
GM4X1NP charger: simultaneously charges four NP1A batteries within one hour.

Garner Industries
CPT50 Type II degaussper: meets NOS/DOO requirements for Type II erasure of 7500m media to 90dB.
Model 1400 degaussper: erases Type C reels to 14'

George Electric
Product line includes: Program delivery services via satellite.

GE Lighting
Product line includes: Lamps for stage, studio.

GE Support/RCA Broadcast
Product line includes: Field maintenance service for existing RCA equipment; stage, studio lamps, parts, tech. assistance, training and emergency services.

Gefen Systems
Filemaster: for AKAI DD1000, AMS Audiofile Plus, Lexicon Opus or Panasonic SX3901; automatic transfer of sound effects from CDs.
NSM CD 3101: 100-CD changer; performs pre-programmed "concerts."
Pioneer CVX3000: 30-CD changer; includes software for IBM or Macintosh control.
SFX Libraries: collections including Sonic Boom, BBC, Digifects.
Touch the Music: touchscreen background music system

3-band, wideband and composite limiting. TT/200: audio teleconferencing interface.
GT line: of group teleconferencing systems for connection to most video CODEC or satellite transceivers.

Circle (633) on Reader Service Card

GEPCO International
SS2404 & SS2412: 4 and 12 pair configurations of SS24, 1101, digital audio twisted pair.
SS26: ultra-flexible oxygen free copper patch cable, 1101, AES/EBU compatible.

Circle (634) on Reader Service Card

Getris Images
Dynamic Paint: features morphing, metamorphosis, non-linear paint effects; option for use with Eclipse, Venus products.
Integrated systems: uses Sony DNS-100 still-store in Getris Images systems.

Circle (635) on Reader Service Card

GML, Inc.
HRT-9100: all discrete line-level mixer series.
Model 8200: 2-channel parametric EQ.
Model 5300: 4-channel mic pre-amps.
Model 5800: dynamic gain controller.

Circle (636) on Reader Service Card

John Gorrell Woodworking
Information not available.

Circle (637) on Reader Service Card

Gorman Redlich
Portable of Tape EBS monitor: tuneable AM/FM receiver and FCC certified decoder.

Circle (638) on Reader Service Card

Gotham Audio
Product line includes: Distributors, audio products.

Circle (639) on Reader Service Card

Graham-Patten Systems
D/EMEM Plus: for D/ESAM 800; enhances memory management to 900 internal registers; to configure virtual machines and other advanced features; disk drive stores entire system memory
D/ESAM 400: digital edit suite mixer; 32 analog digital inputs.
D/ESAM 800 delay option: to delay audio to match video.
D/ESAM 800 Ver 2.0: upgradeEPROM adds manual crossfades, auto To/From for auto-assembly; other features.
DAT: digital audio interface converters.

Circle (640) on Reader Service Card

Gray Valley Group
8800 series: range of high-density analog video DAs; based on 8500 series; 8 outputs with 10 DAs per 2RU frame.
Halo video typography: enhancement to Graphics Factory integrated graphics platform; adds dimensionality to system fonts.
MCF series: multichannel digital fiber-optic transmission system up to 12 channels of 10-bit video, each with four audio channels.
Model 1000 production switcher: component digital system; serial or parallel I/O; 10-bit processing; similar to GVG 110CV.
Model 6000: component digital switcher; similar to GVG 3000.
Performer-SD routing switcher: compact one-RU router for serial digital signals: 10x1 V/A matrix.
Sabre 4100: editing system, with control for up to 36 devices.
SMS-8000 series: modular serial digital format conversion.
SuperEdit: Ver. 7.0: software upgrade for VPE editing systems.
PRONTO: ID system offers operation as optional character generator.
MAX9000 series: addition: M9205-N, M9206-N digital audio multiplexer and demultiplexer; units simplify audio distribution.
videoDesigner upgrade: software enhancement.

Circle (641) on Reader Service Card

Gray Engineering Labs
DTR313 reader, generator: full featured family with independent LTC, VITC functions, SMPTE and EBU specifications.

Circle (642) on Reader Service Card

Great American Media
BEAMER: permits existing theatrical fixtures to moving lights; remote controlled rotation; mounts to gel holder of 6' or 8' lensed fixture; may accept analog or DMX control from lighting console; mirror range pan 160°, tilts 90°.
BOJFO: a pattern holder that permits rotation of the pattern without removing it from the fixture.
IntellaPattern: stainless steel templates for use in pattern wheel of Intellabeam fixtures.
RDS/Techno-Light: automated lighting system; TACT control console. 5-output distribution box, 60 cue capacity.
Shadow Play: enlarged catalog of projectable patterns.

Circle (643) on Reader Service Card

Group One Ltd.
XTA Electronics: DS400 mic/line distribution system; RT-1 real-time analyzer system; 1'/3-octave graphic equalizer.

Circle (644) on Reader Service Card

GTE Spacenet

Circle (645) on Reader Service Card

Gucair Television
3D & Normal effects: more than 50 1-minute broadcast quality special effects.

Circle (646) on Reader Service Card

Fantastic Videolibrary: two subject groups; 80 1-minute sequences of sky images; multiple special effect cuts in 1-minute lengths.

Circle (647) on Reader Service Card

Television

Circle (648) on Reader Service Card

Halland Broadcast Services
Audio Post Production

Circle (649) on Reader Service Card

Hannibal Video International
301 Video Scope: 3-channel composite, component, S-VHS waveform/ vectorscope; stereo/mono bar graph, polar audio displays; BNC front-panel probe input; auto NSC/PAL switching, full screen
The future looks awesome from here.

If you’ve ever wondered what the future of video will look like, here’s where you can see it. From the driver’s seat of a new 4000 Series Digital Production Switcher.

You’ll see video with the crystalline clarity only available from a virtuoso combination of component video technology and advanced digital signal processing. And you’ll observe more sophisticated keying power than we’ve ever engineered into a switcher.

The future will also be a very cost-effective place to work. That’s because 4000 Series Production Switchers are built with serial digital technology that slashes the installation costs and ongoing maintenance expenses of analog technology. Not to mention protecting your investment for the long view.

For an up-close look at the performance and value of our 4000 Series Production Switchers, call your GVG customer representative now. But hurry. We wouldn’t want the future of video to start without you.
HARRISON by GLW
Model MPC: Motion Picture Console for total automation dubbing.
Circle (653) on Reader Service Card

HEDCO, div. of Leitch
ADA Mix Box series: -816MB, -818MB stand-alone monaural audio, -833MB stereo audio DAs.
Model VCA-680MB video clamping amplifier Mix Box.
Xplus series modules: for VSR-16x1, VSR-16x1 serial video and ASR-88 AES/EBU audio routers.
PDA-680MB: Mix Box pulse DA.
UDA-880MB: Mix Box utility video, data. SVYD800MB Mix Box switchable video delay amp.
GPI-20, GPI-40: 204/404 and joystick control panels for Xplus series routers.
Xplus series: switching switcher modules and control panels.
ATG-880: Mix Box series audio tone generator.
Circle (654) on Reader Service Card

Henry Engineering
Digicord: general purpose digital audio recorder.
Digistor: digital message storage.
Edit Track workstation: for dubbing, voice-over, utility audio control.
Microronizer: 4-input stereo line utility mixer.
Telephone Information Service: provides listener information services; stores 10 messages; callers select message via touch-tone phone.
Twinnatch: dual stereo, impedance, level converter.
Circle (655) on Reader Service Card

Hewlett-Packard
HP 3589A: time-gated spectrum and network analyzer.
HP Quality Advisor: realtime digital video measurement device. (See Pick Hits)
EDH 10 Inserter: inserts Error Detection and Handling (EDH) packet into digital video per SMPTE 165.
Video Format conversion: products include encoders, decoders, serializers, deserializers, D/A converters and A/D converters.
HP Digital Video Power Analyzer: for monitoring TV transmitters.
Circle (656) on Reader Service Card

High Density Circuits
UTS Video Interlometer: time lapse videography in the camera.
Circle (657) on Reader Service Card

HiP metric
Product line includes: Power control equipment, Peschel automatic voltage regulators and variable transformers.
Circle (658) on Reader Service Card

Hitachi Denshi
SK-200: studio camera using IT CCDS with 700-line resolution.
SK-F380: field studio camera with 600,000 pixel FIT CCDS.
SK-F200S: hand-held version of SK-F380.
SK-M5: portable camera using Harpicon tube, blockable, multicore, triaxial systems available.
VL-D50S D-2 recorder: with improved front panel, menus and machine status displays, memory card stores individual user setup data, serial interface. ZONEC: portable CCD camera; 1/2" 400,000-pixel array, new-low-light capability.
Circle (659) on Reader Service Card

Hi-Tech Furnishings
Product line includes: Work area furnishings.
Circle (660) on Reader Service Card

Hi-Tech Trading Company
Product line includes: Buying, selling and locating used equipment.
Circle (661) on Reader Service Card

Holiday Industries
HI-3520: battery operated microwave monitor with alarm; detects electromagnetic radiation from 1 to 18GHz.
HI-3627: 3-axis ELF magnetic field meter.
HI-3701: induced body current meter.
HI-4008: RF hazard measurement system.
Circle (662) on Reader Service Card

Hoodman
Mobile Equipment Cart: for field and/or studio use.
Circle (663) on Reader Service Card

Hortia
GPS-based generators: Master Time Code and Master Sync sources.
PC cards: plug-in board for SMPTE time code, blackburst, sync and tone generation.
Video distribution amplifiers: user configurable.
Circle (664) on Reader Service Card

Hotronic
AS11: broadcast-quality, PC-controllable plugin switcher with digital effects; software upgradeable.
Circle (665) on Reader Service Card

Howe Industries
Product line includes: Rent: broadcast satellite services, program distribution.
Circle (666) on Reader Service Card

Hughes Communications
Product line includes: Broadcast satellite services.
Circle (667) on Reader Service Card

Hughes & Phillips Inc.
Solid-state controller: for dual red and white lighting systems; includes DC backup.
Circle (668) on Reader Service Card

IBM Corporation/US Mkgt/Sales/Comm.
POWER Visualization System (PVS); a general purpose, resolution-independent production and post-production computer.
Circle (669) on Reader Service Card

IBM Multimedia
Ultimedia series: PS/2 486-based machines; 3-year on-site service with 4-hour response time.
Enterprise Multimedia hardware: RSC System/600, AS/400, ES/9000.
Ultimedia Tools series: products from IBM and other vendors; creativity products; unified by Tools Series Architecture.
Circle (670) on Reader Service Card

IBSS
Ghielmetti GVA4232: jackfield for audio signal routing control: applicable for analog, digital.
Circle (671) on Reader Service Card

IDB Communications
Product line includes: Satellite communications systems, the Flyaway Phone, satellite terminal in a suitcase.
Circle (672) on Reader Service Card

IDEA System
Videotronics
IP456: standards converter for 8bit multidirectional operation among NTSC, PAL, PAL-M and SECAM; composite, component Y/C and RGB/S/I/O.
IPXR: computer to video, scan converters.
IPX20 & IPX21: VGA cards with built in scan converters.
IPX30 scan converter: flicker free scan conversion from VGA or Mac II to video; composite, Y/C and RGB outputs in NTSC and PAL.
IVT-291, IVT-292: dual-channel TBC, transcoding with composite, component and Y/C 1/0, RGB/S
Circle (673) on Reader Service Card
Pro-Bel, the leading European supplier of routing systems, is now established in the U.S. We are committed to solving your video and audio routing system problems, be they analog or digital, with a wide array of established products.

- Analog Audio and Video Matrices.
- Digital Audio and Video Matrices.
- RS-422 and 4 wire matrices.
- Sophisticated user friendly controllers.
- Automatic tie line operation.
- Programmable control panels.
- Under monitor displays.
- Digital audio converters.
- Analog and Digital Video Keyers.
- Digital audio and video test sets.
- Custom systems.
inputs: -1 for 4:1 processing, -2 for 4:2:2 processing.

IVT-60: 1-6-channel transcoding TBC/synchronizer; composite, component and Y/C I/O facilities.
IVT-7, IVT-7/RGB: composite and Y/C TBC with freeze feature; RGB includes RGB I/O.
IVT9 TBC: full transcoding TBC/frame store with freeze, freeze, separate effects; composite, component and Y/C I/O single channel.

Quartet: video production system combines 4-input switcher, digital effects, dual TBCs, keyer; operates from front panel or via Windows-based software.

TBCard, TBCard II: plug-in TBCs for Amiga, IBM; TR-7 remote; composite I/O: TBCard has Y/C input; TBCard II has Y/C I/O.

Circle (673) on Reader Service Card

IDS/SAIC

Product line includes: Endophot video projection systems.

Circle (674) on Reader Service Card

ikegami Electronics

16 series: professional color monitor; 500-line display.
18 series, 19 series, 20 series: color monitors with auto setup features; -18 for 600TVL, -19/-20 with 700TVL, resolutions.
30 series: color monitor with high resolution CRT and auto setup feature; 20" diagonal.

DME-4501, DME-4502: digital codec multichannel compression teleconferencing processor; carries four NTSC video signals with eight sound signals; DS3 standard.

HC-340A: upgraded 3-CCD camera using 1/4" IT devices.
HC-340B: portable camera using 3 1/2" IT CCDs.
HK-343, HL-43: field/studio camera and portable companion using 3 2/3" IT CCDs.
HK-353A: studio/field CCD camera; RGB wideband triaxial system with base station.
HK-377, HL-377: ultra wideband studio/field and portable companion CCD camera; resolution to 900+ lines; 1/3" ITCCDs with 600,000-pixel arrays; triaxial cable with base station.
HL-55A, HL-55V: 5-ITCCD camera and camcorder.
PM-50A, PM-9030: monochrome monitors in 9" and 14" CRT sizes.
PP-70, PP-90: portable microwave links, -70 with 2/7/13GHz, 80 for 2/7GHz.

Circle (675) on Reader Service Card

IKON Video

VW-160: an economical and versatile video wall processor.
VW-300: high resolution and completely modulator video wall.

Circle (676) on Reader Service Card

ILC/Daymax

Product line includes: lighting products based on metal halide lamps; DBS-575W ballasts.

Circle (677) on Reader Service Card

illbruck/SONEX Acoustical Products

ProSPECT: pyramid acoustical foam, composite barriers.
SONEX: fabric covered panels.

Circle (678) on Reader Service Card

Image Design Filmtechnologies

RETHETO: film-cleaning machine, with environmentally friendly chemicals, for 16 & 35mm film.

Circle (679) on Reader Service Card

Image Logic Corp.

Direct Caption Card: addition to AutoCaption system, preview captions by displaying them over video directly from the PC.

Universal EDL maker: addition to LogProducer; EDLs and scene lists can be generated from LogProducer logs.

Circle (680) on Reader Service Card

Image Video

AMM-I: 20 segment-per-channel bar mode LED multiplexer.
A1240 router: for AES/EBU signals.
A860: A/D converters convert two analog audio inputs to one AES/EBU digital output.
APC890 station automation: for small to intermediate market, real-time programming.
CMA-1000: divides VGA or SVGA into RGB signals.
SM-50: stereo monitoring amplifier with balanced audio inputs.
D900 converters: D/A devices convert one digital audio input to two analog outputs.
Quantalox: under monitor displays.
9000 series: routing switchers for AES/EBU digital audio signals.
9910 series: digital video routing switcher.

Circle (681) on Reader Service Card

IMC/International Music Corp.

Model CD3000: sample player with integrated CD-ROM drive.
Model DD/OMac II: editing software for DD1000 disk recorder.
Model DR4d: multitrack hard disk recorder.
Model S01: MIDI digital sampler.
Model S2800, S3000, S3200: stereo digital sampler.

Circle (682) on Reader Service Card

Industrial Acoustic Company/ICAC

Accutone 2000 room: includes compatible 5" thick, triple seal door.

Circle (684) on Reader Service Card

Inline

VideoCube: digital workstation for post-production; disk-based non-linear editing; real-time digital effects creation; high-resolution anti-aliased character generation; editing, mixing of CD-quality audio. (See: Rick Hils)

Circle (683) on Reader Service Card

Intellivideo

Inimix

VideoCube: digital workstation for post-production; disk-based non-linear editing; real-time digital effects creation; high-resolution anti-aliased character generation; editing, mixing of CD-quality audio. (See: Rick Hils)

Circle (684) on Reader Service Card

Innovision Optics

3axis MiniJib arm: portable camera support handles 100-pound loads.
MiniVor enhacement: portable motion control tables, joystick controllers, 4-axis movement; memory permits motion repetition.
Right angle Probe: 90° angle of view for video cameras.
Probe Seal: underwater cover for probe lens.
Series 6000: tubular, high-res. lens, self-luminateting with direct, 90° and 45° angles of view.

Circle (666) on Reader Service Card

InnoVision Technology

Broadcast Titan: broadcast-quality CG for the Amiga.

MONTAGE: 24-bit titling software for the Video Toaster.

PrimeTime: broadcast-quality CG for IBM ATs and compatibles.

Circle (687) on Reader Service Card

Inovonics

DAVID: stereo audio processor; includes FM stereo generator.
530: off-air modulation monitor for FM broadcasters.
The Sentinel 550: broadcast monitor receiver/evaluator.

Circle (688) on Reader Service Card

Insulated Wire/Microwave Products

Information not available.

Circle (689) on Reader Service Card

Integrated Switching Systems

PathFinder: switchers that can operate at 1.2Gb/s.
SRX: small matrix serial router operating at 400Mbs.

Circle (690) on Reader Service Card

Intelligent Resources

D-1 Serial: Digital I/O for the Mac.

Component Modules: accepts and transmits 3-wire component video signals.
Software Release 3.8: user-configurable, open architecture system to control IR products; can be used to interface third party products through VideoFahn.

Circle (691) on Reader Service Card

Intelliprompt (BREAMDATA)

Product line includes: Video prompter systems using PCs, Intelliprompt II.

Circle (692) on Reader Service Card

Intellvideo

DEC 7: NTSC color decoder.

INR impulse noise reducer: removes impulse noise from ignition, electrical and other sources; removes video dropout from NTSC color signals.

