FACILITY DESIGN
SPECIAL REPORT

1993 NAB Preview
The PESA RM4000...it's a big deal for a little bit.

...for a little bit. The 48x40 video matrix is a compact 6RUs...as is the 48x48 stereo audio matrix (96x48 mono). The inherent low cost of PESA's A/V matrices and the new 6600EX plug-in controller...which also "partitions" the matrix for analog, digital or RGB signals...permit the RM4000 to fit tight budgets.

You get a big deal...Extreme flexibility. D2/D3 digital levels, with auto equalization, can be separate or mixed and matched with analog component or composite levels...and added in increments of one input/output without degrading analog paths. The matrix can be "partitioned" to service a small RGB matrix and component video systems...and drive additional matrices. The video matrix can be field expanded to 384x120 (a 96x40 is only 15RUs) and has the identical performance specs and is fully compatible with PESA's System 5, 100MHz system.

A low cost, high performance A/V router for mobiles and small studios.

See us at NAB Booth #19401.

PESA Switching Systems
205-883-7370 Fax 205-882-3294
Burbank, CA 800-323-7372
New York City 800-328-1008

Call or Fax to find out how the RM4000 fits your price and performance requirements.
That's what you get when you put a Harris Platinum Series® VHF Transmitter to work for you. Its innovative power-block architecture gives you unsurpassed reliability. The solid-state modules operate at low junction temperatures for longer life. Parallel redundancy ensures that a failure won't take you off the air. And its interchangeable visual and aural power amplifier modules are self-protected against six fault conditions. We offer our Platinum Series in all international broadcast standards and at power levels from 500 W to 60 kW. All backed by our 24 hour service center. If you're looking for the most reliable, cost-efficient transmitter that's the foremost in VHF solid-state technology, it's time you looked at a Platinum. Exclusively from Harris Allied. To learn more, contact your Harris Allied representative or call us directly.

3200 Wismann Lane
P.O. Box 4290
Quincy, Il. 62305-4290 USA
217-222-8290
Fax 217-224-2764
**FACILITY DESIGN SPECIAL REPORT:**

While some production houses and broadcasters have been awaiting the arrival of economic recovery, other progressive companies have leapt to the head of the pack by building state-of-the-art facilities. Now that production budgets are once again climbing, these entrepreneurs are beginning to reap the rewards of their investment in new technology. This special report highlights some of the technological advantages built into these new facilities.

- Exclusive NAB Map on page 84a
- NAB Exhibitor Highlights on page 85

**DEPARTMENTS:**

<table>
<thead>
<tr>
<th>Page</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>38</td>
<td>Hollywood Digital: Designing for the Future</td>
</tr>
<tr>
<td>52</td>
<td>New York 1: Innovation for Tomorrow</td>
</tr>
<tr>
<td>62</td>
<td>High-Definition Audio</td>
</tr>
<tr>
<td>70</td>
<td>Building an Award-Winning Transmitter Site</td>
</tr>
<tr>
<td>78</td>
<td>Inside the ESPN Master Control Center</td>
</tr>
</tbody>
</table>

**THIS MONTH . . .**

24 "Radio in Transition:" New User-Control Interfaces  
By Skip Pizzi, technical editor  
Switching and mixing of audio signals has a new look.

38 Hollywood Digital: Designing for the Future  
By Chris Leonard, consultant  
Building for the future is possible.

48 Post Logic and the Record Plant: Combining Form and Function  
By Richard P. Bourdeau, Lance Gordon Architectural Photography  
Two West Coast facilities expand and improve.

52 New York 1: Innovation for Tomorrow  
By Harlan Neugeboren, New York 1 News  
An all-news cable channel puts new technology to work.

62 High-Definition Audio  
By Carl Yancher, Lakeside Associates  
Save time and money by building a problem-free acoustic environment.

70 Building an Award-Winning Transmitter Site  
By Roy L. Abernathy, Bartholomeu Associates Inc  
How a revolutionary transmitter building design arose from an icy tragedy.

78 Inside the ESPN Master Control Center  
By Jason Rheinhold, free-lance writer  
Discover how one network meets the challenges of broadcasting to a worldwide audience.

**COVER:**

Cover design by BE graphic designer, Nenita Gumangan.
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.
News

By Dawn Hightower, senior associate editor

WCBS-TV stays on air after explosion at World Trade Center

WCBS-TV was the only VHF station on the air in New York City after a car bomb exploded in the basement garage of the World Trade Center (WTC). The explosion occurred at approximately 12:18 p.m. on Friday, Feb. 26.

The WTC is the highest building in New York City. All seven of the city’s VHF transmitters and three of the city’s UHF transmitters are located there.

WNBC-TV Channel 4 and WNET, Channel 13 went off the air immediately. The remaining stations went off the air when the WTC cut the power about an hour later. At that point, the World Trade Center emergency power generators were not available because they are on a subbasement level, which was flooded by a broken water main during the blast.

WCBS was the only VHF station with a backup site (which was its old pre-WTC site, located at the Empire State Building) and lost only a few seconds of airtime. The other stations were dark, except for the cable systems that have direct feeds.

WCBS weathered the explosion. However, there was soot and smoke damage. WCBS was the only VHF on the air until about 11:30 p.m. when the WTC restored power. Later that night, all stations were back to full power. All TV and FM transmitters in the building are operating normally, even though the World Trade Center is expected to be closed for approximately one month.

EIA announces changes in digital radio testing

The Electronic Industries Association’s (EIA) Digital Audio Radio (DAR) subcommittee has extended the deadline for format proponents to submit hardware for testing from April 15, 1993, to July 1, 1993. The extension will give proponents more time to develop their systems, and allow the subcommittee to finalize testing procedures and obtain an appropriate test site.

EIA plans to complete the testing process by early 1994. Five proponents are involved in the testing: Amati Communications/AT&T, AT&T Bell Labs, Jerrold Division of General Instrument, NASA/VOA, and Thomson Consumer Electronics (for Eureka 147/DAB). In response to a recent FCC further Notice of Inquiry, EIA has filed comments outlining the testing process and confirming its willingness to cooperate with the commission on format examinations. EIA has received partial funding for the tests from proponents and the industry at large, and is currently seeking additional funds. A new working group within the subcommittee will study the potential costs for digital radio transmission and reception equipment.

Meanwhile, NAB has expressed concern with the lack of broadcast industry participation in the EIA tests. Discussions have begun on a proposal to move the tests under the auspices of the National Radio Systems Committee (NRSC), which is a joint body of the EIA and NAB), but a potential obstacle involves NAB’s preference for testing of only in-band/an channel systems, whereas EIA plans to test all submitted formats, regardless of type.

Improved Zenith-AT&T system shown in field tests

In early February, the Zenith-AT&T HDTV team showcased its improved picture, sound and transmission performance of the Digital Spectrum Compatible (DSC-HDTV) system.

The highlights included live, over-the-air field tests with WNYT/TV operated by the Central Virginia Educational Telecommunications Corporation. WNYT used less than one-tenth of the power normally used to transmit a full-power conventional analog TV signal.

The digital signals were received free of noise, snow or ghosts by a conventional TV antenna atop ART offices in downtown Washington, DC (28.5 miles from the transmitter).

The tests also featured the HDTV broadcast of digital 6-channel audio using the Dolby AC3 compression system developed by Dolby Laboratories.

In another experiment, District Cablevision, a local cable TV operator, is working with Zenith and AT&T to transmit two DSC-HDTV programs over a single 6MHz cable TV channel without additional video compression.

Contact information for the above companies is also available on the web at www.americanradiohistory.com
Nikon ENG/EFP lenses. All you need to look good.

When you’re on location with a CCD camera reaching for the best shot possible, you need ENG/EFP lenses that are compact, lightweight, and easy to maneuver. Lenses with the flexibility to adapt to any situation. Lenses with all the star qualities found only in a Nikon.

Our ENG/EFP precision lenses are created from the same superior glass and coating technology that have made Nikon the world renowned name in optics. Which means they’re made with Nikon’s exclusive Extra-Low Dispersion (ED) glass. And treated with special anti-reflection coatings to minimize ghosts and flare. Plus, their strong magnesium housing makes them extremely durable. So no matter how tough the assignment, Nikon ENG/EFP lenses are even tougher.

Our full line of outstanding ENG/EFP lenses includes the Nikon S9x5.5 wide angle lens — perfect for tight, close-up shots. The Nikon S19x8, with its unsurpassed focal length and range. The all-purpose Nikon S15x8.5. And the economical Nikon S13x9.

Want to create special effects with your CCD camera? We have two ENG/EFP converters that will allow you to use your whole bag of Nikkor 35mm SLR lenses. One lets you use wide angle lenses down to an effective focal length of 2 mm. The other lets you use long focal lenses out to 1200 mm.

And in the unlikely event something should happen to your Nikon lens, a simple call to our Nikon Express Loaner Service hotline will get you a loaner lens overnight. So you don’t ever have to worry about a crew being out of action until you can get a lens repaired.

To learn more about how Nikon ENG/EFP lenses can make you look good, call 800-525-NIKON or (516) 547-4355 for our complete brochure. Or write: Nikon Electronic Imaging, Dept.01, 101 Cleveland Avenue, Bayshore, NY 11706.

See us at NAB Booth #16876.
Multimedia comes to NAB

Today's newspaper headlines are finally reporting what BE readers have known for about eight months. The recession is over and the economy is improving. Too bad so many economic experts had their collective heads stuck in the sand, failing to check with those in the broadcast industry. Oh well, what can you expect from economists? You know the joke: If you lay all of the economists in the world end-to-end, they still couldn't reach a conclusion.

As predicted by BE readers, production houses and stations are returning to the buying table, ready to adopt the latest technology. Cable systems are forging merrily ahead, building in-house production capability as they begin looking more like broadcasters, complete with locally produced programming — and local commercials.

Such optimism should make this year's trek to Las Vegas for the NAB Convention a more enjoyable experience than in recent times. Attendees and manufacturers alike should be in an upbeat mood as the industry finally gets its collective backside in gear and begins implementing new technology. If all this isn't enough reason to go, something new will be on the scene.

In addition to the traditional broadcast and production exhibition, this year's show includes a multimedia conference and exhibition. The new conference is designed to address the needs of working multimedia professionals while encouraging broadcasters and other programmers to explore new business opportunities and cost-effective technology.

The multimedia conference even has its own set of notable speakers: John Sculley, Apple chairman and CEO; Lucy Fjeldstad, IBM vice president and general manager, multimedia applications solutions; and Georgia McCabe, Eastman Kodak director of worldwide commercial CD imaging.

The conference will be highlighted with sessions, including: “Designing Interactive Broadcasting,” “Converting Existing Materials into Multimedia Products” and “Hollywood 2001 — Designing Interactive Entertainment.” Attendees will even be able to try their hands at virtual reality games and other multimedia technology.

For those of you who have made this annual trip, having some new subjects to explore will be exciting — if you still have time after you've investigated the new products and services available on the regular show floor. See you there.

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.

Digital Makes the Best Even Better.

Digital technology not only improves the quality of the signal—it makes the OPTIMOD-FM 8200 more programmable, more flexible and more user-friendly. And it can actually help keep capital equipment costs down because it allows stations to expand and upgrade their system with software, rather than expensive hardware.

A case in point: all current 8200 owners will receive a new software upgrade free of charge. Version 1.0's sonic and operational improvements meet broadcasters' ongoing demands for superior audio performance and increased control—like customized bass response and automatic switching of presets for dayparting.

The New Standard.

The OPTIMOD-FM 8200 is now the new industry standard for digital audio processors. Call your dealer now for a hands-on evaluation of the 8200. In a market where stations live and die by the ratings, you can dominate the dial.
AM stereo standard proposed

By Harry C. Martin

The FCC has proposed Motorola's C-QUAM as the single authorized AM stereo standard in the United States. The commission would incorporate the Motorola standard into its rules, and would require stations employing other AM stereo systems to discontinue using them within one year of the effective date of the new rules. AM stations wishing to convert to stereo after the rules go into effect would be required to employ the C-QUAM system. The proposal affects only those stations currently operating or choosing to operate in stereo in the future.

Only 660 out of 5,000 AM stations have converted to stereo. However, 90% of those have chosen the Motorola C-QUAM system, which has been adopted as the national standard in six foreign countries.

New uses for VBI proposed

The FCC is proposing to amend its rules to allow optional transmission of expanded closed-captioning and other types of information using all of line 21, field 2 of the vertical blanking interval (VBI) of broadcast TV signals.

It is also proposing to reserve use of line 19 of the VBI for transmission of the ghost-canceling reference (GCR) signal. Currently, the FCC's rules permit the use of line 21, field 1 and the second half of line 21, field 2 for use by caption and other data services. Line 19 currently is reserved for the vertical interval reference (VIR) signal.

Under the proposal, all of line 21, field 2 would be available for additional captioning channels as well as an extended data service. Captioned information for the hearing impaired would continue to have priority, but other data services could be provided on a secondary, space-available basis.

With regard to line 19, the commission aims to abandon the current VIR signal usage in favor of the GCR signal. Ghosting is a problem in most over-the-air TV reception. It can even occur in a milder form in cable reception. Therefore, a system for reducing or eliminating ghosts would be a significant technical improvement.

FCC proposes cable rate rules

The FCC has initiated multiple proceedings through which the provisions of the 1992 Act will be incorporated into its rules. The act stipulates that the basic service tier must include: 1) all must-carry channels; 2) any public, educational and governmental access channels the system franchise requires; and 3) any TV broadcast signal provided, unless it is a non-local signal transmitted by satellite. Cable programming service is defined in the 1992 Act as any video programming provided, regardless of service tier other than basic service programming or video programming offered on a per-channel or per-program basis.

With regard to line 19, the FCC proposes to abandon the current VIR signal usage in favor of the GCR signal.

The act also permits regulation of a cable system's basic service and cable program service rates only if the FCC finds that a cable system is not subject to effective competition. The statute establishes tests for the presence of effective competition based on the relative subscribership of the cable system, as compared to the number of households in the franchise area and the availability of other multichannel services in that area.

Systems subject to effective competition under the FCC's definitions are free from rate regulation. If, however, the commission finds that a cable system is not subject to effective competition, rates for basic cable service are regulated by the local franchising authority or by the commission in certain circumstances. Rates for cable programming service are subject to regulation only by the FCC.

The commission identified benchmarking and individual system cost-based approaches to rate regulation that would satisfy congressional objectives.

Under a benchmarking approach, the commission would establish a benchmark rate or a formula that could be used to derive such a rate. Rates below the benchmark would be presumed reasonable. Cable systems with rates above the benchmark price would be required to reduce their rates to the benchmark level unless they could justify higher rates under standards established by the FCC. Mechanisms to adjust the benchmark over time are part of this proposal. The commission identified several alternative methods for setting benchmarks:

- rates charged by systems facing effective competition
- past regulated rates
- average rates of cable systems
- cost-of-service, based on an ideal or typical system
- price caps

Under a cost-based approach, the reasonableness of a cable system's rates would be determined by examining the costs of the individual cable system using rulemaking principles set by the FCC.

The following alternative methods for individual system cost-based regulation have been proposed:

- direct costs of signals plus nominal contribution to joint and common costs.
- cost of service, whereby a cable system's rates would be reviewed using the established standards of cost-of-service regulation as applied to public utilities, including common carriers.

One advantage of a cost-based alternative is that it would permit close supervision of rates. However, the commission tentatively concluded that it should not select a traditional cost-of-service alternative as the primary mode of rate regulation because of the complexity and expense involved in administering such a scheme.

The 1992 Cable Act requires that rates for equipment used to receive basic tier service be based on actual costs. The FCC has tentatively concluded that the converter box, remote-control unit, connections for additional TV receivers and inside cabling are subject to rate regulation.

Martin is a partner with the legal firm of Reddy, Begley & Martin, Washington, D.C.

www.americanradiohistory.com
YES!

To Broadcast Production

- Produce complete radio/TV spots fast with multiple versions in seconds?
  - Yes [ ] No [ ]
- Time compress/expand or pitch shift a complete spot, music bed, note, word, or phrase?
  - Yes [ ] No [ ]
- Edit seamless voice-over tracks from an unlimited number of takes?
  - Yes [ ] No [ ]
- Assemble music, interview, or news features with cross-fading and segue effects?
  - Yes [ ] No [ ]
- Auto-mix hundreds of tracks, plus unique fades and levels for each listed audio event?
  - Yes [ ] No [ ]
- Cut and copy song verses, choruses, or just phrases or riffs to build great radio remixes?
  - Yes [ ] No [ ]
- Easily align downbeats in cross-faded or over-dubbed music tracks?
  - Yes [ ] No [ ]
- Design sounds, create your own special effects, and digital signal process internally?
  - Yes [ ] No [ ]
- Scrub smoothly and precisely back and forth, with a mouse, trackball, or scrub wheel?
  - Yes [ ] No [ ]
- Record and edit direct to removable MO and transmit finished productions via network?
  - Yes [ ] No [ ]
- Customize the interface to your working style, set up favorite music/effects for instant use?
  - Yes [ ] No [ ]
- Answer the ad clients', "What if we tried this...?" by doing it instantly, while they watch?
  - Yes [ ] No [ ]
- Configure multiple complete digital production rooms for the price of one analog room?
  - Yes [ ] No [ ]

YOU CAN! Just say YES to SPECTRAL, the system of choice for radio, TV, and ad production, and you'll be able to say YES to almost any audio job. The most flexible, most cost effective system combined is upgradeable to 24 tracks, 24 channels of I/O, and can also be configured for tracking, music editing, mastering, film and video post production, signal processing, sound design and more.

YES!

Mastering the Digital Domain

19501-144th Ave. N.E., Suite 1000A • Woodinville, WA • 206-487-2931 • Fax 206-487-3431

www.americanradiohistory.com
Satellite radio takes off

By Skip Pizzi, technical editor

From the earliest days of digital radio discussions, the prospect of radio service from direct broadcast satellites (DBS-R) has intrigued and panicked the industry.

The Federal Communications Commission (FCC), in response to a system proposal filed in May 1990 by Satellite CD Radio, established Jan. 15, 1993, as the deadline for submission of competing applications for U.S. DBS-R service at 2,310MHz-2,360MHz (S-band). This triggered five more proposals, each with a somewhat different approach. (See Table 1.) If an authorization is made this year, most proponents believe service could begin by 1997 or 1998.

Variations on a theme

As Table 1 illustrates, some proponents plan commercial operations, while others anticipate non-commercial, subscription-based systems using addressable receivers or a mix of both approaches. Because DBS-R allows wide-area coverage and the aggregation of special interest affinity groups nationwide, mainstream national radio stations and narrow niche services (or minority-interest programming) could all be viable.

None of the proponents asks for the entire 50MHz of available spectrum, and most allow for multiple entrants (i.e., other players) to provide service within their system. Technically (though perhaps not economically) speaking, this means that 100 to 200 national channels of CD-quality stereo audio — or even more channels of lower fidelity — could be accommodated. Data services also are planned.

One proponent specifies the use of 28 small spot beams, each covering a circular area approximately 230 miles in diameter and aimed at a major metro area. The system also includes a single national beam and three larger spot beams for Alaska, Hawaii and Puerto Rico. The 32 beams can each carry 16 separate audio services, allowing up to 512 different channels to be programmed. All listeners will receive at least 16 channels, with listeners in spotted metro areas getting 32 (16 local plus 16 national channels) under this plan.

Most systems call for low gain, non-directional receive antennas (3dBi to 5dBi), allowing automotive installation using small flush-mounted modules in the car roof. Because mobile listening is the primary target market, significant receiver population could be achieved through the natural replacement cycle for cars. Some systems expect significant building penetration, however, allowing reception on portable indoor receivers. Diversity reception also may be incorporated.

From scratch pad to launch pad

Although all of these proposals look impressive on paper, actual development and testing of these systems presents challenges, primarily because there are no existing S-band broadcast satellites. A solution to this problem may come from NASA. Although not a part of this proceeding, NASA has undertaken DBS-R research for the Voice of America (VOA), which intends to use the technology to replace its existing short-wave network around the world. Coincidentally, a group of NASA spacecraft called Tracking Data and Relay System (TDRS) satellites, are equipped with space-to-earth spot-beam transponders of relatively high power, operating around 2,100MHz. (TDRS is used to track low-orbit spacecraft and replaces the network of ground-tracking stations used in the past.) TDRS satellites’ geosynchronous nature, downlink frequency and transponder power provide reasonable approximations of proposed DBS-R systems, and therefore present a valid testing platform. NASA and VOA expect to begin such tests later this year.

Whether these systems will ever become economically viable remains unsettled. Some proponents have obvious self-sufficiency for launch capital, while others will need to raise substantial funds. Terrestrial gap-filler transmitters also may be required to continue coverage in “urban canyons,” where line-of-sight to the satellite is interrupted by nearby tall buildings. This may increase these systems’ costs dramatically. Furthermore, the satellites themselves have only a 10- to 15-year lifespan, and replacement costs may be higher than initial launch expenses. Receiver costs are forecast to reach $200 or less fairly quickly, making the consumer the big winner if DBS-R truly takes off.

Table 1. The six DBS-R proponents now before the FCC, comparing some parameters of their systems’ design. Number of channels and spectrum used are per operator in multiple entrant systems. (* indicates that not all channels are of similar capacity/quality.)

<table>
<thead>
<tr>
<th>PROponent</th>
<th>NO.CH</th>
<th>NO.SATS</th>
<th>COST</th>
<th>SPECTRUM</th>
<th>SUPPORT</th>
<th>FUNDING</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Mobile Radio Corp.</td>
<td>22*</td>
<td>2</td>
<td>$528M</td>
<td>15MHz</td>
<td>Subscrip. &amp; Comm’l.</td>
<td>GM/Hughes, McCaw</td>
</tr>
<tr>
<td>Digital Satellite Broadcast Corp.</td>
<td>512</td>
<td>1</td>
<td>$622M</td>
<td>25MHz</td>
<td>Subscrip. &amp; Comm’l.</td>
<td>Private investors</td>
</tr>
<tr>
<td>Loral Aerospace Holdings</td>
<td>32</td>
<td>1</td>
<td>$354M</td>
<td>6MHz</td>
<td>Subscrip.</td>
<td>Internal (owns Ford Aerospace)</td>
</tr>
<tr>
<td>Primosphere Limited Partnership</td>
<td>29*</td>
<td>2</td>
<td>$373M</td>
<td>25MHz</td>
<td>Comm’l.</td>
<td>Q-Prime Talent, Priv. Inv.</td>
</tr>
<tr>
<td>Satellite CD Radio</td>
<td>30</td>
<td>2</td>
<td>$320M</td>
<td>8MHz</td>
<td>Subscrip.</td>
<td>Automakers, Priv. Inv.</td>
</tr>
<tr>
<td>Sky Highway Radio Corp.</td>
<td>30</td>
<td>2</td>
<td>$145M</td>
<td>8MHz</td>
<td>Subscrip.</td>
<td>EchoStar (DBS-TV), Priv. Inv.</td>
</tr>
</tbody>
</table>

The six DBS-R proponents now before the FCC, comparing some parameters of their systems’ design. Number of channels and spectrum used are per operator in multiple entrant systems. (* indicates that not all channels are of similar capacity/quality.)
The newest member of the Audio Precision family of test instruments... the Portable One Plus

...A comprehensive, high performance instrument combining sweep test and graphics capability with 12 audio measurement functions.

**SWEEPS**

- Press a button to sweep
- Acquired data shown numerically and graphically
- Makes both single & dual channel swept measurements
- 3 to 150 steps per sweep or sweep ISO standard ½ octave frequencies
- External sweep mode for test tapes, CDs or incoming signal sweep

**GRAPHS**

- User selected end points for both axes of graph
- Automatic dynamic redraw for graph rescaling
- User selectable measurement units
- Graphic cursor provides numeric reading for any point

**PRINTOUTS**

- Drives external printer through standard parallel port
- Prints graph or numeric sweep data table
- Also prints key analyzer/generator settings or bargraphs
- Printout menu allows combined tabular, bargraph & sweep printouts on one page

PORTABLE ONE PLUS... AUDIO PRECISION QUALITY IN A PORTABLE PACKAGE
Managing stress

Recognizing the signs

By Judith E.A. Perkinson

I have a copy deadline today. Right now, I am on an airplane flying through a snowstorm. The flight took off 40 minutes late, so now I will miss my connecting flight. My well-planned schedule is shot, and more than likely, I won't make my deadline. Needless to say, I am feeling the stress that this travel snafu has created.

Many of us experience stressful situations everyday. But how much is really understood about stress? Where does stress come from? How does it affect you? How can you control it? Most of us do not have a clear understanding of stress. Often, it is easier to ignore stress and hope that it will go away. Unfortunately, stress takes its toll whether you like it or not. It doesn't matter how strong or in control you think you are. Unless you learn how to recognize the signs of stress, understand where it comes from and develop stress management techniques, you will suffer its ill effects.

At worst, stress can kill you. However, it also can undermine your job performance as well as affect your personality and behavior. Therefore, it is important that you learn how to manage the stress in your life.

Recognizing the signs of stress

Understanding stress begins with identifying its signs. Stress affects individuals in different ways. The effects of stress can be grouped into four main categories or types of reactions:

1. Physical. Physical reactions to stress can include indigestion, headaches, ulcers, diarrhea, back or neck pain, high blood pressure, rapid breathing, fatigue, dry mouth, facial tics and nausea.

2. Behavioral. Forgetfulness, loss of concentration, chronic tardiness, procrastination, increased smoking, alcohol or drug abuse, overeating, decreased sexual drive, and complaining or yelling are all behavioral effects of stress.

3. Emotional. Emotional reactions to stress can include moodiness, depression, frustration, anxiety, irritability, hostility and feelings of helplessness or panic.

4. Psychological. Psychological reactions to stress can include insecurity, indecisiveness, low self-esteem, feelings of inadequacy, and diminished creativity or motivation.

If you experience one or two of these signs, don't be alarmed. However, a collection of these reactions should alert you that stress is beginning to have an adverse affect on your life.

Learning to properly manage stress will make you physically and emotionally healthier.

The onset signs of stress

Because symptoms of stress occur gradually, they are easy to dismiss. Furthermore, your reaction to stress can vary from time to time. Some people never develop identifiable patterns of stress reactions.

It is the accumulation of the effects of stress that eventually does the damage. Stress signals can be compared to the warning lights in your car. These lights are designed to warn you about a problem before it becomes critical. If situations in your life are not "normal," look for the potential signs of stress. If you are able to identify a number of symptoms, take them as a warning. Learning to properly manage stress will make you physically and emotionally healthier.

Next month, we will examine the sources of stress.
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.

For example, so you can make changes fast and easily, the DTR-90 is the only R-DAT available with individual record insert on Ch. 1, Ch. 2, and time-code channel. And its user-friendly front panel features an LCD screen that gives you powerful functions often relegated to DIP switches in other R-DATs—you can even detach the control section of the front panel and use it as a remote unit!

You'll also appreciate the optional Time-code Card with its chase synchronizer for tight lock with VTRs and ATRs, as well as features like read-after-write and punch-in, punch-out.

And if you need a complete electronic editing system, you can't do better than couple the DTR-90 with Otari's CB-149 editor for flawless digital editing.

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

Design efficiency

By John T. McGaughey

The mystery behind the programmable logic device (PLD) will be the subject of the "Circuits" column for the next three months. Although the focus is on practical applications, some background will first be presented to make the capabilities and utility of these devices better understood. Part 2 of the series will illustrate how quickly and inexpensively custom designs can be accomplished. Parts 3 and 4 will show you how to design a PLD-based alarm system for a radio station.

Since their introduction, microprocessors have had a major influence on system design. Although without much fanfare, the impact of PLDs on hardware design has been no less important. For the first time, these devices allow chip users to become chip designers. No longer are designers forced to find ICs that come close to the application. The IC can be configured to perform the function(s) required. Inside many digital systems are several PLDs, noticeable by their stick-on labels.

What is a PLD?

A PLD is an integrated circuit capable of being user programmed to provide a variety of logic functions. The programming can be done by the manufacturer, but the most useful PLDs are configured by users. Instead of building logic arrays configured to perform a standard function, the IC manufacturer creates a generic logic array with connections accessible to the designer.

Inside ICs

Digital ICs fall into two broad categories: fixed function and application-specific integrated circuits (ASIC). The familiar TTL (Transistor-Transistor Logic) family illustrates the fixed function concept. The designer selects components from a stock set of commonly used functional packages. Because of the need for pin access to internal gates, a TTL design usually contains a large number of ICs.

ASICs implement connections internally under user control to greatly reduce the package count. Even a small PLD can replace six to 10 TTL dual in-line packages.

Programmable PLDs bridge the two categories by allowing mass production of a generic logic array at a low unit cost. The final logical implementation depends upon how the designer uses the interconnections. A PLD is programmed much like other memory devices. Three methods of specifying integrate connections include fused-based, ultraviolet eraseable and electrically erasable approaches.

A programmable array is useful when the scope of the job is too small for a microprocessor, but complex enough to require many TTL devices. Because PLDs are fast and are not software controlled, they are frequently used in the high-speed portions of a system where a microprocessor would be too slow.

Logical results

Although there are numerous PLD architectures, the majority use the sum of products method. (See Table 1.) A truth table indicates a set of three inputs representing a binary number. In this case, the desired output should be a 1 if the number 0, 5 or 7 is present. The function is the logic OR of three product terms.

Figure 1 illustrates a small section of a typical PLD. Three input pins are shown connected to input buffers, providing inverted and non-inverted outputs. These connect to the programmable AND array. To minimize clutter, the array is drawn in the standard industry format of one line per AND gate with an X to mark a connection. (In reality, a separate line exists for each input, with another for its complement to every AND gate.) Each AND gate forms a product term that is applied to the programmable OR array. Here, all of the required product terms are logically OR'd to form the function.

The macrocell is another programmable section where logic could be complemented or a D-type flip-flop introduced to form sequential functions. Other control provided here can select the pin as an input, output or tri-state. Notice that the pin returns to the AND array to support these possibilities.

A typical small PLD might have eight input-only pins and 10 pins individually configurable as inputs or outputs. The programmable AND array is made up of 32 AND gates each with 36 inputs. Each output is formed by a 32-input OR gate. These numbers illustrate the large number of programmable connections that need to be controlled, even in a small device.
If Television News had this baby back in the "good ole days", those days would have been so much better.

Upgrade your stereo audio to full parity with your video using the Auditronics 900 Series of audio consoles.

- Designed specifically for Stereo TV & TV News
- Up to 320 Addressable Input Sources*
- Optional Computer Set-up Memory with Read-Outs
- Optional Multi-Level House Router Access

* Model Dependent

See us at NAB Booth #1002
GSA Contract #GS-03F-1017A
Care and feeding of coaxial transmission lines

Construction and ratings

By Dean W. Sargent

Over the next eight months, this column on coaxial transmission line will provide readers with insight into why some systems fail and others do not. It will also describe the many varieties that are presently available and how to use them properly.

Most rigid line consists of a copper inner and outer conductor (however, some lines use an aluminum outer). The inner conductor is supported by insulators, usually Teflon, to keep it concentric with the outer conductor. An inner connector is used in the inner conductor at one end to connect to the next piece in the system. A flange is attached to each end of the outer conductor, except some inside lines that use a "slip coupling." This should be used only at VHF.

Up to this point, it would appear that all coax is the same. However, this is not so. Each manufacturer has its own design, and that design can differ widely. Some components are the same if they are built to EIA standards. Not all line sizes have a standard, however.

Power handling and attenuation

Power handling is another area that must be understood. Many manufacturers list a power rating for their line based on frequency, unity VSWR, ambient temperature and temperature rise of the inner conductor. Power must include all power (i.e., sideband power if modulation is AM and power reflected as a result of VSWR). If a line is rated to take 210kW average, it will not handle 210kW of 100% modulation and a VSWR of 1.4 at 100MHz. The carrier power will have to be dropped to approximately 115kW for these conditions so that it doesn't exceed the power rating of 210kW.

Another important parameter is attenuation, which increases with frequency, temperature and load VSWR. Conductivity of the copper used in the transmission line and components also affects attenuation. This can vary from 85% to 102% relative to pure copper.

This should be conductive relative to the conductivity of pure copper. When looking up the attenuation for your coax, understand that manufacturers list the attenuation figures based on zero watts of power, 20° C ambient temperature and a VSWR of 1:1 which is not realistic.

What is the difference between this set of parameters and the real world? At show for this size line, power, temperature and VSWR.

What can be expected in the way of differences between the high conductivity copper and regular copper? For a 6/8-inch, 75Ω line, 1,000-foot long, a load VSWR of 1.2:1, 45kW TPO and 100% AM modulation, the total power delivered to the load at the end of the line is 47.9kW (carrier power = 45kW and sideband power due to 100% modulation = 22.5kW. Therefore, power into the transmission line = 67.5kW). Using the same parameters but using regular copper, the total power delivered to the load at the end of the line is 46.7kW, or an additional loss of 1,200W. The temperatures of the inner and outer are higher for the regular copper. Higher temperatures result in a lowering of the conductivity and increasing the resistivity of the copper. The cooler the line the lower the attenuation, no matter which copper is being used.

VSWR of the load also is important in that less reflected power results in lower temperatures because the total power in the line is less. Increasing the pressure in the line will lower the temperature slightly. However, the attenuation is improved so slightly that it isn't worthwhile. In this case, the power delivered to the load is only 80W more for the case of high conductivity copper when the pressure is increased from five PSI to 10 PSI.