Circle (693) on Reader Service Card

Interface Controls

IC 1000: microprocessor based control box.

VC 1R: audio level control for 2 channels at line level.

RM 1R: radio module with optional high gain antennas.

PC 1R: on/off power controller for 120VAC 10amp.

MC 1R: bidirectional motor controller for 120VAC motors, 10amp.

WC 1& WC 4G: wireless control of 16 or 48 channels.

SC 1000: VGA to video scan converter.

Series 3000: automatic dimming system for dimming up to 2.5kW. also available in a rackmount 6-pack version.

Circle (694) on Reader Service Card

Interface Engineering Corp.

MAXX Series 10: PC graphics frame buffer for broadcast and post-production. Manipulates 32-bit pixels, software programmable.

Circle (695) on Reader Service Card

International Datacoring Corp.

SR250/DAD: addressable satellite receiver for data/audio.

MPEG PRO Series: transmit digital audio via satellite.

Circle (696) on Reader Service Card

International E-Z UP Inc.

EZ UP Instant Shelter: self-contained, quick setup, heavy-duty fabric tops with double-truss design.

Circle (697) on Reader Service Card

International Tapeformics/ITC

DigiCenter: digital audio operating platform; hard disk record/playback; traffic interface, automation capabilities.

DPR-612: digital program repeater; stores, replays 15 monophonic programs; for IDs, lines, effects, other short message needs.

Series 2: audio tape cartridge recorder/repugger; mono, stereo models; Dolby DBX Pro headroom extension, active balanced XLR 1/0.

Circle (688) on Reader Service Card
Trust the Power

You Can Rely on Varian Tubes.

When the name on your transmitter tube is Varian, you’re getting something no other tube can offer — Varian reliability. Varian’s klystrons and Eimac® tubes keep your signal strong and on-the-air for years of worry-free dependability.

Varian reliability is beyond the ordinary because we understand the demands you place on broadcast tubes. Before a Varian tube is shipped to a customer, it undergoes stringent tests to insure maximum performance when you powerup.

Since we invented the klystron and designed the first Eimac tube over 50 years ago, we have been delivering reliable power for broadcasters worldwide. And with our commitment to continuous improvement, we have increased tube life, power levels, and efficiency to meet your evolving requirements.

Call us today and see for yourself why Varian tubes are the ones broadcasters trust. In the U.S. call 1-800-544-4636. From other countries, call 415-424-4819.

varian

Circle (48) on Reply Card
Intrallex  
SAM4400: switched audio multiplexer for distribution of digital audio signals over switched digital networks.
Circle (699) on Reader Service Card

IRIS Technologies  
IRIS Desktop Control Platform: hardware, software for Video Commander for Windows; routing, machine control, mapping engines for specialized applications.
Video Commander: routing and switching system for 16x16, 32x32 and 64x64 matrices.
Circle (700) on Reader Service Card

IRT Electronics Pty Ltd  
Digital intercom system: single-mode fiber.  
Digital intercom system: IRT Electronics Pty Ltd  
applications.  
Digital intercom system: machine control, mapping engines for specialized
ware for Video Commander for Windows; routing, IRIS Desktop Control Platform:
IRIS  
networks.

Intraplex  
Absorb Isolate Dampen  
FIRST A I D FOR YOUR EARS

Feral Industries C-100 Plus: TBC, synchronizer with adaptive digital comb filter and automatic DOc, multiple I/O.
Feral Industries MICRO: board-level TBC/synchro-nizer, 4.2 processor, automatic SOC, com-posite & Y/C I/O, gen-lock.
Feral Dual 4:2:2 TBC: standalone with RS-232 remote control.
Hamlet HV1 300 series: combination waveform, vector monitors.
Hamlet Micro Scope: portable waveform and vector for display on NTSC monitors.
Hamlet PC Scope: plug-in for PCs and Amigas for digitally generated waveform and vector on NTSC monitors.

YEM Sync generators: SG-3000B gen-lock system; RS-170/IC dual generator; RB-170/IC rubidium-controlled dual sync generator.
YEM ENC-3000: gen-lock color encoder.
YEM SW-950: computer graphics video switcher.
YEM scan converters: CVS-891, 980M monochrome, 980H high-resolution; CVS-970AL graphics to HDTV/31.5kHz; CVS-970 VGA-to-NTSC; CVS-910 real time automatic system.
YEM EDEC-2000: digital decoder and line doubler.
Circle (706) on Reader Service Card

Jampro Antennas
JDMIs: dual mode slot antenna.
JDMp: dual mode panel antenna.
JDMR: dual mode batwing antenna.
JHDI: low-band VHF dipole panel antennas.
JLHP: series of HP translator antennas.
JLSP: series of CP translator antennas.
JMDs: multi-point distribution antenna.
JHUD: broadband UHF panel antennas.
JY-series: YAGI antennas for VHF, UHF, FM transmission.
Circle (709) on Reader Service Card

JBL Professional Control 8SR: control room monitor.

Preserve Your Past Investments in Codecs!
The versatile CDQ1000 is fully compatible with G.722, 7.5 kHz codecs such as the CCS Micro56 and Micro66i. It also interoperates with the CCS CDQ2000 ISO MUSICAM codec. You can now achieve universal compatibility with a single codec!
- Three modes of operation: 7.5, 8.2, or 10 kHz
- CCITT G.722 or enhanced MUSICAM compression
- Two-way mono transmission
- 56 kbps or 64 kbps data rate
- Both V.35 and X.21 digital interfaces

Circle (50) on Reply Card

NEW! Call 1-800-285-6660 for more information.

FREE sample and literature available.

Absorb Isolate Dampen  
FIRST A I D FOR YOUR EARS

Sensational Sound Over Switched 56/ISDN

Transmit 10 kHz Over a Single Digital Circuit!
CCS, the pioneer of digital audio codecs, proudly presents the CDQ1000, the only codec that lets you transmit up to 10 kHz of audio over a single switched 56 or ISDN line.

Preserve Your Past Investments in Codecs!
The versatile CDQ1000 is fully compatible with G.722, 7.5 kHz codecs such as the CCS Micro56 and Micro66i. It also interoperates with the CCS CDQ2000 ISO MUSICAM codec. You can now achieve universal compatibility with a single codec!
- Three modes of operation: 7.5, 8.2, or 10 kHz
- CCITT G.722 or enhanced MUSICAM compression
- Two-way mono transmission
- 56 kbps or 64 kbps data rate
- Both V.35 and X.21 digital interfaces

Circle (50) on Reply Card
Overheard in all the best places.

It's the new Matrix Plus® II intercom system. The system that more and more broadcast professionals and system integrators are starting to talk about. Matrix Plus II builds on the remarkable strengths of the original Matrix Plus—the new industry standard for high-performance communications. Matrix Plus II is a truly integrated, 100 x 100 digitally-controlled intercom with easy-to-use visual display stations, a comprehensive modular interface system, external DTMF system control, and simplified, pull-down menu programming. Exclusive features include "Intelligent System Linking" of multiple systems for expansion beyond 100 ports, and global remote control over crosspoint levels. There's also improved station communications for long-line remote capability, as well as optional, fully digitized single-pair wiring. Plus much more, including the highest level of service and support in the industry. Want all the details? Call us at (510) 527-6666. The Matrix Plus II. You'll be overhearing more about it.

945 Camelia Street, Berkeley, CA 94710. Tel. 510-527-6666, Fax 510-527-6699
M525, M523: variable crossover networks.
M644: 4-channel gating compressor/limiter
MPA Power Amplifiers: models from 275-1100W per side
Model 4400A series: studio monitors.
MPA Power Amplifiers: models from 275-1100W
M644: 4-channel noise gate.
M552, M553: variable crossover networks.
Leveling High Hat: 4-way leveling head with J.L.
Levels High Hat: 4-way leveling head with J.L.
Jewelry Tools 
Product line includes: Tools and tool kits.
Jenk Tools
Product line includes: Tools and tool kits.
J.L. Fisher Leveling Hi Hat: 4-way leveling head with Mitchell mount
Push Bar Kit: for Model 9 and 10 camera dollies.
70 foot diameter Curved Square Track: 24 pieces for full circle.
K 5600 JOKER 200: 200W single ended HMI.
Circle (717) on Reader Service Card
K&H Products
AR-222: audio recorder cases.
AO-2 Audio Organizer: holds mixer, wireless mics, shotgun mic, fishpole, hand mic, filters, headphones, cables; connectors changes can be made without removing equipment from the case.
CAR-2 cargo case: for general purpose production use.
ARD-10: case for Sony TCD-d10 audio recorder.
Kaleidoscope Camera Control
Hot Head System: three choices of heads, with or without tilt slip rings; joystick, pan bar or geared head wheel control choices; DC/AC power.
Kangaroo Video Products
EMIKOTE products: protection for sensitive electronic equipment.
KVP series: video recorder packs, including newly introduced VCRs.
NAGRA KAP series: audio recorder carrying cases.
Karl Heitz
Fluid Heads: quick release; 90° front-rear tilts; 360° pan; drag adjust; 180° for loads to 7 lbs; Sport Eco tripod; 280° has 90° side tilt feature; for loads to 10 lbs; Reporta Eco tripod; 380° rear tilt; 360° pan; adjustable drag; all-metal quick release, shift plate for centering, balancing of cameras to 15 lbs; with Inter Pro Studex tripod and levelling ball 3.
Kaplan Electronics
DK980: 360° panoramic lens; C mount lens.
Kaplan Opel: KAP-85 Series: audio patching system, program- mable with DIP switches on the rear panel.
Keystone Communications
Korg USA
SoundLink: 3-channel, 88Hz bandwidth.
Circle (725) on Reader Service Card
Kay Industries
Product line includes: power phase conversion products, Phasemaster APW for 3-phase power from 1-phase input.
Circle (723) on Reader Service Card
KDV Kanopy
Majestic: aluminum frame with fabric canopy, includes carrying case.
Circle (724) on Reader Service Card
K-Line Electronics
KAP-85 Series: audio patching system, program- mable with DIP switches on the rear panel.
Keppie Audio Engineering
RF front load jackfield: 36, 32-position using standard or miniature jacks; self-terminating and non- normal circuits.
Serial Digital video jack: two varieties, PN 7008-
1, PN 7500-1 matched 75Ω self-normalizing, internal termination; dual video jacks.
Circle (727) on Reader Service Card
Kline Electric
Product line includes: dual-channel programmable graphic equalizer.
Circle (729) on Reader Service Card
Kline Towers
Product line includes: design, fabrication and erection of guyed, self-supporting platform and multibeam towers.
Circle (731) on Reader Service Card
Klark Teknik
Product line includes: joint venture offering turn-
key packages in design, fabrication, construction, installation of towers, inspection, maintenance services; HDTV feasibility studies.
Circle (730) on Reader Service Card
Klark Teknik
DN3600: dual-channel programmable graphic equalizer.
LBB100: direct injection box provides transformer isolation, attenuation and impedance matching of audio signals.
Circle (732) on Reader Service Card
Knox Video
Desktop Video Manager-DVM: for PC platform; 4-
layer, 4-input switcher with on-line editor, color controller, DSK, gen-locking sync generator and other features.
Mini D/A: 1x5 DA for NTSC or PAL; packaged in mini-box.
MiniGen: gen-locking sync, black burst generator; four or six black burst outputs; RS-170.
PC 40: real time character generator on PC card.
PC-D/A: 1x5 DA on PC plug-in card; one card for NTSC or PAL composite; two cards allow NTSC or PAL Y/C components.
PC Sync: gen-locking sync generator on PC plug-in card for PCs or Amigas; four (or six) black outputs; full RS-170A sync; jumper for Y/C inputs.
Kodak vision
RS series routers: 3-channel, 88Hz bandwidth.
Circle (732) on Reader Service Card
Korg USA
"Our Pictureboxes give us fast, elegant handling of video with key, distributed access, and complete graphics connectivity around the building. In short, Quantel's system concept is great. We're happy with where we are now and we're excited about the future. You have to trust that your suppliers will continue product development, and every Quantel system we own has real growth capability."

WFAA, Dallas, TX has Picturebox Twin (3), Picturebox Single (3), Paintbox, Harriet, Cypher (2) and Picturenet.

"COMPLETE CONNECTIVITY"

Hundreds of Picturebox systems are in service with broadcasters, large and small, across the US and around the world.

Stand-alone or in any size of network, Picturebox is the new industry standard for stills storage, library management and on-air presentation.

It's unbeatable at the basics, it integrates seamlessly, and with the added power to create everything from multilayer graphics to on-air captions, Picturebox is much, much more than just a still store.

Call Quantel and put yourself in the picture.

PICTUREBOX

Much, much more than a still store
If you look at this and see "ten," not "two," we've got the digital audio system for you.

The DAD 486x Digital Audio Delivery System lets you reap all the benefits of a powerful, CD quality digital audio system without having to hire computer wizards to operate it. With your DAD on the job, you can throw away your cart and floppy disk machines, the carts, the disks and all the problems and expenses they've caused you. But since DAD's basic operation emulates standard cart machines, you won't have to waste time learning unusual operating methods or incur brain damage trying to figure out complex computer screens. DAD's easy, intuitive touchscreen operation lets you put it right to work boosting your audio quality, improving your audio operations and paying dividends on your investment quickly and efficiently.

But, underneath DAD's easy to operate touchscreen is a powerful, hard disk-based production and playback system. DAD can even be configured as a networked system with multiple users and locations for even greater versatility and economy. With virtually unlimited stereo audio storage capacity, graphic waveform editing capability and versatile automation, your DAD system is far more than just a replacement for cart machines. It really is a complete Digital Audio Delivery System!

To receive more information or to find out how to put your DAD to work for you, call us at 1-800-ENCO SYS.
The problem is obvious.

The solution is simple.

No more studio clutter! Reduce overall costs and simplify monitoring needs by letting one unit do all the work.

The VIEWPLEX-2000 is the ultimate video signal multiplexer. It will display up to 16 different channels on one screen with excellent clarity, making applications virtually unlimited.

VIEWPLEX-2000 is ideal for monitoring in a closed circuit set-up, broadcasting multiple images in a collage, or broadcasting sequential images for instructional formats.

If you're thinking of upgrading, don't get more equipment; just get the one you really need.

Features include: • Video signal format NTSC. • High quality 8 bit picture resolution. • 16 maximum input channels. • 40 different display configurations. • Completely programmable. • Real time picture refreshing at 30 frames/sec. • 8 color character generator built in. For dealer inquiries and further information, contact:

SUMITOMO ELECTRIC
U.S.A., Incorporated.
Telephone: (310)782-0227
Facsimile: (310)782-0211

SUMITOMO ELECTRIC
Circ'e (54) on Reply Card
Super Peewee II: small camera dolly with hydraulic-operated arms; 23.5” pneumatic tires. Western Dolly: camera dolly with 48” vertical travel, maximum capacity 785 lbs.

Circle (745) on Reader Service Card

Leonetti Company

Electronic Ballasts: model EB 1200 120VAC, EB 2500 and EB 4000 240VAC units.

Fluorescent instrument: 4-tube or 8-tube fixtures producing high output flicker-free lighting.

Sunray 18,000: HMI Fresnel instrument.

SunRay 250W0: HMI PAR instrument.

Circle (746) on Reader Service Card

LES Corporation

Systek VTL-800: video cassette loader, pancakes to 16” diameter, 20 tape magazine.

Systek VTL-1600: dual supply video cassette loader.

Circle (747) on Reader Service Card

Lester Audio Laboratories

AES/EBU & SDI2F digital output cards: optional for passing digital signal at the output mainframe, rather than conversion back to analog form; various card configurations.

DAS 500 fiber-optic transmission system in 8- or 16-channel formats.

Circle (748) on Reader Service Card

Lex Computer

Edit/Pack 2000: portable, random-access, full screen, full motion video acquisition and editing system, less than 35 lbs.

ReadyEdit 2006: picture processor for 486-PCs Windows 3.1

Circle (749) on Reader Service Card

Lexicon

20/20 AD: 20-bit analog to digital converter 112dB dynamic range.

CP1, CP2, CP3: digital audio surround sound processors.

FL-10: digital audio format interface.

MIDI remote Ver 4.0: software for bidirectional communications with LXP-1, 1.5, 15 digital audio processors.

Nuword: digital signal processing card, plugs in to Mac Nu Bus.

Opta Software V 3.0: external machine control; Automation conveyor automation; CPEX time compression, expansion, pitch shifting, rate conversion.

Circle (750) on Reader Service Card

Lightmaker Company

Lightmaker Mega Brute: 9-light HMI systems.

Combo Ballasts: HMI lighting ballasts that work with all leading manufacturers’ heads.

Circle (751) on Reader Service Card

Lightning Eliminators & Consultants

Grounding Augmentation Fill: material for low resistance grounding in high-resistance soils.

Guy Charge Dissipation Choke: protects against static charges.

Circle (752) on Reader Service Card

Lightning Master Corp.

Product line includes: Bonding & grounding products and services, tower leg ground straps; design, surge suppression products.

Circle (753) on Reader Service Card

LINK

ECT21, 722: black burst generators; 722 includes gen-lock, tone source.

PSW-826: video, audio switcher; configuration for 1x4 or dual 8x1.

Stokes 3001: transmitter for RGB to Beta and Mill.

PRC-865: video AGC processing amplifier; auxiliary input.

Circle (754) on Reader Service Card

LLite Video

A-5500/A-5501 SCROLLBOX: Chinese scrolling prompt display with Chinese word processor and Scrollbox; StudioPlus Editor, smooth speed control; foot controller for variable speed.


A-6000: enhanced A-6000 PC prompter program.

BDL Autoscript: complete range of high-contrast and brightness monitors for prompting.

Circle (755) on Reader Service Card

LNR Communications

DAYSAT: digital satellite communications systems. MTC-10 mobile voice communication; BAD-10 digital audio distribution; DVC-10 digital video compression.

LVD series: low profile digital video exciters for uplinks.


Circle (756) on Reader Service Card

Logitech

Bright-VU LED: audio level meter with larger display range.

4VUB: four 3 1/2” analog VU meters in 2RU rack-mount package.