Thicker vs. thinner

It has been said that thicker wall inner conductors are better than thinner wall inner conductors. This isn't true. As long as the inner conductor is mechanically strong enough to support itself between insulators, it is thick enough. The problem arises when a bullet of one manufacturer is used with another manufacturer's inner. In these cases, the bullet can have too large a diameter, and when it is jammed in the inner conductor it creates a problem. If the bullet is smaller (as used in a thick wall inner) and is inserted in a thin wall inner, the contact pressure is too small and burning results. Inner conductor wall thickness does not affect power handling or attenuation.
In OMB you will find the answer for your radio or television transmitting station.

Many broadcasters came to us with doubt and went away satisfied, technically and financially.

Today we are able to help you.

If you want the best quality and the best value for money OMB can supply them both.

Have confidence in our services.

Facilities:

- System projects • Installation
- Short delivery time • After sales service • Full technical data

Indicative prices in US$ FOB Zaragoza and Miami

<table>
<thead>
<tr>
<th>Product Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIGITAL STEREO GENERATOR 45-60 dB SEPARATION</td>
<td>1.375</td>
</tr>
<tr>
<td>3 kW RADIATING SYSTEM 4 Dipoles Power Divider 112° CELLFLEX</td>
<td>2.750</td>
</tr>
<tr>
<td>PORTABLE TRANSMITTER 12 V 88-108 MH: 10 WATTS SYNTH</td>
<td>1.550</td>
</tr>
<tr>
<td>STL 200-400 MH: 10 WATTS 400-960 MH: 5/6 WATTS TELEMETRY SYNTH</td>
<td>4.685</td>
</tr>
<tr>
<td>PROCESSOR MONO MPX 2 SCX</td>
<td></td>
</tr>
<tr>
<td>FM TRANSMITTER 88-108 MH: 20 WATTS SYNTH, PROCESSOR</td>
<td>2.475</td>
</tr>
<tr>
<td>FM TRANSMITTER SOLID STATE 88-108 MH: 500 WATTS</td>
<td>8.800</td>
</tr>
<tr>
<td>FM TRANSMITTER TUBE 3CX 1500 88-108 MH: 1.000 WATTS</td>
<td>10.390</td>
</tr>
<tr>
<td>FM TRANSMITTER TUBE 4CX 1500 88-108 MH: 5.000 WATTS</td>
<td>25.375</td>
</tr>
<tr>
<td>TV REPEATER 5 WATTS</td>
<td>6.500</td>
</tr>
<tr>
<td>PANEL RADIATOR UHF STAINLESS STEEL</td>
<td>790</td>
</tr>
<tr>
<td>MICROWAVE LINK 5 WATTS 1.8-2.4 GHz</td>
<td>13.150</td>
</tr>
</tbody>
</table>
Invention: the mother of necessity

By Curtis Chan

The HDTV simulation tests conducted by the ATTC during 1992 would not have been possible if it had not been for a special format converter developed by Charles Rhodes and Philip Crosby, chief scientists for ATTC and Tektronix. The format converter permits the different, incompatible advanced TV signals to be recorded in real time on a commercially available high-definition VTR (Sony HHD-1000).

The fundamental advantage of the converter was to allow the different programmable systems to be videotaped and played back for comparison by government and industry decision makers. Without the device, each proponent could make performance claims and create demos on separate but not comparable systems. In addition, the ATTC converter was used to create many of the offical test materials for the comparative testing of the different DATV/ATV systems.

The dilemma
Six transmission systems were under consideration in the original tests. One used 1,125 lines, 60 fields/s interlaced; two used 1,050 lines, 59.94 fields/s interlaced; two used 787.5 lines, 59.94 fields/s non-interlaced; and one used 525 lines, 59.94 fields/s non-interlaced. Unfortunately, the only available recording equipment was developed around the SMPTE 240-M format. Modifications to a D-1 VTR were attempted, but at best the unit recorded up to 720 pixels/line (240 lines) in 1/6 of a second. This amounted to 37.5% of the image width and 46% of the height, by writing the digital signal into a custom-made framestore. Although feasible, the approach was abandoned.

The solution
The solution was to construct the format converter to work in tandem with and, in part, supplant some of the codec functions of the HD-DVTR. This allowed the digitization of Y, P_h and P_v using certain sampling rates. It also allowed the assembly of the luminance and chrominance datastreams into data strings of 1,290 bytes/string and to clock the data strings out of memory into the DVTR at 72,200MHz. The HDD-1000 system at 59.94 fields/s provided a data clock at 1,000/1,001 x 74.250MHz.

The formats that were going to be converted can be visualized in 3-D space in terms of:
1. the number of pixels/line (plotted horizontally);
2. the number of active scanning lines/picture (plotted vertically); and
3. the number of pictures/s plotted along a diagonal axis.

The resolution parameters of the original ATV signals are listed in Table 1.

<table>
<thead>
<tr>
<th>Lines/fields</th>
<th>Interface</th>
<th>Pixels, lines, pictures/s</th>
</tr>
</thead>
<tbody>
<tr>
<td>525/59.94</td>
<td>1:1</td>
<td>768 pixels x 480 lines, 59.94 pictures/s</td>
</tr>
<tr>
<td>787.5/59.94</td>
<td>1:1</td>
<td>1,296 pixels x 724 lines, 59.94 pictures/s</td>
</tr>
<tr>
<td>1,050/59.94</td>
<td>2:1</td>
<td>1,440 pixels x 960 lines, 29.97 pictures/s</td>
</tr>
<tr>
<td>1,125/60</td>
<td>2:1</td>
<td>1,920 pixels x 1,035 lines, 30.00 pictures/s</td>
</tr>
</tbody>
</table>

Table 1. Resolution parameters for ATV studio signals.

By Curtis Chan

In addition to providing a vehicle on which a standard reference could be based, the format converter potentially can find other applications and markets. Other applications may include real time recording of film-to-tape. HDTV camera-to-tape or in the imaging industries. Whatever the outcome, ATTC’s pioneering achievement has become a cornerstone in broadcasting history. Its evolving history will help pave the way toward a commercially viable high-definition standard.

Applications

By Curtis Chan

Invention: the mother of necessity

By Curtis Chan

The HDTV simulation tests conducted by the ATTC during 1992 would not have been possible if it had not been for a special format converter developed by Charles Rhodes and Philip Crosby, chief scientists for ATTC and Tektronix. The format converter permits the different, incompatible advanced TV signals to be recorded in real time on a commercially available high-definition VTR (Sony HHD-1000).

The fundamental advantage of the converter was to allow the different programmable systems to be videotaped and played back for comparison by government and industry decision makers. Without the device, each proponent could make performance claims and create demos on separate but not comparable systems. In addition, the ATTC converter was used to create many of the official test materials for the comparative testing of the different DATV/ATV systems.

The dilemma
Six transmission systems were under consideration in the original tests. One used 1,125 lines, 60 fields/s interlaced; two used 1,050 lines, 59.94 fields/s interlaced; two used 787.5 lines, 59.94 fields/s non-interlaced; and one used 525 lines, 59.94 fields/s non-interlaced. Unfortunately, the only available recording equipment was developed around the SMPTE 240-M format. Modifications to a D-1 VTR were attempted, but at best the unit recorded up to 720 pixels/line (240 lines) in 1/6 of a second. This amounted to 37.5% of the image width and 46% of the height, by writing the digital signal into a custom-made framestore. Although feasible, the approach was abandoned.

The solution
The solution was to construct the format converter to work in tandem with and, in part, supplant some of the codec functions of the HD-DVTR. This allowed the digitization of Y, P_h and P_v using certain sampling rates. It also allowed the assembly of the luminance and chrominance datastreams into data strings of 1,290 bytes/string and to clock the data strings out of memory into the DVTR at 72,200MHz. The HDD-1000 system at 59.94 fields/s provided a data clock at 1,000/1,001 x 74.250MHz.

The formats that were going to be converted can be visualized in 3-D space in terms of:
1. the number of pixels/line (plotted horizontally);
2. the number of active scanning lines/picture (plotted vertically); and
3. the number of pictures/s plotted along a diagonal axis.

The resolution parameters of the original ATV signals are listed in Table 1.

<table>
<thead>
<tr>
<th>Lines/fields</th>
<th>Interface</th>
<th>Pixels, lines, pictures/s</th>
</tr>
</thead>
<tbody>
<tr>
<td>525/59.94</td>
<td>1:1</td>
<td>768 pixels x 480 lines, 59.94 pictures/s</td>
</tr>
<tr>
<td>787.5/59.94</td>
<td>1:1</td>
<td>1,296 pixels x 724 lines, 59.94 pictures/s</td>
</tr>
<tr>
<td>1,050/59.94</td>
<td>2:1</td>
<td>1,440 pixels x 960 lines, 29.97 pictures/s</td>
</tr>
<tr>
<td>1,125/60</td>
<td>2:1</td>
<td>1,920 pixels x 1,035 lines, 30.00 pictures/s</td>
</tr>
</tbody>
</table>

Table 1. Resolution parameters for ATV studio signals.

By Curtis Chan

In addition to providing a vehicle on which a standard reference could be based, the format converter potentially can find other applications and markets. Other applications may include real time recording of film-to-tape. HDTV camera-to-tape or in the imaging industries. Whatever the outcome, ATTC’s pioneering achievement has become a cornerstone in broadcasting history. Its evolving history will help pave the way toward a commercially viable high-definition standard.

Applications

By Curtis Chan

Invention: the mother of necessity

By Curtis Chan

The HDTV simulation tests conducted by the ATTC during 1992 would not have been possible if it had not been for a special format converter developed by Charles Rhodes and Philip Crosby, chief scientists for ATTC and Tektronix. The format converter permits the different, incompatible advanced TV signals to be recorded in real time on a commercially available high-definition VTR (Sony HHD-1000).

The fundamental advantage of the converter was to allow the different programmable systems to be videotaped and played back for comparison by government and industry decision makers. Without the device, each proponent could make performance claims and create demos on separate but not comparable systems. In addition, the ATTC converter was used to create many of the official test materials for the comparative testing of the different DATV/ATV systems.

The dilemma
Six transmission systems were under consideration in the original tests. One used 1,125 lines, 60 fields/s interlaced; two used 1,050 lines, 59.94 fields/s interlaced; two used 787.5 lines, 59.94 fields/s non-interlaced; and one used 525 lines, 59.94 fields/s non-interlaced. Unfortunately, the only available recording equipment was developed around the SMPTE 240-M format. Modifications to a D-1 VTR were attempted, but at best the unit recorded up to 720 pixels/line (240 lines) in 1/6 of a second. This amounted to 37.5% of the image width and 46% of the height, by writing the digital signal into a custom-made framestore. Although feasible, the approach was abandoned.

The solution
The solution was to construct the format converter to work in tandem with and, in part, supplant some of the codec functions of the HD-DVTR. This allowed the digitization of Y, P_h and P_v using certain sampling rates. It also allowed the assembly of the luminance and chrominance datastreams into data strings of 1,290 bytes/string and to clock the data strings out of memory into the DVTR at 72,200MHz. The HDD-1000 system at 59.94 fields/s provided a data clock at 1,000/1,001 x 74.250MHz.

The formats that were going to be converted can be visualized in 3-D space in terms of:
1. the number of pixels/line (plotted horizontally);
2. the number of active scanning lines/picture (plotted vertically); and
3. the number of pictures/s plotted along a diagonal axis.

The resolution parameters of the original ATV signals are listed in Table 1.

<table>
<thead>
<tr>
<th>Lines/fields</th>
<th>Interface</th>
<th>Pixels, lines, pictures/s</th>
</tr>
</thead>
<tbody>
<tr>
<td>525/59.94</td>
<td>1:1</td>
<td>768 pixels x 480 lines, 59.94 pictures/s</td>
</tr>
<tr>
<td>787.5/59.94</td>
<td>1:1</td>
<td>1,296 pixels x 724 lines, 59.94 pictures/s</td>
</tr>
<tr>
<td>1,050/59.94</td>
<td>2:1</td>
<td>1,440 pixels x 960 lines, 29.97 pictures/s</td>
</tr>
<tr>
<td>1,125/60</td>
<td>2:1</td>
<td>1,920 pixels x 1,035 lines, 30.00 pictures/s</td>
</tr>
</tbody>
</table>

Table 1. Resolution parameters for ATV studio signals.

By Curtis Chan

In addition to providing a vehicle on which a standard reference could be based, the format converter potentially can find other applications and markets. Other applications may include real time recording of film-to-tape. HDTV camera-to-tape or in the imaging industries. Whatever the outcome, ATTC’s pioneering achievement has become a cornerstone in broadcasting history. Its evolving history will help pave the way toward a commercially viable high-definition standard.
The promises we've kept weren't made in the dark.

You had the foresight and experience. You encouraged us to make a commitment. And today, thanks to you, AutoCam is performing with "honors" at television stations...from the 1st to the 81st TV markets...and approaching 100 station installations...all within six short years. And the really good news is...

AutoCam starts earning its way the first day on-air (the average return on investment for a typical three camera studio system is less than twelve months). The average "from box to on-air time" is less than three days and AutoCam performs every day with a reliability record approaching spectacular.

And it gets better every day.

See what lights go on at NAB Booth 12451

Get "On target" with AutoCam. Call to arrange a demo for your station.
Thanks to our engineers, not only will Archie Bunker be around forever, but he’ll actually cause less friction. Because we’ve developed a way to save broadcast history and your recording equipment with one remarkable tape.

Presenting an even better Sony D-2 Videotape designed to preserve the television classics that will become priceless pieces of America’s history. Even after 22 years, you’ll be happy to know that with Sony’s help, the Bunkers, the Stivics and the whole All In The Family gang are doing just fine.

Determined to safeguard this celebrated series for future generations, Columbia Pictures decided to transfer All in the Family to the tender digital care of Sony D-2 videotape, where it will live on, unchanged by time. Over the years, countless television and film favorites have been relocated to Sony D-2 tape where they’re continuing to entertain both new and old audiences alike.

The safekeeping of these cultural treasures is not a trust Sony takes lightly. On the contrary, it’s timeless pursuits like these that lead our own dedicated family of engineers to further discoveries in the world of digital tape.

Take our latest improvements to Sony D-2 Series videotape. Our Emmy Award-winning metal tape technology was only the beginning. We went on to perfect a unique lubricant process that significantly lowers tape friction. And, as a result, has dramatically improved video head life.

Which means Sony D-2 videotape not only lengthens the life of the programs you save, but equally important, prolongs the life of your video heads.

Still not content, we even gave the tape a stronger binder system for greater durability and a reduced error rate.

It’s such endless advances that make Sony D-2 videotape a sought after media star among broadcasters, cable operators, duplicators and production houses. Advances that will keep other prominent stars shining brightly for a long, long time.

So good old Archie and Mike can stay just the way they are. Now that they’re residing on Sony D-2 videotape, no one in that family will ever be stifled again.

©1993 Sony Corporation of America. Sony and Sony Recording Media are registered trademarks.
The Bottom Line

Today's radio stations feature more audio sources, faster-paced formats and fewer operators than ever before. This calls for control technology that can perform harder work with simpler operation. Current technology sets about doing this in a number of different ways, as outlined in this month's look at renovating radio.

Control and direction of audio signals is at the heart of every radio station. Since the medium's earliest days, designers have sought improved methods of achieving this end. Here's a look at where things stand presently.

As most audio professionals know, signal control and direction is subdivided into two basic hardware categories: one that simply directs signals (the audio switcher or router), and the other that combines, controls and modifies signals (the audio mixer or mixing console). Each of these areas has undergone substantial recent change.

Switcher technology

Digital control of analog audio switching has been popular for some time. The latest trend in this area is incorporation of PC interfaces and control software. This allows either manual switcher control from any PC terminal or integration of the switching system into a PC-based automation system.

A few systems are now designed for both digital control and digital audio routing. In some cases, all audio signals are converted to a common digital protocol before switching, while others allow a hybrid of analog and digital audio paths. AES/EBU is the most popular digital audio transmission format among these systems. Although still somewhat rare among today's facilities, the fully digital audio switcher is likely to become a popular item over the next several years.

Console developments

Audio mixing control for broadcast has reached a significant fork in its development path. Advances continue along each of two branches. The first is comprised of traditional or "real" mixing consoles, and the second involves screen-based or "virtual" control surfaces.

Within traditional console design, trends continue toward moving audio off of the control mechanisms (faders, pots and switches). These devices are used instead to generate control voltages (CV) for VCs, gates and other "remote" devices through which the audio passes. Beyond merely increasing reliability and reducing wiper and other contact noise on frequently adjusted controls, the CV approach allows simple automation to be incorporated in the console design. Examples include VCA sub-grouping of faders, insertion of dynamics control (compression/limiting) via CV sidechains and snapshot automation of console setups.

The screen scene

A growing number of stations have integrated PC-based automation systems into their operations. When these are used in live-assist mode, the board operator watches the recorded programming scroll by on the display screen, and controls levels and other functions on a standard mixing console. Recently, a few such automation/hard disk recording systems have taken the obvious next step and made the screen's role more interactive. By employing a touchscreen, the system's video monitor can not only offer display, but also control. That same operator may now be able to eliminate the console and much of the other traditional equipment in the control room.

Continued on page 30
Quality for generations to come.

Ultimate picture quality... advanced image processing... and lasting value. Now video professionals everywhere can own it all, with the new Model 1000 Digital Production Switcher.

Advanced component digital image processing gives you total transparency, generation after generation. A capability that makes the compact Model 1000 a tool of awesome value for post production, graphics, or telecine transfer. And speaking of value, serial digital technology cuts maintenance costs for years to come—who knows, maybe even for generations.

Call your GVG customer representative today for the whole story on the new Model 1000 Digital Production Switcher. Generations from now, you'll be glad you did.
RBDS becomes the American standard

By Jesse Walsh

The Radio Broadcast Data System (RBDS) standard, which was recently adopted by the NRSC, is about to change the business of radio. RBDS will offer new sources of income generation and provide program directors with a new medium of connectivity to listeners.

Research on the original Radio Data System (RDS), the predecessor to RBDS, began in Europe around 1976, with its first on-air implementations in 1986. See "Rx for New Radio Profits," March 1992, for a full explanation of the RDS system.

RDS vs. RBDS

There are four major differences between RDS and the new American standard RBDS:

1. The American program-type (PTY) list is now general. An addition of program-type name (PTY) was made to accommodate a station's need to promote its format as unique. A fixed PTY code name may not best represent a particular station format now or in the future. Automatic format-seek tuning will follow the general list of PTY format names, but a PTYN can be programmed to appear in place of the PTY general format category after a station is tuned in.

2. AM stations now can be included in RBDS via a technology called ID Logic-B, which allows program-type format search and display of station call letters from a database stored in the radio. This provision of the standard also states that future technologies allowing further accommodation of AM stations will be considered on an annual basis by the NRSC.

3. The 57kHz subcarrier frequency used by RDS was already employed on approximately 300 U.S. FM stations for a national paging network. The format used in this system was a Swedish precursor of RDS called MBS. A provision for multiplexing MBS with RDS was developed and written into the RBDS standard, allowing both systems to coexist in the United States. Other existing SCAs at 67kHz and 92kHz are not affected by the RBDS signal.

4. Although it is called a standard, the approved RBDS document is a voluntary guideline for the broadcast and receiving manufacturing industries serving U.S. markets.

New service opportunities

American broadcasters may be particularly interested in using RBDS technology for the radio text (RT) feature, which allows the broadcaster to display 64-

Walsh is president of Jesse Walsh Communications, Buchanan, MI.
“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
"Get an Ikegami." That's what the staff has been saying for years. But a tight economy continues to hold you back from buying the best. Well, no more of that. Here are four products with the

Newly developed "Super Color," as well as chroma, aperture, black stretch/press, soft detail, and Super V provide outstanding picture quality. The HL-43 as a stand-alone or as a portable companion adds versatility to the HK-343 Studio/Field Camera System with triax connection to the same base station. Plus, the HL-43 uses the same high-performance IT CCD sensors as the HK-343, and SHBA (Super High Band Aperture) technology achieves an effective 850 TV lines.

HL-43 2/3" 3-Chip IT CCD
- Res: 850 TVL
- Sens: f8.0, 2000 Lux, SNR 62dB
- 400,000 pixels
- Accepts Super High Band Aperture & Super Color
- Continuously Variable - Speed Shutter

HC-340 2/3" 3-Chip IT CCD
- Res: 750 TVL
- Sens f8.0, 2000 Lux, SNR 60dB
- 400,000 pixels
- Accepts Beta SP, MII, Hi-8 and S-VHS
- Continuously Variable - Speed Shutter
- High Gain: + 24dB

The HC-340 is the latest portable camera in Ikegami's HC series, where low-cost means superior value for the cable, industrial, broadcast, or multi-media user. The HC-340 offers the most complete line of accessories for virtually any camera configuration, for portable, field or studio application. The camera can be remotely controlled via an RS-232C port and interfaced to an external computer or controlled over an extended distance by modem.

Prices and specifications subject to change without notice. Camera prices shown are less lenses unless specified.
THE PRICES ARE REAL.

Ikegami magic, each priced within reach of the tightest budget. Look at what you get. Compare the prices. Then call the Ikegami Regional Office nearest you for details.

$4,030
TM14-18RA
$4,330
TM20-18RA
$49,990
HK-343

Featuring an exceptional price/performance ratio, the 18-Series Auto Setup Color Monitors are designed for multiple applications such as: professional use at broadcasting and production facilities, corporate video, and educational TV. Functions automatically setup at referenced levels include: Contrast; Brightness; Chroma; Hue (NTSC only); RGB Background; GB Gain. All switching functions are digitally controlled.

The finest dollar-for-dollar broadcast camera available, the HK-343 has 2/3-inch IT CCD sensors with low smear and reduced FPN (Fixed Pattern Noise). The HK-343 relies on innovative technology SHBA (Super High Band Aperture) to achieve an incredible 850 lines of horizontal resolution. Triax cable connection from head to base station are standard.

TM14-18RA
- 14" Auto Setup Color
- 600 TVL H. Resolution
- 2-NTSC, RGB/Comp. Y+C Input

TM20-18RA
- 20" Auto Setup Color
- 600 TVL H. Resolution
- 2-NTSC, RGB/Comp. Y+C Input

HK-343 2/3" 3-Chip IT CCD
- Res: 850 TVL
- Sens: f/8.0, 2000 Lux,
  SNR 62dB
- 400,000 pixels
- Computer Controlled
  CCU: Triax System
  Super High Band
  Aperture & Super Color

Ikegami
The Professional’s Choice

Ikegami Electronics U.S.A., Inc. 37 Brook Avenue, Maywood, N.J. 07607
East Coast: (201) 368-9171 • West Coast: (310) 534-0050 • Southeast: (305) 735-2203 • Southwest: (214) 869-2363 • Midwest: (708) 834-9774

Circle (19) on Reply Card
www.americanradiohistory.com
When you want more than just an antenna

JAMPRO has been providing the broadcasting industry with state-of-the-art antennas for over 35 years, longer than any other US antenna manufacturer. With over 3000 antenna systems delivered, at JAMPRO you don’t just buy an antenna, you invest in experience.

THE LEADERS IN ANTENNA TECHNOLOGY
• Complete line of FM & TV broadcast antennas
• RF components, Filters & Combiners
• Modern 7000 ft FULL SCALE test range
• Directional antennas and pattern studies.

Call or fax us your needs today.
(916) 383-1177
Fax (916) 383-1182

JAMPRO ANTENNAS, INC
6340 Sky Creek Dr.
Sacramento, CA 95828

Circle (20) on Reply Card

character, real time, alphanumeric messages on the radio. Messages can be advertisements or tags, telephone numbers for a station’s request or contest lines, news headlines, promotional announcements and so on. The title and artist of a musical track also can be listed while the song is playing.

In addition to the obvious commercial advantages of this text display to the audience, other automated collection of data might be possible with RBDS. For example, music licensing agencies could use RBDS data to monitor airplay. Ratings diaries could also be accurately logged by retrieving and recording the output of RBDS call letter displays on the sampled listeners’ radios.

Clocks can be set by RBDS (timing updates are sent once per minute), and control signals for peripheral equipment also can be generated, such as record-er, start-commands. Furthermore, in-house data for control and status of remote station equipment can be included in the RBDS data stream.

Getting RBDS on the air
The RBDS encoder needs to sample the FM composite signal for synchronizing its subcarrier generator to the 19kHz pilot. This can be achieved by inserting a simple BNC “tee” connection in the output line from the stereo generator, or the composite signal can loop through the RBDS encoder on its way to the exciter.

Next, the encoder’s output is connected to the exciter’s SCA input. The sensitivity of the SCA input must be determined to calculate the injection level required for 2kHz deviation (2.6% injection). Finally, verify the FM deviation, and the installation process is complete.

The encoder typically requires some internal settings for clock and static RBDS data. Dynamic control of other RBDS data can come to the encoder from a PC or other dedicated device through RS-232. This also can be done via phone modem if the RBDS coder is located at a remote transmitter site.

The typical cost of converting a station to RBDS is less than $2,500. Considering how much broadcasters spend each year just on promoting call-letter recognition ($55 million to $60 million is the most recent figure), RBDS may be one of the best hardware investments a station can make today.

For more information on RBDS encoders, circle Reader Service number 200.

Continued from page 24

A touchscreen system controls the on-air operation for WCCO-AM's talk-radio format in Minneapolis.

Audio from the system’s internal hard disk or any external source can be switched on-line and started by touching the appropriate screen area. Levels either are automatically controlled or adjustable by touching virtual faders on the screen. Level metering generally is shown on the screen as well. Announcer copy can be called up on all or part of the same screen on some systems, allowing the operator to concentrate all on-air operations on a single screen.

In the production studio, a wider variety of virtual console designs is evident. Here, emphasis is on creativity rather than continuity, so many more on-screen control options are typically provided. Elements traditionally associated with storage media (such as editing) and the mixing console (such as fader control and audio processing) are combined on these virtually controlled systems. Because of this, point-and-click control (using a mouse or trackball) often is more appropriate than touchscreen control. Some of these systems include on-screen and traditional console control surfaces, to allow more visceral interaction with the software by the user. (More on production systems next month.)

If your station is contemplating a full redesign, a switcher replacement or a console upgrade, consider all the possibilities carefully. Look at systems from the engineering and the operating perspectives. The decision you make will have a long-lasting and wide-ranging impact, affecting everything from on-air audio quality to staff morale.

For more information on audio mixers and switchers, circle Reader Service Number 201.
The sound, priceless.
The cost, considerably less.

The only argument about the new Panasonic SV-3200 Pro DAT is whether its most remarkable feature is its advanced digital technology or its extraordinarily affordable price. Ideal for project studio, broadcast and recording studio work, the SV-3200 is designed after our award winning Panasonic SV-3700. With 44.1 kHz/48 kHz sample rates (analog input), 1-bit A/D and D/A converters, a shuttle wheel with dual speed range and a high-speed search (400 x normal), this machine sounds as good as the very best. Especially when you hear the price. $950 suggested retail price. To hear more, please call us at (714) 373-7278.

Panasonic
Broadcast & Television Systems Company
Emerging issues for converging media at NAB ’93 in Las Vegas.

By Skip Pizzi, technical editor

The Bottom Line

As the broadcast industry careens toward its future, new technologies and transition scenarios seem less like concepts and more like reality. This year’s engineering conference program increases the quantity and quality of coverage on the critical issues ahead. Attendance at the broadcast industry’s major meeting has never been more important. Here’s an overview of the program’s highlights at press time.

Table 1 provides a look at the multiple conference tracks featured in this year’s show. Most notable is the debut of NAB MultiMedia World, covering this growing peripheral industry from the broadcast and production point-of-view.

Foremost among the high-profile speakers this year is keynoter John Sculley, chairman, CEO and chief technology officer of Apple Computer. On April 19, Sculley will speak on “The New Information Age.” Other keynoters include Lucy J. Fieldstad, the driving force behind IBM’s multimedia development, and Eastman Kodak’s director of worldwide commercial CD imaging, Georgia L. McCabe.

Broadcast Engineering conference highlights

Most of the Broadcast Engineering conference features two or three simultaneous sessions. Unlike previous years, these multiple sessions are not strictly divided along television, radio and RF lines. Table 2 provides the schedule.

Featured topics in audio-related sessions include data compression, cart replacement, digital audio workstations, wired digital transmission, automation and error performance in digital systems. Related RF sessions present improvements in AM and FM transmitters and receivers, and the development of specialized test signals for those systems.

On the video side, the dominant subjects are ghost canceling, graphics and display, image compression, automation, advanced signal processing, facility design and the impact of consumer-grade equipment used for broadcast. In TV RF, the featured issues include advances in UHF transmission and transition to HDTV broadcasting.

Half-day sessions will be devoted to the subjects of international broadcast issues, management in broadcast engineering and the establishment of broadcast standards. A full day of coverage is slated for digital radio broadcasting (DAB), including presentations on coverage, multipath, conversion costs, in-band system evaluation.

Continued on page 35
THE MOST IMPORTANT AUDIO CONTROL EQUIPMENT WORKS FROM HERE TO HEAR

Keeping sound clean and accurate can make or break your audio projects. SONEX from illbruck ensures that you're getting the sound you want. Our complete line of acoustical materials gives you total control—in the studio, the control room, or wherever sound quality is critical. There's a reason SONEX continues to lead—nothing works better. Put the leader to work for you; call today for all our performance specs and application guides—800-662-0032.

SONEX
The only acoustical foam with the illbruck anechoic-wedge—over 400% more surface area than flat materials. Controls reverb, reflections, and resonances beautifully. The proven performer.

SONEX 1
The same unbeatable performance of SONEX but in materials that meet all Class 1 regulations. For demanding applications where heat or fire are factors. Safe for you but deadly for sound.

SONEX CEILINGS
Suspended ceiling treatments that deliver new levels of acoustical performance. Unique, contemporary designs. Available in a variety of styles and colors.

BARRIERS & COMPOSITES
When the problem requires more than absorption, illbruck barriers deliver. Single layer vinyls to multi-level laminates. Lead performance without lead price or problems.
The new Sachtler Vario Pedestals offer unique features for studio and OB operation:

1. Continuous column stroke, for shooting from sitting to standing person’s height – Vario Ped 2 - 75.
2. Rock steady and 50 kg/110 lb lightweight, to carry equipment up to 90 kg/200 lb – Vario Ped 1 - 90.
3. Carriage and column can be disassembled in seconds – compact modules for ease of transportation.
4. Quickfix, allows instant change of fluid heads for flexibility – included.
5. Track width, narrow and wide, symmetric and asymmetric – set in no time and you well can expect precise, easy steering and crabbing, smooth and jerkfree column movement thanks to the patented Sachtler pneumatic system. Test for yourself the optimum camera support for all compact studio/ob cameras, now!

Space age CCD-cameras don't fit on iron age pedestals
tions, RF amplifier linearity and the EIA testing process. DAB format proponents also will address the conference.

Other half-day sessions will cover data broadcasting, RF radiation management and video camera set up/maintenance. As in the past, the SBE will present one day of the conference on Tuesday, April 20. The scheduled sessions will cover RFI, serial digital video, disaster preparedness and EBS. SBE Day also will include a contract engineering workshop, certification testing, a membership meeting and a chapter chairs’ meeting.

The engineering luncheon will be held Wednesday, April 21. Featured speaker Craig Fields is chairman and CEO of Microelectronics and Computer Technology Corporation (MCC), and developer of the “First Cities” multimedia project. Fields also is a former director of the Defense Advanced Research Projects Agency (DARPA), and remains a strong proponent of joint technology efforts between industry and government. He leads a research consortium of 50 North American companies.

Engineering achievement awards will be presented at the luncheon to Stanley Barron, managing director of technical development at NBC; Herbert Schubart, vice president for engineering at Gannett Broadcasting; and consulting engineer Robert Silberman.

The traditional Ham Radio Operators Reception will be held Wednesday, April 21 from 6 p.m. to 8:30 p.m.

**HDTV World and MultiMedia World highlights**

This year’s HDTV World conference will consider production techniques, the format selection process, transition to HDTV broadcasting, RF and production equipment selection, and consumer media and display hardware. Numerous HDTV productions from around the world also will be screened. The European Broadcast Union (EBU) again will present a day of the conference (Wednesday, April 21), providing an update on international HDTV systems, progress and technology.

NAB’s MultiMedia World, which is a new conference, begins its first appearance appropriately, with an introduction to multimedia technology. It continues along two tracks, one for developers and the other for technologists. Featured topics include multimedia development strategies, post-production processes, interactive systems, intellectual property issues, authoring systems, data compression, hardware platforms, marketing and budgeting, multimedia network development, and applications in training and database software. In addition, a MultiMedia World breakfast has been added to the program, on Monday, April 19.

Because the program is far too full for some attendees to visit all the sessions that might interest them, the publication of proceedings and audio recordings of the sessions may come in handy. The NAB Store and Book Exhibit also provide an exhaustive selection of reference information for broadcasters at the show. Of course, the convention floor competes for attendees’ time during the show, and it promises more hardware displays than ever before. (See the exhibitor/new product listings and Broadcast Engineering’s exclusive exhibit floor map included in this issue.) As usual, it won’t be hard to find something interesting and valuable at NAB ’93.

---

**Table 1. The many conferences of NAB ’93.**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>BROADCAST EDUCATION ASSOC.</td>
<td>BROADCAST ENGINEERING CONFERENCE</td>
<td>TELEVISION MANAGEMENT CONFERENCE</td>
<td>RADIO MANAGEMENT CONFERENCE</td>
<td>ABA/NAB</td>
<td>TVB MKTG. CONF.</td>
<td>HDTV WORLD CONFERENCE</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>MULTIMEDIA WORLD CONFERENCE</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>B'CAST. LAW &amp; REG. CONF.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>RAB MKTG. CONF.</td>
</tr>
</tbody>
</table>

**Table 2. The Broadcast Engineering conference schedule at a glance.**
Facility design special report

Beat your competitors to the punch by increasing your facility’s technological advantage.
As our economy rebounds, broadcasters and production houses are finally beginning to see profits improve as their clients’ pocketbooks are opened wider. Likewise, as consumer purchases of goods and services increase, it eventually will translate into more advertising for our industry.

Simultaneously, multimedia, interactive video and computers are beginning to provide products that will compete with the traditional providers of video and audio entertainment.

The resulting economic reality means at least two things for our industry. First, those who transmit and produce programming and advertising will see revenue-enhancing opportunities. Second, as a whole new range of entertainment options becomes available to our core audiences, the revenue pie will be further divided among the players. The key to survival then becomes taking advantage of the economic opportunities and, at the same time, meeting the competitive challenges. How can technical managers help their facilities do this?

One common area that progressive stations, cable programmers and production houses alike must invest in is their facilities. By adding new production capability, creating a unique “on-air look” or building a more efficient transmitter site, a company can quickly differentiate itself from the competition and improve efficiency. In today’s highly competitive marketplace, you not only have to be different, you also have to be better.

The March issue of BE provides a behind-the-scenes look at how some of today’s leading-edge companies are using technology to give them that extra advantage over the competition. Serial digital video, superior acoustic capability, sophisticated signal routing systems and efficient transmitting facilities are some of the technologies described in this special report.

Don’t wait until your competition has the technological advantage. Beat them to the punch by learning from these successful facilities. Then, implement those ideas that will produce the winning solution for your facility.

- “Hollywood Digital: Designing for the Future” ........................................... page 38
- “Post Logic and the Record Plant: Combining Form and Function” .................. 48
- “New York 1: Innovation for Tomorrow” ......................................................... 52
- “High-Definition Audio” ................................................................................. 62
- “Building an Award-Winning Transmitter Site” .............................................. 70
- “Inside the ESPN Master Control Center” ....................................................... 78

Brad Dick, editor
Hollywood Digital: Designing for the future

Building for the future is possible.

By Chris Leonard

Hollywood Digital, a new post-production facility in Hollywood, took on the challenge of building an all-serial digital facility. Hollywood Digital is a full-service facility that caters to episodic television, commercials, feature films, music videos and corporate industrial productions. The facility was designed to build upon a platform of today's digital technology while maintaining the flexibility to adopt future advances.

Audio capabilities and acoustical detailing

Perhaps the most significant benefit provided by digital technology is the quantum leap in audio quality for videotape post-production. One of the key design goals for audio quality was to exploit the AES/EBU digital audio standard throughout the facility. The audio post area is designed to accommodate material and mixing needs at 44.1kHz and 48kHz sample rates. This allows for mastering CD audio as well as handling digital videotape's 48kHz sample rate. Specialized needs are handled by sample rate converters that can translate digital audio with rates ranging from 32kHz to 50kHz.

Digital audio production is handled in an integrated way using Solid State Logic's SoundNet digital network. The network interconnects two studios, each with an SSL Scenaria digital audio mixing system.

Leonard is a consultant for Hollywood Digital, Los Angeles.
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:

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-2511 Analog Video Switcher features a 40 MHz bandwidth and 20x10 switching in 1 RU or 20x20 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 .05% THD at +26 dBu (20x10 in 1 RU or 20x20 in 2 RU).

Each of these cost-effective switchers includes RS-232C or 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.

Please call or Fax Datatek for more information.

See all our switchers and other exciting Datatek digital and analog products at NAB Booth #13814

Circle (21) on Reply Card
www.americanradiohistory.com
and ScreenSound workstations. The system gives editors 24 tracks of digital audio recording and playback, simultaneous with up to one hour of compressed digital video on a hard disk recorder.

Maximizing the capability of digital production requires equal acoustic performance. Hence, the entire building was designed to match the goal of CD-quality audio.

Every room, including edit bays, telecine bays, and video compositing and graphics rooms, sits on its own concrete floating floor. Each room is further isolated by being mechanically decoupled from other rooms and the main structure.

The edit bays are constructed with two isolated walls. Each wall has two layers of Durock and one layer of \( \frac{3}{4} \) -inch gypsum Sheetrock per wall. The walls separating the rooms contain air spaces, which provide additional isolation.

The ceilings are built on a 1:12 slant and acoustically treated to minimize the standing waves. Each room also has sound absorption, sound diffusion and bass traps to complement the environment.

Most of the rooms have non-parallel walls. The monitors in the front of the mixing rooms are mounted in a special structure that gently curves from wall to wall. The space behind the soffitt-like structure is treated with sound-absorbent material, which improves the acoustic performance. In addition, the monitor wall is covered with a light gray fabric except along the elevation where the speakers are located. Here, a special acoustically transparent black material is used. (See photo on page 38.) The mixing console countertop follows the same curve used in the monitor wall. This maintains the overall dramatic appearance of the room. Although equipment is mounted in bays above the countertop, it is kept to a minimum so that it doesn't interfere with the overall acoustic performance of the room.

Airflow into the editing rooms comes from high-volume, low-velocity delivery systems. One unique problem often overlooked centers on video projectors. These units require extra cooling and are equipped with internal cooling fans. To protect the integrity of the room acoustics, these fans are disconnected, and a special duct is run from the room cooling system directly into the projector. To prevent oscillator noise from the projector from becoming audible, the video line double was moved from the projector to the equipment room.

Attention to detail at this level may seem excessive. However, such techniques not only provide the best in surround sound capabilities, but they also help operators catch audio problems before mastering, thus reducing costly technical rejections.

**Signal distribution and management**

Clients only pay for what they need and use in a typical edit session. Yet, many of today's suites are encumbered with expensive dedicated hardware. This means that if a particular piece of equipment in the suite isn't being used, the facility has to either absorb the cost of it being idle or include it in client charges, which in-

---

**The design team**

<table>
<thead>
<tr>
<th>Client:</th>
<th>Hollywood Digital</th>
</tr>
</thead>
<tbody>
<tr>
<td>William Burnsed,</td>
<td>chief executive officer</td>
</tr>
<tr>
<td>John Williams,</td>
<td>chief operating officer</td>
</tr>
<tr>
<td>Tom Tippets,</td>
<td>vice president of marketing</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Architect:</th>
<th>Andresen and Associates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chris Andresen</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Systems integrator:</th>
<th>B &amp; B Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dave Bartalone,</td>
<td>president</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project engineer:</th>
<th>Hollywood Digital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nathan Simmons</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project manager:</th>
<th>B &amp; B Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dave Jennings</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Acoustical consultant:</th>
<th>Smith, Fause and Associates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ken Fause</td>
<td></td>
</tr>
</tbody>
</table>

| Construction company: | JCP Construction             |
|                       | Joe Callahan, president      |
Real-time disk recorders were revolutionary when they were introduced. They allowed you, for the first time, to produce multilayered video without picture degradation. And since then, they’ve spawned a new generation of non-linear real-time editing recorders of great power.

Yet for the original task of multilayering, that first generation of disk recorders is limited to very specific applications. Most can hold only about 1 minute of program material, so they’re constrained to short elements, such as commercials.

Worse, every layer you create overwrites the previous one. So if your clients change their minds about a particular move in layer 15, for example, and you’ve already laid down layer 18, you have to start again...from layer 1.

Starting where the disk stops.

Ampex takes a different approach to multilayering. We looked at how you actually want to work in a digital component post-production environment. And while we could have developed a disk-based solution, we chose instead to create a system that goes far beyond disk technology.

The result is the Ampex DCT 700d Tape Drive. It can hold 3 hours of program material. Which means in multilayering applications every layer you create can be saved intact. So if your clients want to make a change in layer 15, you can do it effortlessly—typically in less than a minute.

The DCT 700d gives you all the creative freedom of a transparent multilayering environment combined with the speed, flexibility, and efficiency of a sophisticated editing tape drive. So when the drive is done with that complex commercial, you can put it to work editing that long documentary. That just can’t be done with any other component system currently available, due to the limitations of high cost, high maintenance, and low editability.

In fact, the DCT 700d is simply the best digital editing tape drive in the world. We say that because it is built on the technical foundation of the best analog editing tape recorder ever made, the Ampex VPR-3, and the best video signal system, the Ampex Zeus. VPR-3/Zeus is the fastest, gentlest, most accurate, most transparent system ever designed for the analog environment—which may explain why you’ll see them in almost every premier post-production house in the world. It truly sets the analog recording standard. And now the DCT 700d Tape Drive sets the digital recording standard.

Not just a new product, a new perspective.

The DCT 700d, however, is only part of the story.

DCT from Ampex is actually a system. A system conceived and optimized for post production in the digital component environment. And the first complete digital component system available from one manufacturer. In addition to the DCT 700d drive, it includes new tape cartridges, a new production switcher, new computerized edit controllers, ADO* digital special effects, and interconnect equipment.

It is a compact, sophisticated, practical digital component system that unlocks a whole new world of creative—and competitive—possibilities.

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 DCT 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 creative and competitive advantages of this one now.

With DCT from Ampex.
Post Logic and the Record Plant: Combining form and function

Two West Coast facilities expand and improve.

By Richard P. Bourdeau

The Bottom Line

Renovating or expanding existing production facilities presents a serious challenge. The impact of construction noise and debris on the facility's continuing operations must be minimized. However, doing so can add considerably to the time and expense of the project. Unwelcome discoveries also can occur during demolition of earlier construction. Here's how two leading post-production facilities handled their upgrades.

The business of creating functional, fine-tuned and attractive video-post and audio recording facilities is well demonstrated at Post Logic and the Record Plant. In 1991, these two Hollywood studios faced the prospect of expansion in different ways. Post Logic had decided to make the leap from audio facility to full-service audio/video post. The facility's motivation was simple: to take Post Logic to the top of the highly competitive Southern California post market.

Meanwhile, the Record Plant was about to make a marketing decision that could affect its position in the recording industry for decades. The decision to add two new studio suites was sparked by a desire to make the Record Plant stand alone among West Coast recording studios. Management at both facilities had specific visions for guiding their respective projects from concept to reality, in terms of equipment selection and physical construction. They understood the need for
WHEN EVERY DOLLAR COUNTS, NOTHING BEATS OUR EXPERIENCE!

In times like these, when you can’t afford to take chances, it’s nice to know there is a company you can trust to do the job right.

The company is A.F. Associates—and we’re celebrating our 25th Anniversary in the business!

For a quarter of a century we have been leading the way in the design and fabrication of television systems of every size and format for cable operators and networks, broadcast stations, corporate facilities, and production and post-production studios. Our clients appreciate the fact that we know how to cut through the red tape, avoid mistakes, and deliver on-budget and on-time!

Through it all, we have remained independent—not tied by ownership, affiliation or special contract to any one manufacturer. Accordingly, the equipment we recommend for your project is based solely on its suitability to the job at hand.

If your company is considering building a new technical facility, or simply planning to upgrade an existing one, talk to us. We can offer everything from a one-camera studio to the last word in a network control center… from engineering services to a complete turn-key operation. In any case, we’ll do a great job that will keep your bottom line looking great, too!

A.F. ASSOCIATES INC.

ADVANCED SYSTEMS AND PRODUCTS FOR THE VIDEO INDUSTRY
100 STONEHURST COURT, NORTHVALE NJ 07647 (201) 767-1200
IN THE WEST: (619) 536-2925
A VIDEO SERVICES CORPORATION COMPANY

Circle (29) on Reply Card

www.americanradiohistory.com
audio/video equipment that reflected every current technological advancement, along with construction that would provide a functional and comfortable space for equipment, technicians and clients. The new facilities also had to reflect the good taste of their upscale and savvy clientele. This would be achieved by incorporating eye-pleasing construction features, such as cracked glass walls, floating acoustical ceiling panels and flattering indirect corridor lighting. For both projects, after equipment lists and production room designs were agreed upon, careful consideration was given to client comfort and privacy areas. The finished construction products unite form and function into clean, efficient and beautiful spaces.

**First things first**

As with most construction projects, the first critical step was to select an architect and general contractor. The two projects required design and construction professionals who could quickly recognize and address the problems inherent in post and audio facility expansion. After exhaustive searches, the facilities chose studio bau:ton of Los Angeles as the architectural firm and Pridemark Contractors of Irvine, CA, as general contractor. This team began its work for both facilities with one guiding principle: to create the most efficient, productive and client- (and technician-) friendly post and audio recording spaces possible.

Both projects were rebuilds of existing spaces. The contractor mandated that old construction had to be stripped all the way to the subpanels (including walls, ceilings, old circuits, HVAC and plumbing) before final plans were drawn. This is a crucial step, and can reveal previous construction errors or deviations from the original plans.

Plans for the Post Logic project called for the demolition and complete remodeling (including all non-production areas) to be finished in four months. In an age where missed completion deadlines are common, the contractor in this case not only finished on time, but followed a process that allowed the facility’s existing audio studios to continue operating. The story at the Record Plant was much the same, and similar deadlines were met. Construction work hours had to be carefully scheduled so that noise and vibration did not occur while recording studios were in use.

**The Post Logic rebuild**

Once demolition was complete at Post Logic, final plans were approved and construction began. Although a logical and free flow of space in and around production rooms and corridors was a prime concern, it also was important to provide direct cabling to a central machine room. To accomplish this, two telecine rooms, a telecine machine room, a graphics room and two edit suites were configured around a central machine room. (See Figure 1.) Each of these rooms was connected to the central machine room by wiring

---

**Design team**

**General contractor:** Pridemark Contractors

**Architect:** studio bau:ton

**Clients:** Post Logic

---

**Figure 1. Floor plan detail of new facilities at Post Logic. Digital edit suites, graphics facility and telecine rooms all surround a central machine room.**
THE WORLD OF TELEVISION IS ABOUT TO CHANGE.
INTRODUCING DIGITAL BETACAM VTRs.

With the introduction of Digital Betacam VTRs from Sony, a rugged, digital workhorse format is within your reach—without leaving the past behind.

QUALITY. THE UNMATCHED STANDARD OF DIGITAL.

The ultimate quality of digital component. Digital Betacam technology gives you a high performance format with the ability to record a 10-bit CCIR-601 signal, taking full advantage of the latest digital technology. Optimum signal integrity, elimination of drop-out, and delivery of transparent multi-generation copies. All in a 1/2" tape by use of coefficient recording.

COMPATIBILITY. PROTECTING YOUR CURRENT INVESTMENT.

For those who have invested in the 160,000 Betacam and Betacam SP VTRs out there, think of Digital Betacam recorders and players as an upgrade to the all digital environment—without making your current investment obsolete. By providing full playback capability with Betacam and Betacam SP tapes, your acquisition and archive material is now easily brought into the digital component future.

AFFORDABILITY. NOW.

With Digital Betacam technology, the digital component environment is now an affordable reality for the entire industry. The key is Sony's unique coefficient recording system. It employs a 2:1 bit rate reduction scheme, which reduces mechanical complexity and gives you the highest quality signal in a cost-effective VTR. And with Digital Betacam VTRs, no additional interface equipment is needed because it's already built in. So connecting to your current system is easy as well as affordable.

Digital Betacam players and recorders from Sony. An innovation built on the notion that going forward doesn't mean leaving the past behind.

To see Digital Betacam VTRs at work, come see us at NAB.

INNOVATION AT WORK.
CERAMIC ARMOR METAL PARTICLE TAPES

In Your Hands Our Science Turns To Art

Let your imagination soar! With Maxell Ceramic Armor Particle Tape Products, you'll have total creative control, combining great versatility, tremendous reliability and incredible output. Available in D-2, D-3, DAT, HD Digital 1" & Betacam SP. They are the tapes of tomorrow, produced for you, TODAY.

maxell
Maxell Corporation of America
22-08 Route 208, Fair Lawn, New Jersey 07410
1-800-533-2835

Circle (30) on Reply Card

www.americanradiohistory.com
## What to look for in racks and consoles

### By Guy Tessier

In the search for the perfect videotape recorder, camera and special effects unit, we often overlook the fact that these pieces of equipment require a resting space. Racks and consoles are equally as important as the equipment they hold. Specifying racks and consoles can be as detailed a process as evaluating videotape recorder performance.

The problem is that these pieces of metal often do not share the same spotlight as video production equipment. To imagine, however, where a system would be without racks or consoles. Equipment would be stacked on top of each other. Wires would run from component to component in a jumbled mess. Not only would the video system lack aesthetics and organization, it would also be subject to potential damage.

The evaluation of racks and consoles requires system designers to examine several important areas. Only some of which are product related. Console design can directly affect the user-system interface. As a result, the human factor in equipment placement and manufacturer support must be taken into consideration in addition to product quality.

### Equipment positioning

Positioning equipment within a rack or on a console is directly related to the number of visual inputs a person can focus on at any given time. Most people that number is five, plus or minus two. This number also equals the maximum number of monitors that should be placed in a single rack.

To better focus operational attention and increase operating efficiency, different rack selections can be separated by blank panels or open air space. All equipment that requires a human interface must be mounted within easy reach. This usually means in working areas directly above the desk fixed at a height of 26.5 inches from the floor. For comfortable reach, the working ra-

---

### 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.
Specifying racks and consoles is as detailed a process as evaluating videotape recorder performance.

Heat and electronics also play a major part in rack equipment positioning. Remember that hot air rises, so fans should be positioned at the top of the rack, not at the bottom. By exhausting air at the top of the cabinet, efficiency is increased by assisting air flow. Run the fans in the exhaust mode, and remove air from the top and filter from the bottom. This helps to remove potential air contaminants and is important in increasing equipment life. With more video systems using computer- and microprocessor-based systems, RFI protection and the capability of racks to shield RFI is becoming important.

Specifying considerations
Several areas must be considered for specifying racks and consoles. One of the most important is construction. Welded frame construction offers the advantages of security and time. Welding assures the rack will have the rigidity required to support equipment even under the stress of thousands of pounds. Welding also means that the rack arrives completely assembled. It places the integrity of the rack on the manufacturer and relieves the installer from potential liability or structure failure because of improper installation. Most important, welding means that valuable staff time is not spent assembling racks and consoles.

Tapped rails are another important feature to consider. Some rack manufacturers offer this feature only as an option. Tapped rails ensure a direct mounting relationship between equipment and the console.

The manufacturer you select can be as important as the product. Find out what accessories the company offers. Checking for accessories should not be limited to power outlets and fans. Accessories also include the variety of colors and coverings offered. The more a manufacturer offers as standard, the less options you have to pay for.

Most important, be sure the manufacturer is willing and able to work with a customer and customize the system. This depends on the manufacturer providing several services. The process begins with over-the-phone and/or local product representative support.

Console design directly affects user-system interface.

Does the manufacturer provide a trained staff? Does the manufacturer have local field sales representation, or must all questions be referred to the factory? Access to a local product representative can make a major difference in the manufacturer truly understanding the system and providing the exact equipment needed.

Racks and consoles are just as important to a system as any electronic component. Their specification and design requires the same attention to detail as that of cameras, monitors or videotape recorders. Before purchasing one, make sure you do your homework.

--

"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 your most basic piece of equipment, the intercom, is 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.
See us at NAB Booth #19414.

Shown here, the MCE 325 User Station with MCS 325 Speaker Station in various modular combinations. Shown above, Model 802 Master Station.

RTS BY TELEX
outfit a staff of 20 reporters. (These reporters, known as video journalists, shoot their own stories.) The Hi-8 format seemed ideal in this case, especially since the introduction of a fast and accurate edit deck for the format (Sony EVO-9850). After a number of field tests, New York I concluded that the resolution and robustness of Hi-8 would more than meet its needs.

Editing is done directly from Hi-8 to Pro- Betacam. With seven edit rooms, every little bit helps in terms of the budget.

Facility design

The overall design for New York I was quite challenging. A great deal of computer-based technology had to be integrated with the standard building blocks of video facilities. Many of the components used in more expensive facilities were applied here in more cost-effective ways. Every product was considered for its past performance, reliability, user-friendliness, cost and ease of integration. Although this is not a gold-plated facility in cost, it has to perform like one.

Most sources appear on the facility's router, along with RS-422 machine control. A BTS-2000 router running 3000 series machine control is employed. This system allows quick reconfiguration of the router and storage of multiple configurations to disk. This feature is especially helpful during live event coverage.

The switchers include a Grass Valley 200 and 250, and robotic camera control is handled by a Radamec/EPO Scene Select touchscreen system. The intercom is a McCurdy/RTS 50x50 matrix with CS-9500 control panels. Again, the RTS system allows for quick and easy reconfiguration, and provides a matrix system, indispensable for live-event coverage. Graphics are based on the Chyron inflinti! Max and Leitch still-store. Both were chosen because they perform like one.
KVVU consolidates split operations in advanced broadcast center.

KVVU-Channel 5 of Henderson, Nevada, wanted the design of its new facilities to befit its consistent rating as one of the nation's top independent television stations.

This broadcasting center consolidates administrative, sales and production operations that were previously divided between Las Vegas and Henderson, located 10 miles apart.

Constructed on a 3.5-acre site, this facility has a total building area of 31,700 square feet. This includes a technical center with 5,300 square feet of raised-access floor, and two studios with a total area of 3,600 square feet.

The two studios, each with a control room connected to the master control room, were designed to accommodate an increasing schedule of live local programming.

The building also includes two high-tech postproduction suites; an electronic graphics room; client viewing and conference rooms; and employee and visitor lounges.

This facility is one of six broadcasting centers designed, engineered and constructed by The Austin Company for the Meredith Corporation, the parent company of KVVU.

If you are contemplating a new or expanded facility for today's competition, you might want to discuss your requirements with Austin.

LDK 9. If you've been thinking of buying any other studio camera, you should think again.

If you're like most people you probably consider the purchase of a new studio camera for a long, long time. And we're delighted that you do. Because it is our intention to present all the facts you need with regard to the LDK 9. to enable you to sit back and make an informed buying decision.

Developed with broadcasters for broadcasters and in keeping with all cameras in the BTS family, the LDK 9 is designed and built to the very highest standards and embodies the most advanced technology in the world.

Like its fully compatible portable companion, the 9P, the LDK 9 features one of the most revolutionary advances in broadcast TV history: the FT-5 SH Sensor. Quite simply the best there is. Only the FT-5 SH Sensor, indeed, can completely eliminate vertical smear and lag whilst simultaneously producing an exceedingly high dynamic resolution. This results in beautifully sharp, crystal-clear images and better, richer, truer colours under any operating conditions.

The camera is laden with other refinements as well, including an Adaptive Highlight Compressor. Ingeniously, this provides film-like picture quality by emulating the softly limiting transfer characteristics of film.

The LDK 9's range of on-line automated facilities is, as you'd expect, unrivalled. Black Balance, Black Shading and Dynamic White Shading are all continuously checked and corrected automatically. Leaving the camera operator free to concentrate on the people on set instead of worrying about the camera set-up.

Another reassuring feature of the LDK 9 is its Wide Band Triax System (copied by other camera manufacturers believe it or not, and for which we won one of our Technical Emmy Awards). It has full bandwidth RGB component signals for the best possible quality chroma key. A high performance teleprompter. And, take careful note, return viewfinder signals over triax.

In addition, you'll be pleased to discover that whilst star filters are fitted as standard, we've installed an 8-position Quick Change Filter Wheel to give you an even wider choice of filters and allow almost instant access when special filters are needed.

If you use a lot of different lenses, you'll also find yourself at a distinct advantage with the LDK 9. An Integral Camera Base Plate lets you balance the camera quickly and easily - regardless of lens configuration.

A Full Feature Viewfinder keeps your camera operator well informed of what's going on and includes a digital focus feature for precise reference to the scenes already shot. At the same time, it provides extreme ranges of pan and tilt as well as offering high brightness and resolution.
There's even an optional Digital Video Output to international standards too. Perfect if your studio is digitally-based.

Teamed with the BTS Series 9000, the most powerful remote control system ever designed for studio production, it's easy to see why the LDK 9 is today's most sophisticated full size camera.

All of which leads us to this conclusion:
If you've been thinking of buying any other studio camera, you should think again.

Needless to say, the whole LDK 9 story could fill an entire booklet. And it has. We'll be happy to send a copy to you, along with any other information on the BTS family of cameras. Just give us a call.

Creative Television Technology from BTS
High-definition audio

Save time and money by building a problem-free acoustic environment.

By Carl Yanchar

The Bottom Line

High-definition audio means CD-quality sound. The benefits of this improved and better sound can be accomplished by implementing simple electronic upgrades, and improving production techniques and audio monitoring. However, when building a new facility or renovating an existing one, it is important to have a superior acoustic environment. Read on to find out how sound isolation, floating floors, noise criteria, and reverberation and absorption are critical to audio monitoring and high-quality sound.

Sales growth of stereo TV receivers, movie video rentals, home theater and high-end automobile sound systems, as well as the acceptance of compact discs has raised the standard by which broadcast audio is compared. The old 3-inch internal speaker that filtered out hum and buzz, minimized the impact of distortion, excessive compression and equalization, differences in level and masked the effects of poor mic placement is no longer the benchmark. Thus, it can no longer be the scapegoat.

Newer receivers, with improved internal speakers, offer the capability of easier connection to the home entertainment system. They also have the potential for improvements in actual sound and perceived picture quality. The standard is no longer "broadcast quality" but "CD quality."

High-definition (also called advanced-definition) television will provide improved picture quality along with CD-quality sound transmission capability. However, the benefits of bigger and better pictures will only be fully realized with bigger and better sound. Many of these improvements can be implemented by simple electronic upgrades, such as replacing the analog cart machine with a CD player, digital cart machine or workstation.

Today's consumers expect CD-quality audio from all of their entertainment sources. Thus, studio designers and engineers must pay as much attention to the acoustic environments as they do to the electronics.

Yanchar is president of Lakeside Associates, Irvine, CA.
When you won't get a second chance, your only choice for wireless microphones is Sennheiser.

For critical applications, in live theater, entertainment and broadcast, Sennheiser's VHF and UHF systems provide superior audio fidelity as well as unsurpassed reliability. Comprehensive shielding and advanced RF filtering on both transmitters and receivers are among our substantial technical advantages. You can depend on Sennheiser wireless systems to perform flawlessly every time you use them.

Your professional success is on the line whenever you specify wireless. Make the right choice. When it's time to get serious about wireless, it's time to invest in Sennheiser.
Improved audio monitoring

At locations where quality judgments are made, the audio monitoring system must be equal to the task. It must be capable of accurately reproducing the low frequency response. Mounting the audio monitor loudspeaker and amplifier then becomes a critical issue.

Because the sound must relate to the picture, the speakers are placed symmetrically about the main video monitor. In most cases, this is at or near one or more corners. At low frequencies, most loudspeakers radiate over 360°. Some of the low-frequency energy will be reflected back into the room, slightly delayed. Because of the long wavelengths, most of this energy will be in-phase. Unless the speaker is designed with this type of mounting, the low-frequency response will be boosted. However, certain frequencies will be canceled, depending upon the exact geometry involved. The worst case occurs when the loudspeaker is equidistant from two adjacent walls and the ceiling.

Soffit mounting the audio monitor loudspeakers can circumvent this problem. This forces the low-frequency energy to radiate over a 180° angle, boosting the low frequencies more uniformly. Some loudspeakers have internal equalization for these alternate mounting methods. If not, external equalization should be incorporated. A 6dB boost in the low frequencies through speaker location does not provide quality monitoring.

Enhanced sound isolation

All on-air, production and post-production facilities have common requirements for the appropriate degree of sound isolation from the outside. A Foley room or narration studio where live sound is being recorded requires a lower noise floor than a post-production room. This distinction is important because the cost of each increment of isolation can increase construction costs geometrically.

Proximity to external stationary and
WE MAKE IT VERY, VERY HARD TO BLAME IT ON THE TAPE.

While we can't fix all your problems, we can make sure 3M tape isn't one of them. You get consistently high quality in every audio and video format. And flawless support from the people who know more about tape than anyone. We won't be satisfied until you are.
Is home room noise the limiting factor?

For years it has been assumed that home receiving and playback equipment, as well as the home listening environment, were limiting factors in the overall quality of the audio chain. The high-quality audio provided by CDs and the proposed advanced TV systems will eliminate the electronic portion of the chain from this consideration.

That leaves the home listening environment in question. In a recent AES paper, Cohen and Fielder readdressed the question of what is the appropriate background noise level for a recording facility. In a study of 27 home listening rooms, they found the room average noise level to be NC 17. A substantial portion of the rooms measured had less noise than the average.

Although these low-noise listening conditions may not exist if children, pets, kitchen appliances and HVAC units add their contributions, the research indicates that the typical consumer acoustic environment may be far better than originally believed. The message to program producers is clear: You must be concerned with the overall acoustic performance of audio recording environments because the audience can hear a quality difference.

Bibliography


Transportation noise sources will establish the degree of isolation required from these sources beyond your direct control. Evaluate every possible condition when choosing a site. External noise levels vary greatly from day to evening. In a multiroom facility, the proximity to high-level, low-frequency external sources almost always demands a level of isolation exceeding that from any external sources.

The conventional method of specifying the noise level requirements in a room is called the noise criteria (NC) curve. The data on which the NC curves are based was gathered by surveying office workers on the effects of environmental noise on their ability to work and to communicate. They have been adapted by the building industry as a simplified method of communicating the allowable noise levels in a room. (See Table 1.)

NC 15-20 used to be the standard for studios and concert halls. Digital recording and Dolby SR have lowered the standard goal to NC 5-10 and below. Achieving this low level of noise is extremely costly, with each 5-point reduction in noise criteria translating to a minimum 10% to 15% increase in construction costs.

At NC 20, the allowable noise level at 63Hz is 51dB SPL. This may not be an insurmountable problem for many instruments and voice, however, if, for example, the use of a high-pass filter is tolerable. For Foley work, especially when the sound being recorded falls into this frequency range and are at or below the background level, a filter will not help. When several channels are summed, the situation becomes even worse.

The degree of sound isolation achieved in the field depends upon three factors:

1. The mass, stiffness and damping of the enclosing walls, ceiling and floor.
2. The air tight sealing of all penetrations for doors, windows, cables and air ducts.
3. The physical separation of internal and external noise sources.

The first two are summarized in the sound transmission class (STC) rating system adopted by the building industry as a means of comparing various barrier constructions. Test data for frequency bands below 125Hz is not always available or reliable.

Wall, floor and ceiling transmission loss at low frequencies becomes more complex to predict. The transmission loss is no longer governed simply by the mass, but additional factors, such as damping, stiffness and panel dimensions. By virtue of combined mass and stiffness, concrete and concrete block perform well in the low-frequency range. When increasing STC by adding mass reaches its practical limit, the only other method of increasing sound isolation is through physical isolation.

Floating floors

Floating or room-within-a-room construction usually is necessary to prevent vibration and structure-borne sound from entering a room. Ease of access into the room and the law of gravity limit the physical separation of a floated floor from the structural floor.

There are three basic types of floated floors. (See Figures 1 and 2.) The lowest cost (and perhaps the least effective) is the use of a continuous underlayment. A continuous sheet of neoprene, fiberboard or proprietary materials is laid down, covered with building paper or polyethylene, and then topped with concrete. Because of the limit static deflection, this type of floating floor is effective only in the mid-and high-frequency ranges.

The second type of floated floor employs a neoprene or coated fiber glass fixed mount. These isolation mounts are placed at 12- to 24-inch centers and covered with plywood and polyethylene.

Next, concrete is poured over this form. An STC of 73 therefore can be achieved.

For extreme low-frequency vibration isolation, spring mounts are required. Although fixed springs have been used, the most common system is the raised slab system. Housed metal springs are placed on 3- 4-foot centers with an integral steel reinforcing grid. Concrete is poured over the mounts and grid. After the concrete has cured sufficiently (approximately...
What's the big attraction at NAB this year?

You can win up to $5,000 cash in our Great Las Vegas Roll Off

Here's how you can be a big winner.

1. Use this official game card or stop by our booth #15181.

2. Visit each participating exhibitors' booth, look for our Great Las Vegas Roll Off poster and get your official game card verified.

3. Bring your completed game card to our booth and try your luck in the Roll Off for big prize money. You could cash in on as much as $5,000. Other prizes range from $10 to $500.

4. We'll conduct the Roll Off at 4 P.M. on Tuesday and Wednesday and again at 11 A.M. on Thursday. Five rolls of the dice determine what you can win. One Roll Off per contestant, please.

You're a sure winner with Broadcast Engineering.
30 days), the slab is raised by a process of slowly turning jack screws built into the mounts. Thus, isolation down to subsonic frequencies can be obtained, and STC ratings of 82 and greater are possible.

**HVAC noise sources**

Excluding doors and windows, air-conditioning duct work is the most significant penetration of an enclosure. Careful sealing and structural decoupling of these penetrations is crucial.

Air-conditioning noise, especially low-frequency noise, presents one of the most difficult challenges to providing a low-noise floor. Conventional techniques, such as fibrous duct lining and passive silencers, are effective above 250Hz. Passive silencers of sufficient length to control low-frequency noise place severe static pressure restrictions on the air-handling units.