Mariner enhancement: incorporates digitally controlled analog ladders; low distortion of direct audio ladders with reliability and tracking of VCA units.

Super-VU: 40 bar type tricolor LED meters for audio applications.

ADA-4/4 DA: 1RU rack-mount unit configures as four x4, two x8 or one x16 distribution amplifier.

Circle (757) on Reader Service Card

Loral Microwave-Narda

8250: compliance meter for measuring RF radiation.

8842C Personal Monitor: wearable protection against overexposure to non-ionizing radiation.

Circle (758) on Reader Service Card

Loant Automation

Autoscreen: PC based off-line tape presentation system.

ADC-10: automation for low end and cable markets.

ADC-100: advanced automation system; multi-list, multichannel operation.

LCP-206: compact control panel for ADC-100 and NEWSTRAK systems.

NEWSTRAK: PC-based device server for newsroom automation.

Circle (759) on Reader Service Card

Lowel Light

DP & DPX T Kits: lighter due to new case and stand design.

Rita Lite: self-contained halogen lamp centered within a silver-reflector housing, folds up like an umbrella.

Circle (760) on Reader Service Card

LPB FM stereo radiating cable system: unlicensed applications, such as hearing assistance, localized rebroadcasting.

LPB 7000 series: stereo audio consoles.

Message Manager: PC-based audio storage and retrieval system.

Telephone Access: remote controller.

Travellers Information System: 1610kHz operation.

Circle (761) on Reader Service Card

LSI Logic

C7202 JPEG Core: JPEG image compression engine.

L64702 JPEG single chip co-processor.

L64111 MPEG and decoder.

L64112 Digital TV MPEG decoder.

L64711/12/13/14 Reed Solomon encoders/decoders.

JPEG Video-Rate BitBuster 700 evaluation board.

JPEG chip set.

Circle (762) on Reader Service Card

LTM Corp of America

20K: incandescent lighting unit.

Cinepar 200W/E: single-ended PAR HMI lighting unit.

Cinepar 575 S-E: single-ended PAR HMI fixture.

Torch: hand-held 200W S/E HMI lighting unit.

Circle (763) on Reader Service Card

Lucas Manufacturing

EasyView: TV wall mount.

LINKX: modular security systems use interlocking components.

Sightline: TV wall mount.

Circle (764) on Reader Service Card

Lyon & Greenberg Electronic Prompting

Teleprompt International: extended software with foreign language character sets for Spanish, French, Japanese.

Circle (765) on Reader Service Card

Lyon Lamb Video Animation

IVAS: animation controller for SGI Iris Indigo workstation.

VASTools4Mac: assists in recording Macintosh-generated graphics to videotape or disc, requires Mac System 7.

Circle (766) on Reader Service Card

Macrovision

VES-DV: video transmission scrambler for business, teleconference, educational programming; converts audio and video, including S-video, and automatically detects NTSC or PAL standards.

VGA Producer PRO: VGA-to-NTSC or PAL encoder now includes an RGB version, allowing any VGA graphics program to be converted to color difference or RGB component video; fits in 8-bit PC expansion slot for direct connection to VGA card converter; vertical text scroll, pan, zoom features.

500 Series: cost-reduced component/composite waveform monitors and vectorscopes.

Signal Creator: video signal generator, including serial 525/625 D1/D2 output and new RAM card.

Circle (770) on Reader Service Card

Magic Teleprompting Inc.

MagicScroll 2.0: teleprompting software for Macintosh computers.

Circle (769) on Reader Service Card

Magnum Systems

MM-400: low-cost waveform and vector monitor; converts waveform and vector display to a standard video signal for easy display or routing; supports any analog format, including S-video, and automatically detects NTSC or PAL standards.

VGA Producer PRO: VGA-to-NTSC or PAL encoder now includes an RGB version, allowing any VGA graphics program to be converted to color difference or RGB component video; fits in 8-bit PC expansion slot for direct connection to VGA card converter; vertical text scroll, pan, zoom features.

500 Series: cost-reduced component/composite waveform monitors and vectorscopes.

Signal Creator: video signal generator, including serial 525/625 D1/D2 output and new RAM card.

Circle (770) on Reader Service Card

Magnus Tower

Product line includes: Radio, TV and communications towers.

Circle (771) on Reader Service Card

Mainframe Computer Graphics

Inscriber Fontmaker: converts any Windows TrueType or ATM font into an Inscriber font, fully aliased and ready for video; supports full ANSI and PC keyboard mapping, instant on-line resizing and font effects plus keyboard remapping.

New Inscriber frame buffer support: in addition to established support for Trueview and Matrox frame buffers, Inscriber now supports frame buffer for Interlace VMAXX Series 10: includes 32-bit...
The Odetics TCS90 - The Only Cart Machine
Designed with Your Future in Mind

With the TCS90, Odetics Broadcast gives new meaning to the word versatility. Featuring a unique ability to handle multiple cassette sizes and virtually all available broadcast formats, the TCS90 provides incomparable flexibility plus an open window to the future.

Field Changes Made Simple
Don't waste time second-guessing future tape deck format changes. The TCS90's simple, straightforward design makes field upgrades easy and affordable. You can take advantage of technology upgrades as they become available.

Mix cassette sizes to match your needs
Odetics put its award-winning electromechanical expertise to work and developed a system that makes handling dual-sized cassettes simple and foolproof. With a capacity of 150 carts, there is enough on-line access for a full day of programming plus twelve to twenty-four hours of spots and promos, depending upon your format. And, with Odetics Multicut Software, the TCS90 can store several hundred spots on-line.

The Decision is Yours
Full compatibility with any news or station automation system lets you make choices that make sense for your station's needs. Built-in redundant hardware and software features make choosing Odetics a decision you can be sure of.

Buy for the Long-Term
Because Odetics products are fully compatible with each other, system obsolescence is never a concern. The TCS90 includes the same advanced features as the Odetics TCS2000 large library Cart Machine and all TCS2000 software and hardware options and accessories. It's no wonder Odetics Broadcast is the world-leader in large library automation systems.
Pixel-depth, key channel, component video output; multistandard resolution.

Circle (772) on Reader Service Card

Major Engineering

Videocassette storage: Patented, adaptable, high-density storage systems for D-2, Beta, M-2, VHS videocassettes.

Circle (773) on Reader Service Card

Management Graphics

Solido One Image Recorder: Produces photographic film images from digital information in a variety of user-configurable formats.

Circle (774) on Reader Service Card

Manhattan Production Music

Audiosphere Sound Effects: library of 495 popular effects for radio, TV, film use.

Circle (775) on Reader Service Card

Marko Inc.

Product line includes: modular rack systems.

Circle (776) on Reader Service Card

Marconi Communications Systems

B6500 series: FM radio transmitters uses solid-state redundant design using 300W modules; hot pluggable; dual drive with output to 10kW in one cabinet.

B7600 series: solid-state UHF TV transmitters from 1kW to 20kW, featuring compact size, simple installation and uniform RF power module design.

B7650 series: IOT UHF TV transmitters from 1kW to 40kW, using common design across entire range; supports multiple international audio and video formats.

Circle (777) on Reader Service Card

Mark IV Pro Audio Group

See: DBA; Electro-Voice; Klark-Teknik; MIDAS; Vega.

Marti Electronics

STL-1SC, R-1SC: Composite FM aural STL transmitter and receiver, available from 140MHz to 900MHz; capable of digital audio/data transmission with external modems.

Circle (778) on Reader Service Card

Master Performance One

Master Performance I: Production music and sound effects collection featuring over 1,100 selections on 8 CDs.

Circle (779) on Reader Service Card

Matco Mfg. & Test

MA-204A: automated playback system; 22x3 stereo AFV router; loss-of-video protection; random, sequential list scans; parallel, serial, IR VTR control; 24 control outputs for VTRs, other devices; battery backed clock, calendar, list memory.

MA-200: Similar to MA-204A, but includes internal routing switcher, front panel control and video display board removed and replaced by an attached PC.

MA-130: DTMF decoding interface; allows local commercial insertion into satellite transmissions automatically through MA-201 or MA-204A; supports 288 codes. DTMF decoders; standard unit includes one decoder board in 1RU unit; additional plug-in decoders available.

MA-120: Microprocessor-based serial communications adapter providing serial-to-parallel machine interface for RS-422 control of various N" and ½" VCRs.

Circle (778) on Reader Service Card

Matrix Electronic Systems Ltd.

Illuminator-PRO: video graphics board; 32-bit frame buffer; broadcast quality encoder, full-resolution NTSC/PAL at 32-bit, multimedia alpha channel output; integral TBC, digital video effects; various third-party software paint animation packages may be used.

Toccata-Pro: serial 2-2.4:1 (D-1) I/O board option for Illuminator-PRO.

Matrix Mareit: multimedia controller; enhances live video windows to 1,024x768 resolution in applications from video conferencing to frame capture in desktop publishing.

Matrix Studio: complete desktop editing for EISA PC; A/B/C roll editing, 5-layer video and graphics effects: internal TBCs, 32-bit graphics paint, titling software; three DVEs, two key channels; 12-track audio mixing; digital audio editing software.

Matrix Studio enhancement: non-linear editing module; D-1 I/O; DVE add-on board; 3-D DVE add-on board; fast cuts, editor D-1 and analog Y/R-Y/C component support.

Personal Producer for Illuminator: low-cost video editing for Windows 3.1; combines video segments, digital audio, graphics, titles, video effects and transitions through intuitive storyboard interface; program automatically stored to videotape from storyboard layout.

Circle (781) on Reader Service Card

Matthews Studio Equipment

Product line includes: Camera support products, pedestals, stands, pan/tilt mounts, cranes, spacer bags, lighting, effects and power distribution.

Circle (782) on Reader Service Card

Maxwell Corporation of America

D3 videoeditors: small, medium and large ½" cassettes offering high particle density, thin reinforced base film and high output.

Betacam VX videoeditors: new formulation offering improved picture quality, higher output and increased durability.

Circle (783) on Reader Service Card

MCL, Inc.

M/N 10906: high-power Ku-band TWT; 300W output; 14.6-14.5GHz; sealed for outdoor use; antenna mount and fly-away windows; forced air cooling under thermostatic control.

M/N 10916: C-band TWT; 600W or 700W, 5.85-6.45GHz; LED displays, RF drive limiting and TWT protection.

M/N 10974: C-band HPA linearizer; improves intermod performance, reduces HPA backoff requirement; includes RF equalizer.

M/N 10890: Ku-band TWT; 300W output; 14.4-14.5GHz; single drawer rackmount device with LCD multifunction monitor interface; autoranging with RF power display; LED fault indicators and complete TWT protection.

Circle (784) on Reader Service Card

M.C. Lights and Manufacturing

J3000 series Soft Lights: Provide diffuse, virtually shadow-free light over a smooth field; a variety of sizes and configurations are available.

Circle (785) on Reader Service Card

McCurdy Radio Industries

Product line includes: Audio mixers, test sets, meter panels, jacksicles, monitors, cue amplifiers; 25Hz tone equipment, universal interface units, traffic interfacing, automation, routing switches; video DAs, clamping amps; digital audio storage systems; loss of video, silence sensors; under-monitor displays; custom systems, components, equipment.

Circle (786) on Reader Service Card

Media Computing

pcTV: PC software, hardware; simultaneous display of full-screen video with stereo audio from two non-synchronous sources.

T.E.N. The Electronic Newsroom: PC-based, LAN-compatible broadcast newsroom automation.

cod. companion: PC-based sequencing/automation/effects software for Chyron codi character generator.

Circle (787) on Reader Service Card

Media Concepts

Product line includes: used broadcast TV production equipment.

Circle (788) on Reader Service Card

Media Touch Systems

OmniPLAY: Four-seven radio automation system integrating traffic/billing, music scheduling, satellite services and machine control.

OplDG: Control software for automated radio broadcasting; supports Novell LAN to link traffic/billing, music and newscast computers.

MTS Digital: Multi-user mass storage digital audio system; handles up to 8 mono or 4 stereo signals simultaneously.

Circle (789) on Reader Service Card

Meret Optical

HR VIEW 6000: allows remote location of a graphic workstation, keyboard and mouse up to 1km from its CPU.

LiveLink 100, 200: fiber-optic links for mobile ENG/EFP systems; for uni- or bidirectional configurations; for 4 video channels, 3 audio pairs, 3 digital channels with intercom.

LiveLink 450: HDTV FO transmission to 10km; 60dB with 3 video, 4 audio, 3 digital channels with intercom.

OmniSpeed 5500: serial digital fiber-optic link; transmits 5-400Mbit/s to 10km without repeaters; handles video, audio formats and compressed signals, such as HDTV; meets SMPTE 295M and CCIR 656.

Circle (790) on Reader Service Card

Merlin Engineering Works

Product line includes: Video processing equipment, ME-278-S synchronizer; ME-981; 991 data encoder, decoder.

Circle (791) on Reader Service Card

Micro Communications

HDTV feasibility study service: evaluate current NTSC transmission site for HDTV conversion; tower inspection, load analysis and final stress analysis; pattern analysis and design of antenna; relocation of HDTV antenna on tower; final design for HDTV site.

HDTV filters: constant-7 absorbive filters for HDTV transmissions; rejects all out-of-band components for pure transmission of digital signal; to be used for AT&T over-the-air test site in Charlotte, NC.

HDTV/telecommunication antenna: "all UHF" antenna for sites wishing to use a common antenna, LPTV bandpass filters: interdigital type for out-of-band protection; low insertion loss; 2 kHz to 2 MHz.

Emergency antenna: universal antenna for emergency use in all markets, on any UHF channel and on all tower types; modular design allows easy transport and installation.

Circle (792) on Reader Service Card

Micron Tool/CanMate Systems

Product line includes: camera support systems, Black Magic boom extensions with remote head, pan/tilt control.

Circle (793) on Reader Service Card

Micro Technology Unlimited

MicroEditor 2.1: software package; includes DAT generator.

LiveLink 450: HDTV FO transmission to 10km; 60dB with 3 video, 4 audio, 3 digital channels with intercom.

Circle (794) on Reader Service Card

Micro Audio Products

TX-521/TX-631: wireless microphone transmitters

SR-522/SR-623: multichannel, switchable-frequency wireless microphone transmitters

MID-552/MDR-653: multichannel, switchable-frequency wireless microphone diversity receivers

Circle (795) on Reader Service Card
Create production magic with BTS’ new component digital production switchers.

Your business could multiply.

No matter what type of operation you happen to be - small, mid-size, high-end post-production, live production - or whatever kind of magic you want to perform, BTS has a Component Serial Diamond digital switcher to perfectly match your studio or O.B. facilities.

There are four exciting versions to choose from, each one combining unbelievable creative digital video compositing talents with quick and easy control.

They offer the very latest features including BTS's DynaChrome keying power, Automatic Key Alignment, MultiMix and FXLoop to help you accomplish the most sophisticated editing tasks simply and cost-effectively.

They incorporate control over external DVEs, routers and editors for network flexibility. And what's more, they're ideal for use with both 4:3 and 16:9 formats.

To find out more about the amazing power of BTS Diamond digital switchers, just write or call. In no time at all, a full color brochure will magically appear on your desk.
Micro Net
Product line includes: Video transmission services; terrestrial linking New York, Philadelphia, Washington DC, Dallas, Austin, Houston, San Antonio; earth stations in Dallas and New York for domestic and international services.

Circle (796) on Reader Service Card

Microtome
Impact 1XP: Low cost, entry-level version of Impact variable image transformer, offering real-time, render-free, true 3-D shape manipulation and live video mapping on shapes.

Impact option cards: Field-installable by user in any Impact series product; offering Delucus, Gouraud Shading and Motion Blur.

Impact version 1.33 software: Provides operational and feature enhancements plus new shapes.

Circle (797) on Reader Service Card

Microcom Ltd
Digital proc amp: Adjust black level, Y/UV gain, Y-C delay, picture position in digital domain.

Digital test pattern generator: 10-bit 270Mb/s serial, RP-125 parallel signals; includes new patterns for primary and secondary color correction, macros for recording sequence movements, improved edge tinting, descale output, reverse play, true source stop, lock pan with FX locate, disable automatic and feature enhancements.

Circle (798) on Reader Service Card

MicroWave Networks
1DS1: Microwave radio product for 15, 18, 23GHz; for CD quality over video microwave links.

10DS: microwave radio product for 15, 18, 23GHz; for CD quality over video microwave links.

Circle (799) on Reader Service Card

MicroWave Radio
Digiflow: Digital audio subcarrier encoder and decoder for CD quality over video microwave links.

MicroLink III: 18/23GHz broadcast system, short haul video microwave system.

MR-4DM: 36-40GHz digital microwave radio system for video/data transmissions up to 5mi.

Circle (800) on Reader Service Card

MicroWave Solutions Inc
Power Amplifiers Catalog Supplement: Outlines Microwave Solutions' general product line of power amplifiers with output power levels of 1W, 3W, 5W, 10W and 15W, and at broadband range of frequencies from 1MHz to 1GHz.

Circle (801) on Reader Service Card

MIDAS
XLS-16: audio mixing console.

Circle (802) on Reader Service Card

Middle Atlantic Products
MC: Automatic message center using large fluorescent display panels, controlled by IBM or compatible PC.

Slim 50/Slim 20: Rugged, precision-built equipment racks.

Circle (803) on Reader Service Card

Miles
M36 Digital Stripper: Provides digital video and audio reference signals plus 48kHz word clock, all locked to station black.

MST Serial Digital Safe Area Generator: Provides a range of video display boxes and cursors locked to the serial digital input.

Circle (804) on Reader Service Card

Miletek
Product line includes: BNC connectors, cabling for analog and digital video; cable cutting, stripping, crimping tools; computer networking adapters, cabling, connectors; also distributors for Trompetre, North Hills, APC Telecommunications.

Circle (805) on Reader Service Card

Miler Fluid Heads (USA)
Miller 25 Fluid head: camera mount/tripod intended for ENG with self-contained camcorders; sealed clutch-controlled adjustable drag, counterbalance and sliding; quick release camera platform.

Carbon fibre tripods: single- and 2-stage units with extreme rigidity, high twist-resistance and lightweight.