Active noise control systems are a viable solution to solving low-frequency attenuation problems. They consist of a microphone that detects the noise as it propagates down the duct. A digital controller processes this signal, determines an appropriate canceling waveform and introduces this signal by way of a loudspeaker attached to the duct. A second microphone located just beyond the loudspeaker provides an error-correction signal. Attenuation of 12dB to 20dB between 40Hz and 160Hz can be realized.

Independent duct systems for each critical room are necessary. Whether sheet metal, rigid fiber glass or flexible, the duct work should be routed and isolated so that it does not pick up any noise along its path or couple sound from one room to another. The duct work should not generate vibration any noise of its own. Although sheet metal duct has higher transmission loss than rigid fiber glass or flexible duct, it can generate popping noises when it is pressurized or depressurized if it is not properly braced and damped. Square or rectangular duct is more susceptible to producing aerodynamically generated noise. However, round or flat oval sheet metal duct minimizes both of these problems. Flexible duct has extremely low transmission loss, but can generate cracking noises as it expands and contracts when the fan is turned on and off. Often, it becomes pinched, restricting airflow and generating noise. It is economical, however, and does not transmit vibration as well as the other types.

To introduce air into a room without adding noise, a low outlet velocity is required. To attain NC 15, an outlet velocity of no greater than 250 feet per minute is required. Consequently, a large outlet area is needed. Dampers within 20 feet of an

**Continued on page 166**

---

**See HEWLETT-PACKARD at NAB**

For product advances in

- Serial digital video
- 4:2:2 quality monitoring
- EDH
- Transmission and broadcast
- Ghost simulator
- Digital modulation for HDTV
- Other technology demonstrators
- CATV, signal monitors, and more

**Our strengths are in your future**

Circle (41) on Reply Card
Our 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 5-10 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 20 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 40 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.
Building an award-winning transmitter site
How a revolutionary transmitter building design arose from an icy tragedy.

By Roy L. Abernathy

The Bottom Line

While towers and antennas receive a lot of attention in the design stage, broadcasters usually give little thought to the mundane, cement transmitter building. However, this was not the case for WPTF-TV and WRAL-TV. These stations were given a second chance to redesign and rebuild their transmitter facilities when parts of an icy tower destroyed theirs. Read on and find out how this 3-time architectural award-winning transmitter building was designed and completed in less than one year.

On the morning of Dec. 10, 1989, after three days of freezing rain, the icy landscape of Auburn, NC, resembled a stand of giant steel-decorated trees. Disaster had befallen the transmitter facilities for two of the three largest TV stations in eastern North Carolina, the 32nd ADI in Raleigh, NC.

At approximately 8 a.m., the 2,000-foot tower for WPTF-TV collapsed, crushing the transmission facility. As the engineers for WRAL-TV and WTVD-TV looked on, the ice along the southern guy lines for the other two stations' tower slowly melted, leaving the towers weighted by the northern lines, gyrating and bending. At approximately 8:45 a.m., WRAL-TV and FM's tower fell into a mass of fragmented steel on the ground. Although WRAL's transmission facility was not completely destroyed, the building was later condemned because of structural stresses. The third tower, WTVD-TV, went through wild periods of moving and bending, but remained erect.

As the residents of Raleigh, NC, arose to find their television and radios quiet, WPTF rushed to transfer its signal to its old transmitter site in Apex, NC. WRAL was forced to temporarily lease the transmitting facilities of WKFT-TV 40, making Channel 40 WRAL-TV. WRAL-TV was able to uplink to local cable stations immediately, losing only 3½ hours of air time. However, because WPTF-TV had no sa-
IT MAKES THESE TWO BUTTONS OBSOLETE.

How much time have you spent over the last few years waiting to get there? The Pioneer VDR-V1000 Rewritable Videodisc Recorder just saved you that much time and more. It offers instant access (0.3 seconds average) and the fastest, most precise frame-by-frame editing in a recording device.

Gone are the typical problems associated with shuttling and jogging. The VDR-V1000's unique, dual-head configuration lets you search while play, record while play, or erase and record simultaneously. With 32 minutes recording time, and non-linear playback capability, you can assemble-preview your edits in realtime before recording. No pre-roll or post-roll is necessary.

For a quick return on investment, the VDR-V1000 offers endless possibilities to these and other operations:
- On-line Non-linear Editing
- Commercial Insertion on the Fly
- Flexible Time Delay
- Efficient Still Store
- Instant Replay
- News Presentation
- Animation
- Satellite News Gathering

With so much going for it, the VDR-V1000 leaves only one question unanswered: What are you waiting for?

For more information, press the buttons on your phone, and contact your regional Pioneer representative:
- East - Tom Mykietyn at (201) 327-6400
- Midwest - Chris Boldt (708) 285-4500
- West - Craig Abrams (310) 522-8600.

Pioneer Communications of America, Inc.
600 East Crescent Avenue Upper Saddle River, NJ 07458

See us at NAB Booth #18481.
ScheduALL's
New Personnel Manager
THE COMPUTERIZED FACILITY MANAGEMENT SYSTEM

- CREATE & ASSIGN SHIFTS
- WARNS OF OVERTIME, MEAL PENALTIES & OTHER UNION REQUIREMENTS
- INSTANTLY SHOWS WEEKLY HOURS & PROJECTED OVERTIME CHARGES
- ASSIGN AND TRACK VACATIONS, HOLIDAYS & PERSONAL DAYS
- EXTENSIVE PRINTED SCHEDULES AND REPORTS
- MONTHLY, WEEKLY AND DAILY PERSONNEL SCHEDULES

ScheduALL is a complete networkable facilities scheduling system designed for the TV industry. Ask about our full line of scheduling and management software: Library/Labeling, Accounts Receivable, Bidding, Facilities Scheduling, Production Reports, and Project Manager.

Call our toll free number for more information 1-800-334-5083

VIZUALL INC. • 20377 N.E. 15th Court • Miami, Florida 33179
(305) 651-6241 • Fax (305) 651-0478
24 Hour BBS # 305-651-6245 • CompuServe ID # 74017, 131 [GO BPFORUM]

Circle (44) on Reply Card

The design team

Clients: Capitol Broadcasting Company Inc.
Raleigh, NC
Jim Goodmon,
president/CEO
Wilbur Brann,
corporate engineer
Durham Life Broadcasting Inc.
Raleigh, NC
Bob Butler,
president/CEO
Chuck Brit, corporate engineer

Architect: Bartholomew Associates Inc.
Raleigh, NC
Norman E. Bartholomew, principal
Thomas G. Crowder, project designer
William G. Spencer, job captain

Engineers: Lysaght & Associates, PA (structural)
Raleigh, NC
RMA Inc. (mechanical/electrical)
Raleigh, NC

Contractor: A&M Construction Company Inc.
Raleigh, NC

Tower: Kline Towers
(erection)
Marietta, GA
Tower King (elevation)

Saving time

To save time, it was decided that the tower would be rebuilt at the old WRAL transmitter site. It was considered the highest point in the area.

The new transmission facility would consist of one super tower with two transmitter buildings connected by ice bridges. The tower would carry the two TV stations, and also would hold platforms for 2-way equipment, antennas for WRAL-FM and WQDR-FM, as well as antenna space for the eventual conversion to HDTV.

The tower

Concerns about the recent collapse and future needs dictated the selection of a 723-ton, 12-foot triangular face tower. Incorporating more than 14,000 pieces of steel and 45,000 structural fasteners, Kline Towers designed and fabricated the tower while Tower King provided the tower erection. The tower was designed statically and dynamically to withstand 82.5mph
ACRODYNE'S DIGITAL AMPLITUDE MODULATION BASED TELEVISION TRANSMITTER TECHNOLOGY

Acrodyne’s patented technology of Digital Amplitude Modulation, when applied to TV transmission, is called ADAM. The technique provides near perfect performance characteristics and significant enhancement of power efficiency. This is achieved because ADAM digitally synthesizes the amplitude sidebands onto the visual carrier. Also, an ADAM based TV transmitter is universally compatible with all CCIR, color and HDTV formats.

Essentially, ADAM is a power RF digital to analog converter that reconstructs the modulated waveform from ones and zeros.

Five years of intensive R&D have netted a TV transmission technique with a greater than 50% improvement in plant efficiency when compared to the best of current technologies. Further, and in tandem with future HDTV, ADAM will reach overall system performance levels approaching theoretical limits.

The ADAM technique is so simple, yet so superior to today’s analog modulation and linear amplification, that we believe the days of these methods are numbered.

The world's first ADAM based TV transmitter installation is scheduled for June 1993. Be sure to visit Acrodyne at NAB ’93, and don't miss "The World’s First Digital TV Transmitter" presentation at the NAB ’93 Broadcast Engineering Conference. In the meantime, call or write for further technical information.

ACRODYNE

Acrodyne Industries, Inc.
516 Township Line Road
Blue Bell, PA 19422
800-523-2596 or
(215) 542-7000
FAX: (215) 540-5837

©1993 All rights reserved. "ADAM" is a trademark of Acrodyne Industries, Inc.
(EIA-222-E) or RS-222-C combined ice- and windload of 20PSF with 1-inch radial ice under 300 feet; 25PSF with 1 1/2-inch radial ice 300 feet to 650 feet; and 30PSF with 2-inch radial ice above 650 feet.

With nine guy levels, more than seven miles of guy lines were used, which weighed more than 258 tons. The largest of the guy wires has a diameter of 3 1/4 inches with a capacity of 625 tons. The total length of individual wires in guy lines equals 1,028 miles, or a distance equivalent from Auburn, NC, to Omaha, NE.

Adding to the weight of the tower and the guy wires is the weight of lights, 2-ways, ice shields, antennas, dishes, platforms and rigid transmission lines and expansion room for future HDTV. Additional 2-way equipment was provided on 6-foot-wide platforms that wrap the tower at 820 feet, 1,240 feet and 1,440 feet.

An interior shot of the galvanized steel ice trusses.

The steel for the tower legs was milled in France because no company in the United States could manufacture the 8 1/4-inch solid legs.

The total weight on the center pier is 2,584 tons. To counteract this force, the pier contains more than 600 cubic yards of concrete weighing more than 1,200 tons.

Design

Because the facility had to be completed as soon as possible, the architect developed a design that required less construction time than conventional facilities, cost less per square foot, and was more resistant to damage from falling ice.

Because of material expansion, the aluminum waveguide of the UHF station required a distance of at least 150 feet from the base of the tower, while the copper

THE PANASONIC WJ-MX50: IT'S ONE SUITE THING.

Panasonic's WJ-MX50 Digital A/V Mixer packs surprising post production power into one compact, powerhouse unit.

With it you can do: Digital Effects, 287 Wipe Patterns; Automatic A/B Roll; Luminance Keying; Chroma Keying; Downstream Keying; Titling; Programmable Effects; Pre-set Effects; and Audio Mixing.

The WJ-MX50 features a two-channel digital frame synchronizer plus an editing controller input for RS-422 or RS-232C serial control signals. The sweetest thing about this "mini suite" is its price.

Panasonic

Broadcast & Television Systems Company

VIDEOTAPE PRODUCTS INC

320 North Madison Avenue
Los Angeles, California 90004
800•422-2444
Sync To An All-Time Low.

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®, VDAX® or Routing Switcher cards. Or plug the MicroSYNC into any IBM compatible computer.

You'll find that the MicroSYNC performs like the real thing, with digitally controlled proamp 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.

In the U.S. call (606) 371-5533 Fax: (606) 371-3729 • In Canada call (416) 754-8090 Fax: (416) 754-7046

www.americanradiohistory.com
transmission line of the VHF station required only 60 feet. Using the ice bridge as one segment, the architect combined the two stations’ facilities into one duplex-like arrangement where the ice bridge forms a central spine for the building. This approach allows for large unobstructed rooms that will facilitate the future change to HDTV. (See Figure 1.)

**Ice bridge**

The basis for the design of the transmitter building came from the incorporation of the ice bridge as more than an appendage of the tower. Normally, an ice bridge is used simply to protect the transmission lines as they travel from the building to the base of the tower. This ice bridge protects and supports a portion of the building as it protects the transmission lines. This innovative approach allows the ice bridge to become the protective box truss from which the building’s metal deck roof is suspended as well as protect the transmission lines.

**Ice trusses**

Because the ice bridge covers only a small portion of the roof, a system was developed to incorporate the same ice-protection system over the entire building. Using the ice bridge as a spine for the facility, a series of metal trusses with spanning steel grating protect the internal components much like ribs. The trusses, which are hot-dip galvanized to prevent rust, are placed to form a hip roof that encompasses the box truss of the ice bridge as a core. The outer end of the trusses sit atop galvanized spandrel beams and columns that overhang the building to protect transformers, service vehicles and emergency equipment. (See photo on page 170.) The building’s exterior is made of concrete masonry and glass block. The combination is effective in deterring vandalism and allows natural light to enter the building.

The emergency generators and beam supplies for the UHF transmitter are included in the facility. Using anodized aluminum louver panels for exhaust and ventilation along with removable steel crossbeams allows for easy removal and replacement of defective equipment. This permits the generators to sit within the protective shell of the building even though they are actually outside the conditioned envelope.

The steel grating used atop the trusses is installed in modular sections so that if large pieces of falling ice damage certain panels, the old panels can be removed and new sections installed as needed. This de-
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.

Matrix Plus II
From Clear-Com Intercom Systems

945 Cornelia Street, Berkeley, CA 94710. Tel. 510-527-6666, Fax 510-527-6699

See Us at NAB! Booth #18011

Circle (49) on Reply Card
Inside the ESPN master control center

Discover how one network meets the challenges of broadcasting to a worldwide audience.

By Jason Rheinhold

The Bottom Line

Consider the challenge of transmitting several programs on a 24-hour schedule to audiences around the world. The schedule requires direct live feeds and delayed presentations. In some cases, alternate programs may be needed if a region has been blacked out by contractual agreements. Add to that the need for multilingual requirements to serve an international marketplace, including Europe, Japan and the countries of the Pacific Rim. These are just a few of the tasks that the master control center of ESPN faces every day.

In the late '60s and early '70s, program distribution by satellite began in earnest, resulting in a proliferation of alternative entertainment sources for cable TV systems. Among the first choices was ESPN, the Eastern Sports Programming Network. Quickly capturing the attention of the sports-minded audience in the United States, ESPN found a vast following as cable television penetrated deeper into metropolitan and rural communities.

Today, ESPN is an international service providing programming to a steadily expanding worldwide audience. In addition to U.S. cable feeds, ESPN manages an international 24-hour satellite network feed, worldwide program syndication and participates in co-venture sports networks — the European Sports Network and Japan Sports Channel.

The task of televising a full schedule of programming to a worldwide audience recently prompted an expansion of ESPN's headquarters in Bristol, CT. At the heart of the facility are four identically designed broadcast control suites, each with a master control switcher and an extensive system for signal routing, machine control and signal conversion.

Complexities prompt expansion

When the program fare is a sporting event of international interest, the operation can become quite complex. In January 1993, under an agreement with the National Football League (NFL), the network distributed live coverage of Super Bowl XXVII to TV outlets in more than 100 countries. The agreement called for distribution of the game live through the ESPN International network, which serves Southeast Asia, Latin America and the Pa...
When it comes to vision mixing, you've developed professional reflexes that are now second nature. Today THOMSON BROADCAST proves you can take mixing to new levels of perfection without having to learn new tricks.

Introducing the 9000 Series: setting a brand new standard; a complete range of 4:2:2 digital component mixers offering exceptional performance, combining practical features demanded by users everywhere with advanced technological and operational innovations. All with exceptionally well-designed ergonomics.

THOMSON BROADCAST urges you to be among the first to see the unique 9000 Series at NAB 93 or Montreux.

THOMSON BROADCAST

State of the digital art
Pacific Rim, with syndication rights to those and other regions. In addition to reception in more than 60 countries, Super Bowl XXVII aired live through the ESPN International network to luxury cruise ships of the Holland America, Norwegian and Princess lines.

This wide spectrum of viewers required multilingual audio for the program. ESPN International's telecast carried English, Spanish and Portuguese commentary on the Pan-American Satellite (Western Hemisphere), with English commentary on Intelsat 180 and Palapa B2P (for the Pacific Rim).

In January, ESPN announced an agreement with Taiwan-based China Television (CTV), adding 4.5 million viewing households to its audience. An extension agreement with Seoul Telecom for exclusive broadcast distribution in Korea has coordinated arrangements for ESPN with SBS and KBS, reaching a total of 10.5 million more households.

Control of such an operation requires simultaneous program feeds to multiple uplinks with programming for different countries. Additional complications result from international commercial insertion, time zone delays, regional blackouts and rain-out feeds. For the viewers' enjoyment, multiple language voice-overs are essential.

Planning a control center

To meet this challenge, ESPN began a master control renovation early in 1992. Goals of the project included construction of four identical master control rooms in one central location to allow for easy operation, integration of shared sources and four channels of audio. (See Figure 1.) The proximity of the four control rooms creates a built-in redundancy among the suites. A flip of the switch offers backup in case of equipment failure. The multiple facility also presents an opportunity for easy offline suite maintenance, when required.

Another motive behind the design of the centralized master control facility was to give tour guests the opportunity to view ESPN broadcasting in action. This objective has been achieved through an architectural "ring and hub" design. The broadcast operations control center area is in the innermost ring, with the master control rooms on the next ring. The monitor and VTR rooms are on the outermost ring. Ample use of sound-proof glass and wood treatments separates each of the rings. A perimeter hallway inside the hub gives visitors a view of ESPN activities.

System configuration

Each of the master control rooms contains a master control room system developed by Grass Valley Group. For each, a Master 21 master control switcher is integrated with a Horizon router, TEN-X bypass switcher and DPM 100 digital video effects unit.

Video and audio sources originate from various areas around the facility: control rooms, a video cart system, graphics production, edit bays and satellite downlink areas. To access the variety of sources, each control suite uses a 48x16 router, switching one video channel with four audio channels as an input expansion to the master control switcher. An additional eight dedicated non-rolling sources are available to each master control switcher.

Of the 56 total sources, 48 are linked to the master control switcher. A linked source refers to a router destination that is pre-configured as a master control switcher source. A routing control panel mounted on the desktop control surface of the master control switcher allows the operator direct access to all 48 linked sources. Forty of the linked sources are pre-configured by the master control

NOW ISLATRON® "PLUS" ...before the damage is done

Now Outstanding Protection for a reasonable cost with Islatron-Plus. The real solution for today's power line related problems.

Its high speed "Active Tracking" filter safeguards both your income and broadcast equipment investment.

Islatron-Plus reduces equipment deterioration.

Your sensitive electronics are protected because Islatron-Plus continually tracks, attenuates and clamps incoming spikes and transients, absorbing the destructive energy and filling short duration undershoots. The result? Prevention of catastrophic equipment failure and loss of airtime.

Positive protection for both production and transmitting equipment.

For the Islatron-Plus success story see us at NAB, Booth 16336-16337 or call 800-288-6169 toll free.

CONTROL CONCEPTS
A Subsidiary of the Liebert Corporation
WE PUT OUR TECHNOLOGY ON THE LINE®
328 Water Street
Binghamton, New York 13902
607-724-2484 Fax 607-722-8713
Circle (31) on Reply Card
A MODULAR SOLID-STATE WORK OF ART

• APC (Automatic Power Control)
• Full microprocessor control
• MOS FET technology

FM SUPERGALAXY 10-kW TRANSMITTER
Two 5-kW transmitters combined via a 3-dB coupler. 5 + 5 hot-standby configuration.

FM SUPERGALAXY 2-kW TRANSMITTER:
Two 1-kW amplifier modules, a combiner and the microprocessor control unit.

□ BASIC 1-kW POWER AMPLIFIER MODULE.

PRIMARY PRODUCTS MANUFACTURED BY ITAME:
—FM transmitters or repeaters:
  Solid state: GALAXY SERIES: 100 W, 300 W, 600 W, 1 kW and 2 kW.
  SUPERGALAXY SERIES: from 2 kW to 10 kW.
  Tube-type: 1 kW, 3 kW, 5 kW, 10 kW, 20 kW, 30 kW.
—AM transmitters: 5 kW, 10 kW, 20 kW.
—Analog and digital radio links in all bands from 140 MHz to 1700 MHz.
• TURN-KEY SERVICES ANYWHERE IN THE WORLD.

Because broadcast stations keep changing

www.americanradiohistory.com
switcher with a source memory. Source memory includes source identification, pre-roll time, audio levels and operating modes. This allows for predictable machine control as well as simple one-button operation.

Facilities control
Communications between the routing and master control switchers pass through a general-purpose interface, which converts RS-422 signals from the master control switcher to C-bus commands required by the router. Machine start relays from the master control switcher are read by an integrated machine control system, which encodes start relay information to the router C-bus commands, and which are decoded as parallel machine control commands (for tape start, play, ready). The machine control commands can be sent to selected machines through programmable machine control panels located in an auxiliary switcher sidecar panel.

The router expansion uses a source tally system to allow tape operators to see which tape machine is currently being used on-air. More important, it allows operators in 10 control areas (five production, five edit control) to know through which master control room their program is being aired.

Downstream from the master control switchers, a picture manipulator effects system compresses the output image from the master control switcher during 28/58s. During that time (28 minutes and 58 minutes after the hour), updated sports scores are keyed below the rolling video, and co-sponsorships can be shown to the side of the active video.

In case of failure
Backup and redundancy are designed into the system by building four identical rooms with cross-connected VTRs. If a major failure occurs in any room, one switch can place a standby room into the transmission path. Four identical rooms give operational flexibility and the ability to take a room fully out of service for preventive maintenance and upgrades.

If equipment fails, an operator also can gain control through a bypass switch control located on the master switcher sidecar. Should the bypass switcher fail, the master control switcher can go directly on-air through a passive transfer switch. This redundant design guarantees around-the-clock transmissions.

Additional backup is provided by a fifth master control area to handle B-net material to any of the main program channels. B-net is alternate programming that replaces programs in areas blacked out for contractual reasons. Although this control room differs slightly from the others, it can overtake operation of any feeds in keeping with overall ESPN design philosophy. However, its main purpose is to provide alternate commercial and program feeds for the Pacific Rim.

The Pacific Rim largely receives the same programming aired on the ESPN International Latin American feed. A modified commercial schedule and program content reflect a concern for cultural diversity in the audiences being served. Eventually, the Pacific Rim probably will receive Cantonese and/or Mandarin commentaries, as well as English. Multilingual needs have prompted investigations of 16 channels of digital audio on a D-3 system.

To the future
A technically conservative undercurrent is evidenced by ESPN's continued use of Type C VTRs for playback of most of its commercial and program load. D-2 VTRs are used to compile commercial reels from ESPN's LMS system. However, as the new master control goes on-line and ESPN continues to expand, changes are likely to occur here. Most likely, the LMS output eventually will go direct to air, and a 13-hour tape delay system, using D-3 transports, may handle requirements of the rapidly growing Pacific Rim audiences.
THE BENEFITS OF OUR EXPERIENCE.

Custom Sound
Superior Flexibility
Wide Coverage
Extraordinary Fidelity
Integrated Solutions
Exceptional Service
Powerful Performance
Absolute Control

When you purchase CRL products, you are not just buying exceptional audio equipment. You are also receiving the benefits of years of professional ‘hands on’ audio experience, the quality of master craftsmanship, product reliability and unparalleled personal service.

CRL manufactures a complete line of audio processing equipment for AM, FM, SW and TV. Call us now for the name of a dealer in your area and find out how you can benefit from our experience.

CRL SYSTEMS
2522 West Geneva Drive Tempe, Arizona 85282
800/535-7648 602/438-0888 Fax 602/438-8227
See us at NAB Booth #1918.
Smart broadcasters know that quality sound is essential to attract and keep loyal listeners ... and advertisers.

That's why premier stations around the U.S.A., and around the world, rely on the Aphex Audiophile Air Chain.

This powerful combination of the Aphex Compellar Model 320, Aural Exciter Type III and Dominator II Model 720 has been improved in several ways with new features and enhanced performance. And, after six years of development, the Chain is complete with the new Digicoder digitally controlled stereo generator.

The Aphex Audiophile Air Chain allows maximum loudness and modulation while maintaining the natural dynamic feel of the program. Quick and easy to set up, it maintains the same high quality regardless of the type of programming or who is controlling the board. By contrast, other processors need to be tuned for almost every song, and achieve loudness by homogenizing or crunching to the point of pain.

If you want to be a winner in the "no win modulation wars", contact your dealer to arrange a demonstration of the Aphex Audiophile Air Chain. You can't buy better quality at any price.

ARGENTINA—A G Electronica S.A.; AUSTRALIA—East Coast Audio;
AUSTRIA—AKG Acoustics; BELGIUM—Trans-European Music NV;
CANADA—Goald Marketing; DENMARK—SC Sound; FINLAND—Nores-Oy;
FRANCE—Cineco; GERMANY—AKG Acoustics; GREECE—Omikron S.A.;
HONG KONG—Ace Co. Ltd.; HOLLAND—TM Audio; HUNGARY—ATEC;
INDIA—Pro Sound; INDONESIA—David Sutedja & Assoc.; ISRAEL—Sontronics;
ITALY—Audio Equipment srl; JAPAN—Otaritec; KOREA—Young Nak So Ri Sa;
NEW ZEALAND—Maser Broadcast Systems Ltd.; NORWAY—Audiotron S/A;
RUSSIA—MS-MAX; SINGAPORE—Auvi Private Ltd.; SPAIN—Neotechnica S.A.E.;
SOUTH AFRICA—Tru-Fi Electronics; SWEDEN—Leab AB;
SWITZERLAND—Audio Tech; TAIWAN—Acesonics International Co. Ltd.;
U.K.—Stirling Audio

©Aphex Systems

Aphex is proudly American ... 100% owned, engineered and manufactured in the U.S.A.
In the past we have requested the manufacturers to tell us about their NEW products to be introduced at the exposition. This year we asked only for information on products that will be FEATURED.

This list includes the responses made by more than 800 manufacturers. The list is alphabetical, allowing you to see everything from one company at a glance. One reader service number will bring you information from each company.

Manufacturers participating in the exposition and advertising in this issue are denoted by a color bar behind their name.

Booth numbers are based on information released by NAB as of Feb. 1, 1993. An MM indicates the company is participating in the concurrent Multimedia exposition.

See the map insert for a complete list. Unassigned indicates the company had not been assigned an exhibit number when this listing was prepared. Information listed for the companies is based on their response to our questionnaire.

### Highlights of NAB’93

#### A-A-A

**A/V Systems Advanced Audio Visual**

*Systems (Sencore)*

**Product line:** Automation products, routers, multiformat displays: cable programming guides.

EVA: EVAT automation using EBus.

S-68 MOSAIC: multiplexes 4, 13 or 16 images on screen from 36 asynchronous inputs.

Access 2000: program guide, promotion system.

Model S-310: digital video analyzer; tests composite, component digital waveform.

Circle (301) on Reader Service Card

#### Abekas Video Systems

*11551*

**Product line:** Digital effects, production switchers, titles, disk recorders, still stores, format converters.

**A31 component digital switcher:** three mix/effects modules, keying, user-defined inputs, signal system networking. ASPR, internal digital disk recording, LINC integration software.

**A32 production switcher:** composite digital processing, ASPR, two keyers, pattern generator per M/E.

**A34 component digital switcher:** framstore-based lay-RED video architecture; 4, 6, 84ayer configuration; 10, 20 bit CCIR-601/10; LINC timeline control.

**A5:** effects: 3-D perspective, rotation; 16-input, independent assignment of video; key sources to front, back; side of channel; optional Superwarp effects.

**A57:** effects: 10-bit expanders switch M/E sources with input pre-transform, background keys; Superwarp shapes and other features.

**A57 Video combiner:** digitally mixes two A57 effects channels over five background w/o switcher keyer; 3-D intersecting picture plane effect.

**A58:** digital disk recorder: 25s capacity; switch between 525/625: per CCIR-601, SMPTE RP-125, SCSI, Ethernet interfaces; zero preroll, field, frame animation recording; new playback features.

**A66 recorder options:** SC1/Ethernet interface for file tran store; 50s record, play of 422 video per signal system; networking increases storage to 200s.

**A72 titleer:** instant font access, character sizing, attribute adjustment; digital scanin, animation.

**A64 digital still store.**

**A64 SDX production system:** TBC, video switcher, audio mixer, digital effects.

**A74 D/A, A25 A/D converter** between digital and analog component video w/key; parallel, serial I/O.

**A77 D2 to D1 converter:** decodes, converts NTSC digital composite w/key to digital component, parallel, serial I/O.

**A78 D1 to D2 converter:** decodes, converts digital component video w/key to digital composite video; parallel, serial I/O; D2, D2 serial, composite analog out.

**A29 Video Legalizer:** limits the amplitude of color in component video for conversion to NTSC.

**Circle (302) on Reader Service Card**

#### ACCOM

**Product line:** Digital processors for noise, grain reduction, encoding, decoding, A/D, D/A conversion.

**Axial 2020:** visual on-line editing system.

**Digital Image Store:** for video key.

**Image Composition Module.**

**R/T 424:** 10-bit video, key data recorder.

**Circle (303) on Reader Service Card**

#### Accu-Weather

**Product line:** Weather graphics, NEXRAD services.

**Accu-Call 2000:** call-in general news service from 900 number.

**FirstWarn:** automatically creates crawl warning over a broadcast signal based on official watches, warnings, advisories for a specified ADI.

**Ultragraphix-PLAS:** high resolution graphics access, paint, display system; automates graphic downloads from Accu-Weather.

**Circle (305) on Reader Service Card**

#### Acoustic Systems

**Product line:** Announcement booths.

**Series BB:** voice-over booths; 3x3 to 7x8x3-4 foot.

**Circle (306) on Reader Service Card**

#### Acoustic Solutions/Alpha Audio

**Product line:** Acoustic treatments, Sonex materials.

**Acoustic forms:** pyramid, wedge shapes.

**Alphanets:** fabric-covered fiberglass panels.

**Sound Barrier:** blanket, vinyl barrier forms.

**Soundless:** acoustical wall fabric.

**Circle (307) on Reader Service Card**

#### Acrodyne Industries

**Product line:** TV transmitters, translators with solid-state, tube; power amplifiers; exciters.

**ADAM:** "Acoustic Digital Amplitude Modulation" demonstrates VHF, UHF broadcast; 10-bit A/D converter, ultra-high efficiency with instantaneously switched solid-state PAs, compatible with CCR, HDTV formats.

**Circle (308) on Reader Service Card**

#### ADC Telecommunications

**Product line:** Signal distribution products, PrePatch for audio/video, I.C.O.N, audio distribution frame, multi-channel fiber optic systems: LiteAmp CATV stations.

**Digital Audio Patch Bay:** digital-ready audio patching; accommodates AES/EBU digital audio signals.

**RS-422 Patch by Exception:** 3-pin patch bay for digital signals on 9-pin connectors; full normalized patching of 8-pins required by ANSI, SMPTE 207M/192 control recommendation.

**Circle (310) on Reader Service Card**

#### A.D.M. Systems

**Product line:** Audio mixers, distribution products.

**Post-Pass:** post production mixer; 8-16 inputs, 4x4 pre-selectors, 3-band EQ, VCA control.

**Circle (311) on Reader Service Card**

#### Adrenne Electronics

**Product line:** Signal routers, EBus interface, analyzers for PCs, POTSine code reader, generator cards.

**AEC-Box 8/18/28:** LTC/VTC generators.

**AEC-Box 8/18:** parallel adapter for serial remote VTRs.

**MCT/LTC, MVC/VTR, VLC/VTC, LTC/VTC:** plug-in time code cards for IBM PS/2 PCs.

**VTR emulation:** for Box 2/1020 timecode readers.

**Circle (313) on Reader Service Card**

#### Adtec Productions

**Product line:** Broadcast automation equipment.

**Active 64-16 multichannel: controller:** automates playback, record, commercial insertion for 16 transports on 16 channels.

**Telecaster 4A:** playback controller for 16 transports on 16 channels.

**Active 64-16/Telecaster 4A:** multichannel commercial insertion with four titlers.

**ARC series:** table-top racks for head-ends, vans with space and weight concerns.

March 1993 Broadcast Engineering 85

www.americanradiohistory.com
BROADCAST QUALITY VIDEO COMPRESSION FOR TELEVISION BECOMES A REALITY ON STAND 18718 AT NAB '93.

NATIONAL TRANSMUNICATIONS

NATIONAL TRANSMUNICATIONS LIMITED · CRAWLEY COURT · WINCHESTER · HAMPSHIRE · SO21 1QA · UNITED KINGDOM
TEL: 0962 822243 · FAX: 0962 822374 · TOLL FREE: +44 962 822243 · FAX INordable: +44 962 822374.

Circle (53) on Reply Card

Alcatel Network Systems/Telespace
Product line: Microwave link products.
Circle (324) on Reader Service Card

Alden Electronics
Product line: Weather graphics systems, NEXRAD data link.
Circle (325) on Reader Service Card

Alexander Batteries
Product line: Batteries, triammonium, Smart chargers.
Circle (326) on Reader Service Card

Allen Avionics
Product line: Hum eliminator, video delay lines.
Circle (327) on Reader Service Card

Allen Osborne Associates
Product line: Hilmont pneumatically operated mobile telescoping mast.
Circle (328) on Reader Service Card

AF Associates
17353
Product line: Turnkey system design, engineering, fabrication, consulting services, Radiomac-EPU camera robotics. RP-2 pedestal, Seek-and-Select video touch-screen controller.
Circle (321) on Reader Service Card

Aircraft Digital Music
19210
Product line: American Music Series CD library.
Circle (322) on Reader Service Card

AKG Acoustics
2900
Product line: Audio processors, dbx noise reduction, noise gates; Micro Mic: K270H/C headset mic; Orban FH200 digital audio processor. Blue Line: modular mics; Modulock positive bayonet coupling; Trans-act transducer capsules; cardioid, omni, figure-8, short shotgun types. C 547 boundary mic: hypercardioid, non-reflective. C 647 gooseneck mic: high-gain studio mic with gooseneck mount; hypercardioid pattern. DSE 7000 Ver.2.0, enhanced speed, simplified operation of workstation: 16 hour capacity. Quested Q108 speakers: integrated processor, amp; cabinet contains two 100W units. CS900, CS600: condenser mics in Tri-Power series.
Circle (323) on Reader Service Card

Alimar USA
12429
Circle (324) on Reader Service Card

Alcatel Network Systems/Telespace
Product line: Microwave link products.
Circle (324) on Reader Service Card

Alden Electronics
Product line: Weather graphics systems, NEXRAD data link.
Circle (325) on Reader Service Card

Alexander Batteries
Product line: Batteries, triammonium, Smart chargers.
Circle (326) on Reader Service Card

Allen Avionics
Product line: Hum eliminator, video delay lines.
Circle (327) on Reader Service Card

Allen Osborne Associates
Product line: Hilmont pneumatically operated mobile telescoping mast.
Circle (328) on Reader Service Card

AF Associates
17353
Product line: Turnkey system design, engineering, fabrication, consulting services, Radiomac-EPU camera robotics. RP-2 pedestal, Seek-and-Select video touch-screen controller.
Circle (321) on Reader Service Card

Aircraft Digital Music
19210
Product line: American Music Series CD library.
Circle (322) on Reader Service Card

AKG Acoustics
2900
Product line: Audio processors, dbx noise reduction, noise gates; Micro Mic: K270H/C headset mic; Orban FH200 digital audio processor. Blue Line: modular mics; Modulock positive bayonet coupling; Trans-act transducer capsules; cardioid, omni, figure-8, short shotgun types. C 547 boundary mic: hypercardioid, non-reflective. C 647 gooseneck mic: high-gain studio mic with gooseneck mount; hypercardioid pattern. DSE 7000 Ver.2.0, enhanced speed, simplified operation of workstation: 16 hour capacity. Quested Q108 speakers: integrated processor, amp; cabinet contains two 100W units. CS900, CS600: condenser mics in Tri-Power series.
Circle (323) on Reader Service Card

Alimar USA
12429
Circle (324) on Reader Service Card

Alcatel Network Systems/Telespace
Product line: Microwave link products.
Circle (324) on Reader Service Card

Alden Electronics
Product line: Weather graphics systems, NEXRAD data link.
Circle (325) on Reader Service Card

Alexander Batteries
Product line: Batteries, triammonium, Smart chargers.
Circle (326) on Reader Service Card

Allen Avionics
Product line: Hum eliminator, video delay lines.
Circle (327) on Reader Service Card

Allen Osborne Associates
Product line: Hilmont pneumatically operated mobile telescoping mast.
Circle (328) on Reader Service Card
If you haven’t kept up with Telemetrics, you’re not alone.

Neither has our competition.

Ours

Theirs

Coax Control System TM-9255

Compare performance, operational features AND PRICE!

Visit our booth 18951 at NAB

Telemetrics Inc.

7 VALLEY STREET, HAWTHORNE, NJ 07506
Tel. (201) 423-0347 Fax. (201) 423-5635

20 years of background in designing triax/coax control systems
Lighting. Latest Technology for News and Production.

Whether for tungsten halogen or daylight, whether for on-board, hand-held or stand mounting you will find the optimum lighting fixture in the Sachtler range.

Select the best:
Halogen – Reporter 20 Watts up to 1000 Watts.
Daylight – Reporter 125 up to 575 W and Production 575 up to 1200 Watts.

You may now select Sachtler Suspension Systems as well. We will be glad to send you more detailed information on this as well as on the Studio and OB fixture range.

1. More lighting power for less weight.
2. Better light distribution.
3. Wide focussing range which is precise and durable.
4. Highly effective convection cooling – for long bulb life.
5. All Reporter up to 270 W for mains or battery operation.
6. The range easily achieves the latest safety standards.

New to the Sachtler range:
Reporter 20 / 52H featherweight on-board lights.
Reporter 200DI the new single ended ‘daylight’ fixture.
Reporter 575D compact and lightweight.
Reporter 650H5 / 1000H efficiency in the ‘1k’ class.
Production 575DSE as a development of the super lightweight Production 575D.
Production 1200D instead of the PAR-type light the improved lightweight, fully focussable fixture.

sachtler®
corporation of America
New York office:
55, North Main Street
Freeport, N.Y. 11520
Phone (516) 887-4800
Fax (516) 623-6844
Telex 140107 sac lpt

sachtler
Support & Lighting
See us at
NAB
Las Vegas, April 19-22, 1993

California office:
3316 West Victory Blvd.
Burbank, CA 91505
Phone (818) 845-4446

Headquarters:
Sachtler AG
Kommunikationstechnik
Germany, Gutenbergstraße 5
D-8044 Unterschleissheim bei München
Telephone (089) 32 158 200
Teletex (089) 32 158 227
Telex 5 215 340 sac d

Circle (66) on Reply Card

www.americanradiohistory.com
product line: Component digital production switches; routers, signal conversion equipment.

Alpha line (332) on Reader Service Card

Alpha Lyracon/Panamaz 17346

Product line: Program distribution, transmission.

Product line: Video, program production equipment; grip bases, camera to power through... (340) on Reader Service Card

Altec Lansing 15716

Product line: Sound system components; mic mixers, speakers, processing systems.

Altronics Research 3803

Product line: RF power metering equipment; VHF air-cooled Omega/ENE loads.

Amber Electro Design 2103

Product line: Programmable audio test systems; Amber 7000: analog, digital audio generator, analyzer, with Windows on 386/40MHz; measures two channels simultaneously.

Circle (337) on Reader Service Card

AMCO Engineering 13107

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

Circle (338) on Reader Service Card

AMEX Consoles/TAC 18974

Product line: Audio consoles, console automation.

BCI modules: BC 348 mono-minus-outputs; BC 344 x/o2 monitor mixer; BC 324 quad group module. EINSTEIN: automated mixer; comprehensive metering, monitoring, 84 inputs, 4:1 band EQ; SUPERBE: automation; VIRTUAL DYNAMICS gating, autopan.

Circle (339) on Reader Service Card

American Broadcast Systems 13413

Product line: TV automation equipment.

MicroCarts 100: Windows application automates spot, program playback, record, net delay, traffic interface; multichannel operation.

Circle (340) on Reader Service Card

American Studio Equipment 16078

Product line: Film, video production equipment; grip products; rental programs.

Circle (341) on Reader Service Card

Ampil Publications 19477

Circle (342) on Reader Service Card

Anexo Recording Media 17101

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

Circle (343) on Reader Service Card

Anexo Systems Corporation 17101

Product line: Professional video products. D2 VTs; ACE2 editors. Vista switches, Alex tiler; ACR 225 automated control system. DCT system: CCI-60 digital component production system; multigeneration with digital layering for post production; 15mm digital component tape drive DCT 700D. DCT 700S post production switcher, DCT 700C edit controller. DCT 500s digital effects; DCT 700T tape.

Circle (344) on Reader Service Card

AMX Corporation 20021

Product line: Teleconferencing, multimedia products. Master port expander. AXU-MLC uniswap; mini-LCD panel. Softkey: liquid crystal touch panel. POC power current sensor.

Circle (345) on Reader Service Card

Anchor/ROH 11601

Product line: Audio monitors, distribution, intercoms. HME 3: standard intercom. Passive audio monitor: 1-, 2-, 4-channel in 3.5" high panels.

Circle (346) on Reader Service Card

Andrew Corporation 15674

Product line: Transmission antennas for UHF, VHF, MMDS, LPTV, HDTV; STL, TSL; earth stations: HELIAX, rigid coaxial, circular waveguide; satellite antenna controllers, related services, accessories. 2.4M, 24MHz ESA systems: motorized, complete with controllers, receivers. 3.7M, 4.68M ES Antennas: with INTELSAT type apprv. (F1 for 4.68M); significantly reduces field test costs, establishes system turn on. 60 kilowatt APL: antenna for full service TV. 9.3M ESA system: INTELSAT B station system. HDTV broadcast system: 12GHz, developed for international applications. HotPlot, DB Freebie: software for HMDY/MMDS coverage, power contours. HRLine: rigid transmission line; reliability increased by 800%. Circle (347) on Reader Service Card

Angeneux Corporation 17729

Product line: Video camera lens systems. 208.8: 208-8mm for 9" (235mm) camera: coatings reduce chromatic aberration; on MOD: Multi Range Extender for on-air selection of extenders: Teleshot focus. 14x5.3AFL: "Assisted Intelligent Focus" ENG lens includes pushbutton instant tele zoom for faster focusing. T:1.6, 2x, 2x; stationary front element. 14 x Anamorphic: converts 3:4 aspect ratio camera to 16:9; IBx.7 for 5/8", IBx.5 for 1/2", focus to 2x/12. Circle (348) on Reader Service Card

Anjon & Associates MM

Circle (349) on Reader Service Card

Antenna Concepts 4520

Product line: UHF, FM antennas; wireless cable products; transmission line, connectors. MMDS alot antenna: wireless cable wideband directional or omnidirectional for VPO+, HPO, or CP installations.

Circle (350) on Reader Service Card

Antenna Technology 13644

Product line: Earth stations and related components; Simmsat multibeam antennas: receivers; LNAs, LNIs; test equipment; system design, consultation services. PROAD systems: digital audio satellite systems for radio and CATV networks.

Vanguard Instruments VI 2.0: multifunction satellite spectrum analyzer, receiver, monitor; for 900-2000MHz, 10MHz bandwidth; field strength meter functions indicate program frequency, level, video image, sound; LNB power through RF port.

Circle (351) on Reader Service Card

Antron 17146

Product line: Technology furniture. Anthracite: mobile, modular carts for computers, rack equipment, multimedia, accessories; numerous sizes; customized.

Circle (352) on Reader Service Card

Anton/Bauer 12427

Product line: Battery, charger, lighting products. DM4 charger: charge battery, electronic; diagnostic accessory for Logic Series MP-1D charger; test routines calibrate battery capacity, identify failure modes; prints report. Logic Series digital battery system: advanced NICAd charging technology with μ control; accesses capacity, charging cycles; serial number. MF-4D: 4-position, sequencing last charger, shows charge status: 3-step charge routine, three charge termination systems: ports for DM-4, NPCM modules. Ultralight 2: low voltage on-camera light; quick change head modules, filters, lamps. Autoequil: lights Ultralight2 camera light when VTR records.

Circle (353) on Reader Service Card

Appany Cases 12833

Product line: Transport cases; A:1R isolated racktype.

Circle (354) on Reader Service Card

Aphex Systems 4524

Product line: Audio spectral exciter; Compeller, Dominator dynamics controllers.

#490 Digitalcoder: FM stereo generator/HPlimitr, JFIlter.

#1280 modular audio DA. 6 out. 1 in.

#9901: parametric EQ uses shaping with overlapping filters for multiple EQ settings.

Circle (355) on Reader Service Card

Appliaciones Electrónicas Quasar/AEO 1702


Automated recording system.

AM-03 audio monitor: stereo, self-powered with input selector, phase display.

TH-02 Ext: enhanced TH-02 digital hybrid.

Circle (356) on Reader Service Card

Applied Memory Technology 18282

Product line: Digital component video recorders. Model 71222 component video recorder: 100s described. real-time, 4.2:2:2 storage; for NTSC, PAL; parallel serial 1 compatible (4)/24-30/30/42 lip conversion feature.

Circle (357) on Reader Service Card

Arrak Systems 5202


Circle (358) on Reader Service Card

Arrilux 16342

Product line: Film cameras, support products; ARRI geared head; lighting products. Electronic Ballast: 5 to 12KW. ArriSoft/Fresnel: portable light kit. ArriSoft 1000, ARRI 650 Fresnels; ArriSoft accepts 500/150/150W lamps. Arrilux HME: fixtures for 2.5KW, 4000W. Compact HMI fixtures: 250 to 2.5KW.

Circle (359) on Reader Service Card

ART Applied Research & Technology 2208

Product line: Audio processors, mixers.

Phantom: recording consoles.

Multiverte LTI 1: 16-bit processing systems. SGX processing processors: SGX-T2 multi-effect, pitch transposer; SGX-T4 pre-amp/effects processor; Multivert Alpha 2,0 sampler/effects with pitch shift. DRX 2100 Wonder Processor: studio, live sound, 24-bit digital.

Circle (360) on Reader Service Card

ASA Corobi Shibohaku 16619

Product line: Video cart systems; tape cleaners, evacuators; video noise meters, audio analyzers; audio, video routers, DAS; video monitors; closed captioning equipment; decoders, encoders: test & measuring sets: erasable rewritable MO disk, audio files; still stores; GCR, HDTV equipment sale.

CM2000: 20" auto setup monitor; 900line resolution; NTSC decoder with EQ modulation; adaptive 3-line comb filter. RGI, component, VC inputs; D1, D2, D3
Introducing RMS.
Automate The Operational Areas Of Your News Production To Control Costs And Cut Repetitive Tasks.

Is your tape ready? Can you get that feed recorded on time? What will it cost?

We created RMS (Resource Management System) to answer all these questions. RMS is a communication tool that holds all the information for running your operational areas. It even allows journalists access to the latest timetables and material available for broadcast.

Tape Tracking, Lines Booking and Input Recording automation are separate RMS modules, each offering a clear payback in your news production areas. In fact, RMS is valuable throughout the station, wherever recordings are scheduled and you need to know where tapes are.

Using barcode labels, RMS Tape Tracking monitors the location and contents of every cassette, and links it to the news item in BASYS' Newsroom system. Any journalist in the system can use RMS to see what's on a given videotape, as well as who had it last.

RMS Lines Booking helps you lower communications costs. It can estimate the cost of satellite linkups and then cross-check the invoices. Graphic displays of the scheduled video feeds optimize resource planning, and allow everyone to see the latest plan.

RMS Input Recording automates the recording process, improving productivity and freeing up machine time for other areas. It controls an entire bank of VTRs or a Cart machine, schedules recordings at pre-set times, performs automatic tape blacking, generates library compilation reels automatically, and reflects all this back to the journalist's terminal.

Since RMS utilizes industry standards and scalable platforms, it will grow with the needs of your station. It's backed by all the resources of BASYS, the world's leader in broadcast solutions. And, as with all BASYS products, you'll enjoy our unsurpassed 24-hour service and support.

Let us show you how RMS can bring automation into the heart of your news production area, and deliver payback all around.

For details, call 1-800-869-7009.
serial interfaces; standby switch kills HV to CRT.

CM206N 20" monitor: auto setup option; 900-line resolution; NTSC I/Q axes demodulation; 3-line comb filter; three chroma Q EQ axes may be installed and selected; RGB, component Y/C input with D1, D2, D3 interface.

ADS-7000 HDTV still store: ISO standard disk drive using HVC Hi-Vision Compressed format; video processor with outputs for Next, Owls; integrated video processor for cuts, wipes, dissolves; remote control panel.

AG81A digital audio generator: AES/EBU digital oscillator, signal source; AUSO D/A converter, ASSO multi-channel expansion module.

ADC-620: DL, DZ tape cleaner, rewind.

ADR-6000: NTSC, 1.25 byte removable MD disk recorder, fullband, 4FS, composite digital format.

VM2067: composite, component, TGB waveform, vectorscope monitor.

Circle (362) on Reader Service Card

ASC Audio Video Corporation

Product line: Videotape editing systems, software.

ASC Clean & Trace: software for clean, trace functions of industry-standard EDL formats.

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

Virtual Recorder: emulates videotape machine without tape; 1/2-hour video, two audio tracks, SMpte time code on optical disc.

Circle (363) on Reader Service Card

ASC Press

Circle (364) on Reader Service Card

Associated Production Music

Product line: Music, effects libraries, Broadcast 2 CDs with updates; commercial, full length cuts.

Circle (365) on Reader Service Card

Astrodesign/Mira Vision

Product line: Programmable signal, sync, test generators for NTSC, HDTV, HDTV converters, still recorders, frame grabbers, superimposition, switching devices; chroma key products.

MC2001 multimedia scan converter: multiple window display for NTSC computer images; superimposes two sources with background image on workstation monitor; control window size, sequence, position, audio channel sources.

Computer Graphics Synthem: background link-up unit: tracks background graphic image with pan, zoom, tilt, focus movements of NTSC foreground image for added realism in keys.

Circle (366) on Reader Service Card

AT&T

Product line: Communications equipment, services.

Circle (367) on Reader Service Card

ATI Audio Technologies

Product line: audio mixers, mic. line, headphone, monitor, turntable, interface amps, audio DAs, metering, press box distribution systems.

System 10000: modular, distribution, line-buffers, mic units: 10 plug-in modules per frame.

Circle (368) on Reader Service Card

Atlantic Representations

Information not available.

Circle (370) on Reader Service Card

Audio-Card

Product line: DL, S series audio cart recorders, players.

Circle (371) on Reader Service Card

Audio Accessories, Inc.

Product line: Audio jack, patch panels, jacks, patch cords, order holders; Polysand, video panels; RS-232 patching; Edac connectors, accessories.

Circle (372) on Reader Service Card

Audio Action

Product line: Production music libraries on CDs.

Circle (55) on Reply Card

FX-01-10 Sound Effects.

Joseph Weinberger: 10 CDs, ethic, classic, jazz, other.

KOKA Media: CDs of music effects.

Zebra: new age, jazz, pop, world music, dance, rap.

Circle (373) on Reader Service Card

Audio Developments

Circle (374) on Reader Service Card

Audio Precision

Circle (375) on Reader Service Card

Audio Processing Technology Ltd.

Product line: Digital audio processing with data compression, apt-X 100 system.

ACE 100: PC expansion card: includes simultaneous playback record features, balanced 1/0.

DSM 100: digital audio transceiver: enhanced with Inverse Multiplexer option.

Circle (378) on Reader Service Card

Audio Services Corporation

Product line: Audio mixers, recorders, mics, speakers, PSC, Milliblue, wireless boompole, Microtec, Geffel mics.

Circle (379) on Reader Service Card

HM ELECTRONICS, INC.

6675 Mesa Ridge Road, San Diego, CA 92121
Phone: (619) 335-6060 Fax: (619) 552-0139

Look for us at NAB!
The '90s are synonymous with innovation and value. Which is why we're committed to creating quality video and audio equipment that takes "state of the art" to an even higher level. Take a look at just some of the ways Videotek is combining new technology with affordability.

**Omniframe.** Modular video and audio distribution amplifiers plus sync timing and test signals, our Omniframe does it all.

**SAM I System Auto Measure.** We've taken the lead in automatic measurement instruments! Our SAM I accurately performs hundreds of NTSC and PAL tests. And at a fraction of what others cost.

**APM-800 Audio Program Monitor.** Here's a truly innovative four stereo or eight monaural audio program monitor. You get high fidelity at an economical price.

**TVM-675 Video Analyzer.** Advanced combination waveform monitor/vectorscope/audio monitor for composite and component measurements. Packed with features, yet very affordable.

---

The '90s are synonymous with innovation and value. Which is why we're committed to creating quality video and audio equipment that takes "state of the art" to an even higher level. Take a look at just some of the ways Videotek is combining new technology with affordability.

**Omniframe.** Modular video and audio distribution amplifiers plus sync timing and test signals, our Omniframe does it all.

**SAM I System Auto Measure.** We've taken the lead in automatic measurement instruments! Our SAM I accurately performs hundreds of NTSC and PAL tests. And at a fraction of what others cost.

**APM-800 Audio Program Monitor.** Here's a truly innovative four stereo or eight monaural audio program monitor. You get high fidelity at an economical price.

**TVM-675 Video Analyzer.** Advanced combination waveform monitor/vectorscope/audio monitor for composite and component measurements. Packed with features, yet very affordable.
Say good-bye to the hassles of operating high-intensity obstruction lights! Flash Technology’s FTS 2100 SMART™ System Monitoring And Reporting Telemetry — controls, monitors, diagnoses, anticipates, stores and communicates system events without human intervention. SMART is compatible with existing ElectroFlash™ systems, and can operate in both strobe and dual systems.

Monitoring and Diagnostics. SMART continually polls the beacons for flash rate, intensity, night-burst count, internal temperature and other vital functions. Monitor the past or present operation of each light or the entire system. A wide range of possible malfunctions, such as missed flashes or lights operating below the required intensity, instantly trigger status codes or alarms. Selected personnel are automatically notified of serious conditions via modem.

Programmable. The FTS 2100 allows precise control of a multitude of functions such as setting the flash intensities for day, night and twilight; determining changeover times; and specifying operating mode — normal, dual or carousel. In normal mode, all beacons flash simultaneously. Carousel minimizes backup power current surges. Dual offers reliable backup for top tiers of red lights or an entire red system.

Unstoppable. If the controller loses power or the ability to communicate with the lights, they will operate independently, maintaining normal intensity changes from their own memories. In the event of a power disruption or other transient disturbance, the system restarts itself and resumes normal operation, while storing diagnostic information about the event.

We’ll do it all! We can provide site setup, 24-hour monitoring (via modem), emergency notification of key personnel, and full documentation of system compliance to FAA specifications by semi-annual certification reports. We also offer remote trouble-shooting and on-site maintenance from our field service department, and reporting of any beacon failures to the FAA within the legally required 30 minutes.

Unique. This is only a sampling of the FTS 2100’s many capabilities. Ask us for full information, then check out the available alternatives. You’ll find no better way to drop the hassles from high-intensity obstruction lighting systems.

Look for the SMART 2100 at NAB Booth #1618.

Call us at (615) 377-0600, or fax us at 800-4-A-FLASH.

Flashing Technology Corporation of America®

--

Model 2242: high output DA.
Model 85, 200: “U” model amplifiers.
Performance: Series 2 stereo amp; 2X8W/channel to 8Ω, welded steel, modular circuitry; 2-speed fan in 24Ω.
Rack-mount PCD: UPS, upgradable ESA bus; ESA - local bus design.
Circle (412) on Reader Service Card

Bi-Directional Microwave

Product line: ENG, STL microwave systems.
HD TV microwave: for all HD formats, Y/C (PA, PB) and digitally compressed formats.
Circle (412) on Reader Service Card

Bogé Photo

Product line: Camera support; MiniPro tripods.
Circle (415) on Reader Service Card

Bonawell Broadcasting

Information not available.
Circle (416) on Reader Service Card

Bowen Broadcast Service

Product line: Replacement parts for RCA automated cart equipment.
Circle (417) on Reader Service Card

Bretford Manufacturing

18966
Product line: Wall, ceiling mounts; AV tables, TV/VCR security center.

Call us at (615) 377-0600, or fax us at 800-4-A-FLASH.

Flash Technology Corporation of America®
WOULD YOU LEAVE THE SAFETY OF YOUR COMPANY'S MOST VALUABLE ASSETS TO A COUPLE OF NUTS AND BOLTS?

The answer is No! That's why Stantron engineers chose a welded construction design with unparalleled strength and rigidity. A design that offers you the security of knowing your products are safely rack mounted to stay. Our welded design is strong. In laboratory tests we've lifted fully loaded racks weighting thousands of pounds with no structural damage. A test that other manufacturers would be NUTS to try.

Welded construction offers the time saving advantage of "No Assembly Required". Each bay comes completely assembled and ready for any system configuration requirement. While other manufacturers offer tapped rails only as an expensive option, with Stantron they're standard at no extra cost.

STANTRON... YOU'RE NUTS TO LEAVE THE SAFETY OF YOUR ASSETS TO ANYONE ELSE.

STANTRON... ENGINEERED WITH SAFETY AND RELIABILITY

12224 Montague Street, Pacoima, CA 91331
CALL TOLL FREE 1 (800) 821-0019 IN CALIFORNIA 1 (818) 890-3445 FAX 1 (818) 890-4460

Circle (68) on Reply Card
Broadcast Microwave Services
Product line: Microwave radio equipment, antenna prestals, frequency agile portable transmitters.
Circle (425) on Reader Service Card

Broadcast Programming
Information not available.
Circle (428) on Reader Service Card

Broadcast Software Ltd./BSL
Product line: Transmitter site management software.
Guardian III: transmitter management software for 100 sites of 50 types: supports Guardian I, Gentner, Burk Technology, SVS Computer Interfaces on single phone or computer line; senses conditions at transmitter; shows status on CRT with fault alarming. SSVS computer interface: links remote capability with 16 to 256 input status/measurement channels: 8 to 128 output control channels.
Circle (427) on Reader Service Card

Broadcast Supply West/BSW
Product line: Distributor, 200 lines of professional audio, video, software.
Circle (428) on Reader Service Card

Broadcast Video Systems/BVS
Product line: Signal distribution, video processing products, comb filter decoders, downstream monitors; grain reduction.
Beu,®nn BCS-3000/PC FDL90. trol twitchers; video
Product features digital 18 input status/measurement, 4x1 component phones, 3-D comb filter decoders, downstream monitors; grain reduction. Beu,®nn BCS-3000/PC FDL90. trol twitchers; video
Product features digital 18 input status/measurement, 4x1 component phones, 3-D comb filter decoders, downstream monitors; grain reduction.

Broadcasters General Store
Product line: Distributor, audio products for radio, TV/Systems digital hybrids.
CRI, event timer: produces timed relay closures for dayparts/afternoons.
Mbitronics MCS: multilane coordinator, frame holds 18 auto coupling phone cards or cards and DAs.
Rodman/Brown Desk Jockey: hard disk commercial storage, PCTotal automation for 14-day walk-away time.
STIV VTR controller: by DNF Industries.
Circle (430) on Reader Service Card

Bryson
Product line: Audio monitors.
4BPB power amp: 250W/channel stereo: multiple filter caps per channel in power supply; LEDs show yellow on short peaks, red on potentially harmful levels.
Circle (431) on Reader Service Card

BSI/AKG Acoustics
Product line: Specialty audio processors, mic splitters.
FCS 935/920 Variable: parametric EQ, analyzer: -296 features digital control of 12 parametric EQ sections; -92 slave provides same functions, but controlled from 1x296 or wireless remote system control.
Circle (432) on Reader Service Card

Broadcast TV Systems
Product line: Video, H/TV cameras, recorders, switchers, switcher interfaces, A/D and D/A converters, video system configuration upgrade with serial digital format, AES/EBU audio.
DCR 300, DCR 500: D1 VTRs, -300 w/o, -500 with integral A/D, D/A converters for post-production; setup cards hold simple edit operation menus; four units in parallel record grant.
Dyad2 keyer: for D-2 VTRs, for digital layering. E/Clip: desktop video production application for access Windows word processors, paint, graphics packages. FDL-90 telemetry: combination system with switchable aspect ratios; 4.3, 16:9 in 325-625 lines.
Motif 117880: uses PostScript Type 1 fonts; dynamic flows, cubes, created with Pallet, Asian Electronics; Video display effects: Super Vector animation.
Prdm DVE: full-featured broadcast/post-production DVE with DAVIor 3D graphics maps.
Venue: high-density router: 2,048 audio, 1,024 video crosspoints per unit: inherit HDTV video, 40MHz/s digital video, stereo analog audio, AES digital audio.
Alamar: master control switcher.
Circle (433) on Reader Service Card

Burk Technology
Product line: Remote control, AutoPilot multisite units.
Circle (434) on Reader Service Card

CableWave Systems/RF Systems
Product line: Antenna products, Bogner widening, MMDS, ITFS, FM, STL antennas; high power Widelens transmitter.
Bogner directional antennas: LP, medium power TV, E30 waveguide, connectors: for MMDS, ITFS.
Flexwell: coaxial cable, ellipsoidal waveguide. FM: power dividers, directional antennas.
Circle (435) on Reader Service Card

Calaway Editing
Product line: Editing controllers.
Circle (436) on Reader Service Card

Calzone Case
Product line: Equipment cases. Titan, Ultimie series. Corrugated plastic and synthetic material cases. Studio series: rack cases, protected 8-, 12-unit rack; upper rails slanted, tapped steel rails.
Circle (437) on Reader Service Card

Camera Mart Inc
Product line: Distributor: rental programs; video, audio production equipment.
Circle (438) on Reader Service Card

Camera Cable
Product line: Patchcables for video, tools, wire, connectors, BNC crimp plugs: audio transformers.
2411UVJZ22C: video patchbay, 24 dual video 751 jacks: baseband analog to serial digital.
The Stripper: coax cable strippers.
v: 75Ω multicore cable, 5, 4, 3, Channel: LV-77 (#8281) type low-loss.
DA206: 110Ω cable for AES/EBU digital audio.
RPC-4A RCA video plug: 200MHz bandwidth.
BCJX-JTR: BNC-XF: impedance transformer for AES/EBU digital audio lines; 110Ω-XLA female, male to 75Ω BNC receptacle connections.
BPCS-517: 75Ω BNC crimp plug for #8281 cable.
Circle (439) on Reader Service Card

Canon USA/Broadcast Optics
Product line: H/8 camcorders, laser transmission systems; camera lenses with internal focus.
J30ax288 IR/ IR: internal focus 2X zoom, 1/3" output: 108-16mm, 2x extender: 0.95mm MOD; macro at wide end; square hood lens.
YJ17x5.8B KRS: ENG/EFP lens for 1/3" camera: 17:1 zoom ratio: 0.95MOD: 9.5-162mm.
J35x15BE Tele: ENG lens: 9.1 x zoom, 599mm telephoto:

Circle (440) on Reader Service Card

Capitol Production Music
Product line: Music libraries.
Circle (441) on Reader Service Card

Carpel Video
Product line: Evaluated recording media, 4½" CAA U-Matic, 1", clocks/timers.
Carpel-o-pect: label remover solution.
Circle (442) on Reader Service Card

CBSi Custom Business Systems
Product line: Broadcast software: Classic, Elite traffic, billing, InterAct accounting systems.
CBSi Windows: multiskilling capability.
CustomNet: consolidated traffic/billing system for multiple stations at a single location.
Circle (444) on Reader Service Card

CC Electronics
Product line: XM, FM transmitters, exciters.
FM transmitter: super high power design.
FM product line: new FM exciters.
FM transmitter series: solid-state designs.
Circle (445) on Reader Service Card

CCOR/Cornux
Product line: Digital fiber optic transmission for video, program audio, data: RS-250c short-haul performance, redundancy, A/B switching.
Single-channel digital fiber optic system for 9-bit video with 16-bit audio for standalone link or add-on to existing C-COR/Cornux implementations.
Circle (446) on Reader Service Card

CEL Electronics
Product line: Video encoders, standards converters, digital effects systems.
P153/RAM: upgrade for Maurice Minor key controller, expands effects sequence memory.
P171: digital video encoder.
ImageCon: supports TIF, TIFF, TARGA graphics; converts between image standards, interfaces to graphics I/O devices.
Myriad-ixc: 525-line image manipulation system.
P272 router: 12+15x dual out: D1, D2 signals: parallel CCR 625/601 standard.
Workmaster/P266: standards converter.
Meridian: video 3D effects; D1 processing.
Circle (447) on Reader Service Card

Central Tower
Product line: Tower, monopoles for broadcast: structural engineering analysis; complete construction service, antenna, line installations; tunnel key projects.
Circle (448) on Reader Service Card

Century Precision Optics
Product line: Wide-angle optical adapters for slide-to-video transfer; New products announced at show.
WA-85C: 0.9x wide-angle converter attaches to lens.
Circle (449) on Reader Service Card

Channelmatic
Product line: Automation, ad insertion systems.
AD CARM: plus ad insertion shares four VCRs on two channels; RO event mode.
AD CARM: local ad insertion replaces VCRs with digitized AV data for analog playback.
Circle (450) on Reader Service Card

March 1993 Broadcast Engineering
97

www.americanradiohistory.com
Reels from traffic schedule with one VCR.

Circle (450) on Reader Service Card

Chimera

Product line: Lighting products.

Circle (451) on Reader Service Card

Chromatek Inc.

Product line: HBTY1A series converters.

Circle (453) on Reader Service Card

Christie Electric

Product line: Battery chargers, analyzers, CASP/1200, CASP/2000 systems.

Circle (452) on Reader Service Card

ChromaVision

Product line: Digital graphic systems, titlers.

Circle (454) on Reader Service Card

Circle 60

Product line: Lights, batteries, chargers.

Circle (455) on Reader Service Card

Circle 101

Product line: Time code products, transport synchronizers; random access digital audio recorder CDK328.

Circle (456) on Reader Service Card

Circuit Research Labs

Product line: Audio processors, AudioSignature 4-band stereo, news/talk AM systems, FM generators; event sequencers.

Circle (457) on Reader Service Card

Clark Wire & Cable

Product line: Standard, digital audio, audio snakes; standard video, video snakes, RGB cables; remote application composites with audio, video, power conductors; various colors; bulk, prepared harnesses.

Circle (458) on Reader Service Card

Colortron

Product line: Lights, elite lighting control systems; ENR dimmers, lamps.