System 15: lightweight, fast handling support system for professional event videography; recommended for ENG configured camera systems weighing up to 15 lbs.

Circle (806) on Reader Service Card

Mira Imaging
HyperSpace: hardware/software system for rapid computer modeling of complex 3-D objects.

Circle (807) on Reader Service Card

Miralite Communications
Product line includes: sales and installation of satellite and wireless terrestrial communications products for audio, video, voice and data.

Circle (808) on Reader Service Card

Miranda Technologies
SDM-300: serial, parallel 4FSC to NTSC/PAL D/A converter.


TITIANA: 3D digital effects system for Matrox Studio.

SDM-100A: 4:2:2 to RGB/YUV D/A converter.


SER-200: 4FSC serial-to-paralle and parallel-to-sequence digital coders.

Circle (810) on Reader Service Card

Mitsubishi Professional Equipment Div.
AM-4201R: 40" autoscanning video monitor; NTSC/PAL/SECAM/HDTV and multicomputer-platform compatible.

XC-3725C: 37" autoscanning color monitor with up to 1280x1024 resolution.

DX-2000U: High-resolution analog video still-image recorder using NTSC audio/NTSC video; accepts composite white, video; optional archiving software.

CP210U: Color video printer producing up to 4 high-resolution images per sheet; accepts wide variety of input signals.

Circle (811) on Reader Service Card

Modulation Sciences
RDS-1: PC-based software and subcarrier generator for RDS FM data system. (See Pick Hits.)

PROceiver enhancement: antenna diversity system with 12:28VDC power adapter for MTS PRO channel receiver.

Circle (812) on Reader Service Card

Mohawk/CDT Broadcast Cables
Product line includes: design and development of copper and fiber-optic cable products for audio, video; multipair, shielded, audio snakes; high-definition mic cables; coax, triax, Ultra flex video cables; composite camera cables; fiber-optic video link; cables conform to SMPTE, standards, current NEC code.

Circle (813) on Reader Service Card

Mole-Richardson
Type 4251 Big MrOLED: 20kW Molequartz Solarspot; 24" Fresnel lens.

Type 6351: 18kW HMI Fresnel Solar-Arc Eldars.

Type 6581/6291: Small single-ended globe lights with a variety of lenses; 2.5/4.0kW.

Circle (814) on Reader Service Card

Montage Group
MTS/MT50/M100: random-access, full screen, full motion non-linear editors; user interface emulate film-style editing.

M2UP: Portable, random-access, full screen, full motion video acquisition and editing system; allows direct camera-to-disk recording on location and top-line PC.

MPF: Personal Picture Processor software for desktop PC with IBM/Intel/ActionMedia II board.

Circle (815) on Reader Service Card

Moseley Associates
CDQ 2000 option: selectable, high spectral efficiency for digital audio-for-video STL.

DSP 6000 high spectral efficiency option: allows DSP 6000 digital audio STL to carry 14 15kHz channels and 2 data channels.

Master-Touch: touchscreen interface for MRC 2 and MRC 160 remote controllers.

MRC 1620 LP: Flash reprogramming option; low power option, allowing solar operation; intelligent RS-232 interfaces for MRC 1620 system.

PC1 6000 multichannel: up to 16 channels on a single STL.

Circle (816) on Reader Service Card

MTR AG Electronics
Product line includes: automated signal routers for analog and digital composite and composite video, mono and stereo audio, HDTV and data; distribution amplifiers.

Circle (817) on Reader Service Card

MOTOROLA/North American Group
Product line includes: C4QUAM AM stereo.

Circle (818) on Reader Service Card

MVE Video Tape Services
1" DUB PAK: environmentally conscious alternative to plastic tape supplies.

Reycled D-3 tape: Previously used D-3 cassettes in various lengths.

Circle (819) on Reader Service Card

Multidyne Electronics
SSR-30: solid-state recorder; 1.5 minute capacity for audio source ID; playsback alternates between the messages and one of three tones or an external audio source.

TS4: 5.1 SMPTE color bar generator with black burst; gen-lock, video ID and spoken ID features.

TS2/RM: Rack-mount test set; generates 12 signals, including VITSS, 5MHz line sweep, black burst, stereo audio tone; inserts 16-character VI message ID in external video; lip-sync audio, video synchronizing signal; loop-through for external video, stereo audio, automatic broadcast of external signals.

TS2/RM: Rack-mount NTSC test signal generator similar to TS2/RM; exceeds short-haul RS-250C specifications.

Circle (820) on Reader Service Card

Murry Rosenblum Sound Assoc.
Audio Ltd TX 2000/HIP: high-power (800W) version of TX 2000 wireless microphone transmitter pack.

Audio Ltd MX 2000: VHF or UHF wireless microphone system in RMS 2000 line, with transmitter and receiver both contained in similar small, lightweight cases; 2-frequency spaced.

Audio Ltd DcX 2000: compact diversity receiver for RMS 2000 wireless microphone system.

Circle (821) on Reader Service Card

NAB '93 - Show of Shows
ELECTRON TUBES FOR TV AND RADIO BROADCAST.

Extending your broadcast performance. We make broadcast performance go further with a complete selection of tubes and circuit assemblies for TV, FM and radio. OEMs and broadcasters choose Thomson time and again for reliability, power and ongoing optimization of tube lifetime.

Our TH 563, featuring 30 kW UHF in common amplification, opens new horizons in tetrode performance, and joins our full range of VHF and UHF tubes for TV.

Our FM tubes, from 10 to 100 kW, are economical, easy to use and available in industry standard designs.

For the latest radio transmitters, our outstanding new 500 kW TH 576 offers a higher level of efficiency, resulting in lower operating costs.

Whichever tube you need, Thomson delivers the service, quality and innovation that's ready to take your performance to new heights.
Every camera may deserve to be placed on a pedestal. But not the same one.

What if you need the stability and smooth moves of a studio pedestal but the camera requires only a lightweight pan and tilt head? Or, what if your camera configuration demands a heavy-duty pan and tilt but no on air pedestal moves? You need more than one solution.

Fortunately, Vinten's family of lightweight VISION and heavy-duty CLASSIC heads and pneumatic pedestals gives you 54 different solutions (not counting accessories) to create the exact support system to meet your precise needs. And your budget. For proof, four of Vinten's most practical and proven packages are shown here.

VISION PRO-PED two-stage portable pedestal and CLASSIC PETREL MK II pantograph head.
For camera payloads to 100 pounds, this combination delivers broadcast quality on a tight budget. While not designed for on-air floor moves, the pedestal's pneumatic column equals the performance of the OSPREY II. And the PETREL MK II pantograph head combines Vinten's counterbalance system and infinitely variable fluid pan and tilt drag.

CLASSIC OSPREY II two-stage steering, portable pedestal and VISION 30 pan and tilt head.
Together, they're perfectly suited for any load up to 80 pounds. The pneumatic OSPREY rivals Vinten's full size FULMAR for smooth, steering ring controlled dolly and height movements. Yet, it's portable. And with the VISION 30, you get infinitely variable fluid drag pan and tilt (±180°) plus Vinten's patented camera counterbalance system.

CLASSIC TEAL single-stage pedestal and CLASSIC MARK 5 cam head.
Supporting camera configurations up to 160 pounds, the TEAL moves on dual gimbaled wheels with 8" rubber tires and offers full crab, steering and elevation control from the ring. The head, with continuously variable friction pan and tilt, works with any camera from ENG up to studio equipped with prompter, large lens and viewfinder.

CLASSIC HAWK 3-stage studio pedestal and the new MARK 7B Fluid cam head.
With a payload up to 175 pounds and uncompromising broadcast quality performance, the HAWK is second only to Vinten's FULMAR pedestal and the head is the newest version of the MARK 7, the world's studio standard. While the HAWK easily performs flawless on-air dolly moves and elevation changes, the new MARK 7B provides continuously adjustable fluid drag tilt and pan controls, a pan disc brake, a ±60° tilt range and a host of new features including a visible camera lock indicator.

If you have a camera that deserves a pedestal, it's a good thing Vinten believes in strong family values and freedom of choice. That's why instead of only one way to support a camera, Vinten offers you 54. After all, Vinten has been supporting broadcast television cameras since 1934. No one has done it better or longer. For more information, call your nearest Vinten location.

VINTEN BROADCAST INC., 44 Indian Lane East, Towaco, NJ 07082 (201) 263-4000 FAX (201) 263-8018
South — Sunrise, Florida 33071 (305) 572-4344
West — Sun Valley, California 91352-4022 (818) 767-0306
Circle (58) on Reply Card
Musikos
Product line includes: production music libraries. Circle (822) on Reader Service Card

MYAT
Stab Harmonic Filter: controls even harmonics, intermod products and lightning or precipitation discharge.

Flexible Section line: 500 or 750, 6/5/Ba flexible line; allows >30° detection without VSWR change.
Antenna Power Divider: 8-way UHF divider; 75Ω, 5° input.

Fine Matchers: tune VSWR from 1.5 using four pour at 1/4 wave spacing: 500 or 750, 1/8 to 9 diameters available. Circle (823) on Reader Service Card

N Systems
Product line includes: complete line of micro-wave antennas, remote controls for ENG, point-to-point applications; Superquad, Silhouette ENG antennas.

MC5A: digital remote control for ENG receive antennas and receivers; 8D386-based with VGA touchscreen monitor and multisite control capability; position memory and several automated functions.

Silhouette ST6/STK: low windload microwave antennas with asymmetrical reflector and offset feed; 6ft/8ft parabolic units with windloading equivalent to 2 dead smaller dishes; exceeds FCC standards for STL/ICR use.

Silhouette/Superquad: Central ENG receive antenna systems.

Circle (824) on Reader Service Card

NabSat Systems
Series 2000 VHF: wireless system with hssm muse circuitry; diversity receiver; 120dB dynamic range; accepts various mics capsules.

351 VR: camcorder VHF wireless mic system; receiver connects to external micjack on the camera; handheld or lavaliere mics.

301 UHF: 4-channel, frequency-synthesized wireless mic/instrument system; handheld, lavaliere, instrument mic transmitters.

950 UHF: 10-channel frequency-synthesized wireless mic/instrument system; diversity, companding processing; 20-channel transceiver base.

950 GS UHF: 40-channel receiver for 950/1950/5950 UHF system.

351 VR: 2-channel wireless video mic uses VHF frequencies; 120dB dynamic range; HT-10 handheld mic; LT-30 lavaliere bodypack transmitter with mini XLR connector for electret condenser lavaliere mics.

RW3 UHF: 4-channel, frequency-synthesized, true diversity wireless mic receiver; 120dB dynamic range; 4 -channel diversity down-convert.

Circle (825) on Reader Service Card

Naga/Pa-Tech
Product line includes: Naga analog and digital audio recording products.

Circle (826) on Reader Service Card

Nalpak Video Sales
Series 2400 Retro-Kit: Equipment hand-truck enhancement adds cushioned ride currently on nose-end only to complete truck.

Circle (827) on Reader Service Card

National Supervisory Network
Product line includes: transmission plant monitoring service; VISION system for transmission and management of audio, automation and control/monitoring data for remote stations from group HQ; ComStream digital audio products.

Circle (828) on Reader Service Card

National Transcommunications
NXL System 2000: MPEG-based video compression system enabling four broadcast quality signals to be carried within spectrum normally occupied by one analog signal.

Circle (829) on Reader Service Card

Nautel
AM/FM/PDS NDS: SkW all-solid-state AM transmitter with integral Q-QUAM AM stereo; modular design and duplicate exciter for added reliability and online servicing, highly efficient design.

Circle (830) on Reader Service Card

NCC
Product line includes: Dacomoble rolling equipment carts.

Circle (831) on Reader Service Card

NDG Phoenix
OMS for Windows: Operations Management Software for IBM PCs and compatibles operating under Microsoft Windows 3.1.

Circle (832) on Reader Service Card

NEC/AMerica/Broadcast (Alan White)
Product line includes: video display units, DM2710 Data Smart, CM2791 Multimedia monitors.

Circle (835) on Reader Service Card

Nental Electronics International
Product line includes: precision audio and video cable; #1576 and #2051A, MC424P flexible mic cable.

Circle (834) on Reader Service Card

Neotek
ES100: audio production console.

Expir: audio production, on-air, record console.

Circle (835) on Reader Service Card

Nebits Systems Inc.
FTS File Tracking System: cross-reference, cataloging system manages records retention.

Text retrieval module: word indexing for Media Library and Equipment Tracking System; for PC on a LAN.

Circle (836) on Reader Service Card

Neumack USA
TLM 193: large diaphragm condenser cardioid microphone for critical recording, broadcast and live sound applications.

Circle (838) on Reader Service Card

Neurtek USA
A2: 2-channel audio generator, analyzer, oscilloscope, for all common audio measurements: numeric or graphic sweep displays; hardcopy through printer with DOS-based PC.

Combo: Combined 1/4” and XLR receptacle; mono or stereo, with or without 2 mic input contacts.

NanoCon: 3+1 pole subminiature audio connector; 5mm (0.2”) diameter; locking connection; all metal housing with chuck type strain relief.

Circle (839) on Reader Service Card

New E.V.S.
Product line includes: video slow motion, processing and delay equipment, RAM recorders; LSM Live Slow Motion system; Video Paint 7.0.

Circle (840) on Reader Service Card

NewMedia Systems
Release 4.0: complete newsroom automation for MS-DOS/Novell NetWare environment; operates as stand-alone or in network.

Circle (841) on Reader Service Card

NewTek
Video Toaster 4000: New hardware and software for video effects system operating on Commodore Amiga 4000 platform; added capabilities, faster rendering, easier usage and lower cost than previous versions.

Circle (842) on Reader Service Card

Nigel B Furniture
Spacemaker/Estimator and Imagebank: Windows-based software packages for designing, outfitting and pricing studio floor plans.

Circle (843) on Reader Service Card

Nikon Electronic Imaging
FW/ENG, FENG: cost-effective means to expanded special effects; permit Nikkor SLR lenses to be used with ENG cameras.

S15x6.5B U Nikkor: enhanced version of previous S15x for 1/2" cameras; 8.8M MOD; removable servo housing for serviceability; wide zoom ratio.

S19x8 TV Nikkor: ENG lens reaching from 8mm to 152mm; local lengths; 1/7 maximum aperture.

S9x for 2/3" wide angle lens; Internal focusing system accepts matte boxes; filters; high MFT curve.

Circle (844) on Reader Service Card

Norpak
Product line includes: V8/relextex data transmission products, TT6X00 receivers with integrated VCR.

Circle (845) on Reader Service Card

Nomat International Inc.
2000 series: Digital Ku-band low-noise block downconverters (LNbs); high stability and low noise for critical data applications.

7300 series: Ka-band Nlb for reliable, compact performance in less critical applications.

9000 series: Ku-band Nlb exhibiting high stability.

Circle (846) on Reader Service Card

Northern Technologies
Product line includes: power protection systems.

Circle (847) on Reader Service Card

Nova Systems
NuBox add-ons: low-cost frame synchro-nizer and sync generator cards.

TBC/synchronizer products: NOVA 950 processor/transcoding TBC, NovaMate single, dual and multi-channel TBC, NOVAsynch frame synchronizers.

(See Pick Hits.)

Circle (848) on Reader Service Card

NPB Satellite Services
Product line includes: satellite transmission services for radio broadcasting.

Circle (849) on Reader Service Card

NRG Research
Product line includes: Light and power products for professional videographers.

Circle (850) on Reader Service Card

NSEO Radio Network
Product line includes: Adult contemporary radio network service.

Circle (851) on Reader Service Card

NUGCOMM
FM/MUX series: 70MHz modulator/demodulator: supports four FM subcarriers plus video.

FT/FR4 series: STL/ICR heterodyne transmitter/receiver; 70MHz interface; covers 1.3-1.5GHz.

CAT/475 series: Direct modulation: STL/ICR system; 4 audio channels plus video; covers 1.3-1.5GHz.

AT/44 series: Agile IF heterodyne transmitter/receiver with 70MHz interface.

HTGA: Hand-held multi-function video/audio test generator.

CR4 series: ENG central receiver; single and multi-band with block converter option; covers 1.3-2.3GHz.

Circle (852) on Reader Service Card

Nutel Electronics Corp/Telemet
Product line includes: engineering services.

Circle (853) on Reader Service Card

NYSION
NV5000 series: universal sync generators providing common timing reference for simultaneous lock of NTSC/PAL video, AES/EBU and SDIF-2 digital audio; all outputs simultaneously available.

(See Pick Hits.)

NV3064 series: Digital routing switches for AES/EBU audio or ANSI/SMPTETime code signals; 32x32 or 64x64 configurations.

NV3128: RS-422 data routing switcher; allows configuring of outputs up to 128 channels.

NY1000 Delay Compensation Modules: Delays AES/EBU audio and timecode up to 20 video fields.

Circle (854) on Reader Service Card
In broadcasting, Image and Power are everything.

BURLE is committed to providing a full range of camera and power broadcast tubes.

As television celebrates its Golden Anniversary, BURLE continues a 50 year tradition of broadcast technology leadership. We've supplied you with Vistacon, Saticon and Vidicon camera tubes since their introduction. And our power tubes are the industry standard for VHF TV.

BURLE supplies a wide variety of camera and power tubes for the broadcast industry.

It takes a domestic source like BURLE to maintain a half century commitment to producing and supplying a full line of broadcast electron tubes. From camera to transmitter, BURLE provides the tubes that keep the broadcasting industry on the air. Count on us to keep you supplied with the full range of broadcast camera and power tubes you need. Today and tomorrow. Contact your local BURLE broadcast tube distributor, or call us at 1-800-827-8823.

Experience counts.

BURLE Electron Tubes

©ircle (59) on Reply Card
Nycone Electronics

ISS 1B: Slide scanner system producing broadcast quality color video from 35mm slides; composite or RGB output.

Circle (855) on Reader Service Card

O'Connor Engineering Labs

354: Quick release lightweight tripod.

1030 upgrade: Increased drag, sleeker profile fluid camera head.

Circle (856) on Reader Service Card

Odetics Broadcast

OmniCart: Multichannel broadcast system; composites, records and plays to up to 8 outputs simultaneously; controls external devices. (See Pick Hits.)

Circle (857) on Reader Service Card

Osetics Broadcast

Odetics Broadcast

OmniCart: Multichannel broadcast system; composites, records and plays to up to 8 outputs simultaneously; controls external devices. (See Pick Hits.)

Circle (858) on Reader Service Card

Robel

Controls external devices. (See Pick Hits.)

Circle (859) on Reader Service Card

Optical Disc Corporation

Product line includes: LaserDisc recording systems and Recordable Laser VideoDiscs (RLVs) compatible with standard LaserVision or LaserDisc format consumer players; Model 610A/620A recording system accepts composite video for cost effective single-copy or low-volume duplication; Series 500 Mastering Modules handle LaserDisc or CD mastering.

Circle (860) on Reader Service Card

Optimate Interactive Services

Motion Media: Macintosh-based tool for generating MPEG-encoded full-motion video sequences; uses off-the-shelf video capture card and VTR.

Audio to MPEG: Macintosh-based tool for creating MPEG-encoded audio sequences; includes audio capture hardware.

Circle (861) on Reader Service Card

Optimum Productions

Product line includes: Versioning and dubbing of Video output; optional safe area generator; key pulse output switchable for component or composite production systems.

Circle (862) on Reader Service Card

Orban/AKG Acoustics

8200 version 1.0 software: New control options include user-configurable daypart processing, "purist" processing features, multiband processing improvements, SCA and overshoot compensations and EEB tone generator.

Circle (863) on Reader Service Card

Ortel

Optical switcher; bit-parallel and bit-serial with four levels of digital audio; RS-232, -422 control.

Circle (864) on Reader Service Card

Oscram Sylvanian

20,000 Watt Studio Lamp: Tungsten Halogen lamp with no ballasts, flicker, color shifts or warm-up time; outputs over 7 million lumens at 3200K color temperature; 350-hour life.

Circle (865) on Reader Service Card

Otari

Concept: Digitally controlled audio console for music and production; symmetrical dual-path architecture; 24-track buses and 10 auxiliary buses; individual 4-band EQ, 100mm fader; full snapshot recall plus dynamic automation of faders and mutes with DISKMIX dual-path VCA automation for up to 36 simultaneous channels.

DISKMIX 2x: hardware and software revision of DISKMIX 2 console automation system; improved data resolution, video display, varispeed performance and data interface; supports 80256/80256 PC processors; runs DISKMIX 3 v4.0 moving fader VCA automation with graphics, pull-down menus. MADi interface option for DTR9000: Multi-channel audio digital interface for PD format 32-track digital recorder.

PD-646 v4.2 software: New features for Macintosh-based multitrack digital audio recording/editing system include on-screen GUIDE waveform display for visual editing, external machine control, DSP stereo mixdown with real-time track solo/mute, offline upload/download, CMX AutoConform support option, sound file interchange via removable magnetic disk and new Sound Library management features.

Circle (866) on Reader Service Card

Pacific Recorders & Engineering

Product line includes: Audio mixing consoles, cart machines, digital audio workstations.

Circle (867) on Reader Service Card

Pacific Radio Electronics

Product line includes: Audio hardware and distribution equipment; racks, panels; digital audio and video cables, connectors.

Circle (868) on Reader Service Card

PacifiC

Product line includes: Audio mixing consoles, cart machines, digital audio workstations.

Circle (869) on Reader Service Card
Fujinon's new 66X field production lens. It turns a long shot into a chip shot...in one shot.

The odds of converting a long shot into a chip shot have never been better, thanks to Fujinon's high-performance Ah66 X 9.5ESM field zoom lens. From a wide angle of 9.5 mm to an extreme close-up of 1250 mm (2X), the Ah66 X 9.5ESM has the highest magnification and best F-stop ramping of any field lens you can buy.

So whether you're shooting sports or concerts, any time the situation calls for a long shot, increase your odds with Fujinon's Ah66 X 9.5ESM. For more information about Fujinon's superb new Ah66 X 9.5ESM, call Fujinon at 1-800-553-6611 or consult your local Fujinon representative.
in CG; RGB, Y/C, component and composite outputs; 750-line resolution; ~62dB S/N; ~8 @ 2000lux.

**Panther**

**Product line includes:** Camera support equipment, Super Panther, Mini Panther camera dollies, THOMA remote camera head.

**Circle (877) on Reader Service Card**

**Parallax Graphics Systems**

MATADOR rgb: Enhancement to integrated 2D animation, paint, special effects system; improved text features, expanded color palettes and manipulation tools, added saturation/brightness adjustments, automates operations of painting, keyframe animation, rotoscoping, chroma keying, smart brush effects, warping, high-speed operation with SQL processor.

**Neuromorph Graphics Systems:** Family of software for Silicon Graphics workstations for fast, high quality, stylized image preparation; includes maps and generic templates for sports, financial data, quotations, statistics, etc.

**Circle (876) on Reader Service Card**

**Patch Bay Designation**

**Product line includes:** Labels and designation strips for patch panel units.

**Circle (879) on Reader Service Card**

**Peerless Sales**

**Product line includes:** Monitor/TV wall and ceiling mounts, the Jumbo and Designer series.

**Circle (880) on Reader Service Card**

**Philips Consumer Electronics**

**CDI 350:** Professional Compact Disc-Interactive (CD-i) player with active matrix color LCD screen; displays NTSC or PAL; includes built-in pointing device, stereo speakers and multiple I/O, upgradeable to full-motion, full-screen video; AC/DC powering.

**DC 211:** Desktop CD recorder; Orange Book II system, supporting CD-ROM, CD-ROM XA, CD Multisession, CD-i and DVD; double-speed record and playback capability; SSI interface includes publishing software available for control by Macintosh or PC/Windows platforms.

**CD4628R/CD4642SR:** CD ROM players with fast access times, MPC and photo CD capabilities; tray loading system eliminates need for CD caddies; CD4642SR comes with selected software and stereo speakers.

**CM450ABK/CM452ABK:** Internal/external double-speed SCSI CD-ROM drives; SC-2 compliant; self-cleaning laser mechanism; headphone outputs included; multi-session and photo-CD capable.

**CD200:** Portable photo CD player; designed for presentations; standard video monitors or projectors; AC/DC power; plays CD audio; full remote control; image rotate, pan and teleview functions.

**220M4141:** Full-motion, full-screen video extension unit for CD players; plug-in mounting; forwards MPEG audio and video standards; supports slow motion and still video playback.

**Circle (889) on Reader Service Card**

**Philip Lighting**

**Product line includes:** Lamps for stage, studio.

**Circle (900) on Reader Service Card**

**Philips TV Test Equipment A/S**

**PM 56410:** HDTV test pattern generator.

**PM 56501:** NTSC TV transmitter monitor; back-lit LCD screen displays multi-channel data; keyboard-operated; mono or BTSC versions.

**PM 56510:** Hand-held projection color balance meter for aligning video projectors.

**PM 56520:** PC-based industrial CRT color analyzer package.

**PM 5640A:** NTSC video test signal generator; includes Ghost Cancellation Reference (GCR) signals; see Pick Hits.

**Circle (911) on Reader Service Card**

**Photomart Ciné Video**

**Product line includes:** Video equipment and accessories.

**Circle (902) on Reader Service Card**
By lunch time she had recorded forty-one spot effects, five background effects, and twelve music beds. She also made twenty-two cuts, eighteen fades, and built ten playlists. From there, she set up three music loops and nine effects loops. When she was done, she handed the entire job to the client—on a single disk.

Pretty good first session.
Nature has its own professionals of sound and vision.

The wonders of sound and vision found in nature are hard to reproduce. In fact, if anyone has come close it's EEV.

Whatever your broadcast requirements, you'll find EEV has the technology to match. High-efficiency UHF Television Klystrons from 5kW to 70kW for Television Transmitters. A range of Broadcast Tetrodes and Vacuum Capacitors for AM and FM transmitters, and Leddicon® camera tubes to fit virtually every broadcast color camera available today.

Our experience is the key to technological leadership. Our manufacturing know-how ensures the highest quality and reliability. Above all, our professional dedication to our customers' needs makes us the natural choice of broadcasters the world over.

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EEV Technology for the Broadcast Industry

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Subsidiary of the General Electric Company plc of England
NAB '93 - Show of Shows

loads to 70kgs.

SAS See and Select: cue computer facility; frame grab function; shot replay through screen selection.
Circle (915) on Reader Service Card

Radiation Systems Inc.
Model 240KVO: offset-feed SNG antenna system.
Anghel: frequency synthesized satellite up/down converter, available for both C and Ku-bands.
Truncated antenna: 8 category A performance with 6 tower windloading; frequency range 2GHz, 7GHz, 13Hz.
Circle (916) on Reader Service Card

Radio Computing Services
Linker: integrates commercial and music logs on paper or for transfer to a radio automation system.
RCS Works!: integrated programming, traffic, billing, continuity, news, sales and production package.
Circle (917) on Reader Service Card

Radio Design Labs
Rack-up series: RU-MX5 5-input mixer; RU-DA4D 1x4 stereo audio DA; RU-DA4 1x4 video DA; RU- SM12 dual audio meter; RU-RA3 19" rack adapter holds up to three Rack-up products. (See Pick Hits.)
Circle (918) on Reader Service Card

Radio Systems
RS-24 mixer: 24 linear faders for 48 stereo or mono sources; production or on-air.
RS Master Clock: analog system with drivers, slaves; digital and analog displays available.
RS-Squared: 24dB noise reduction stand-alone encode-decode unit based on Dolby S technology; single-ended stereo phase correction;
TI 101: telephone interface, provides equalization, limiting and conferencing.
Circle (919) on Reader Service Card

RAM Broadcast
32000C: professional communications system, capable of 32-users.
555200: on-air console, up to 30 input modules, stereo plus audion and mono sum output channels.
SR10A: audio switcher.
AA5400XL: on-air console, stereo plus audion, two telephone mix-minus buses.
Circle (920) on Reader Service Card

Ramsa Audio/Panasonic
WR-5400: 4-bus mixers with 12 to 24 channel models; 2-inputs per channel; 3-band EQ; L/R stereo mixers from channels, groups and four aux sends.
WP-1000 series: audio power amp uses class H circuit, also WP-1200, WP-1400 models.
WX-RP410/RP700: 30-channel 800MHz UHF wireless mics for ENG/EFP.
SV-5200: R-DAT system.
Circle (921) on Reader Service Card

RamSoft
32000C: professional communications system, capable of 32-users.
SS9200: on-air console, up to 30 input modules, stereo plus audition and mono sum output channels.
SRIOA: audio switcher.
AA9400XL: on-air console, stereo plus audion, two telephone mix-minus buses.
Circle (922) on Reader Service Card

Raytheon semiconductor
Product line includes: wide range of semiconductors for audio and video applications.
Circle (923) on Reader Service Card

Recognition Concepts
VDR 1000 series recorders: records either composite or component digital video on same disk, up to 100 minutes of composite, 50 minutes of component or 34 minutes of HDTV video.
Circle (924) on Reader Service Card

RF Electronics
RE-533: RDS coder; stores 16 data records; supports Program Service name, Program Type, Traffic Announcements, Radio Test and other service types; RE531 adds paging capability.
RE8720/8730: tie line audio codec for 15kHz stereo transmission on telco lines or twisted pair conductors.
RE880 sound interface: encodes, decodes four 7.5kHz speech channels to 64kbit/s.
Circle (925) on Reader Service Card

Rees Associates
Product line includes: Architectural services.
Circle (926) on Reader Service Card

Register Data Systems
DigiCorder: digital alternative to cart machine in live station operation.
The Phantom: complete digital audio automation system for recording, scheduling and playback of commercials, liners, promotions and satellite sources.
Traffic Master: Radio station business computer system, handles traffic, billing. Upgrades include payroll, general ledger and accounts payable.
Circle (927) on Reader Service Card

Research Technology International/RTI
CF3000.MK V: Lipsner-Smith ultrasonic film cleaner;

What does Dolby know about RF?
As much as we know about audio.

With decades of experience in audio and psychoacoustics behind it, Dolby's DSTL® digital aural STL was destined to be the best-sounding system in the world. And it is. But the story doesn't end there. Using the most advanced RF technologies, the DSTL system achieves new heights of RF performance and reliability:

- Increased fade margin. Thanks to a highly sensitive receiver, the Dolby DSTL system outperforms other digital STLs on long or obstructed paths, where dependable operation is a must.
- Greater immunity to interference. A wide RF dynamic range makes the Dolby DSTL system highly immune to adjacent channel and co-channel interference. Even powerful cellular and paging transmitters won't faze it, so your signal comes through loud and clear.
- Superior spectrum efficiency. With sophisticated modulation techniques and an ultralinear RF transmitter, two program and two auxiliary channels occupy a bandwidth of only 250 kHz (half that of ordinary composite STLs). That means clear skies for you and your frequency coordinator, particularly in congested markets.

Progressive RF technology plus digital sound quality add up to the Dolby DSTL system outperforming analog and other digital STLs on the market.

Dolby Laboratories Inc. 4 Lionsgate Drive, Wiltlow, Enfield, England  
Dolby Laboratories Inc. 94110 Executive Center 79988-12401 * Toll 800-934-8377  
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Circle (64) on Reply Card
Roeco Laboratories
E-Colour: European color filters.

Rosco Laboratories
RF-1000P/T:
Product line includes:

Rules Service Company
SSA 324:
Model 2550:
SAP 612:
RTS Systems
video equalizing amplifiers.

VTA 7000 series amplifiers:
4-bus multilevel effects systems, 12 linear keyers.

Ross Video
SADiE
vice senses, eliminates feedback.

FBX-90 feedback exterminator:

Sabine Musical Manufacturing
FLX-90 feedback exterminator: digital notch device senses, eliminates feedback.

SADIE
SADIE: professional digital audio disk editor for Windows

Sachtler
Vario Ped 1-90, 2-75: support system for broadcast cameras.

Video 18 Sensor, Video 20 Sensor: pan/tilt heads with LED display to show correct balance or center of gravity and correct dynamic counterbalance; feature 90% tilt, illuminated leveling bubble.

Suspension system, studio planning: complete line of Griddrivers, Barrel hoists, motorized grid telescopes, Scenery hoists, Positioning controls.

Director series: Fresnel lights for EFP and studio applications.

Reporter 1000H: open-face fixture for wide-angle illumination.

Reporter 2000: portable HMI light; size of Reporter 1250, output equivalent to Reporter 270D.

Circle (942) on Reader Service Card

Samson Technologies
Solo Monitor: 10-bus monitor console, 4-band EQ.

UHF Synth series: multichannel wireless mics; dbx noise reduction.

MPI 2242: rackmount console; 22x10, with eq.

SNR 2000 Behringer audio processing systems:
SNR 2000 multiband denoiser, Autoquad XR 2400 expander/gater.

Composer MDX 2000 dynamics processor and IntelliGate XR 2000 expander/gate/ducker.

Sercio 240/150: bi-polar audio amplifiers, 240W/150W per channel.

Jade: 16-channel input console, parametric equalizers, monitor channels.

QS: live-output stereo headphone amplifier.

Ku Track: 300W uplink to SatCom 2.4m prime dish; redundant RF electronics.

Circle (943) on Reader Service Card

Sandar Electronics


VX-2000: video crosspoint card; 16 x 16.

Circle (944) on Reader Service Card

Sanken/Audio Intervisual Design

CD-1 prototype: 4-channel Shotgun Surround mic.

Specialis: professional real-time processor for placement and movement of audio sounds in 3-D space.

SR-15 Distriplayer: time code distributor, reshaper, pilot tone stripper & time code analyzer.

Circle (945) on Reader Service Card

Schafer World Communications

Product line includes: CD automation system.

Circle (948) on Reader Service Card

Schneid Telecommunications
Product line includes: Audio test, measurement systems, RESCO network monitoring, control systems.

Circle (949) on Reader Service Card

Scientific Atlanta

Encore DSR-3610: digital satellite receiver. (See Pick Hits).

2.4mattenuator: towable mobile self-contained earth terminal.

Digital Ad Delivery System: combines D9100 VQ encoder, D9110 integrated satellite digital receiver with VQ decoder, IBM 386 PC controller, multiple 1Gbit hard disks.

7530 International Video Receiver: converts RF to video and audio.

Model 8136: 3.6m earth station.

Model 8885: digital satellite modem.

Model 9708: integrated receiver and decoder: incorporates VQ vector quantization digital video compression.

Model 7550B: satellite video exciter with sound-in-sync capability.

Circle (961) on Reader Service Card

Seem Audio

Seeport: portable audio mixer; features mono and stereo, 19" rack mount; includes output, talkback and monitor modules.

Circle (952) on Reader Service Card

Selco Products

Pointer knobs: soft-touch control knobs: custom colors for body or pointer.

Custom molded parts

VE/PPM/digital meters: panel, bezel mount.

Circle (953) on Reader Service Card

Sennheiser Electric

MX100B: live pattern RF condenser microphone.

MS11-MDS12: cardioid pattern microphone.

MS15-MD616: supercardioid pattern microphone.

MS327: dynamic supercardioid microphone.

RF1051: handheld wireless microphone system.

WEM2: wireless ear monitoring system.

EM 1040: UHF wireless microphone system with tunable frequencies.

Circle (954) on Reader Service Card

SESCOM

Product line includes: Audio modules, transformers and audio signal processors.

Circle (955) on Reader Service Card

Shereff Systems

Deputy CG enhancements: titler software for 386/486 PC.

Circle (956) on Reader Service Card

Shima Seiki USA

Moeox HD system: non-linear digital HD editing system.

Circle (957) on Reader Service Card

Shively Labs

Product line includes: Panel, side-mount FM broadcast antennas; related equipment: branched, balanced multistation combiner, rigid transmission line, pressurization equipment; omnidirectional
Opr competition is making a lot of noise about their wireless. Trouble is, their wireless make a lot of noise too.

Experience the Nady 950 UHF. The first quiet multichannel UHF wireless.

Fact: Due to problems inherent to UHF technology, like phase noise and residual frequency modulation, UHF wireless systems tend to be noisy.

Fact: Other companies offer high end UHF wireless systems that are 3-10 dB noisier than their VHF systems, and VHF systems that are 10-30 dB noisier than any Nady.