Circle (459) on Reader Service Card

Comambre

Product line: UHF TV transmitters, "S" series with high power DHDTV compatibility.

Circle (460) on Reader Service Card

Comband Technologies

Product line: Terrestrial microwave ProBand, ComBand wireless cable systems.

Circle (461) on Reader Service Card

Communication Graphics

Product line: Promotional products, professional logo design.

Circle (462) on Reader Service Card

Communications Data Services

Product line: Engineering services; Real World Pro- gression coverage predictions; Sun Microsystems SPARC workstation; 5 digital erran data on CD-ROM.

Circle (463) on Reader Service Card

Comprehensive Video Supply

Product line: Video amplifiers, multimedia monitor cables, desktop video production accessories; PC/Mac- based edit control; Walter Brewer lighting systems integrations services.

Circle (464) on Reader Service Card

Computer Assisted Technologies

Product line: Equipment, repair status software.

Circle (465) on Reader Service Card

Computer Concepts

Product line: Radioautomation, DCS digital commercial system with editing options. Audio Switcher.

Circle (466) on Reader Service Card

Computer Engineering Associates

Product line: Computer newspaper systems.

Circle (467) on Reader Service Card

Computer Prompting, Captioning Co.

Product line: Video prompting, closed, open captioning systems; flat-screen screen display.

Circle (468) on Reader Service Card

Comrex

Product line: Audio Frequency Extenders for remote audio pickups with integrated mixing digital audio codecs; telephone couplers, hybrids; wireless IFs; TV aerial monitors.

Circle (469) on Reader Service Card

Circle 34

Product line: Lighting products.

Circle (470) on Reader Service Card

Circle 60

Product line: Lights, cameras, envisal.

Circle (471) on Reader Service Card

Circle 101

Product line: Time code products, transport synchronizers; random access digital audio recorder CDK328.

Circle (472) on Reader Service Card

Circle 60

Product line: Lights, cameras, envisal.

Circle (473) on Reader Service Card

Circle 101

Product line: Time code products, transport synchronizers; random access digital audio recorder CDK328.

Circle (474) on Reader Service Card

Circle 60

Product line: Lights, cameras, envisal.

Circle (475) on Reader Service Card

Circle 101

Product line: Time code products, transport synchronizers; random access digital audio recorder CDK328.

Circle (476) on Reader Service Card

Circle 60

Product line: Lights, cameras, envisal.

Circle (477) on Reader Service Card

Circle 101

Product line: Time code products, transport synchronizers; random access digital audio recorder CDK328.

Circle (478) on Reader Service Card

Circle 60

Product line: Lights, cameras, envisal.

Circle (479) on Reader Service Card

Circle 101

Product line: Time code products, transport synchronizers; random access digital audio recorder CDK328.

Circle (480) on Reader Service Card

Circle 60

Product line: Lights, cameras, envisal.

Circle (481) on Reader Service Card

Circle 101

Product line: Time code products, transport synchronizers; random access digital audio recorder CDK328.

Circle (482) on Reader Service Card

Circle 60

Product line: Lights, cameras, envisal.

Circle (483) on Reader Service Card

Circle 101

Product line: Time code products, transport synchronizers; random access digital audio recorder CDK328.

Circle (484) on Reader Service Card

Circle 60

Product line: Lights, cameras, envisal.

Circle (485) on Reader Service Card

Circle 101

Product line: Time code products, transport synchronizers; random access digital audio recorder CDK328.

Circle (486) on Reader Service Card

Circle 60

Product line: Lights, cameras, envisal.

Circle (487) on Reader Service Card

Circle 101

Product line: Time code products, transport synchronizers; random access digital audio recorder CDK328.

Circle (488) on Reader Service Card

Circle 60

Product line: Lights, cameras, envisal.

Circle (489) on Reader Service Card

Circle 101

Product line: Time code products, transport synchronizers; random access digital audio recorder CDK328.

Circle (490) on Reader Service Card

Circle 60

Product line: Lights, cameras, envisal.

Circle (491) on Reader Service Card

Circle 101

Product line: Time code products, transport synchronizers; random access digital audio recorder CDK328.

Circle (492) on Reader Service Card

Circle 60

Product line: Lights, cameras, envisal.

Circle (493) on Reader Service Card

Circle 101

Product line: Time code products, transport synchronizers; random access digital audio recorder CDK328.

Circle (494) on Reader Service Card

Circle 60

Product line: Lights, cameras, envisal.

Circle (495) on Reader Service Card

Circle 101

Product line: Time code products, transport synchronizers; random access digital audio recorder CDK328.

Circle (496) on Reader Service Card

Circle 60

Product line: Lights, cameras, envisal.

Circle (497) on Reader Service Card

Circle 101

Product line: Time code products, transport synchronizers; random access digital audio recorder CDK328.

Circle (498) on Reader Service Card

Circle 60

Product line: Lights, cameras, envisal.

Circle (499) on Reader Service Card

Circle 101

Product line: Time code products, transport synchronizers; random access digital audio recorder CDK328.

Circle (500) on Reader Service Card

Circle 60

Product line: Lights, cameras, envisal.

Circle (501) on Reader Service Card

Circle 101

Product line: Time code products, transport synchronizers; random access digital audio recorder CDK328.

Circle (502) on Reader Service Card

Circle 60

Product line: Lights, cameras, envisal.

Circle (503) on Reader Service Card

Circle 101

Product line: Time code products, transport synchronizers; random access digital audio recorder CDK328.

Circle (504) on Reader Service Card

Circle 60

Product line: Lights, cameras, envisal.

Circle (505) on Reader Service Card

Circle 101

Product line: Time code products, transport synchronizers; random access digital audio recorder CDK328.

Circle (506) on Reader Service Card

Circle 60

Product line: Lights, cameras, envisal.

Circle (507) on Reader Service Card

Circle 101

Product line: Time code products, transport synchronizers; random access digital audio recorder CDK328.

Circle (508) on Reader Service Card

Circle 60

Product line: Lights, cameras, envisal.

Circle (509) on Reader Service Card

Circle 101

Product line: Time code products, transport synchronizers; random access digital audio recorder CDK328.
The Most Versatile VIDEO EXCITER of All

LVM Series

LNR Series LVM Low Profile Data Quality Video Exciters are broadcast-quality units that combine a compact satellite video modulator with a low phase noise digital-ready upconverter.

Features:
- Video modulator exceeds RS-250C and IESS-306 standards and has consistently outperformed all others.
- Agile data upconverter for inclusion of an SCPC data channel or digital video.
- Slimline construction - complete system in 3½” rack panel space. Offers a full range of front panel controls, indicators, and monitor points including:
  - Full/half transponder switchable
  - Subcarrier pre-emphasis selectable
  - Subcarrier level/deviation adjust
  - NTSC/PAL/B-MAC/SECAM switchable

Available Models:
- C-Band Model: LVM6-D4 (5.925-6.425 GHz)
- C-Band Model: LVM6-D4/575 (5.850-6.425 GHz)
- Ku-Band Model: LVM14-D4 (14.0-14.5 GHz)
- DBS Uplink Model: LVM70 (17.3-17.8 GHz)
- IF Output Model: LVM70 (70 MHz)

Option:
- Dual low pass filter (4.2 and 6 MHz)

Also Available...

LVE SERIES
Low Profile Ku-band Video Exciters for SNV Mobile Uplinks

UVE and DRV SERIES
Video and FM-FDM Exciters and Receivers (C, Ku, IF Output)
Top of the line broadcast quality units for fixed and mobile operations. These modular units are field proven and have been selected by Comsat, AT&T, broadcasters and telecom organizations worldwide.

GDE SERIES
Group Delay/Amplitude Equalizers

PROTECTION SWITCHING
1:1 and 1:N Switching Systems for both video and audio.

TURNKEY SYSTEMS
LNR equipment is available in racks on a turnkey basis for INTELSAT, ARABSAT, DDMSAT and related applications.

LNR products are in production for rapid delivery for today’s and tomorrow’s video applications. Put LNR leadership, product support, and 23 years of experience to work for you. For additional information and assistance, please contact the Marketing Department.

Visit Us At NAB '93 Booth No. 3012. Your Digital and Analog Communications Connection

COMMUNICATIONS INC. 180 MARCUS BLVD. • HAUPPAUGE, NY 11788-3795 • TEL: (516) 273-7111 • FAX: (516) 273-7119

Circle (57) on Reply Card

www.americanradiohistory.com
FIRST
To Build and Ship Air-Cooled 10T Transmitters

FIRST
Public Demonstration of High Definition Television Broadcasting

FIRST
To Develop and Ship Solid-State FM Radio Transmitters to 8kW

FIRST
To Offer Self-Correcting Intelligent Controllers

FIRST
To Offer All Current Transmitter Amplification Technologies

FIRST
To Develop a Digital Quality FM Exciter

FIRST
To Offer Transmitter Power Levels From 1W to 240kW

HOW IN THE WORLD DOES TTC DO IT?

Only one company keeps coming up first in the broadcast transmission industry - TTC. Surprised? Don't be. Only TTC offers all five current television amplification technologies. And, that same company pioneered the development of solid-state FM transmitters. In fact, TTC has been designing and building products for the broadcast transmission industry around the world for 25 years. No other company can offer you our knowledge and experience in low power television, translators/transposers, high power television and FM radio. No other company is as dedicated to supplying you with the highest quality broadcast equipment to suit your needs. That's how TTC does it.

FIRST.
A Global Force in Broadcast Transmission Technology

TELEVISION TECHNOLOGY CORPORATION
650 S. Taylor Ave. Louisville, CO 80027 USA  Facsimile: (303)673-9900 Telephone: (303)665-8000

Please see TTC at NAB Booth #13806.
Circle (58) on Reply Card

www.americanradiohistory.com
two mic channels; self-adjusting hybrids; mic-minus; dia-cue feature.

Circle (480) on Reader Service Card

Comstar World Systems

Product line: Satellite program distribution.

Digital Audio Distribution: international service through INTELSAT network; delivers audio from remote locations; back-haul services. INTELSAT-K network supplied by Ku-band.

TV scheduling service: short-terms, occasional use, VIP-conferencing services by satellite.

Circle (481) on Reader Service Card

ComStream Corporation

2100

Product line: Satellite receivers, integrated digital audio eu, apprs telecon.

Ace206: 20dbi stereo digital audio multirate, multimode integrated receiver for Ku-band; Musicam (EU/MEP) compression algorithms.

CM236: digital modulator for video networks by satellite; RS-232/485 remote control port.

Circle (482) on Reader Service Card

ComTech Antenna Systems

13403

Product line: Satellite communications products, 5m m-boosted antenna system; ECG, offset uplink antenna.

LEM Byway: portable, transmit-capable Ku-band antenna.

Circle (483) on Reader Service Card

COMWAY

Product line: terrestrial microwave systems for wireless cable, MMDS.

Circle (485) on Reader Service Card

Concept Productions

4521

Product line: Digital audio cart systems, DAF systems.

Circle (486) on Reader Service Card

Concept W Systems

13356

Product line: Single-coax, field adaptable CAMPLEX m, lifelayer systems for bidirectional A/V signal, CCU data, power; for remote production.

CP-301 series: remote control unit, camera adapter; im warranty, V/A signal multiplexing with mini FM mc demod; video response 30Hz-6MHz, 55dB SN, 0.75% THD; mod for 3-channel switchable return video, CCU data interface, PJ control.

Circle (487) on Reader Service Card

Confer

11301

Product line: Antennas, block downconverters, low noise preamps; frequency conversion formats. Integrated receivers: one-piece antenna, downconverters with 32/58dB gains, noise figures of 1-5dB.


Circle (488) on Reader Service Card

Coventronics

13628

Product line: Connectors, One Piece adapters.

JB Jack-By-Jack series: 1/4" Adapter jack, 2/row/22-jack, or 1/row/16/jack; 8-16 console "insert points."

XR modular patch panels: with XLR connectors; 2-rows, 1-connector or 1-row, 16-connector.

Circle (489) on Reader Service Card

Continental Electronics

3418

Product line: AM, shortwave, FM transmitters, associate equipment. New products to be introduced at the exhibit.

4110/420C: shortwave transmitters for 30kW, 150kW; standard, CCM-controlled carrier level modulation or SSR remote control, tetrad 2 power. 800B FM exciter; LP transmitter. 5500w source for high power transmitter, P.I. frequency control. SSM series modulators: high-level digital modulation from 4-96 modulation supplies controlled plate current based on modules activated by audio input level. T-1 line AM: solid-state, modular transmitters; 312T 300W, 314T 1Kw, 314T-1 15kW, 315T 5kW; broadband, synthesized frequency control.

Circle (490) on Reader Service Card

Control Concepts

16336

Product line: Power protection, conditioning equipment; isolation, isolator active tracking filters; for transmitters, computers, automation systems. 1F, LG series: surge and power protection systems.

Circle (491) on Reader Service Card

Cooper Industries/Belden

19169

Product line: wire, cable, precision video cable, 24-gauge multi/pair snake cables.

Circle (492) on Reader Service Card

Corporate Computer Systems

3000

Product line: CES digital video transmission codecs. Micro 56-75kz, Micro 166-75kHz dual rate units.

CDQ-1000: codec: transmitting 1kHz, digital audio over one switched circuit digital (56 or 64 kbps).

CDQ-3000: multirate ISM Musicam codec; transmits 2kHz stereo or mono digital audio.

PAC: editing workstation for digital audio.

Circle (493) on Reader Service Card

Cortana Corporation

481

Product line: Lightning, static protection products; Stat-Cat, Stat-Kitty and Stat-Ton-Cat systems.

Circle (494) on Reader Service Card

Countryman Associates

18617

Product line: Microphones, the EMV series.

Circle (496) on Reader Service Card

Crouse-Kimpey Company

1606

Product line: Audio distributors; Otari workstation; Denon CD player.

362 Systems DigiCart: digital audio recorder.

AKG Trio-Power series: stage mics.

Audio Arts R-10: 10-channel audio mixer.

Rames WP-1200: monitor.

Sony DPS-M: timecode modulator effects.

Telos hybrid: Telos 100 Delta, One-plus-One.

Circle (497) on Reader Service Card

Crow International

4812

Product line: Audio system products; trundline mic; monitor amplifiers.

SASSP-M11: stereo ambience mic.

IQ-2000: computer-controlled audio system.


PCC-17b: multifunction supercardioid boundary mic.

CS-311 "different" head-worn mic: high rejection of background ambience at sporting events.

SMX-6: digital 6x programmable mixer.

Circle (498) on Reader Service Card

CSI Camera Support Int’l

18863

Product line: Camera dollies, tripods, pan/tilt heads.

System 40 tripod, head, dolly, for EFP/studio.

DaVinci systems: pan/tilt, tripods support 450? pound loads; single, double-handle options; lit, pan locks. EN tripod: light-weight with 8" over-crowd height.

Soft, hard cases: for CSI/DaVinci systems.

DaVinci dolly: positive tripod leg attachments, locks; from 25-75 lb loads, polyurethane tires, roller bearings.

Circle (500) on Reader Service Card

CTE International

4000

Product line: FM transmitters, excitors, PAs. 5/2 exciter per FCC. CCR, CBT; 25W, redundant.

VL/1000: kW solid-state FM amp, four MOSET/250W modules; protection, diagnostics; 25-30W RF drive.

VL/30 exciter: 30W output, RS-232 port to control transmitter from a remote PC.

Circle (501) on Reader Service Card

Cycle-Sat

11543

Product line: Program distribution service, transmission security equipment, Cyclecypher.

Automation Protocol Converter: routes 28 dbaud data from Cyclecypher receiver for direct serial data interfaces in TV station automation systems.

Circle (502) on Reader Service Card

D-D-D

1326

Data Systems

Product line: Digital Media System automation not available.

Circle (503) on Reader Service Card

Da-Lite Screen Co.

15381

Information not available.

Circle (504) on Reader Service Card

Dan Dugan Sound Design

4620

Product line: Automated mixer controls.

Model D: automatic mixing controller assists sound operators with multiple live mics; 8-channel VCA unit patches into audio console insert points.

Circle (505) on Reader Service Card

Daniel’s Publishing Group

12800

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

Circle (506) on Reader Service Card

Data Center Management

19175

Product line: Newsroom automation systems.

DCMPC: distributed processing newsroom computer.

Circle (507) on Reader Service Card

Data Security

13148

Product line: Tape degressors.

Tape: Enhancement Series: versatile, cost-effective bulk tape degressors, videotape cleaners, evaluators, dropout analyzers.

Type B-A bulk degressor: 1x0 approved, purges classified information from S-VHS, D-1, high energy magnetic media with coercivities to 1.000 e.

Circle (508) on Reader Service Card

Datastack

13014

Product line: Signal routers, distribution equipment.

D-254N digital audio switcher: 2x10 to 4x6.

D-250K: digital video router, 2x10 to 40x40 arrays.

D-2553: 100MHz video router, 2x10 to 20x20 array.


D-2700D/A: AES/EBU digital audio router; transformer coupling, read/write, regeneration feature.

D-27000XPS: digital video routing switcher; 64x64 to 56x56 arrays.

D-896: 1x6 digital audio DA module.

Circle (509) on Reader Service Card

Datworld

4818

Product line: Broadcast industry databases; reports, research services; customized marketing maps.

Circle (510) on Reader Service Card

David Sarnoff Research Center

10849

Product line: Advanced Television Research Consortium participant with NCB, Thomson Consumer Electronics, Philips Consumer Electronics Company; Compression Labs.

Advanced Digital HDTV (ADHDTV): a digital simulcast HDTV system with high video, audio quality, reliability, robustness; featured attributes include MPE/ - compression, packetized data structure, two-tiered transmission for flexible interoperability with other TV, multimedia products.

Circle (511) on Reader Service Card

daVinci

18862

Product line: Color correction processors for video, telelines: Renaissance Hi-Res Kilovectors.

3/2 edit package: for daVinci. Renaissance series; allows teleline with recording VTR.

EDM/2V; 3/5 options: VTR/teleline editing facilities for daVinci line.

Renaissance 8:8:8: component digital color correction; enhancements announced at the exhibit.

Circle (512) on Reader Service Card

March 1993 Broadcast Engineering

101

www.americanradiohistory.com
Dolby

Product line: Audio processors, equalizers, de-essers, noise control products.

# 172 Supergate: 24dB/octave voltage-controlled filters for selective isolation of signals requiring gating; fast attack with Transient Capture Mode (TCM).

# 193A: dual buffer amp interconnects audio equipment with different operating levels.

Project 1 series: dual compressor/gate (#266), quad/expander gate (#274), dual spectral enhancer (#296).

# 7060X: dual mic preamp; 0.4-15dB, 20Hz-20kHz, functional bandwidth 21kHz-20kHz, gain trim, polarity reverse, overload indicator, 48V phantom power; packaged in 191U/19/2 rack chassis.

# 130XP: subharmonic synthesizer forms Waveform Modeled bass notes exactly one octave below bass information in most musical program material.

Circle (513) on Reader Service Card

DDA/Mark IV

Product line: Audio recording, post production mixers.

Circle (514) on Reader Service Card

Decision, Inc

Product line: Software for business management, information services for radio, TV.

Circle (515) on Reader Service Card

Dedocte USA

Product line: Dedolight precision optical lighting equipment and accessories.

DSET-M: location lighting kit; four Dedolight heads, stands, projection attachment; kit weights less than 30 pounds.

Circle (516) on Reader Service Card

Delta Electronics

Product line: Transmission monitoring products, splatter monitor, operating impedance bridge.

ASEF2: low cost, high performance AM stereo exciter.

CQAM format

Circle (517) on Reader Service Card

Denny Manufacturing

19106

Product line: Backgrounds, props for video, photographic work.

Electrovision electronic proofs: EV-2000 system used side-by-side with photographic camera to record video proofs of photo shoot.

Circle (516) on Reader Service Card

DEON

Product line: CD cart recorders, cassette decks.

DN-1200P: CD changer; 200-disc capacity.

DN-720R: cassette deck; variable pitch, adjustable record, bias levels, real-time counter, rack mount.

DN-951AF: CD cart-on-air system; AutoTrack selection; streamlining profile, rugged transport.

DN-061FA: CD player loads, plays Orange Book CDs.

TU-680NAM: AM broadcast monitor; per NRS; selectable bandwidth IF; CQAM stereo.

Circle (519) on Reader Service Card

DeSlati Lighting/DESFAR

Product line: Lighting products.

Circle (520) on Reader Service Card

DeWolfe Music Library

14044

Product line: Production music libraries.

Circle (522) on Reader Service Card

DIEC Digital

15186

Product line: Recording media, MQ digital audio tape.

Microflex 8mm video tape, 4mm width data-at-seek cartridges, rewritable magnetic optical disks.

Belacan SP: 5.3-micron cassettes.

Recordable compact disc: in 16, 63 and 74-minute capacities.

Circle (523) on Reader Service Card

Dielectric Communications

15719

Product line: TFM antennas; LP/HF TV antennas.

UHF FLAGPOLE: UHF/FM antenna fits where a flag pole could be mounted; CP: HP; 1% EIA input; radome; patterns filed with FCC speed application processing.

Circle (524) on Reader Service Card

DigiDesign

3212

Product line: Digital audio recording systems.

GMR-Pro Archive: tape backup system.

ProTools Multitrack: digital record, playback in 8, 12, 16 channels; enhanced time code entry.

ProSource ProFX: CD ROM library; sound effects, ambients in format for ProTools, SampleCell.

Sound Tools II Vers. 2.2: records direct-to-disc; editing, signal processing, playback of CD-quality audio; time compression, expansion, pitch shift.

Circle (525) on Reader Service Card

Digital Arts

18569

Product line: Digital graphics systems; drawing, animation software.

ReaderManager: for Iris Irisgo, 386-486 PCs; rendering, drawing, animation, font management, geometry database features; 3D environment; extensive "surface appearance" library.

Circle (526) on Reader Service Card

Digital FX

18881

Product line: Desktop video production solutions with digital video and audio editing workstations.

Compositum 4.0: upgraded channel edit control capabilities for edit suites; PAN FX adds second layer of motion; Stretch, Average, 32 compress/expand, SnapShot, Ethernet features.

WaveFrame 1000: to create CDs, records digital audio to Yamaha encoder and recorder.

WaveFrame 401: digital audio recorder; VTC sync, digital I/O, mix, multitrack to 16-channel capability.

TitleMan: titler with PostScript fonts.

Video FX Plus: improved control panel, jog/shuttle, multifunction support; Sony D39MA support; enhanced effects, graphics, animation functions.

Hitchcock: stand-alone non-linear disk-based editor; Macintosh hard drive; 640x800 pixel array at 30fps.

TidalWave: 64 rack software; only hard disk recorder, editor using SGI Indigo platform; integrates sound into multimedia applications.

Circle (528) on Reader Service Card

Digital Processing Systems

11300

Product line: TBC, synchronizers, video format converters; sync, test generators, monitoring systems.

Personal Animation Recorder: replaces VCR to record animation from Video Toaster, interface to hard drives to playback of S-Video, Betacam output.

ES-2000 expansion system: chassis holds 12 Personal Series cards with redundant power supplies.

DPS-265: master sync, test signal generator.

TBV-2: synchronizers; DPS-255 multifiform, transcoding TBC/sync; DPS-265 4x4x6x synchronizer; DPS-375SF5 multiformat, transcoding PAL TBV/sync; DPS-365 PAL I/O synchronizer.

Personal TBC 8 plug-in card, NTSC, PAL versions.

VM-2000 Personal VScope: waveform, vector monitor card for Amiga, PC, Video Toaster workstations.

MicroSync A/V: 4-field full bandwidth composite video, stereo audio follow synchronizer; for satelite, mobile, network, CATV feeds; solves lip-sync problems.

Personal Recording Studio: Windows-based digital audio production system on a PC card; 6-channel stereo mixer, 16-bit digital disk recorder, effects; 24-bit DSP, compression, limiting, expansion, reverse, variable delay, pitch shift, RS-232, ISA bus control.

Personal TBC IV: for S-video 1/8, freeze, variable strobe, GPI trigger, color balance; Betacam output, DDC, noise reduction; card for IBM, Amiga PCs.

Circle (529) on Reader Service Card

Digital Vision

19164

Product line: Digital video processors, noise, film grain reduce, color correctors.

DIVIS 1000: digital image stabilizer; reduces 2D motion in video from camera or telecine; advanced variable motion filter; filters in motion estimation.

Model ASC: conceal negative, positive film dust; replaces chemical, electrostatic treatments.

Circle (530) on Reader Service Card

Discreet Logic Inc

15669

Product line: High resolution, high-speed on-line software systems for film, HDTV, video.

FIRE: high-speed paint system; solid, air, texture brush shapes; smear, wash, shade, stamp, warp, reveal, filter

Circle (535) on Reader Service Card

Meant to be heard, not seen.

CD-quality stereo with Dolby AC-2

Introducing this year's hottest audio product, the new SX-20 digital audio adapter with Dolby AC-2 from Antex. It's the first PC compatible board to use Dolby AC-2 digital audio coding technology for real-time, direct-to-disk record and playback of CD-quality stereo audio with 6:1 compression.

With a frequency response of 20Hz-20kHz and 16 bit, 64 times oversampling, the Antex SX-20 offers high quality, digital audio for 386/486 PCs. CD-quality audio can now be economically transmitted at 128kbps over T1, ISDN and SS6 digital networks.

Hear the difference from the leader in digital audio—Antex Electronics.
The Dream Becomes Reality ...

Master Control at KRCA-TV's new multi-room production and post complex, Burbank.

Complete turnkey design and construction package by Lakeside Associates.

Lakeside Associates specialize in the design of recording, broadcast and production studios for today's cost-competitive marketplace. Our designers and acoustic experts will advise you on the best way to upgrade an existing studio, or handle the design, construction and commissioning of an entire facility.

Other recent assignments include:

- Dual mix-to-picture and sweetening rooms for Editel/Chicago.
- Multi-room mixing and post complex for Serafine, Inc., Venice, CA.

... and many, many more state-of-the-art recording/production facilities around the world!

- Acoustic Consultants
- System Engineering
- Facility Designers
- Fabrication & Construction

See us at the NAB Convention, Booth #2102.

Lakeside Associates

9272 Jeronimo Road, Suite 123C, Irvine, CA 92718 • 714/770-6601 • Fax 714/770-6575

www.americanradiohistory.com
The Industry Standards have Changed.

Now they’re also available in BLACK.

A lot of microphones have come and gone, but the Electro-Voice 635A and RE50 have remained a constant. Until now.

Don’t panic! The 635A and RE50 are still designed specifically to meet the challenging, “real-world” rigors of broadcasting on location. The only change is that both are now available in black, as well as their original fawn-beige color. Everything else is exactly the same.

Debuting more than two decades ago, field and ENG crews quickly adopted the 635A and RE50 as industry standards, instantly recognizing their trendsetting shape and design, unmatched reliability and clean sound. And they continue to set the industry standard like no other microphones!

When there is only one chance to get it right, the 635A and RE50 remain the choice — in black or beige — no matter the conditions.

Electro-Voice, Inc., a MARK IV company, 600 Cecil St., Buchanan, MI 49107  616-676-6831  800-234-6831  In Canada: 613-362-2141

See us at NAB Booth #15716

Circle (70) on Reply Card

Effects: animated shapes applied to effects, matching.

FLAME: emulates conventional editing systems; compatible with major 3D systems; for compositing w/o image degradation; visual effects, animation.

INFERNO: film effects, compositing; resolutions 360x128 at 12 bits per channel; editing tools, image filtering, 3D perspective moves, paint, optical effects.

Circle (531) on Reader Service Card

Display Devices

DTeach

Product line: Audio, video, datatag distribution routers, virtual matrix control.

#54304 router: 16x1 stereo AV, 30MHz video bandwidth; RS-222/5V control; 3-level breakaway.

#5434 router: 16x4 stereo AV, 3-level breakaway; 30MHz video bandwidth; RS-222/5V control.

Meridian routers video (5881), stereo audio (5882) frames with 128x160 matrix; 4:1 size; 3.3 power reductions over typical routers, expands to 1024x1024.

Model 590R: stereo AV router expands to 128x128 matrix, compact system expanded with video combiners.

Circle (533) on Reader Service Card

Dolby Labs

Product line: Noise reduction systems; digital STL spectral processors.

DP5000 STL accessories: for 950MHz STL using advanced digital, RF techniques for high-quality audio.

Model 740 spectral processor: 4-channel (dynamic EQ), is capable of handling signals in the bands by 20dB without affecting high-level signals.

SRP multitrack series: 24-track Dolby SR processor.

Model 430: background noise suppressor for broadcast, noise reduction in pre-location recordings.

Model 422: reference encoder, decoder offers Dolby B, C, Type noise reduction for preparing duplication masters, performing quality checks.

Circle (534) on Reader Service Card

Dorrough Electronics

Product line: Signal measurement products, loudness, compressive video luminance meters.

AES/EBU digital reading meter.

Circle (535) on Reader Service Card

DSI Communications

Product line: Engineering, construction; specialization in video, RF system design, maintenance.

Circle (536) on Reader Service Card

Dubner International

Product line: Videotape logging systems software.

Scene Stealer: PC/AT board with software, accepts NTSC/PAL video, automatically detects, marks, film points, makes mini VTR images; stored images can be reviewed, annotated, printed, for RTR PC slot, cut points, annotations in CMX compatible editor.

Circle (537) on Reader Service Card

DVS Digital Video Systems

Product line: Video storage, retrieval systems.

ISP100: image sequence processor; for high-speed capture; display of HDTV sequences, compatible with analog digital video interfaces.

ISP100 series: modular solid-state image sequence processor; for high-speed capture; display of HDTV sequences, compatible with analog digital video interfaces.

Circle (538) on Reader Service Card

Dwight Cavendish

Product line: Videotape duplication equipment, Videotape duplication equipment, Videotape duplication equipment.

Aerosonic DOC 5001 verifier: mirror-verifier verifier uses dual units under PC control for duplication QC.

Aerosonic VPT 9000: pancake media test.

Circle (539) on Reader Service Card

Circle (70) on Reply Card

www.americanradiohistory.com
Broadcast's Premier Telephone System!

Gentner Communications Corporation
Professional Audio Products
1825 Research Way / Salt Lake City, Utah 84119 / (801) 975-7200 / FAX (801) 977-0087

Circle (71) on Reply Card
www.americanradiohistory.com
NEW from Accu-Weather®

- Spectacular UltraGraphix-PLUS™
- Breakthrough Hi-Res Graphics Systems
- NEXRAD Doppler Radar
- Be first with FirstWarn™

Win up to 5 Grand at NAB!
Imagine a lens technology so advanced it can reshape your thinking about how well a lens can perform. So advanced it allows higher magnification, shorter MOD, and wider angles. So efficient it slashes lens size and weight. And so optically superb it extends the television zoom lens state of the art.

Imagine no longer. It’s all been realized in Aspheric Technology (AT). Our new lenses with AT push out the leading edge of lens performance, and they’re better in every way you can measure.

It’s All in the Curve

An aspheric lens doesn’t have the spherical shape of conventional lenses. In fact, aspheric lenses come in many shapes, because they’re customized to the needs of the overall optical design. These shapes produce stunning advantages when used in combination with conventional spherical elements. Advantages like reduced distortion at wide angles, improved corner resolution, and chromatic aberration that can be managed throughout the zoom range, rather than optimized at specific points. And aspheric optics allow zoom lenses to be made with higher magnification, wider angles, and a shorter Minimum Object Distance (MOD) too.

Zoom lenses can be designed with fewer elements when aspheric optics are used, so they are lighter and can be made smaller. For example,

Fujinon’s new A16X9 handheld lens, with one aspheric element, reduces the total number of elements by 20 percent compared to an A16X9 lens with only spherical elements. It weighs 2.64 lb. instead of 3 lb., and its MOD is 5 cm closer as well. All this in a lens that is totally compatible with existing Fujinon accessories. The A16X9 is just one example of how Fujinon’s AT will transform television zoom lens design.

We Rewrote the Book

Although aspheric optics are used in other applications, large lens elements—greater than 30 mm in diameter—have been exceptionally difficult to build. The manufacturing techniques of lens grinding—cutting, polishing, and centering—have never been able to produce large optics with the highest levels of performance in quantities necessary for commercial production.

To break through this seemingly insurmountable barrier, Fujinon took a different route. The new aspheric optics are molded, not ground, so all of the critical processes in grinding are eliminated. They start out as a preformed glass shape. Then the glass is softened by heating, pressed, and cooled in a precision system designed by Fujinon. The result is a lens element that can be made in commercial quantities and delivers all of the benefits of aspheric design.

They’re Available Today

The first AT Fujinon zoom lenses are the new A16X9 and A16X9 with 2X extender. They both deliver all the benefits of AT as well as Fujinon’s legendary durability and commitment to customer support. Fujinon’s new AT lenses. Reshaping the definition of television lens performance...forever. Call us for more information at 1-800-553-6611.
Super Max Jib: quick-to-assemble crane arm for remote camera control; packs into flight case.

Dino Dolly: with special arm.

The Rocken: remote head for space-restricted locations in aircraft, cars, tunnels, elevators. MicroShot: possibly the world’s smallest remote camera control head.

The Roll Mount: remote camera control; pan, tilt, and roll features permit flying, swooping point-of-view shots.

Circle (554) on Reader Service Card

Elaitec Inc
18866
Information not available.