Fact: Some companies that do offer a quiet UHF system don’t advertise how they make it quiet: by sacrificing headroom. So you’re asked to accept less critical performance—to choose between noise and clipping.

Fact: Nady devoted extensive R&D to testing, simulating and modifying our UHF systems. Our engineers utilized circuit modeling and analog simulation software to optimize our design and compensate for manufacturing tolerances and variations in device parameters.

Fact: Nady engineers achieved the first truly quiet RF link for UHF wireless. The Nady 950’s proprietary components and circuitry yield radio link carriers that are up to 23 dB quieter than any other UHF system. And Nady’s specialized companding noise reduction delivers the best dynamic range—and headroom—in wireless today.

Fact: The Nady 950 features state of the art frequency synthesis. With several ten channel models in the 490-950 MHz range, and a 4 channel version in the 800 MHz range. Plus exclusive hiss mute circuitry, which maintains audio quality as the transmitter moves toward the outside limits of operating range. Variable bass boost. Balanced and unbalanced output. Switchable 115/220 and DC power. Available frequency bands for worldwide use.

Fact: You could pay a lot more for a UHF wireless system, and get a lot more noise. So choose the Nady 950 UHF.

Call us—we’ll send you more info.
and formal FCC directional pattern studies.

**Product line includes:** mobile equipment cars.

Circle (981) on Reader Service Card

**Society of Broadcast Engineers**

**Product line includes:** audio test, measurement equipment.

**Product line includes:** audio mixers.

**Snell & Wilcox**

DSY1000: compact 4:2:2 switcher with single M/E; 10 wipe patterns; edge softness; integral serial digital router with 3x4 matrix.

HD2100 downconverser: produces 525/625-line material with ultimate picture quality.

HD3100 upconverser: converts between field rates and line rates, bidirectionally; from 1125/60 and 1250/50 to 525/60 or 625/50.

Alchemist with Ph.C: standards converter with phase correlation motion estimation; 16-point linear aperture (CIR=60) converter; transparent conversion retains resolution, reduces judder and blur.

HDU1000 upconverser: accepts all conventional video formats as inputs to combine conventional video into HDTV productions; supports all current HDTV standards.

KUDOS series: CVR45 standards converter; TBS24 wideband digital synchronizer, CC10 color corrector; TPG2002 standard, multifORMAT test signal generator.

PRISM digital decoder: reference standard decoder; exceptionally clean separation of luminance and chrominance components; acts as bridge between composite digital and component digital environments.

Gaselle Slow motion system: real time picture creation system; uses Ph.C phase correlation motion estimation to produce extra frames for infinitely varied slow motion.

MDE1000 digital encoder: multistandard system samples incoming components to 12 bits; delivers highly accurate, stable output in six encoded standards.

Circle (973) on Reader Service Card

**Spectral Synthesis**

**Product line includes:** sound recording equipment.

**Product line includes:** audio recording equipment.

**Circle (972) on Reader Service Card**

**Sound Ideas**

**Product line includes:** music effects products.

The Warner Bros. sound effects library.

Circle (990) on Reader Service Card

**Sound Technology**

**Product line includes:** audio test, measurement equipment.

**Product line includes:** computer control over TV, motion picture, music recording configurations; switchable for broadcast, record and remix.

**Product line includes:** enhancements to the Ga-er series consoles.

SL-8000GB: on-air production console; G-series automation computer controller for TV, motion picture, music recording configurations; switchable for broadcast, record and remix.

Circle (976) on Reader Service Card

**Sonic Solutions**

**CD Printeric Station:** desktop CD recording system; double speed writing; precision track start, end times; 128-Q track capacity; also usable for creating CD-ROMs.

**DataNet:** network for multimedia professionals; FDDI/CDI network Nubus cards for Apple Macintosh; simultaneous playback of 100 channels of CD-quality audio, 3-50 channels of compressed digital video; integrated multimedia file server; up to 1,000 nodes.

Circle (977) on Reader Service Card

**Sony Communications/Broadcast**

**DVS-4500:** digital Betacam recorder/player; also plays analog Betacam SP tapes; DVS-500 same as DVS-50 but does not play analog tapes. (See Pick Hits.)

PVE-IA: disk-based multimedia package

Circle (978) on Reader Service Card

**Softimage**

**Product line includes:** computer animation for cost-effective automation.

**SoundRoom.**

Circle (1202) on Reader Service Card

**Solid State Logic**

**Product line includes:** sound recording equipment.

**Product line includes:** PC-based video editing workstation.

DME3000: digital multi-effects

FX2C: converts Sony D-2 VCR to component recording.

Broadcast Engineering June 1993
When you can’t see the trees for the forest...

Sierra’s Tahoe Series multi-level routing switchers lead the way!

If you can’t find the signal you need when and where you need it, you need Sierra! Our Tahoe Series video and audio routing switchers will put you and your signals on the right path and improve your productivity at the same time. Tahoe Series routing switchers offer better than broadcast quality performance at affordable prices. See why others are moving up to Sierra Video Systems to get their signal back on the right trail...

- Available in sizes from 16x16 to 32x64. Custom sizes too!
- Up to 8 levels of composite or component analog video and audio switching — with transparent performance.
- Powerful three oct serial control system supports up to 64 control panels at distances to 1,500 meters.
- Serial interface for a host computer or third-party controller. MS-DOS® application software included!
- Terminal port for system set-up. Assign control panels to levels and outputs as needed.
- Expandable. Upgrade at any time by simply adding modules. Ask about our trade-up program too!
- Companion series digital video, wideband RGB and RS-422 data routing switchers from the SVS™ line-up.
- Seven-Year Warranty! When it comes to reliability and service, we mean it!

For more information about us or to review our broad range of products, simply call us or contact your local SVS™ dealer and request a copy of our latest catalog.

SIERRA VIDEO SYSTEMS, INC.
P.O. Box 2462
Grass Valley, CA 95945 USA
Telephone: + 916.273.9331
Facsimile: + 916.273.9390
NAB '93 - Show of Shows

Sprocket Video Technologies
Product line includes: digital utility devices, serializer, deserializers.
Circle (886) on Reader Service Card

ST Keltec Corporation
Product line includes: satellite communications products; H60-350X, R60-300Ku, H40-50Ku, H40-50CJ.
Circle (887) on Reader Service Card

Stainless/SG Communications
Product line includes: tower products, services.
Circle (888) on Reader Service Card

Standard Communication
Product line includes: satellite TV, the Agile Omni Broadcast MT-830 and International MT-830 satellite TV receivers.
INTERCONTINENTAL: satellite receiver; microprocessor tracks LNBs without conversion chart.
Circle (889) on Reader Service Card

Stanton Magnetics
CD-33: dual CD player in console; 10 memory program play; 99 even direct access play; ±12% pitch control; forward and reverse, joystick control.
Circle (890) on Reader Service Card

Stanton Video Services
Remote Head: 900' pan rotation, 2-position focus memory
Circle (891) on Reader Service Card

Star Case
EMS: expandable multirack system, modular, molded E.I.A. rackmount case.
Circle (892) on Reader Service Card

Steenbeck
Product line includes: video, film editing, trans-ler systems.
Circle (993) on Reader Service Card

Stellar Communications
Product line includes: Haller amplifiers
Circle (994) on Reader Service Card

Stor-eel
Room Stretchers: compact storage system for smaller formats.
Set-up trucks: utility carts with maximum capacity to transfer tapes from storage area to playback area.
Stor-Max systems: double-entry high density premium quality steel tape storage for all formats; lengths from 3-18 feet without raised flooring or motorization.
Railrider systems: lateral high-density tape storage for areas with less than 3-foot depths.
Circle (995) on Reader Service Card

Strand Lighting
Leko: 1000w ellipsoidal spotlights
CD 80: Compact rolling dimmer rack
Circle (996) on Reader Service Card

Strassner Editing Systems
StudioHeart: Windows-based edit controller; supports Videomedia V-LAN
Circle (997) on Reader Service Card

Studer Revox
Product line includes: audio mixers; CD players/recorders, D740; audio tape recorders, A807A 4-track; telephone hybrids; R-DAT recorders; digital, analog routing switchers; digital audio workstations; broadcast automation systems.
Circle (998) on Reader Service Card

Studio Film & Tape
Product line includes: evaluated video recording tape.
Circle (999) on Reader Service Card

Studio Spectrum Inc.
Video dealer
Circle (1000) on Reader Service Card

Studio Technologies
StudioComm: digital audio workstation accessories.
Circle (1001) on Reader Service Card

Sundance Technology Group
RADIO: random-access non-linear editing system for Macintosh.
Circle (1002) on Reader Service Card

Superior Electric
Product line includes: electronic and electrical control equipment; STABILINE series power protection equipment.
Circle (1003) on Reader Service Card

Sure Shot Teleproductions
Discovery: 48-foot mobile unit; GVG 300 switcher, Chyron 4200 titleer, Abekas A-42, A-S3 w/warp, 5 Ikegami 323, 3 Ikegami 323p cameras; Yamaha PM-3000 mixer, Sony 3100 VTRs, BVW-75s with ½” and ¾” VCRs.
Circle (1004) on Reader Service Card

Swintek Enterprises
Mark I: UHF System.
Mark 200 transceivers: Full-duplex wireless intercoms.
Mark Q50-200/DCT: On-camera IFB wireless.
Circle (1005) on Reader Service Card

Switchcraft
VIP series: Insulated video patch panels, video patch cords.
Circle (1006) on Reader Service Card

SWR Inc.
Product line includes: RF feedline products; complete line of TV antennas, FM antennas featuring economical performance, Field Engineer Service, Exclusive Direct Out (DO) switch maximizes flexibility. Allows reconfiguration of M1500 Series mixers without use of external patchbays

3-band EQ with sweep mid-range

In-line configuration allows easy monitoring of channels, use as separate monitor mix or double number of inputs for mix-down

Link (3-4 to 1/2/R) allows buses 3 & 4 to be used as a sub-group during mix-down
5-year limited parts, labor warranty. 
Circle (1007) on Reader Service Card

Symmetrix
Product line includes: Audio processors, 528 Voice processor, 511A single-ended noise reduction system. 
Circle (1009) on Reader Service Card

System Associates
Product line includes: Used broadcast and TV production equipment brokers. 
Circle (1010) on Reader Service Card

System Wireless
Product line includes: Wireless microphone systems, HME series 800 UHF wireless intercom; field production wireless equipment from Vega, Lectrosonics. 
Circle (1011) on Reader Service Card

Taber
Product line includes: Recording media degaussers. 
Circle (1012) on Reader Service Card

Tally Display Corporation
Product line includes: Indicators using matrix-type characters to identify and indicate status of equipment; red, green, yellow colors; senses router configurations, etc. 
Circle (1013) on Reader Service Card

TAO/Technical Aesthetics Operations
Product line includes: Marketing research systems, QualiTAP, TargetONE. 
Circle (1014) on Reader Service Card

Tapscan
Product line includes: Equipment; A/B roll editing for Windows and Macintosh 
Circle (1015) on Reader Service Card

TASCAM
112 MKII: Stereo cassette recorder; 4-track, 2-ch, 2-heads. 
112R MK II: Same as 112 MKII, except bidirectional. 
122 MKII: Stereo cassette recorder; 4-track, 2-ch, 3-heads. 
CD-R01R: CD recorder compatible with CD players. 
DA-88: digital 8-track recorder. (See Pick Hits.) 
Circle (1016) on Reader Service Card

Taurus Communications Inc.
Product line includes: Full service telecommunication services. 
Circle (1017) on Reader Service Card

TCS-Tripp Communications
Product line includes: Videocassette, CD, organ-izer cabinets; double-density mobile or static cabinets fit room space limitations; Roll-Around trucks for videocassette applications. 
Circle (1018) on Reader Service Card

Teatronics International
Product line includes: Lighting controllers, ech-elon, MD series modular dimmers. 
Circle (1019) on Reader Service Card

Techflex
Product line includes: FLEXO sleeving, braided monofilament cable, wiring harness management and protection products. 
Circle (1020) on Reader Service Card

Techni-Tool
Product line includes: Special purpose tools. 
Circle (1021) on Reader Service Card

Technosystem SpA
Product line includes: Microwave links 2GHz through 14GHz. 
Circle (1022) on Reader Service Card

Technologie Elettroniche Milano/TEM
Product line includes: Prompting systems WindowsPrompt: Prompting for Windows PCs. 
Circle (1023) on Reader Service Card

Tekskill Industries
Product line includes: Prompting systems WindowsPrompt: Prompting for Windows PCs. 
Circle (1024) on Reader Service Card

Tektronix
WFM601: Serial component monitor 
AVTIME: Automated detection system for audio-to-video delays 
TSG-90: test generator. (See Pick Hits.) 
1910: VITS inserter with Philips Ghost Canceller. (See Pick Hits.) 
Circle (1025) on Reader Service Card

Telemetrics
TM9255: coax camera remote control unit for lower end industrial cameras; uses RG-59/U cable between camera head and base station to 1,500 feet or 2,500 feet of RG-11/U; configurations for Beta, Hi8, M11, S-VHS cameras. 
TM66095: pan/tilt control by RS-232; multicore system operates four cameras with 16 presets. 
TM9250: triax/coax camera remote control unit; interfaces for Sony, Panasonic, Hitachi, Ikegami cameras as complete stand-alone systems. 
Circle (1026) on Reader Service Card

TASCAM
© 1992 TEAC America, Inc., 7733 Telegraph Road, Montebello, CA 90640 213/726-0303 *Suggested retail price. 
Circle (68) on Reply Card

YOU GET WHAT YOU PAY FOR. AND GET. AND GET. AND GET.

One look at the features of the new M1508 (left) and you'll agree that it's a lot bigger than it appears. And, if you like what you get with our rack-mountable 8-channel M1508, you're gonna love the 16-channel tabletop M1516 all the more, because it lets you simultaneously utilize up to 32 input sources for mixdown, plus two stereo and two mono effects returns. 
One way or the other ($1,199* for the M1508, $1,899* for the M1516), you'll get what you pay for, over and over and over again, at your nearest TASCAM dealer.
Sennheiser's dedication to state-of-the-art technology, coupled with quality engineering, earned our microphones an Academy Award*. Sennheiser continues to set the standard in the industry, this time with the MKH 60 and MKH 70, our newest shotgun microphones. They display all the ruggedness that you need in audio production and the reliability that Sennheiser has become famous for.

Sennheiser. The first and last authority on shotguns!

Ask your Sennheiser Representative for a demonstration.
auto EQ to 300m cables.

**TTV 1625**: combines TTV 1647 S camera head, CA 25 multicore adaptor, CUC 1625, control panel for multicore operation.

**TTV 7636**: serializer, deserializer; four serial outputs from one parallel input; regenerating loop-through output of serial signals with parallel signal; input EQ; D-1, D-2/D-3 NTSC/PAL.

**TTV 7750 HD**: Hi-Doubler image converter; produces 1050-line from 525, 1250-line from 625 inputs, 16:9 or 4:3 aspect ratios.

**TTV 7810**: standardizes converter; bidirectional analog composite NTSC, PAL, SECAM, digital composite NTSC, PAL, analog components and 276Mbit/s 4:2:2 digital component signals.

**TTV3281/5280**: D1 recorders with dynamic tracking; optional slow-motion; serial digital I/O, 525/60 and 625/50.

**TTV7710, 7711**: Double D1 splitter, combiner; splits analog HDTV signal into two 4:2:2 signals for recording, processing with standard 4:2:2 equipment; recombines finished product to component, RGB output with composite or tri-level sync.

**TTV7400 DIGIPHASE**: serial digital signal phasing device.

**Circle (1038) on Reader Service Card**

**Thomson Digital Image/TDI**

**Metaballs Blob Modeler**: for TDI Explore, TDImage 3-D animation, visualization packages. Boolean operations generate smooth convexes, cavities with soft edges; optimized number of polygons to create smooth curves; real-time model checks with polygon meshing; blending of Blobs and convex to polygons.

**Metaballs Blob Animator**: attaches blobs or blending groups to skeletons for animation of muscle and joint movement; combines blending groups to create melting objects, fast rendering; full control over animation of blending groups.

**Pixiscan cartooning**: reduces time to create cartoon series in multiworkstation environment; automatic coloring of a series of drawings; exposure sheet with 30 columns of images; scanning for keyboard drawings; auto line closing of outlines; post treatment of images includes anti-aliasing by compression; SGI workstation.

**Circle (1039) on Reader Service Card**

**Thomson Tubes Electroniques**

**Product line includes**: RF power devices for terrestrial broadcast applications, HP/A, TWT devices for satellite, microwave communications.

**TH10001 modulator**: screen-grid technique modifies class of operation of TV transmitter during sync; improved efficiency by 15%; adapts to all Thomson TV tube families.

**TH 3754 TWT**: 2nd generation device for DVS transmission in 12.2-12.7GHz spectrum; >58% efficiency from 120W tube.

**TH 343 tetrode**: 1M power device to 30kW at 120MHz; 18dB gain; Pyrobloc grids; available in TH 18230G cavity circuit.

**TH 3754 projection CRT**: 9" device for HDTV projectors; P53 green, P54 red, P71 blue phosphors; EM focus; limiting focus of 2,000 TV points per line; dispenser cathode.

**TH3781, TH3754**: Ku-band TWT devices, 55W or 160W ratings with 60% efficiency, weights of 900g.

**Circle (1040) on Reader Service Card**

**Thomson-LGT**

**Product line includes**: Broadcast systems engineering of complete stations and networks worldwide; wide range of solid-state and tube transmitters for TV from 1W to 40kW (2x20kW) in Bands 1 to 5, from 1W to 10kW.