Circle (555) on Reader Service Card

ElectroVideo
15716
Product line: Microphone products.

635A/B, RE50/B: mics for ENG/EFP mics; model number with designation /B indicates black finish.

Circle (556) on Reader Service Card

Electronics Diversified Inc
17684
Product line: Lighting control systems, dimmers.

2x2x12 Road Rack: portable dimmer pack; 400a disconnect; 48 4kW dimmers; Multi-Link control.

EnArt series: lighting control; definable macro; VEGA display, edit functions; 200 or 400 control channels; 500 cues stored on 35" disk.

Circle (557) on Reader Service Card

Electronics Research
3015
Product line: FM transmission antennas, panel and high power side-mount systems.

#1010: panel, directional antennas; medium power to 1kW/level, 27kW/system; for multiple class A facilities. 

# 550 combiner: 30kW unit requires no assembly, for 1010 panel antenna.

Circle (558) on Reader Service Card

Electronics Products
11862
Product line: Equipment rack systems.

EVF Electrovideo racks: 19" cabinets, enclosures.

Circle (559) on Reader Service Card

Electronics Systems
11307
Product line: Video display systems.

PICKBLOC 3 series: expanded line with high-resolution, high-definition digitizers using HDVT, VGA, text/graphical as inputs; multimedia compatibility.

Circle (560) on Reader Service Card

Elektron
1024
Product line: Radio transmission equipment.

Compact Series FM transmitters: 750-2000W with triodes, single-3-phase power; per CCR, FCC, ABU, NAB recommendations.

T series FM transmitters: 5kW-30kW.

Circle (561) on Reader Service Card

EMCEE Broadcast Products
16033
Product line: Transmitters for MMDS, VHF, UHF; field systems engineering, shadow mapping, site surveys; transmission system components; installations.

TT500HS: 100W wireless cable transmitter; broadband frequency agile tuning; high performance with integral diagnostics.

TTU1000S: 1kW solid-state UHF transmitter.

TTV1000S: 1kW VHF transmitter; separate virtual/linear PAs for NTSC, PAL, SECAM; solid-state; soft failure feature; enhanced all circuitry.

TVA100E: 1kW UHF; VHF amplifiers for LP broadcast; TUV for translator service.

Wireless cable transmitters: TTS20HSX 20W, TSS40HS 50W units; MSX4030 high power signal bender for wireless cable.

Circle (562) on Reader Service Card

EMCOR Products/Central
16569
Product line: Modular enclosures for electronic equipment, racks, cabinets.

Guide to Encor Enclosures: focus on ESQ, Series 10, Encor I enclosure systems.

Circle (563) on Reader Service Card

ENCO Systems
5221
Product line: Hard disk audio storage systems.

DAD 486a: digital audio distribution system enhanced permits simultaneous multiuser access to CD/DAT audio stored on shared network; 16bit sampling with adjustable rate; hard disk storage; programmable playlists for sequencing, automation.

Circle (564) on Reader Service Card

Energy Plus Inc/Video
16383
Information not available.

Circle (555) on Reader Service Card

Energy-Only
3380
Product line: AM, FM transmitters, l- tube FM, conventional plate-modulated AM models.

TSA500HFS: 50W transmitter; broadside antennas; medium power; per FCC, BBN, NAB recommendations.

Circle (566) on Reader Service Card

ENG Mobile Systems
19143
Product line: Products for remote production, camera transport cradle, battery maintenance products; ENG/EFP vehicles.

Circle (567) on Reader Service Card

Ensemble Designs
12462
Product line: Video production equipment, still store. TBC controller.

Catalyst: digital composite keyer; links analog sources, D-1, D-3 VTRs; 10-bit processing; layering from digital or analog sources; digital mask; color mat generation, linear, additive keying; S-input, D-input, analog I/O, serial option; 100 memory registers.

Circle (568) on Reader Service Card

Enterprise Electronics
16728
Product line: Doppler weather radar systems.

DWSR-90CTV enhancements: Doppler weather radar system; EEC RADYS 2000 display, 486 PC/DOE 5.0; 8MByte RAM, 40MByte hard drive; AT&T Vista graphics PCA, VGA/RGB monitor for display; NTSC encoder.

Canare Patchbays handle every 75Ω standard in your plant, from Baseband Video to High Resolution Computer Graphics and, the studio interface standard of tomorrow...Serial Digital. Plus you get the following:

- **WIDEST BANDWIDTH**
  DC – 600MHz

- **LONGEST LIFESPAN**
  "Microswitch" contacts

- **EASIEST INSTALLATION**
  Jacks Screw To Front

- **PERFECTLY COMPATIBLE**
  Your Cords or Ours

- **BEST BOTTOM LINE**
  Less Expensive!

Call, or write today for a FREE technical brochure with complete specifications and the number of your local Canare dealer.

LEANARE

511 5TH Street, Unit G, San Fernando, CA 91340
(818) 365-2444
FAX (818) 365-0479

See us at NAB Booth #11118-11122
Toshiba launches professional broadcasting deep into the core of High Definition TV with the world's first HDTV CCD Color Camera.

The Toshiba HSC-100, its 2,000,000 pixel CCD image sensor with 100 percent aperture ratio delivers a sensitivity of f/5.6 at 2,000 lux, an S/N ratio of 52 dB and a wide dynamic range of 72 dB.

The HSC-100 is solid state through and through, so there's no registration, no geometric distortion, no magnetic interference during panning and tilting, no microphonic noise caused by external noise and vibration. Additionally, it puts 1000 TV lines on screen:

Eye fidelity! A great reason to be first on the air with Toshiba's world first 2 million pixel HDTV CCD Color Camera. Contact Toshiba today for more information:

See us at: NAB Booth No. 11841

TOSHIBA
TOSHIBA CORPORATION PRINCIPAL OFFICE 1-1, SHIBAURA 1-CHOME, MINATO-KU, TOKYO 105, JAPAN
PHONE: +81-3-3457-3089
FAX: +81-3-5476-4057
TELEX: J2587

Circle (52) on Reply Card
map builder, movie-loop playback of sequences.

Circle (569) on Reader Service Card

The Equipment Broker 16385
Product line: Equipment brokers.
Product (570) on Reader Service Card

ERGO 90/Ergo Industries 19728
Product line: Equipment rack, mounting utilities.
Product (571) on Reader Service Card

Absorb NE FREE sample (572) on Reader Service Card

LNC 13491
Product line: Time code generators, readers, inserters; quad video DAS; signal generators; master clocks. ES-218P4, ES-216P4; audio level meters; LEDs simulate VU meters; peak, average response modes. ES-233: lade-to-black with digital attenuator for linear, repeatable fade rates; trigger by contact closure. PC family: four cards for desktop video; black generator, two video DAS, one audio DA. ES-201: "The Cable Saver DA": 16x1 video DA, separate gain, EQ controls per output. ES-778 time controller system: permits control of equipment VTRs, titlers, satellite recorders with 5000-event capability.
Product (572) on Reader Service Card

Circle (572) on Reader Service Card

ETC Electronic: Theatre Controls 18469
Product line: Lighting equipment, response dimmers, microVisionFX control, effects consoles
Product (573) on Reader Service Card

Eaphonix 4600
Product line: Digitally controlled audio systems, CSS mixer, Snapshot Recall, Total Automation control. CSS software release: V 2.6: enhanced automation with LCRS panning software for multiple operators. Cube Level Option: DCA level cards for CUBE system adds 48 Aux sends, 48 Film Mix buses, 4 Multitrack buses to CSS console; can be used as stand-alone audio submixer with 48 inputs, 48 outputs. The CUBE analog router operates alone or with mixer; use with Snapshot Recall; screen-based displays, metering. 48x48 exclusive or summing matrix switching with A/B switches on inputs and outputs.
Product (574) on Reader Service Card

Eventide 4869
Product line: Time modification systems; broadcast audio, video delay devices; digital loggers.
DSP-4000 Ultra-Harmonizer: audio processor; AES/EBU digital I/O, all-digital signal manipulation in software architecture; links effects blocks to create algorithms; eight simultaneous voices of pitch shifting or four voices with stereo reverb; Effects Scene feature. ES-1000 Ultraharmonizers.
Product (575) on Reader Service Card

BD900, BD941, BD942: broadcast delays.

Circle (575) on Reader Service Card

Evertz Microsystems 19534
Product line: Timecode equipment, film footage encoders; transport controller; Keycode readers; telephone data logging software.

EV-16: Keycode reader head.
KeyPoint: film/video list management software.
Model 4035: integrated film, post-production system.
Product (576) on Reader Service Card

Circle (576) on Reader Service Card

Fairlight ESP 12762
Product line: Digital audio workstations.

Edit Decision List: for MFX2 audio production system, compatible with Digtyeyes Shoutlist captured video information; no manual list writing required.
Product (579) on Reader Service Card

Fairday Technologies Ltd 16378
Product line: Video, RF filters, delay lines for conventional and HDTV. New products to be announced at exhibition.
Product (580) on Reader Service Card

Faroudja Laboratories 13422
Product line: Video signal processors, encoders, decoders, detail enhancers, component transcoders. LD100 line doubler: accepts NTSC, S-video inputs; produces high resolution images by doubling the number of lines of resolution; LD100U provides multi-standard capability with auto input switching to the appropriate standard.
Product (581) on Reader Service Card

Fast Forward Video 11949
Product line: Time code products, F30, P2 portable generators.
Bandit digital video recorder: transfers full-screen, full-motion digital images, animation from Macintosh or PCTo VCRs; connects to SCSIor serial port; supports Quicktime, TGA and other formats.
Product (584) on Reader Service Card

Circle (584) on Reader Service Card

Fiber Options 16314
Product line: Fiber optic transmission systems with Diagnostic Indicators.
Series 120B, 130B Video Link: 120B long-haul FM transmission to 40,000 feet on single/multimode fiber; 10MHz bandwidth; 130B 2-way system.
Series 131B audio, video link: unidirectional transmission on multimode fiber; 8MHz video, 20KHz audio.
Series 170B Video Link: multimode fiber with 10MHz bandwidth, extended resolution version to 35MHz.
Series 220B, 224B, 224SB InSana FM transmission of video/audio on multimode fiber: 8MHz video, 20KHz audio; 224B for stereo audio; 224SB also carries data.

Circle (63) on Reply Card

Circle (64) on Reply Card

www.americanradiohistory.com
It’s lower, lighter and you can buy about 2 for 1 of theirs!

**Miller 25 –**
Bridging the gap between performance and value.

- Designed for broadcast ENG camcorders
- Weighs 3.2 kg (7.5 lb), complete units as low as 5.8 kg (12.2 lb)
- Multi-step fluid drag control
- Counterbalance system integrated with quick release/sliding camera platform
- Available with Lightweight, Single Stage or 2-Stage tripods, alloy or carbon fibre
- 3 year factory backed warranty

**MILLER FLUID HEADS**
30 Hotham Parade
Artarmon 2064 Australia
Tel: (02) 439 6377    Fax: (02) 438 2819

**MILLER FLUID HEADS (USA) INC.**
410 Garibaldi Avenue
Lodi NJ 07644 U.S.A.
TEL. (201) 473 9592    Fax: (201) 473 9693
Compact UHF wireless from Lectrosonics is here!

A new era in high performance wireless systems begins now...

With well over 10,000 compact systems now in field production, we have learned what it takes to make a system perform. It takes solid thermal stability, a 6-pole helical resonator front-end, a balanced XLR output, and an extremely durable mechanical package. With an all new dual-band compandor, 75KHz deviation, no pre-emphasis and up to +8dBm audio output, no other system measures up to the new 195 compact system.

It's all new and it's very hot!

See the 195 Series at NAB 93 in Las Vegas, Booth 12508 or call:
(800) 821-1121

LECTROSONICS, INC.
581 Laser Rd., Rio Rancho, NM 87124
FAX (505) 832-6243

Made in the USA
Series 2408, 241B, 242B, 245B: video, audio single/unknown multiformate fiber systems; 8MHz video, 20-KHz audio; -245B for stereo audio; -242B includes data instead of audio; -248B includes RS-232-C.22 data.
Series 2908 digital control link carries SMPTE 29M 4-WIRE machine control on single or multiformate fiber. dual fiber and single fiber operation.
Series 310B, 312B, 313B audio links: balanced audio systems on multiformate fiber; +4dB, 600Ω for audio distribution; -312B includes stereo audio; -313B offers digital stereo audio with 16-bit processing.

Franklyn R. Beemish
Services include: System, facility engineering, design, construction.

William L. Reising
Product line: Production assistance products, Personal Music. NewFirstCommLibraries

Robert A. Garber
Product line: Product line: High-end digital audio workstations; digital audio systems.

C. B. Green
Product line: Product line: High-end digital audio workstations; digital audio systems.

J. W. Johnson
Product line: Product line: High-end digital audio workstations; digital audio systems.
Product line: Digital edit suite mixers. D/ESAM 800 digital system; digital interface converters.
D/EFSAM 800 Ver 2.0: upgrade EPROM adds manual cues/cut, autoToFlm for automation.
D/ESAM 800 delay option: allows audio delay to match video delay from switching, processing range of 75 frames.
D/EMEM Plus: for D/ESAM 800; enhanced memory management, 900 internal registers, configures virtual machines, other advanced features; disk drive stores entire system memory.
DATS: digital interface converters; passes AES/EBU format digital audio around broadcast and post-production facilities.

Circle (615) on Reader Service Card

Gotham Audio
Product line: Distributors, audio products.
(Circle (614) on Reader Service Card

Graham-Pattten Systems

12447

Product line: Digital edit suite mixers. D/ESAM 800 digital system; digital interface converters.
D/EFSAM 800 Ver 2.0: upgrade EPROM adds manual cues/cut, autoToFlm for automation.
D/ESAM 800 delay option: allows audio delay to match video delay from switching, processing range of 75 frames.
D/EMEM Plus: for D/ESAM 800; enhanced memory management, 900 internal registers, configures virtual machines, other advanced features; disk drive stores entire system memory.
DATS: digital interface converters; passes AES/EBU format digital audio around broadcast and post-production facilities.

Circle (615) on Reader Service Card

Grass Valley Group

16833

Product line: Signal management systems, routers, fiber optic products; videotape edit controllers; production switches; effects, graphics systems, titlers, paint systems; master control switches.
9800 series: high density analog video DAS, based on 8500 series; 8 outputs; 10 DAs per 2RU frame.
Halo video typograph: enhancement to Graphics Factory adds dimension to system fonts; gloves, bevls, other edge effects.
MCF series: multi-channel digital fiber optic transmission system; to 12 channels of 1081 video, each with four audio channels.
Model 1000 production switcher: component digital, serial or parallel/I/O; 10-bit processing similar to Model 110C.
Model 4000: component digital production switcher; similar to Model 3000; 2Mx, 16-input, 4000-2E, 25M-2A, 24-input, 4000-2A.
Performer-SD router: one-RU router for serial digital signals; 10K VMA matrix.
Seltec 1108: dynamic editing system displays pictures, graphics, text on single CRT; controls 36 devices.
SMS-8000 series: modular serial digital format conversion editors.
Sugnet 7.8: software upgrade for VPE editors.
PRONTO: cost-effective affiliate I.D system operates as optional character generator.
MAX-9000 series addition: M920G-N, M2626G-N digital audio multiplexer, demultiplexer; for audio signal distribution in digital video facility.
videoDesigner upgrade: software enhancement increases integration, performance.

Circle (616) on Reader Service Card

Gray Engineering Labs

19438

Product line: SMPTE/EBU time code generators, readers, analyzers, code phase correctors, character inserters, video data editing, solid area generators: data encoding/decoding systems.
DTR-313 reader, generator: family with independent LTC, VITC functions.
VR-221: analog video action video reticle generator; dual standard: size, position; store/recall functions; crosshair, crosshatch, keying capabilities.
FDG-345 film data generators: tach-timed code units with film data VITC generator.
DR-107B time code reader: reads LTC from 1/100 to 1000x playback, inserts character window of time, user bits, window size, position controls.
TCA 1440: character generator shows code phase relative to sync reference: detects color frame, counter error, bit error; memory, alarm circuits.

Circle (617) on Reader Service Card

Great American Market

16615

Product line: Lighting utilile; grip products.
BEAMER: changes existing theatrical fixtures to moving lights; remote control mounts to gel holder of 6" or

8" fixture; analog, DMX control from lighting console.
RDS/Tech-Light: automated lighting systems; TACT control console.
TwinSpin: double pattern rotator fits iris slot of 6" ellipsoidal instrument; pattern set in opposition.

Circle (618) on Reader Service Card

Group One Ltd.

19142

Unassigned

Product line: Distributor for FVituC, XTA, KXK XTA Electronics: (800) mic line distribution; RT-1 real-time analyzer; 1/5 octave graphic equalizer.
FVituC Red range: RED-1 channel mic preamp, RED-22 channel parametric EQ, 8A 215-22 channel mic preamp with FL.
KXK monitor speakers.

Circle (619) on Reader Service Card

GTE Spacetron

Global News Express: news gathering service by satellite provided through GTE network.

Circle (620) on Reader Service Card

Gulcar Television

Product line: Video tape libraries of production material, test signals.
3D & Normal effects, Fantastic: Videolibrary: visual images, effects video: typical segments approximately 1 minute in length.

Video recorder Video Test: 30-minute videocassette for checking TV monitor, video tape equipment.

Circle (621) on Reader Service Card

H. I. Daugs

18867

Product line: Distributor for Belden wire, Neutrik, SwitchCraft connectors; Fluke products; Sony, JVC, Denon DAT: DAT stereo videocassette.

Circle (622) on Reader Service Card

Hallikainen & Friends

17172

Product line: Audio mixers, programmable transmitter control systems.
DRC-200 enhanced: programmable multisite transmitter control; new software to be introduced.

Circle (623) on Reader Service Card

Hamlet Video International

15733

Product line: Waveform, vector, stereo audio measurement, monitoring devices using digitally generated displays on standard monitors.
301 Video Scope: Stereo Scope, composite, component, S-VHS waveform/vectoroscope: stereo/mono bar graph, polar audio display: front-panel probe input; auto/NTSC/PAL switching; 3H filter parade, ARV vector overlay: display mixture: full screen or 1/4, 1/8 split displays: RS-232 control via PC, Amiga, MAC.
303 Video Scope: precision composite NTSC/PAL vector, waveform monitor; measurement timing, phase, absolute SC/H: line select with cursors, function, numeric indicator; chop modes; 3H combined 24up or filter parade; 5-function user setup memory: grayscale.
304 Video Scope: multistandard, simultaneous component, composite waveform, vector displays on standard or component monitor; component mode, Bow, tie, overlay, parade, Y/UV, vector components.
502 Stereo Scope: 4-channel mono, dual stereo on-screen display; shows left/right, zero/difference as VU or PPM; polar plot: default, user-defined setups; for analog NTSC, PAL, composite, component YUV/GHR.
533 Video Scope: 2-channel stereo on screen bar graph display, phase indicator, L/R, M/S, display options for composite NTSC, PAL.
MatchCam: camera alignment system option.
Micro Scope: handheld, single-channel composite waveform/vector unit; integrated NICad battery.
PC Scope: plug-in NTSC/PAL, waveform/vector with mono/stereo audio displays for Amiga, PC, MAC: external reference: full-screen individual, combined or 1/4-size split-screen displays mix with picture or black background.
Ports Scope: portable Video Scope enclosure; available: 301WV, 303WV, 304WV installed: 12Vdc operation: 4 pounds; 10.75x8.4x1.1 inch.

Circle (624) on Reader Service Card

Harding Industries

18565

Product line: Equipment transport cases.

Circle (625) on Reader Service Card

Harris Allied Broadcast Div.

22218

Product line: Radio, TV transmission equipment, solid-state TV transmitter, multimedia switchers; RTT-1K, MD6 satellite transmitters; Phased systems, systems use: remote control products; digital FM exciters.
Audiotronics PC: compatibles designed specifically for broadcasters.
Sigma Series: IOT CH TV transmitters; ATV-ready 15-kW product control cabinet for single, dual exciters; up to six amplifier cabinets; meets world safety, performance standards.
Platinum series: ATV ready 30kW solid-state VHF TV transmitter (other models 14kW); hot-pluggable solid-state modules in parallel reduce routine maintenance, extensive on-air service capability.
DX-15 digital solid-state transmitter: medium-wave, solid-state system rated 15kW; digital modulation: 86% ac-to-hf efficiency.
DX-150A: frequency-agile, digital solid-state MW transmitter; 15kW rating: 83% ac-to-hf efficiency.
DT-20FM: 20kW FM transmitter featuring Digital 5kW digital FM exciter.
TVT Steeper: 5kW solid-state UHF transmitter (other models 3kW-30kW); modular design; extensive on-air service capability, VHF display of transmitter status assessment, remote capability.
PT series: solid-state FM transmitters; 2kW-10kW range; FET hot-pluggable modular design in parallel, redundant configurations.
HDTV system information.
Radio digital automation products: Gentner Audionic. Platinum Sentry option: access to complete transmitter status, control capability from PC.
Navigator UTV-1000: 1kW UHF solid-state TV transmitter; (other models 10kW-11kW), single-tetrode models at 3kW, 10kW.
Digitrol remote control: PC-based remote control: three models from 16 to 128 controls, status, analog channels; IRC-126 connects with three PCs directly or through Hayes compatible modem.
HT series: FM transmitters, solid-state designs ranging from 25kW-1kW; single-tube designs from 3.5kW-35kW.
GATEs FINE, FA: 5kW frequency-agile, solid-state MW transmitter; Polyphase PDM technology; requires - three minutes for frequency change adjustment.
Digit: digital FM exciter; 50kW output; 32-bit direct digital synthesis: precision FM transmitter resolution rivals CID audio quality; available with 16-bit A/D converter for compatibility with analog air chains; use as upgrade to almost any FM transmitter.
RDBS equipment: latest RDBS technology from Re- America, other manufacturers.

Plate: HDTV Newsletter

Harris Allied Broadcast Div.

11629

Product line: Audio mixing consoles, control equipment, Series Ten B.
Model MPC: Motion Picture Console features total automation of dubbing.

Circle (627) on Reader Service Card

HDTV Newsletter

19570

Product line: Lighting, distribution equipment for ana-

Circle (628) on Reader Service Card

HEDCO div. of Leitch

19739

Product line: Routing, distribution equipment for ana-

Circle (629) on Reader Service Card

Broadcast Engineering
March 1993

114
HDTV BROADCASTERS

ARE YOU LOOKING FOR OUT OF THIS WORLD QUALITY?

Then your transmission tube choice has to be EEV

EEV has set up a special HDTV Engineering Group to provide broadcasters and transmitter manufacturers with assistance for maximizing the HDTV performance of their transmitters, whether they be new or modified conventional tube equipped units.

Transmitters equipped with EEV’s IOT tubes have already carried HDTV signals both in laboratory and “over the air” environments. With a track record like this where else should you go?

EEV Broadcast Products

USA: EEV Inc., 4 Westchester Plaza, Elmsford, NY 10523 Telephone: (914) 592 6050 or ‘Toll Free’ 1-800 DIAL-EEV Telex: 6818096 Fax: (914) 682 8922

CANADA: EEV Canada Ltd., 67 Westmore Drive, Rexdale, Ontario M9V 3Y6 Telephone: (416) 745 9494 Telex: 06 993636 Fax: (416) 745 0618

UK: EEV Ltd, Waterhouse Lane, Chelmsford, Essex CM1 2QU, England Telephone: (0245) 493493 Telex: 99103 Fax: (0245) 492492

See us at NAB Booth #16640

Subsidiary of the General Electric Company plc of England

Circle (54) on Reply Card
log, digital audio, video, pulse, data, audio, video DAS. ADA- Mix Box: series: 816MB, 881MB stand-alone monaural audio, 852MB stereo audio DAS.

Model VCA-B/8MB-video clamping amplifier Mix Box. XP58 series modules for VSR-16/16, VSK-16/16 serial visual, ASR-80x AES/EBU audio routers.

PDA-808MB: Mix Box pulse DA.

VEA-808MB, 881MB: Mix Box Mix series stand-alone video products, Top, EQ with clamp DAs.

UDA-608MB: Mix Box utility, video DA.

SVD-808MB: Mix Box switchable video delay.

GS-P: 20x/4, 40x/4, UPI, joystick control panel.

EPC: series: router modules, control panels.

ATG-800: Mix Box audio tone generator.

Circ (629) on Reader Service Card

Henry Engineering

Product line: audio, control interface products, dubbing workstations.

Digicord: general purpose digital audio recorder; 512kHz to 384kHz bandwidth.

Digistor: digital message storage.

Edit Track workstation: for dubbing, voice-over, utility audio.

Microburn: 4-input stereo line mixer.

Telephone Information Service: listener information service; 10 messages accessed by Touch-Tone phone.

Twinmatch: dual stereo impedance, level converter.

Circ (630) on Reader Service Card

Hewlett-Packard

Product line: Test equipment, network analyzers, spectrum analyzers.

HP 5380A: time-gated spectrum, network analyzer.

Tools for Video Test/Measurement: product guide focused on oscilloscope, signal analysis instruments.

Circ (631) on Reader Service Card

HHB Communications Ltd

Product line: Distributor of digital audio mixing, recording equipment.

Circ (632) on Reader Service Card

Hi-Tech Furnishings

Product line: Work area furniture.

Circ (633) on Reader Service Card

High Density Circuits

Information not available.

Circ (634) on Reader Service Card

Hitoptronics

Product line: Power control equipment, Peschel automatic voltage regulator and variable transformers.

Circ (635) on Reader Service Card

Hitcher Dental

Product line: C1 video camera, models; monitors, video recorders, D2 digital VTR.

SK-F380, SK-F36: studio and hand-held cameras; 600,000-pixel ITT CCDs 900-line resolution; digital video processing; fiber, triax, multisync digital outputs.

RF hand-held camera system: camera control, pan/tilt, zoom, focus, video output through RF link.

16:9 concept: camera.

SK-H5: enhancement: low-light cameras with one additional input (up to sensitivity to 0.4 lux).

Z/ONEC: enhanced: additional gain for ¼" 400,000-pixel camera; RZU1 remote control with scene file capability.

Circ (636) on Reader Service Card

HM Electronics

Product line: Wireless mics, intercoms; specialty local area voice data transmission systems.

System 8000: LHF full duplex wireless intercom; clear, crisp sound to 2,000 feet from belt-pack to belt-pack; coupling three base stations together allows 12 belt packs to operate in full duplex or an unlimited number can be operated in push-to-talk: uses Communicator belt-pack units.

Circ (312) on Reader Service Card

Holaday Industries

Product line: Magnetic field, RF radiation metering, ELF and field strength meters.

Circ (637) on Reader Service Card

The Hollywood Edge

Product line: Production music libraries.

Product line: 4627

Circ (638) on Reader Service Card

Hoodman

Product line: Sunshades, Monitor holds for glare-free viewing of field monitors, viewfinders, teleprompters.

Circ (639) on Reader Service Card

Horita

Product line: SMPTE, LTC, VTC, time code readers, generators, inserters; TC TOOLKIT tape logging software; color bar, blackburst, sync, audio generators; safe area generators; timer, time-date-stamp generators; GS-based time code; position logging systems.

GS-based generators: Master Time Code, Master Sync sources.

PC cards: plug-in board with time code, blackburst, sync, tone generation.

Video DA: user configurable.

Circ (640) on Reader Service Card

Honeywell

Product line: 13617

Circ (641) on Reader Service Card

Hughes Industries

Product line: Custom transit, shipping containers.

Product line: 19779

Circ (642) on Reader Service Card

Hughes Communications

Product line: Broadcast satellite program distribution.

Product line: 16246

Circ (643) on Reader Service Card

Hughley & Phillips, Inc.

Product line: FA-Approved obstruction lighting, controllers, remote monitoring for tall towers.

Solisate controller: for dual red and white lighting systems with dc backup.

Product line: 1404

Circ (644) on Reader Service Card

IBM Multimedia

Product line: Multimedia consulting services; hardware, software.

Ultimedia series: PS/2 486-based PC; 3-year on-site service with 4-hour response time.

Enterprise Multimedia hardware: RISC System/600, AS/400, FS/9000.

Ultimediata tools: products from IBM, other vendors; creative products; Tools with auto configuration.

Product line: 15171/MM

Circ (645) on Reader Service Card

IBSS

Product line: Signal routing systems; Ghelletti audio jackfields.

Ghleletti GKA2x23: jackfield for audio signal routing control for analog, digital.

Product line: 1324

Circ (647) on Reader Service Card

IBD Broadcast Group

Product line: Information not available.

Product line: 5002

Circ (648) on Reader Service Card

IBD Communications

Product line: Satellite communications systems; Flyaway Phone satellite terminal in a suitcase.

Product line: 15766

Circ (649) on Reader Service Card

I-DEN Videocon

Product line: TBC: products, synchronizers, video wall processors, standards converters, scan conversion units; video production systems.

IP-450: standards converter for 8bit multi-directional operation among NTSC, PAL, PAL-M, SECAM; component Y/C, RGB.

IP-5X0: scan converter: flicker-free scan conversion from VGA, Mac II to video; composite, Y/C, RGB outputs in NTSC, PAL.

IP-70-L: 2, 2-channel TBC, transcoding with component, Y/C, U/O, RGB inputs; 1 for 4:1 processing, 2 for 4:2 processing.

I-VT-6: 1-6-channel transcoding TBC/synchronizer.

I-VT-7/TG: composite, Y/C TBC with freeze; RGB includes RGB U/O.

I-VT 9: TBC: full transcoding TBC/frame store with strobe, freeze, freeze; effects; composite, component, Y/C 1 single channel.

Quartet: video production system; 4-input switcher, effects, dual TBC's, keyer, operates from front panel or Windows software.

TBCARD, TBCARD II: plug-in TBC's for Amiga, IBM: TR-2; composite Y/C; TBCARD has Y/C input; TBCARD II has Y/C input.

Videowall processor: BW-40x 2x2 matrix, expand to 4x4 system; BW-100 in 2x2 to 4x4 systems.

BW-300 video wall; modular, expandable from basic to advanced multi-input system; 4 input, 1 effects and 16 output cards in mainframe cage; HDTV input card for $80($6) ratio walls supports 1125/60; dual-mode output cards; pixel duplication achieves resolution to 1.500 points per line.

Product line: 650) on Reader Service Card

IDS/SAC

Product line: Edlourgh video projection systems.

Product line: 15253

Circ (652) on Reader Service Card

Bosch Electronics

Product line: 1612A

Circ (653) on Reader Service Card

Bohncor/SOEX Acoustic Products

Product line: Acoustic material, treatments, SOEX acoustical foam, Precision barriers, compressors.

Precision: available as pyramidal acoustical foam shapes, composite barriers.

SOEX: fabric covered panels.

Product line: 15545

Circ (654) on Reader Service Card

Image Logic Corp.

Product line: Videoediting software; LogProducer 22 automated logging on Betacam players; AutoCaption closed captioning system.

Direct Captions: Closed Captioning system.

Product line: 17778

Circ (655) on Reader Service Card

Image Video

Product line: Signal routers, $9501 20x30 video, dual/mono audio; $529121 20x10 video, dual/mono audio router; $8010 master control switcher.

A1204 router: for AES/EBU signals 10x1; 6464F.

AS68: A/D conversion of two analog audio inputs to one AES/EBU digital output.

D968: D/A conversion of one digital audio input to two analog outputs.
In a typical broadcast day, DigiCart/II prepared and played more audio than its predecessors did in a week.

DigiCart/II goes far beyond cart machines and reel-to-reel decks—and even most digital machines. It's a uniquely powerful digital audio recorder, with software tools that bring color and interest to your work. • In production, use DigiCart/II to make mistake-proof edits, precise fades, and seamless back-to-back cuts. • On-the-air, get instant access to music and effects loops, voice overs, delayed news feeds, and QuickStack™ playlists. • DigiCart/II supports an eight-hour hard drive, and three new high capacity cartridges—ideal for playing current inventory and moving audio between machines. • DigiCart/II is attractively priced and available now.

360 Systems
PROFESSIONAL DIGITAL AUDIO
18740 Osuna Street, Tarzana, California Phone 818-342-3127 Fax 818-342-1372
Circle (131) on Reply Card

www.americanradiohistory.com
To Make Money in Radio Advertising, You've Got to Push the Right Buttons.

Since 1990, radio stations in every music market have been more creative, more efficient and more profitable with the DSE 7000. In order to increase profits in the competitive radio environment of the '90s, general managers have been asking more from their production directors, who in turn have had to do things faster and cheaper. Clearly, the trusty 8-track recorder wasn’t going to lead radio stations through this new era.

Since it was impossible to become more efficient at tape splicing, astute production types contemplated digital technology. They found out about a company with over 40 years experience manufacturing professional audio products, who was already shipping a digital sound editor for radio production. Not coincidentally, this system had many of the same controls and functions they were used to.

They tried a demo of the DSE 7000 and realized they could produce spots in one-third the time. Which meant they had time for a certain luxury called creativity. The DSE’s UNDO button gave them room to experiment. And its audio quality raised their standards to an entirely new level.

Today, hundreds of radio stations are making more money producing radio commercials, because they’re pushing buttons on the DSE. Now it’s time to push some buttons on your telephone and call AKG.