**Circle (1041) on Reader Service Card**

**3M Pro A/V Products**

**966**: high-performance analog audio mastering tape.

**BC-Metal Betacam SP, BC-Oxide Betacam video-cassettes**: low drop-out MP videocassette.

**D-3 composite digital videocassettes**.
DigiCart/H: digital audio recorder.

DCN D-1 cassette: addition of D-1 shell size to series.  
Circle (1042) on Reader Service Card

360 Systems  
DigiCart/I: digital audio recorder.  
Series 1000: message player.  
Circle (1043) on Reader Service Card

Tiffen Manufacturing  
Warm Pro-Mist series: filters.  
Warm Soft/FX series: filters.  
ColorGrad: filters.  
EFP Studio/Field filters: clear and UV filters.  
Circle (1044) on Reader Service Card

TimeLine  
Console Control Unit: keypad on AMS, Euphonix.  
Neve, Otari, SSL consoles operate TimeLine System Supervisor multitransport controllers interfaced to console automation computers.  
Alesis AL2: multipurpose audio-video synchronization interface.  
Circle (1045) on Reader Service Card

TM Century  
Product line includes: Radio station automation, Digital Commercial System with hard-disk storage.  
Circle (1046) on Reader Service Card

TOA Electronics/Digital Mixing Systems  
is11000: digital mixing system.  
Circle (1047) on Reader Service Card

Toko America  
VAST-P: video, audio storage and transmission system.  
TCD-1000: portable video codec for multimedia teleconferencing systems.  
Circle (1048) on Reader Service Card

Torpey Controls & Engineering  
Model CLK-50: compact all-digital master clock system.  
Dynateq D8800 series: audio/video/cable DAs, switches, video fader, detector, sync generator.  
Circle (1049) on Reader Service Card

Toshiba Corporation  
SC-521, 821, -831: CCD color cameras.  
HSC-100: CCD color camera.  
HDTV digital fiber-optic transmission system.  
HDTV System.  
Digital SCPC TDM45: digital video compression.  
HD-PICOT system: real-time video signal-processing system.  
HSV-1000: HDTV digital video switcher.  
Circle (1050) on Reader Service Card

TouchVision Systems  
D/Vision V2.1 enhancements: six 44.1kHz audio channels; Targa/PCX overlays; improved SuperRTV image quality, animation; 60-hour video capacity; files export as Microsoft Video for Windows, Apple Quicktime, Intel Indeo and WAV audio files.  
Circle (1052) on Reader Service Card

Trans Video Electronics  
Global SNG/RF-64 and /ISDN-64: self-contained, broadcast-quality portable video news-gathering system.  
Circle (1053) on Reader Service Card

TRF Production Music Libraries  
New CDs: more than 100 new digitally recorded releases; each contains 75 to 80 minutes of music.  
Pyramid Production Music Library: introduced with 11 initial CDs for broadcast; A/V, film applications; Real Country, Real Rock, sports/action, light jazz, light industrial, urban contemporary, Americana, children/children, Technopop, solo instruments, jingles.  
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Trident Audio  
Series 90: 24-bus in-line console: three inputs and 12 switches per module, each with EQ and 12 aux sends; VCA automation is standard for main, monitor fader and optional moving faders on main; 48- and 56-input.  
Vector enhancements: LCRS surround-sound pan module; stereo mic/line input. 4-band EQ; 3-way effects return; routing to multitrack, aux, four stereo buses.  
Circle (1055) on Reader Service Card

Troll Technology  
Touchstar products: master, communications and slave controllers; Trollcam remote tower camera control; Skypod III microwave antenna system.  
Circle (1056) on Reader Service Card

Trompeter Electronics  
J24WHH: high-frequency serial digital coax jack.  
Circle (1057) on Reader Service Card

TrueVision  
Bravado: multimedia engine; on-board VQA for ISA platforms; full-color video-in-a-window, audio pass-through; Windows 3.0-compatible; 8-bit entry level and 16-bit full-featured versions.  
VideoVGA Eight & Sixteen: VideoVGA-R, -Ri and -16 graphics engine.  
Circle (1058) on Reader Service Card

TSM/Total Spectrum Manufacturing  
AutoCam: network LAN, interconnects two ACP-8000 systems via Ethernet for master/slave operation; MCB-3 vector solving manual control for manual operation. Set Mapping provides collision avoidance.  
SP300/X-Y: enhanced full motion-control pedestal: new wheel design, servo control software.  
VS-3000: studio pan/tilt unit.  
VS-2000: variable speed, motorized pan/tilt system.  
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Circle (72) on Reply Card
Ultimate Corporation
MemoryHead: repeatable camera mount for video and film studios; automated in-band, on-channel AM and FM digital audio broadcast.
Circle (1064) on Reader Service Card

Union Connector
DistroBox: complete range of portable power distribution boxes; available from 20A to 200A.
Circle (1065) on Reader Service Card

Unique Business Systems
Product line includes: Productivity, business software; RentTrace rental equipment availability tracking.
Circle (1066) on Reader Service Card

UniSet Corporation
Product line includes: Studio furnishings, sets.
Circle (1067) on Reader Service Card

United Ad Label
Product line includes: Blank, custom printed tape format labels for laser, tractor-feed printers for most audio, video formats.
Circle (1068) on Reader Service Card

United Media
MultiVision System: non-linear desktop video editing studio integrates full-motion video capture, digital scene logging and image viewing.
Circle (1069) on Reader Service Card

URFI
COM1: compressor/expander module.
CPUI, CPUE: computer modules.
GATE1: gate module.
MINI: mono input module.
OUT1: output module.
P.EEQ1: parametric EQ module.
Circle (1070) on Reader Service Card

USA Digital Radio
Product line includes: In-band, on-channel AM and FM digital audio broadcasting.
Circle (1071) on Reader Service Card

US Tape & Label
Product line includes: Labels, promotion products.
Circle (1072) on Reader Service Card

Utah Scientific
Multichannel: automation systems.
MC901: digital master control switcher.
Circle (1073) on Reader Service Card

Utility Tower
Product line includes: Tower products/services for AM, FM, TV, microwave and communications.
Circle (1074) on Reader Service Card

Valentino Production Music
Product line includes: Production music and sound effects library packages.
Circle (1075) on Reader Service Card

Valmont Industries
Product line includes: Tower structures, Monopoles to 250 feet, also free-standing and guyed lattice towers.
Circle (1076) on Reader Service Card

Varian Canada Microwave Products
Jetset: klystron 24-hour emergency delivery, tube repair and maintenance, bonded storage.
Circle (1077) on Reader Service Card

Varian Microwave Equipment Products
Cband HPA: 3kW unit for wideband, single and multichannel commercial satellite service; microprocessor control section; local or remote-control panel with menu-driven commands.
Circle (1078) on Reader Service Card

Varian Microwave Power Tube Products
Circle (1079) on Reader Service Card

Varian Power Grid Tube Products
Circle (1080) on Reader Service Card

Varian Traveling Wave Tube Products
Circle (1081) on Reader Service Card

VEAM
VSCConnectorSeries: threaded coupling multipin computer modules.
Circle (1082) on Reader Service Card

Vega Wireless
Q600 intercom: split-band UHF/VHF wireless system.
Circle (1083) on Reader Service Card

Vertex Communications
Product line includes: Design, engineering, manufacturing of earth station antennas and related components; tracking control systems; dual-reflector antenna systems (1.8m to 32m) for C-, Ku-, X-band frequencies; some L-band; turnkey installations; site testing, maintenance services.
Circle (1084) on Reader Service Card

Vertigo Technology
Meta Balls: modeling software.
Effectors: modeling and animation tools.
Circle (1085) on Reader Service Card

VG Electronics
VGE 1076 series: Slimline RDS coders; entry-level, display and non-display versions; supporting AF, DI, MS, PI, PS, PTY, TA and TP protocol; dynamic and static RDS messages.
Circle (1086) on Reader Service Card

VG Inc.
D400: composite digital downstream keyer; features auto/manual timing; six inputs, integral color bar generator, key memory.
Digital D2500: composite digital production switcher; D-2, -3, and analog-compatible.
CV2: component digital switcher.
Circle (1087) on Reader Service Card

Continued on page 117
In the beginning, there was AM, and its modulation level begat its coverage. Therefore, the people called for a device to save them from the perils of low modulation, and lo, the audio processor was brought forth from the loins of amplifiers. Its adjustments were mightily tweaked, so that it kept the station loud and its coverage strong. And broadcasters saw that it was good...

That bit of history set the tradition for much of what was to follow in radio. When FM came along, however, the loudness = coverage equation was broken, and more kinds of "good" music could be successfully broadcast on the higher fidelity medium. This caused some FM stations to apply little or no audio processing to their air signal. Yet broadcasters soon discovered another reason for reducing the dynamic range of some signals, which the AM processing had previously (although inadvertently) taken care of: Audio programming had to be matched to the environment in which it was heard.

Radio also transformed its service to the user in those years, primarily because of the advent of television. Changing from a medium that people listened to actively, radio became an accompaniment to other activities in the home. Meanwhile, mobile listening also increased dramatically. Both of these trends put radio into increasingly narrow dynamic range environments, as background noise levels increased and smaller radios provided lower maximum listening volumes. Although today's quiet homes and audiophile systems can provide a stunning dynamic range for audio reproduction, most radio programming is not heard this way. Cars also have become quieter, with improved sound systems, but even a best-case, car-listening environment has relatively small dynamic range. (See Figure 1.) Therefore, the need for appropriate audio processing in radio broadcasting remains.

The key word is "appropriate"

Figure 1 shows that the dynamic ranges within which radio is listened to are somewhat diverse. Broadcasters must choose a singular processing scheme that works everywhere, however. Based on this data, an appropriate one-size-fits-all maximum dynamic range for radio might be set at approximately 25dB.

Yet a strange paradox of extremes has developed during the last decade or so in FM audio processing styles. At one end is the purist contingent, which takes a hands-off attitude to processing, while the other side attempts to squash every last decibel out of their dynamic range in pursuit of ultimate loudness. The latter folks generally work with musical formats that are already limited in their dynamic range (often far less than 25dB). The purists play wide dynamic-range music (typically exceeding 25dB). By this analysis, the heaviest audio processors are often the ones whose program material needs it the least. The purists who reject processing are the ones who need it the most — a truly bizarre misapplication of technology.

For example, most pop music played back from a cassette in a car can easily be set at a single, comfortable volume.
However, a classical cassette might require frequent volume adjustment. This argues that a pop radio format needs little additional processing, but a classical or news/talk format could benefit from some dynamic range reduction.

In addition to the overapplication of processing, the reduction of dynamic range has obtained its evil reputation among the purists based on technology that has largely been surpassed. Earlier single-band devices' pumping and breathing have been replaced by adaptive, multiband and programmable systems that allow significant dynamic range reduction without traditional artifacts. Compression doesn't have to be the C-word at the radio station anymore. A properly set contemporary processor can constrain such wide-range audio as classical music or speech to an appropriately narrow dynamic range and still provide a satisfying listening experience. For such formats, too little processing can be worse than too much under many listening conditions.

New audio processing technology
The current state-of-the-art in broadcast audio processing incorporates digital technology. The greatest advantage of digital systems in this application is not in digital audio but in digital control. Many of the best audio processing devices maintain high-utility analog sections in some or all of their signal paths, but incorporate digital control systems throughout. User-friendly, wide-ranging control functions on these devices enable a station to carefully contour its processing and develop a signature sound.

Such systems also allow the simple implementation of another important technique called daypart processing. It provides different types of audio processing during different times of the broadcast day. These changes may reflect different programming types (a morning news/talk block followed by a midday music block, for example) or simply different listening habits (narrow dynamic range during drive time with wider range during late night). The processor's internal clock can affect the changes or external control can be used.

Other external control features for the new breed of audio processors also are popular. PC control via modem is typically offered, so a processor's placement at the transmitter site is no longer a significant handicap. A PC at the station (or in a staffer's home, or even a laptop-plus-cell-phone/modem in a car) can be used to access complete control of an audio processor (under password protection). This allows the processor to be adjusted and checked in real time using real world listening environments. Multiple settings can be stored in memory and A/B compared under various listening conditions. The audio processor's manufacturer supplies remote-control software for control and display on the PC.

How to proceed
If your station is still using the same processing equipment it did 10 years ago (perhaps even five years ago), it's time to revisit the rack. Obtain demos of several new devices and compare them to your current system. (Chances are you won't need the same amount of rack space you're using now to accommodate the new systems.)

Take advantage of this evaluation period to consider the sonic improvements of new hardware as well as your processing philosophy. Ultimate loudness no longer needs to be the goal of any format. Ambient conditions dic-
Figure 1. Dynamic range of home and car environments is determined by the difference between maximum audio system loudness and average background noise levels.

Audio programming has to be matched to the environment.

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Broadcast Engineering June 1993
NAB '93 - Show of Shows

Continued from page 113

DX300: composite digital vision mixer.
DX120: composite video mixer.
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Vicon Industries
Vectorcam: pan-and-tilt drive.
V7060C: manual desktop controller.
V7070C: manual rack-mount controller.
V7100C: programmable desktop controller.
VMS062X3RM: triple-monitor system.
  Circle (1088) on Reader Service Card

Video Accessory
SG2: gen-lockable RS-170A blackburst and sync generator.
  Circle (1089) on Reader Service Card

Video Associates Labs
AudioPort: external digital audio adapter; plugs into parallel port of PC under DOS/Windows for recording, playback; software-selectable sampling rates (4kHz to 44.1kHz); ADPCM 3:1 compression.
  Circle (1090) on Reader Service Card

Video Central
Product line includes: Distributor for video products; utility devices, Optex mini image intensifier and camera surface splash bags.
  Circle (1091) on Reader Service Card

Video Communications
STARS II: multi-user software; supports hundreds of simultaneous users on PC LAN; compliant with IBM’s CUA standard.
  Circle (1092) on Reader Service Card

Video Data Systems
System 840: menu-driven color message system; stores 100 pages with battery backup; 16 colors for text, backgrounds; 50ns resolution with three fonts; RS-232 remote interface.
  Circle (1093) on Reader Service Card

Video Design Pro
VidCAD Ver. 6: cable documentation, design software; for diagrams, 3-D rack drawings, floor plans; based on AutoCAD R12.
CableDOC Manager: cable documentation software without CAD menu, icon-driven; creates single, multipair wiring data, jack, terminal block front-panel drawings, router designs, cable labels, lists.
  Circle (1094) on Reader Service Card

VideoFusion Ltd. Partnership
VideoFusion 1.5: Upgrade to its digital video effects software for QuickTime post-production. 10% speed improvement and broadcast-quality output (to ship this month).
  Circle (1095) on Reader Service Card

Video International Development
SRC 5000: graphics scan converter.
DTC 4500: motion vector standards converter.
DTC 1004, DTC 1504: 4-line, digital TV standard (singular) converters.
DTC 3604 - multi-standards converter.
  Circle (1096) on Reader Service Card

VideoLab Para Technologies Trust
Logichron: multitasking high-performance time code processor.
  Circle (1097) on Reader Service Card

videonauts Inc.
TDS, CDS-2500, CDS-3300: tape degaussers.
  Circle (1098) on Reader Service Card

Video Matic USA
Information not available.
  Circle (1099) on Reader Service Card

Videomedia
ALIX: V-LAN-compatible stand-alone module for animation and video editing control of serial-only devices from Macintosh or UNIX operating systems.
OZ: video editing software for Microsoft Windows and Macintosh; uses V-LAN network for frame-accurate A/B roll editing on the desktop.
Auto-PIC QT: animation software records and captures PICS, PICT files and QuickTime movies to/from videotape/disk.
V-LAN-CX: compatible module supports prosumer VTRs and camcorders for desktop video applications.
  Circle (1100) on Reader Service Card

Videoquip Research
DA24: 1-input/24-output video and stereo audio distribution amp for duplication facilities.
RS-4200: broadcast-quality audio/video routing switcher matrix system.
BG2 generator.
SD2 silence detector: for two independent channels of detection; adjustable silence level -40dBm to 0dBm.
VP2 VU/PM meter: 2-channel unit; separate extended range displays cover -40 to +22 VU or PPM.
VU, PPM meter.
MP2 mic pre-amp: 2-channel package; 2 outputs per channel with independent gain adjustments.
  Circle (1101) on Reader Service Card

Videotek
Omniframe: versatile rack-mount frame to accommodate 10 modules; video, audio, pulse DAs, sync or test signal generators all reside in universal frame simultaneously; eight outputs per DA.
TV-575: combination waveform monitor, vectorscope for composite and component analog

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June 1993 Broadcast Engineering 117
By George McBride

The Bottom Line

Magnetic tape is the original erasable and editable recording medium. Although many other formats have come along, magnetic tape still flourishes as a preferred method of storage for audio and video recordings. During the last decade, tape has made the switch to digital recording and remains the most cost-effective mode of long-form program storage. Continuing developments guarantee that magnetic tape will endure for years as a viable format for video and audio storage.

When magnetic recording was developed by the Germans during World War II, the tape they used was literally a ribbon of acetate with a layer of finely powdered rusted iron filings sprinkled on a layer of adhesive. Those recordings, originating in 1938, are still capable of fairly respectable reproduction.

Yet, the performance of today’s magnetic tapes is astonishing when compared to these WW-II vintage recordings, thanks to the continuing advances and refinements in tape formulation and manufacturing.

An overview of the tape manufacturing process

Perhaps today’s tape manufacturing’s greatest differences from those early days comes in terms of tolerances and precision. For example, to minimize the possibility of extraneous contamination to tape during its manufacture, the entire process is enclosed in extremely hygienic clean rooms. These are similar to hospital operating rooms, except that the clean rooms are even more painstaking in their hygiene. The clean room is designed to minimize airborne contamination rather than bacteria.

People who work inside the clean room must wear a uniform that covers their entire body except for their nose and eyes. When they enter, they pass through an air shower to remove any contamination from the uniform. Workers in the tape-coating area wear a static-free uniform and shoes along with a mask.

Metal particulate tapes

The manufacturing process begins with chemical chefs cooking up a nasty-looking concoction that resembles the dregs from an engine crankcase long overdue for an oil change. This substance is referred to as the magnetic paint, mix or coating.

The coating mix is called paint because it is literally painted onto a plastic ribbon (base film). The primary ingredients of the coating are magnetic particles, binder, self-cleaning components, lubricants and other fillers necessary in most magnetic tape.

The performance of today’s magnetic tapes is astonishing, thanks to continuing advances and refinements.

The binder is a plastic compound that links itself with the plastic material of the base film at the molecular level to form the strong and flexible magnetic tape used in most of today’s recording formats. The critical nature of the binder makes it the most proprietary and confidentially held component of a coated tape.

Dispersion

Because certain components of the coating tend to cluster together, it is
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necessary to disperse them and maintain their detachment during the coating process. This is achieved in specialized devices called sand grind mills or ball grind mills, which resemble large tanks where the mix is blended. An agitation process similar to that of a paint store mixer is used, but with action that is much less turbulent. These mills contain a specialized material that precipitates uniform dispersion of the various components' clusters, while thoroughly blending all of the ingredients of the formula.

Once the coating mixture is properly blended, it is pumped to the coating machine where it is applied to the surface of clear plastic polyethylene terephthalate (PET) or the stronger polyethylene naphthalate (PEN) base film. Base film is configured in a web or jumbo — a wide, long roll of plastic. A coating machine deposits a thin magnetic coating at a uniform thickness onto the web.

Under a microscope, the surface of freshly coated magnetic tape resembles a moonscape, with peaks and valleys resulting from the coating process. Calendaring is a subsequent process that irons peaks down on the magnetic surface of the tape. The tape is compressed between two large and extremely hot rotating drums under several tons of pressure. These drums are ground and polished to an extremely flatness and smoothness. Calendaring is typically quite effective at flattening the tape surface. The degree of flatness on the tape’s surface helps determine the abrasivity of the tape.

Abrasiveness

The abrasiveness of a tape (abrasivity) is an important element of tape formulation. It translates directly to head wear, which correlates to dollars-per-hour in operational costs. Tape manufacturers could easily manufacture a tape with practically no abrasivity. Such tapes would immediately clog the heads of a recorder, particularly those using rotating heads, because any debris deposited on the head (from tape shedding or other environmental sources) will quickly accumulate and prevent proper tape-to-head contact.

Therefore, to keep the gap area of the heads clean, an abrasive material must be added to the coating formula before mixing. The ideal tape formulation will maintain the optimum balance between desirable head-cleaning action and an undesirable amount of head wear. For example, when the D-2 format was in its infancy, some early products contained moderately elevated abrasion properties to deter head clogging, which was considered the worst possible tape defect at that time.

Since then, the format has matured, and improved video head designs and materials have been implemented, lowering the likelihood of head clogging. Many D-2 tape products have been revised to reflect these changes in the current equipment, particularly in terms of lower abrasiveness. (See Figure 1.)

One way to accomplish this lower abrasiveness without actually changing the tape formulation (and risking an unwanted alteration of a tape’s magnetic properties) involved an adjustment of the dispersion process described previously. By increasing the dispersion of the ceramic fillers (i.e., spreading them more evenly apart), the abrasivity of the tape was lowered and the head wear reduced, while other elements of the tape’s performance remained the same.

Slitting

Slitting the web is usually the final step in the magnetic tape manufacturing process. This step cuts the wide web of coated plastic material into ribbons for the desired tape widths, using pairs of rotating blades that the tape passes between.

The slit tape ribbons are then wound onto separate plastic hubs to produce pancakes of tape. The tape on these pancakes is later loaded into reels or cassettes.

Conclusion

This overview barely scratches the surface of the processes involved in making magnetic tape, but it addresses some of the most critical areas of its manufacture.

Meanwhile, magnetic tape technology continues to improve. Today’s products are significantly advanced beyond those of 10 years ago, and growth will continue. Tape manufacturers maintain constant ongoing R&D programs to improve current products based on accumulated experience, and to develop high-quality and reliable first-generation products for new formats.

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Circle (77) on Reply Card
Continued from page 117

Walter Brewer Corporation
Product line includes: Design, engineering, installation of studio lighting systems; power distribution equipment.
Circle (1112) on Reader Service Card

Ward-Beck Systems
RENAISSANCE series: modular audio consoles; solid-state switching, VCA control, automation-ready for live assist; compact package integrates with desktop environment.
DAs: remote sensitivity DA; stereo DA; full compatibility with existing line and may be fitted in combination with them in MP-42 rack frames.
Circle (1113) on Reader Service Card

Wavefront Technologies
Rotation: software for real-time rotoscoping effects.
COMPOSER, Visualizer Paint: enhancements to 2-D products.
Dynamation: 3-D animation tool for interactive creation of realistic images of myocardogenic events.
Kinematon: 3-D animation software.
Circle (1114) on Reader Service Card

WavePhone
TV1: high-speed data broadcast device.
Circle (1115) on Reader Service Card

Wegener Communications
Circle (1116) on Reader Service Card

Wheatstone Broadcast Group
Modular studio furniture.
Wheatstone: high-end main console; high-end mixer for radio, television.
Winsted Corporation
System/90 series: expanded series of high-tech post-production consoles.
Ergonomic series: multimedia workstations for desktop editing systems; recessed monitor wells, adjustable shelves.
1993 video furniture catalog: includes 132 pages of furniture products and accessories for the video and security industries; also includes products for computer graphics and multimedia use.
Circle (1121) on Reader Service Card

Whirlwind/US Audio
Presspower: active press box; two inputs distributed to 16 outputs through XLR connectors.
Circle (1119) on Reader Service Card

Will-Burt
SABER: compact mechanical telescoping mast; mast elevation to any height to 30 feet; self-supporting.
Circle (1120) on Reader Service Card

Winsted Corporation
Circle (1108) on Reader Service Card

Vortex Communications
MADHIA: high-definition intermatrix controllers.
VX-8000: Modular video, audio and data routing switchers.
PMM-200: audio monitoring systems.
VX-1100: modular rack system for Eurocard modules.
CK-100: linear component, multichannel keyer.
Logo 3: high-resolution 24-bit color logo generator.
Circle (1109) on Reader Service Card

VTE
Information not available.
Circle (1110) on Reader Service Card

VVX National Video Network
Product line includes: Switched fiber-optic TV transmission services.
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SPX990: 20-bit multi-effect signal processor with 4 EWS outputs.

Wolf Coach

Model 450B: design for SNG provides more truck in a smaller package.

Worldwide Industries

Product line includes: Studio furnishings.

Circle (1128) on Reader Service Card

WSI

WEATHERspectrum 9000 I:1: enhanced weather workstation; art, animation features with advanced forecast and analysis capabilities.

Polar Orbiter Satellite Imagery: from POES satellites; 14 orbits per 24 hour.

PREcip: precipitation estimations for levels of rainfall.

LIGHTNINGplus: lightning information data, imagery.

NOWrad Plus: high-definition radar composites.

NEXRAD Imagery: provides NWS Next Generation Weather Radar Imagery.

NOWrad: mosaic radar imagery now incorporates NEXRAD reflectivity data.

Zaxcom

HPC2000: TBC/machine-control system; TBC control, VTR tape transport control.

Circle (1131) on Reader Service Card

Wybron

MAC-360: multi-attribute controller; 360 control channels, track ball, two wheels; five fixture types — maximum 12 attributes/fixture.

IPS-DB-6003, IPS-DR-2424 Intelligent Power Systems.

AC-100: auxiliary control unit; incorporates a variety of analog controls into its Intelligent Power System or other DMX512-based dimming system.

Circle (1127) on Reader Service Card

Yale Electronics

Product line includes: Connectorized rack panels, YaleFlex audio snake cable, ADAT & DA-88 cable assemblies and digital cable assemblies.

Circle (1128) on Reader Service Card

Yamaha Music

PM4000: mixer in 32-/40-/48-input frames (24-input special order); EQ, variable high-pass filter; eight primary mix buses plus stereo bus.

DMC1000: 24-bit digital mixing console.

CBX-DS: hard-disk recording system; cross-platform compatibility; for Windows 3.1-compatible and Mac and Atari computers.

SPX390: 20-bit multi-effect signal processor with A/D and D/A conversion.

DEQS and DEQSE: digital EQs.

MSC403, -1603, -1203 and -803: mixing consoles.

Circle (1129) on Reader Service Card

Yamasita Engineering Mfg./YEM

RS-1710C: master sync generator; highly stable gen-lock system from composite video, SC signals.

SG-2000B: gen-lock sync generator; 16 test signals.

ENC-3000: gen-lock color encoder; meets EIA RS-170A or EBU standards.

SW-956: compact, low-crosstalk switcher; accepts 4 EWS outputs.
BUSINESS SCENE

Ampex Systems Corporation, Redwood City, CA, has delivered a second DCT system to Film and Videotechnik B. Gurtler GmbH, Hamburg, Germany. In addition, Highlight Productions, San Francisco, has installed a DCT 700d post-production switcher and DCT 700l analog interface.

Ampex also has sold two DCT 700d tape drives to Omnicom Video, Sydney, Australia. Another Sydney, Australia-based company, Apocalyptic Video, has purchased two DCT 700d tape drives. Broadway Video, New York, has incorporated a DCT 700d tape drive into a new digital component suite scheduled to open in June.

Panasonic, Secaucus, NJ, has installed an AJ-D350 format studio VTR at Audio Visual Transfer (AVT), Atlantic Highlands, NJ. Furthermore, Park Avenue Teleproductions, Richmond, VA, has purchased an AJ-D350 D-3 studio VTR. Panasonic also has sold an AJ-D350 D-3 format studio VTR to The VideoWorks, Westwood, KS.

Panasonic Broadcast & Television Company is the sole supplier of Panasonic Level One and Level Three multilaserdisc players to the educational market. Previously, the corporation’s consumer arm, Panasonic Company, had also sold laserdisc products to educational institutions.

Sony, Park Ridge, NJ, has delivered four D-2 composite digital VTRs to WPX-TV, New York. Sony also has sold a second D-2 suite to Big Shot Productions, Baltimore. In addition, The WPA Film Library has begun transferring the entire British Pathé Newsreel to Sony D-2.

Pioneer, Upper Saddle River, NJ, has sold two V1000 rewrteable videodisc recorders to WSFP-TV/FM, Fort Myers, FL. Nashville Networks, Nashville, TN, also purchased a VDR-V1000 rewrteable videodisc recorder.

Dolby, San Francisco, will supply Dolby S-type noise reduction for use on all of WEA Manufacturing’s new analog cassette releases.

Odetics, Anaheim, CA, has delivered a TCS90 cart machine to Norddeutscher Rundfunk, a Hamburg, Germany, TV station. Also, Euronews, Europe’s first multilingual TV news channels, has purchased two TCS90 cart machines.

Otari, Foster City, CA, has opened a direct sales office in New York City. The office will have direct end-user sales responsibility for Otari’s high-tech products, including DTR-900, MTR-100, MTR-90, ProDisk 464 and all console/automation products. The address is 420 Lexington Ave., Suite 300, New York, NY 10170; phone 212-297-6109; fax 212-986-1952.

AEQ, Madrid, Spain, has established a sales, technical service and distribution office in Tempe, AZ. The address is 2211 S. 48th St., Suite H, Tempe, AZ 85282; phone 602-431-0334; fax 602-431-0497.

dbx Professional Products, a division of AKG Acoustics, San Leandro, CA, has named Tom Lee Music Company, Hong Kong, as its dbx distributor in Hong Kong, People’s Republic of China and Macau. Syntec International has been appointed as dbx’s distributor throughout Australia.

Sony Broadcast & Communications, Hampshire, England, is now providing a commercial conversion service to production companies working with the Sony high-definition video system (HDVS). The Sony High-Definition Facility Europe (SHDFE) uses Sony technology to convert HDVS productions into PAL video format. The service will allow high-definition productions to be broadcast on conventional television.

Avid Technology, Boston, has acquired DiVA Corporation, Cambridge, MA.

Magni Systems, Beaverton, OR, has entered into a joint venture with Great Valley Products to provide desktop video solutions for the PC marketplace. Under the agreement, Magni will design and manufacture a VGA-to-video graphics card, which GVP will market under private label.

Winsted, Minneapolis, MN, has formed a partnership with Winsted Japan for the sale and distribution of Winsted products in the Japanese market.
BIRDS OF ALL KINDS

NEW FROM COMTRONIX SYSTEMS, INC.

HIGH PERFORMANCE VHF/UHF SOLID STATE AMPLIFIERS

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June 1993 Broadcast Engineering 125
WANTED: USED VIDEO EQUIPMENT. Systems or components. PRO VIDEO & FILM EQUIPMENT GROUP: the largest used equipment dealer in the U.S.A. (214) 869-0011.

WANTED: **ELECTRON (VACUUM) TUBES**. Magnetics, Klystrons, Planar Triodes, etc. The Vacuum Tube Exchange (800) 995-TUBE or fax lists to (800) 995-6651.

HELP WANTED

ELECTRONICS FIELD SHOP ENGINEER. Swiderski Electronics, Inc., located in the Chicagoland area, is looking for an Electronics Field/Shop Service Engineer with a min. of 2 years exp. Individual to work with Broadcast/Industrial "1/2", "3/4" & 1" VTRs and related equipment. Full time position. Company benefits. Send resume & salary history to: Human Resources Dept., 1200 Greenleaf Ave., Elk Grove Village, IL 60007. Fax resume to: (708) 364-5019.

POST PRODUCTION ENGINEER. Large, state-of-the-art facility in sunny South Florida looking for a full-time night shift engineer. Good attitude and self-starter a must. Telecorporate exp. a plus. Send resume to Chief Engineer, P.O. Box 451186, Sunrise, FL 33345 (6-93).

BROADCAST ENGINEER. Maintain current plant and add new facilities. Knowledge of AM/FM, digital, and RF (including microwave) equipment to component level. Installation and wiring experience helpful. PC, LAN and programming expertise especially needed. FCC General Class License and SBE Certification a plus. Excellent salary and benefits offered. We are an equal opportunity employer. A Tribute Broadcasting Station. Send resume / salary requirements to: Personnel Resources Dept., 1200 Greenleaf Ave., Elk Grove Village, IL 60007. Fax resume to: (708) 364-5019.

TELEVISION MAINTENANCE ENGINEER positions are available at WPIX, N.Y.'s movie station. Ideal candidate must have 5 years plus experience troubleshooting analog, digital, and RF (including microwave) equipment to component level. Installation and wiring experience helpful. PC, LAN and programming expertise especially needed. FCC General Class License and SBE Certification a plus. Excellent salary and benefits offered. We are an equal opportunity employer. A Tribute Broadcasting Station. Send resume / salary requirements to: Personnel Resources Dept., 1200 Greenleaf Ave., Elk Grove Village, IL 60007. Fax resume to: (708) 364-5019.

HANDS-ON CHIEF ENGINEER needed for network-affiliated, group-owned station in the biggest Little City in the World. Must have 5 years experience with 3 years in supervisory role. Experience with GVG, BTS and Sony tape machines a must. Transmitter microwave experience a plus. Send resume / salary requirements to Personnel Director, Sunbelt Broadcasting Company, 1500 Foremaster Lane, Las Vegas, NV 89101. No telephone calls. EOE. (6-93).

ENGINEER

Quantel, with their continued expansion program require a Broadcast professional. The position requires extensive technical and marketing experience on high-end Post Production products. Good presentation and communications skills are essential for this Connecticut based position. Please fax resume and salary history to: Product Support Manager at 1-203-656-3459.
HELP WANTED

THE SULTANATE OF OMAN
TV BROADCAST ENGINEERING VACANCIES

The Sultanate of Oman operates a modern color television and radio broadcasting service with studio centers situated in the north and south of the country. High-power VHF and low-power UHF transmitters are used to provide TV service to populated areas of the Sultanate.

Due to expansion of the service, vacancies for a variety of television positions have arisen and applications are invited from suitable qualified persons.

TELEVISION MAINTENANCE ENGINEER - STUDIOS

Openings for individuals with extensive background in VTR, cameras, editing systems and other related TV studio maintenance. A degree in electronics technology, or equivalent, is required; SBE certification and PAL experience a plus. Must be able to trouble-shoot to the component level, be a team player and be willing to train others.

TV MAINTENANCE ENGINEER FM & TV TRANSMITTERS

Openings for individuals with extensive background in maintenance of FM/TV transmitters and translators from 1 watt through 10 kw. A degree in electronics technology, or equivalent, is required; SBE certification and satellite or microwave experience a plus. Must be able to trouble-shoot to the component level, be a team player and be willing to train others. Helicopter rides to some sites required.

NOTE: Extensive practical experience in lieu of academic qualifications may be acceptable

RIGGER

Opening for an experienced antenna and tower rigger. Applicant must be able to maintain existing large and small towers and install small translator-style antenna support structures. Many sites are only accessible by helicopter. Individual must be a self-starter and a team player.

EMPLOYMENT BENEFITS

**SALARY:**

1,271 - 1,657 Oman Rials per month

(Approximate exchange rate: 1 O.R. = 2.58 US $)

**Plus:**

R.O. 44 - Water & electricity allowance per month

R.O. 75 - Transportation allowance per month

R.O. 15 - Telephone allowance per month

R.O. 40-50 Yearly increment

Terminal bonus payable at end of contract, after the second year. Applicant signs a one-year contract that is renewable upon mutual satisfaction.

No local income tax is collected. Regarding American taxes, please contact the IRS.

**LEAVE:**

48 days annual leave inclusive of weekends after the end of each annual contract from the date of employment. A round-trip economy-class air ticket from the place of work to the country of domicile will be granted for the employee, spouse, and three children up to the age of 21 years.

**ACCOMMODATIONS:**

Free family housing, furnished, is provided.

**MEDICAL:**

Free medical and dental treatment available for applicant and dependents.

**AIR TRAVEL:**

An economy-class air ticket will be provided for the selected candidate, spouse, and up to three children, 21 years old or below, from the country of domicile to the place of work in the Sultanate of Oman at the time of employment and the end of the contract. The employee will also be given an excess luggage allowance of 20 kg for him/herself, 10 kg for spouse and 5 kg each for up to three children.

Qualified interested applicants should forward their resume stating nationality, qualifications and full details of experience. Successful applicants will need to possess a valid U.S. passport during the hiring process. Send resume to the following address:

**INFORMATION ATTACHE**

EMBASSY OF THE SULTANATE OF OMAN

2342 MASSACHUSETTS AVENUE, NW • WASHINGTON, DC 20008

FAX: 202-483-4097  TEL: 202-483-4096

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