DSE 7000 • The New Speed of Sound

AKG Acoustics, Inc. 1525 Alvarado Street, San Leandro, California 94577, USA. Tel: (510) 351-3500, Fax: (510) 351-6500

©1993 AKG Acoustics, Inc

Circle (130) on Reply Card
Imagine Products
10553
Product line: Timecode equipment, editing software; software for production organization with off-line editor; DAT, timecode management.
MicroReader miniature LIT reader for laptops; battery-powered.
Serial Converter: Control of RS-422 devices; self-powered for field use.
T/PE/V.44 Executive Producer with VTR control, time-coded output, replace; ASCII tab-delimited output.
AVD, EMC compatibility: SMPTE, VTR readers.
Circle (658) on Reader Service Card

LIC/International Music Corp.
5420
Product line: Akai digital recorders, ID1000 MD disk recorders; stereo digital samplers.
CD 1000x: sample player with integrated CD-ROM drive.
DD/DMAC: editing software for ID1000 disk recorder.
DR Id: multitrack hard disk recorder.
S01: MIDI digital sampler.
S240, S3000, S3200: stereo digital samplers.
Circle (660) on Reader Service Card

Tomlinson
16584
Product line: Digital post-production workstations.
VideoCube: workstation for video post production; dissolves, non-linear editing; real-time effects creation; high resolution, anti-aliased character generator; editors, mix CD quality audio; one hour storage of video, two hours audio; expandable with additional storage modules.
Circle (661) on Reader Service Card

Industrial Acoustic/TAC
13841
Circle (662) on Reader Service Card

InfiniVision
17569
Product line: InfiniVision; special purpose camera lens. Probes for 1/2", 1" cameras; Lumenyte fiber optic lighting.
3-axis Mini-Jib arm: tabletop, portable camera precision motion control; attach to heavy tripods, dollies, professional fluid or gear heads.
Mini-Mover enhancement: portable motion control table, joystick controllers; 4-axis memory; memory for motion repetition.
Right angle Probe: 90° angle-of-view for cameras showing tabletop presentation.
Series 6000: 15"/35" tubular, high-res lens; self-illuminating, direct, 90°, 45° angle-of-view.
Circle (664) on Reader Service Card

InnoVision Technology
18284
Information not available.
Circle (665) on Reader Service Card

Inovonics
2006
Product line: Audio processing systems, digitally controlled systems; FM generators, FM sync system.
DAVID: stereo audio processor, FM stereo generator.
The Sentinel 558: monitor receiver/evaluator.
Circle (666) on Reader Service Card

Insulated Wire/Microwave Products
4914
Information not available.
Circle (667) on Reader Service Card

Intelligent Resources
17181
Product line: Graphics for Macintosh, Video Explorer processor, VideoBahn high speed interface between VideoBahn compatible cards; Docking Cards; RGB input digitizers; RGB output put 32-bit to video converters.
Component Modules: accepts, transmits 34-component video; RGB, YUV, Betacam SP, MII.
Software Release: S8: user-configurable, open architecture system control IR port.
Circle (668) on Reader Service Card

Intelliprompt (DREAMDATA)
19205
Product line: Video prompter systems using IBM PCs, Intelliprompt II.
Circle (669) on Reader Service Card

Intervideo
19051
Product line: Video pre-encoder/color detailer, digital color encoder, color corrector, SG sync generator.
DEC 7: NTSC color decoder; digital adaptive comb filters, linear digital color modulation.
IN impulse: noise reducer: removes ignition, electrical, FM threshold, other noise from NTSC color signals; all digital adaptive signal processing design.
Circle (670) on Reader Service Card

International Datacasting Corp.
3191
Product line: Receivers for satellite data transmission.
Circle (672) on Reader Service Card

International E-Z UP, Inc.
18951
Product line: Instant shelters.
E-Z UP Instant Shelter: fast setup with no assembly; fully self-contained; heavy-duty fabric tops with double-truss design; designer colors; stores in golf bag size package; fits to 10X20 feet.
Circle (673) on Reader Service Card

International Tapetronics/RTC
4602
Product line: Audio recorders, RTC 90B, Series 1 cartridge machines; digital recording products; audio signal control products, Audio Switcher.
DigitCenter: digital audio automation platform; hard disk record, play; traffic system interface; live assist.
DPR-612: digital program repeater; stores 15 monophonic programs for IDs, effects, short messages.
Series 2: audio tape cart recorder, reproducer, mono, stereo with Dolby noise reduction, Pro headroom extension, digital timer, active balanced I/O.
Circle (674) on Reader Service Card

InterTech Publishing Corporation
15181
Publication titles:
• Broadcast Engineering
• Video Systems
• World Broadcast News
• Sound & Video Contractor
Circle (675) on Reader Service Card

Intraper
4906
Product line: Digital transmission equipment, T-1, E-1, variable rate multiplexers for satellite, terrestrial networks.
High-speed data capability.
Transport capabilities accesses various of network services.
Circle (676) on Reader Service Card

IRIS Technologies
16371
Product line: Audio, video switching, control systems.
IRIS Desktop Control Platform: hardware, software for Video Commander for Windows; router, machine control, mapping engines for specialized applications.
Video Commander: router system for 16x16, 32x32, 64x64 matrices.
Circle (677) on Reader Service Card

IRF Electronics Pty Ltd
17973
Product line: Fiber transmission, vertical interval audio transmission products.
Digital Intercom system: 32x32 matrix, single twisted pair connects control panel to matrix; software configurable switch functions; 2/4-wire camera interfaces; IFI available.
VA-385, VA-384: portable analog video, audio fiber optic transmission modules; for temporary circuits, locations where equipment racks are unavailable; front panel input, output; ac/dc operation; meets RS-250B short haul specs.
Video Isolator: 50V peak protection; hum isolation between studio buildings, other locations; 60Hz isolation, differential input, cable EQ to 300 feet, back porch clamp; >10MHz bandwidth.
Circle (678) on Reader Service Card

Jampro Antennas
16324
Product line: TV, FM CP transmission antennas. JHD: low VHF dipole panel antennas.
JLHD: broadband UHF panel antennas, 4-dipole.
JLHP: HP transmitter antennas.
JLST: CP transmitter antennas.

Circle (681) on Reader Service Card

Italiana Ponti Radio SRL
15169
Product line: Radio transmission, STL products.
Circle (679) on Reader Service Card

J-guide
4906
Product line: AM, FM radio transmitters, translators, STL microwave. New products to be introduced at the exposition.
Circle (680) on Reader Service Card

ITELCU spa
15722
Product line: Radio, television transmitters, STLs. Circle (682) on Reader Service Card

IITS/Information Transmission
12136
Product line: UHF transmitters; UHF Exciter Plus replaces older parts of transmission systems; wireless cable products.
Exciter Plus systems: VHF exciter, other stages, except final PAs; replaces 6791 stage of RCA F-line systems.
ITG-228A transmitter: 2m dual coverage antenna; 16W, 10kHz, 10kHz frequency-agile transmitter, 1610 channel combiner, 650 horn antenna with booster; complete 12-channel 20W wireless cable transmission system.
Circle (683) on Reader Service Card

J-Lab
12436
Product line: Video production utilities; field, portable video switcher; DAC, EQ, tone source.
CD3: handheld camera control unit for Betacam; equalized video, gen-lock to 100m.
Circle (684) on Reader Service Card

James & Aster Music
16377
Product line: CD libraries; classical, medieval, renaissance selections; Match Music series.
Circle (685) on Reader Service Card

James Grunder & Associates
15753
Product line: Video processors, Yamaahita scan converters, sync generators; Ferrel Videotech TBC/synchonizers; Hamlet Video video test equipment.
Ferrel Industries C-100: TBC/synchro; multiple inputs, outputs, transcoding NTSC, PAL; freeze with field 1, field 2 select, fade-to-black, sync amp controls with input memory; C-100 Plus adds adaptive digital comb filtering, automatic DOC.
Ferrel Industries MICROC: PC plugin TBC/synchro; 4:2:2 processing; adaptive digital comb filter, auto DOC, composite, Y/C, DVE, transcoding, enhancement, gen-lock, freeze with strobe.
Ferrel Dual 4/2:2 TBC.
Hamlet HV100 series: combo waveform, vector monitors; waveform, vector, audio signal displays on standard monitor, full-screen or control panel.
YEM Sync generator: gen-lock dual generator; rubidium-controlled system.
YEM ENC-3000: gen-lock color encoder.
SMPTE/SM: SW-956B computer graphics video switcher.
YEM DA-950AT: super wide-band video DAC.
YEM scan converters: CBS-980, 980M monochrome, 980H high-resolution, CBS-970AL graphics to HDV/SDI 5kHz, CBS/SDI VGA/NTSC, CBS-810 real-time automatic system.
YEM EDE-2000: digital decoder, line doubler; 3D comb filter, motion adaptive line scan interpolation.
Circle (686) on Reader Service Card

March 1993 Broadcast Engineering 119

www.americanradiohistory.com
**JY series:** YAG antennas for VHF, UHF, FM. 
Circle (687) on Reader Service Card

**JBL Professional**
15713
Product line: Audio monitor products, speakers, amplifiers, audio processors.
Control SSR: control room monitor.
M552, M553: variable crossover networks; 2-way stereo 3-way mono, 3-way stereo 4-way mono.
M644: 4-channel noise gate.
MT12: 2-channel gating compressor, limiter.
4400A series: monitors; 440A 8" 2-way, 4410A 10" 3-way, 4412A 12" 3-way. Symmetrical Field Geometry (SFG) magnets, extended listening without ear fatigue.
2406, 4206: 2-way, 6", 8" consoles; top studio monitors.
Circle (688) on Reader Service Card

**Jefferson Pilot Data/JDS**
13811
Product line: Broadcast business systems, software.
Circle (689) on Reader Service Card

**JEM-FAB**
13147
Product line: Digital signal distribution products. D-Patch machine control patching system; routers. DS-422, SD-422: digital serializer, deserializer.
Area Security System: monitors tower lights, current draw, temperature, power line, HVAC, UPS, fire controls, central station connects with telephone dialers.
Circle (590) on Reader Service Card

**Jenzen Tools**
13406
Product line: Numerous tools, kits for technicians, engineers, meters, signal source generators, computer maintenance kits. Fiske DMMS.
Circle (691) on Reader Service Card

**JNS Electronics**
2306
8000 series modules: SDA, S705 Ver. 2 mono/stereo audio DA, distortion +0.001%, EBU time code compatible, peak level indicator; SDA, 8225 stereo audio DA with five independently outputs; DFM, 8252 FM stereo detector/Alarm, monitors left/right, stereo pilot.
8000 series modules: MA8711 Ver. 3 stereo audio monitor with 10W power, level control; VCA, 8292 voltage controlled amplifier; gain +90dB to remote control four stereo audio sources.
8300 series: stereo to 100Ω router; panel, PC control.
9000 series: audio router, mono, stereo to more than 100Ω/100Ω matrix; panel or PC control.
DMUX 300 series: stereo/mono audio multiplexing system; 16-bit technology; multiple 15kHz, 7.5kHz, 3kHz audio feeds with digital or microwave interconnecting circuits; DMUX MC 501, 502 auto change over.
RF1-700 series: 1.5-2.3GHz digital microwave link for DMux, E1, T-1 to T-1.
Circle (692) on Reader Service Card

**JVC**
18046
Product line: Video cameras, recorders, editing equipment; video monitors; mics, audio recorders.
KY-27Y: 3-CCD LoLux camera: 2.3" IT sensors operate to 2lux illumination; 75kHz horizontal resolution; 62dB SN.
BR-S411LB: S41S recorder: docking portable with time code; XLR audio I/O; search to 7x play speed.
BR-S525U/S41S player: still, slow-motion, VanTrack from 2x, 3x play speed; programmable playback changes 225%; time range in 0.1% steps.
BR-S601UB: S41S recorder: accepts computer video; video insert edits; S427U time code; extension slots.
BR-S622U recorder, edit VCR: similar to S822U/0 editing functions.
KY-17B, KY-17TITA: CCD cameras; -17B with IT Micro lenses, -17TITA with IT CCDs.
BR-S422U: S41S docking recorder.

**JVC**

**K&K Products**
16369
Product line: Camera support products; transport cases, shoulder case, camera case. AR-222 case for Marantz PMD-222, 201, 401, 430.
AO-2 Audio Organizer: holds mixer, wireless mics, wired mics, filters, headphones, cables.
CAR-2 cargo case: general purpose case.
FR-1 filter case: for 4" square, 4 1/2" round filters.
RS427/5 mini slicker: fits Sony DVC-537, BVHS VTR.
ARD-HC case for Sony TC-D10 recorder.
Circle (694) on Reader Service Card

**Kaleideoscope Camera Control**
19781
Product line: Camera cranes, pan/tilt heads.
Hot Head System: three choices of heads, with or without tilt slip rings, joystick, pan bar or geared head control choices; dc/ac power.
Circle (695) on Reader Service Card

**Kangaroo Video Products**
16177
Product line: Production bags, utility products.
EMKOTE products: protects sensitive electronic equipment, recording media against electromagnetic radiation.
KVP series: video recorder packs, expanded for newly introduced VCRs.
NAGRA KAP series: audio recorder carrying cases.
Circle (696) on Reader Service Card

**K-K-K**

**Kalogro Video Products**
16117
Product line: Production bags, utility products.
EMKOTE products: protects sensitive electronic equipment, recording media against electromagnetic radiation.
KVP series: video recorder packs, expanded for newly introduced VCRs.
NAGRA KAP series: audio recorder carrying cases.
Circle (696) on Reader Service Card

**JVC**

**Kalogro Video Products**
16117
Product line: Production bags, utility products.
EMKOTE products: protects sensitive electronic equipment, recording media against electromagnetic radiation.
KVP series: video recorder packs, expanded for newly introduced VCRs.
NAGRA KAP series: audio recorder carrying cases.
Circle (696) on Reader Service Card

**Kalogro Video Products**
16117
Product line: Production bags, utility products.
EMKOTE products: protects sensitive electronic equipment, recording media against electromagnetic radiation.
KVP series: video recorder packs, expanded for newly introduced VCRs.
NAGRA KAP series: audio recorder carrying cases.
Circle (696) on Reader Service Card
Product line: Wireless mics, plug-on outputs; SECAM signal generators.
Circle (715) on Reader Service Card

Leonard Studio Equipment 16084
Product line: Lighting, camera support products.
Leny Arrows 100-142, 25'-29.5' maximum lengths; greatest height, 56' from horizontal.
Circle (722) on Reader Service Card

Leontoff Company 16375
Product line: Studio high, Sunray HMI, ballasts.
Circle (723) on Reader Service Card

LES Corporation 18070
Information not available.
Circle (724) on Reader Service Card

Lester Audio Laboratories 4400
Product line: Fiber-optic transmission equipment converts analog audio inputs with return lines to a data stream on one fiber cable for transmissions. AES/EBU & SDE-2 digital output cards: option to pass digital signal at output mainframe, rather than conversion back to analog form; various configurations of cards possible. DAS 500: fiber optic transmission system in 8- or 16-channel formats; full gain, phantom control for each channel.
Circle (725) on Reader Service Card

Lexicon 17136-17
Product line: Digital audio workstations; stereo audio time compressor, expander systems.
CP-1, CP-2, CP-3: digital surround sound processors.
MDI remote VCA 4.0; software based on multistream, multichannel communications with digital audio processors; stores set up information.
Opus Software V 3.6f: external machine control; AutoMix console automation; CFEX time compression, expansion, gain shifting, sample rate conversion.
Circle (727) on Reader Service Card

Lightmaker Company 16381
Product line: AC ballasts for flicker-free HMI lighting from 200W to 12KW.
Lightmaker Mega Brute: 948 height HMI system.
Circle (728) on Reader Service Card

Lightening Eliminators & Consultants 12001
Circle (729) on Reader Service Card

Lightning Master Corp. 12062
Product line: Bonding, grounding products, services; Loresto Power Fill, tower leg ground straps; design, analysis services; surge suppression; structural lighting protection products. Streamer retarding air terminals.
Circle (730) on Reader Service Card

LIME Light Manufacturing 11662
Product line: Signal distribution, system timing, test, measurement equipment; audio monitor amplifiers.
PSW-626: video, audio switcher; 1x16 or dual 8x8.
Starflex 3690: transcoder for RGB to Beta, MIL.
PRC-685: video AGC proc; auxillary input.
Circle (731) on Reader Service Card

Listec Video 18816
Product line: Video prompting systems. A-5500/A-5501 SCROLLBOX: Chinese scrolling prompter display, Chinese word processor and SCROLLBOX: StudioPlus Editor; commands for live, on-line prompting, downloading script from newsroom computer, ultra-smooth, variable speed control.
A-5505 Scroll-Buddy: full-function 1/2U 110/220Vac mini-SCROLLBOX; runs on Palmtop DOS computer; dual screen editing, instant corrections, random. A-6000: enhanced A-6300. PC prompter imports prepared text files with pre-assigned attributes, cues for immediate program insertion, prompt output; exit to DOS or other applications: auto setup from within program; multiple run orders; six MS-DOS international language code pages.
Circle (732) on Reader Service Card

LNM Communications 3012
Product line: Satellite communication products: video exciters; digital audio system; automatic ID device.
DASVAT: cost-effective digital satellite communications; capabilities include audio, video, data, fax via C/Ku-band; MVC-10 mobile voice communication; DAD-10 digital audio distribution; DVC-10 digital video distribution.
LVM series: low-profile data quality video exciters; combine compact video modulator with low-phase noise digital-ready upconverters.
Circle (733) on Reader Service Card

Logilex 1424
Product line: Audio mixers; audio level metering systems; audio DA.
Bright-VU LED: audio level meter; larger display range, peak-hold indicator; desktop, rack-mount, panel meter models; percent mono meter. 4V1B: four 31/2" analog VU meters in 2RU package; lighting movements; balanced, bridging inputs. Marker enhancement: digitally controlled analog/ladders: low distortion of direct audio ladders with reliability and tracking of VCA units. ADA-4x4 DA: 1RU rack-mount unit configurable as four 1x4, two 1x8 or one 1x16 DA.
Circle (734) on Reader Service Card

Louth Automation 2016
Product line: Broadcast automation systems. ADC 10: ADC-106: automatic for low end/cable markets and advanced systems for multilist, multichannel operation.
Circle (735) on Reader Service Card

Low-Light 16646
Product line: Award-winning location lighting equipment, lighting kits, accessories.
Circle (736) on Reader Service Card

LPB 1924
Product line: Signature III audio consoles; low power AM transmitters.
FM stereo radiating cable system: unclosed applications; measuring assistance, localized re-broadcasting.
LPB 7000 series: stereo audio consoles, PAG line ladders, three stereo output buses; mono mixeddown, mix-minus option, 12, 18 input models. Measurements: PC-based audio storage, retrieval system. Telephone Access Remote controller.
Travelers Information System: 160x12z operation will provide NAS convention information.
Circle (737) on Reader Service Card

LSI Logic Corporation 4443
Product line: Integrated circuitry supporting data compression.
L61111: audio decoder designed for MPEG applications; delivers CD-quality sound with synchronization of audio and video.
L61112: video decoder designed for MPEG applications; produces studio-quality component video signals.
Circle (xxx) on Reader Service Card
Torch: hand

Product line: Superlite and Cinepar HMI lighting. 20k incandescent light.
Circle (738) on Reader Service Card

Lucasberry Manufacturing 16474
Product line: Luggage, equipment case hardware. LINK X modular case security system uses interlocking components for greater safety.
Circle (739) on Reader Service Card

Lyman Greenberg Electronic Prompting 19567
Product line: Computer-based prompting systems, universal camera display system. To wroclaw international: extended software, foreign language character sets.
Circle (740) on Reader Service Card

Lyman Lamb Video Animation 11315
Product line: Animation systems: RTC, real time scan converter. IVAS animation controller for SG iris Indigo worksta-
tion compatible with MinVAs 2: integral TC reader, generator, connections for two RS-422 VTRs, two RS-232 VTR, two Control LS VTRs.
VAStools4Mac assists in recording Macintosh graphics to videotape or disc; supports PC: PICT, PICS, TGA, RIB image files, requires Mac System 7.
Circle (741) on Reader Service Card

M-M-M
M-A-COM 20079
Product line: Microwave STL, cellular, PCN equipment.
Circle (742) on Reader Service Card

Microvision 11349
Product line: Videotape security and denduplication protection products.
Ves-ID: video transmission scrambler for business.

Labels
The largest selection of video and audio labels for laser and pin-fed printers. Available blank or custom printed with your company logo.

United Ad Label has the labels you need.
Call (800) 998-7700 for information and brochure.
United Ad Label Co., Inc. P.O. Box 2345 Brea, CA 92622-2345
Circle (78) on Reply Card

It can initiate tests across analog, digital and multimedia links.

All at the push of a button.

March 1993 Broadcast Engineering 123
outputs for VTRs, other devices.
MA-130: DTMF decoding interface: for local commercial insertion into satellite transmissions; supports five 4-digit DTMF decoders; comes with one decoder board.
Circle (727) on Reader Service Card

Matrox Electronic Systems
Product line: Desktop video production systems for PCs: high-end video post-production, video editing; videographics board; multimedia controller.
Illuminator PRO: video graphics board: 32-bit frame buffer; broadcast quality encoder; full-resolution NTSC/PAL at 32-bits, multiformat channel output; integral TBC, digital video effects.
Matrox Marvell: multimedia controller; applications for video conferencing to frame grab in DTP.
Matrox Studio: complete desktop editing for EISA PC: A/B/C roll editing, S-Video and graphics mix effects, integral TBCs, 32-bit graphics; three DVEs, two keyer channels: 128 rack audio mix, editing software.
Matrox Studio enhancement: non-linear editing, 3D DVE addition board with A/B roll system; fast cuts editor, D1, analog Y/R/B-Y channel support.
Personal Producer for Illuminator: video editing under Windows 3.1 combines video segments, digital audio, graphics, titles, video effects and transitions; storyboard interface: program stored to tape from storyboard layout.
Circle (758) on Reader Service Card

Matthews Studio Equipment
Product line: T.E. pedestal, pan/tilt series, cranes.
Bates cables: cables connect two 60a units to 100a systems; 60a cables in 25 incremental lengths to 100.
Classic Cestand: 40" riser, grip head, single extension gobo arm.
Hollywood box: power distribution; duplex or stage power.
Runway bases: C-stand with wheels; 20", 40" riser.
TPD Box 3287691: temporary power distribution box; 3-4 color coax cables with ground cable.
ITE HR8, HR9: fluid heads, quick-release mechanism, slide plate, 100mm ball, telescoping handle.
ITE HICHS, HICL: hex shipping cases for T/H80, T/H40 or T/H90, T/H600.
ITE T50/H80: tripod, fluid head with spreader.
ITE T30/H80: tripod, fluid head with spreader.
ITE T55 ENG tripod: bagage, spreader: 100mm bowl.
Circle (759) on Reader Service Card

Maxwell Corporation of America
Product line: Audio cassettes, reel-to-reel: M-1 Mac, VHS, D1, Betacam SP, 8mm videocassettes. Type C reel media.
D3 high-density digital videocassettes.
Circle (760) on Reader Service Card

McCurdy Radio Industries
Product line: Audio mixers, test sets, meter panels, jackfields; monitor/cue amplifiers; automation equipment; routers; video DAs, coamps; digital audio storage systems.
Circle (761) on Reader Service Card

MCL/Inc.
Product line: TNT amplifiers for C, Ku-band.
MNP 1054: C-band TWT; 400W; switch mode power supply operates directly from incoming AC with filtered full-wave bridge; 5.856-6.425GHz.
MNP 1086: C-band TWT, 57W; 5.856-6.425GHz; LED fault monitoring; LCD multifunction metering.
Circle (762) on Reader Service Card

Media Computing
Product line: Broadcast automation packages: PROtoc and ANGS systems.
pcTV2: PC software, hardware: simultaneous display of full-motion video with stereo audio from two non-synchronous sources in individual windows: control capability for the two sources displayed.
T.E.N. The Electronic Newsroom: PC-based, LAN-compatible broadcast newsroom automation: wire service management, on-line archiving, assignment desk, production rundown control, prompter interface with closed captioning, script writing.
Circle (763) on Reader Service Card

Media Concepts
Product line: Used broadcast production equipment.
Circle (764) on Reader Service Card

Media Touch Systems
Product line: Automation control products, satellite studio integration, digital audio playback unit.
Circle (765) on Reader Service Card

Meret Optical
Product line: Fiber optic products.
Circle (766) on Reader Service Card

Micro Communications
Product line: Broadcast feed lines, power combiners, UHF, VHF all-band antennas; switchless combiners, coaxial switches, waveguide, diplexers, directional couplers, harmonic filters, LPTV panel antennas.
#121000 channel combiner: constant impedance for multiple channels fed to common antenna.
#42100 interdigital bandpass filters for FM, UHF, VHF.
#43200 Star-Point combiner: FM interdigital bandpass filter.
Circle (767) on Reader Service Card

Merlin Engineering Works
Product line: Video processing equipment, synchronizers, data encoder, decoder.
Circle (768) on Reader Service Card

WHAT COMPETITION?

Does your usual intercom supplier offer you this...
...a FULLY digital 128 x 128 matrix on ONE CARD?
...INTELLIGENT networking of up to eight systems?
...SIMPLE co-ax cable connections?

No - but he knows someone who does.

N-VISION
STAND 17726
N.A.B. '93
APRIL 19th-22nd

Philip Drake Electronics Limited,
The Hydeway, Welwyn Garden City,
Hertfordshire AL7 3UQ England
Telephone +44 (0) 707 333866
Fax +44 (0) 707 371266

Circle (79) on Reply Card
CAMMATE SYSTEM II: 12-20 foot boom extension: remove camera head, VTR controls, integrated battery charger, crab dolly, boom extension, track sections. (Circle 771) on Reader Service Card.

MICRONET (Circle 772) on Reader Service Card

MICROVIDEOLTD. (Circle 773) on Reader Service Card

MICROWAVE NETWORKS (Circle 774) on Reader Service Card

MICROFAX (Circle 775) on Reader Service Card

MICRON TOOLS & MANUFACTURING (19778-878) on Reader Service Card

MICRON AUDIO PRODUCTS (17772) on Reader Service Card

MICRON TECHNOLOGY UNLIMITED (Unassigned Product line: Digital audio workstations.) (Circle 776) on Reader Service Card

MIDAS (Unassigned Product line: Audio mixers.) (1000) on Reader Service Card

MIDAS X3-II: Radio mixer. (Circle 777) on Reader Service Card

STARR TECHNOLOGIES (15445) on Reader Service Card

MILEX (15463) on Reader Service Card

MILLER FLUID HEADS USA INC. (15738) on Reader Service Card

MIMIC TECHNOLOGIES (13347) on Reader Service Card

MINOLTA (11605) on Reader Service Card

MIRAMAR COMMUNICATIONS (13347) on Reader Service Card

MIRANDA TECHNOLOGIES (Unassigned Product line: A/D and D/A converters; oversampling converter between component video, serial/parallel) (Circle 781) on Reader Service Card

D2 MODEL 555-41N NTSC D2 DIGITAL COMPOSITE VIDEO BIT-PARALLEL/BIT-serial Routing Switcher Omicron Video MODEL 555-41N is a routing switcher with 4 in 1 out, serial signal format of NTSC D2 DIGITAL COMPOSITE VIDEO in both bit-parallel and bit-serial digital video with four levels serial digital audio. Each input of digital video is selectable independently to serial or parallel form by internal jumper plug. Both serial and parallel digital video outputs are available simultaneously and reclocked. The serial digital video input circuit has automatic cable equalizer, which eliminates up to 500m of 8281 type coax cable. Remote manual control panel and RS232/422 serial communication control with TTL logic level tally output. Packaged in standard 19" rack mount 17" depth two rack unit (3.5) frame. See us at NAB '93 Booth #13041

2810 LASSEN ST. UNIT H CHATSWORTH, CA 91311 PHONE (818) 700-0742 FAX (818) 700-0313

Circle (80) on Reply Card
video to composite, S-VHS NTSC, PAL; NTSC encoders. SDM-300: serial, parallel 4Fsc to NTSC/PAL D/A converter.


Product line: Lighting

Broadcast Engineering Products


Product line: Mocee ASD100: component SDM-100A: MANIA: vertor. video to composite, -1604: -200: modulation 12/28Vdc

Circle on Reader Service Card on Reader Service Card on Reader Service Card

Product line: Digital graphics, titlers. Circle (1135)

Product line: Audio processors, spatial image enlargers: modulation meters, digital FM peak deviation monitor; subcarrier receiver for ENQ/mobile crew communications. PRDObserver enhancement: antenna diversity system with 12/28Vdc power adapter. Circle (784) on Reader Service Card

Product line: Design, development of copper, fiber optic products for audio, video, multipair, shielded, audio snakes, mic cables; coax, triax, Ultraflex video cables; composite camera cables; fiber optic video link. Circle (785) on Reader Service Card

Product line: Lighting products, lamps, fixtures. #4251 Big Mog: 20kW Molequaet Solarspot Fresnel. #6351: 18kW HMI Fresnel Mole Solar-Arc Solarspot. Circle (786) on Reader Service Card

Moee Associates 2824

Product line: Aural, digital STL; remote control systems and software for transmitter remote control; remote programming link. CDX 2000 option: selectable, high spectral efficiency mode for digital audio for video STL system. DPS 6000 option: selectable high spectral efficiency option for DSD 6000 STL. Master-Touch: interface for MasterController for MRC, MRC160 control products. MRC1620 LP: flash reprogramming option: low power optical Intelligent Interfaces for MRC H20 system. PCL 6000 multichannel: 16-channel STL. Circle (786) on Reader Service Card

Product line: Video tape products. Circle (790) on Reader Service Card

MTR AG Electronics 17981

Product line: Automated signal routers for analog, digital composite, composite video, mono, stereo audio, HDTV, data, distribution amplifiers. Circle (781) on Reader Service Card

Product line: Video/pulse DAs with EQ test generators; solid-state audio recorders. ADA-8550 adapts screw terminals to XLR connectors. SSR-80: solid-state recorder; 15 minute capacity for audio source (2) playback alternating between the messages and tones or external audio source. TS-4: SMPTE color bar generator with black burst; genlock, video ID, spoken ID. TS12-AM signal generator: rack mount test set. 12 signals with VTS, SMF line sweep. Black burst, stereo audio tone; inserts 16-character VDL in external video loop-through for external video, stereo audio; automatic bypass of external signals. TS20-BM NTSC generator: rack mount test signal source like TS12-AM; capability exceeds RS-250C. Circle (792) on Reader Service Card

Murry Rosenbloom Sound Assoc. 1709

Product line: Audio Ltd. wireless mic systems. Dz2000: miniature diversity receiver fits in a pocket includes multiway connector for use in custom" 8-channel receiver rack. MXX2000: package with standard, small receiver, may be attached to camera with Velcro material. TX2000, TX2000H, TX2000HP: handheld wireless transmitters used with Schoeps condenser mic heads; HP model with 800mW output. VHF, UHF; wireless mic transmitter, receiver may attach to TV camera with Velcro material. Circle (794) on Reader Service Card

Musikos 4303

Product line: Production music libraries. Circle (795) on Reader Service Card

MYAT 3701

Product line: Rigid coaxial transmission line components and accessories: %1 to 95%. FM harmonic filter: tunable quarter wave device. Flex/Section line: 50ohm material in 1", 3", 6", 8", sizes. Circle (796) on Reader Service Card

Visit the editors of Broadcast Engineering, Video Systems; Booth #1915, 2:00pm-4:00pm, April 1921.

FOR THE WORLD’S STRONGEST AM TRANSMITTERS, LOOK TO NAUTEL.

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.

Superior audio transparency — Nautel AM transmitters utilize inherently linear digital Pulse Duration Modulation for the cleanest sound you can broadcast. Audio is ruler-flat throughout the range and distortion is typically less than 0.5%.

Field-proven reliability — Nautel transmitters give you multiple protection systems for both power line and lighting transients, VSWR protection, soft failure design, reserve cooling and safe on-air servicing.

Removable AM Power Module

Make a strong transmitter choice. Call us today for all the facts on our totally solid state AM and FM transmitters.

Totally solid state AMPFET ND 10 10KW AM

Nautel Maine Inc. 201 Target Industrial Circle Bangor, Maine 04401 USA Phone: (902) 823-2223

Nautel (Nautel Electronic Laboratories Limited) R. R. #1, Tantallon, Halifax County Nova Scotia, Canada B3J 3J0 Fax: (902) 823-3183 See us at NAB, Booth #1915.

Circle (81) on Reply Card

March 1993
N Systems 13133
Product line: Microwave antennas, remote controls for ENC, point-to-point applications.
MCI controller: digital remote with 80286 CPU operating as slave or master; VGA touchscreen monitor or LCD screen with push buttons; menu driven.
Stiletto ST6, ST8: low windload microwave antenna, asymmetrical reflector, offset feed; equivalent to 6' 8" parabolic unit with reduced windloading for STL/ICR.
Circle (797) on Reader Service Card

Nally Systems 11327
Product line: VHF, UHF wireless mic systems.
2000 VHF: wireless with Has Mute circuitry; diversity receiver; 120dB dynamic range; various mic caps.
351 VR: camcorder wireless system, receiver connects to external mic jack on the camera.
756 VHF: dual discrete channel wireless system, two diversity receivers in one cabinet; filter permits 10 channels to operate simultaneously.
950 GS UHF: 40-channel receiver for 950 UHF system.
956 UHF: 10-channel wireless system; diversity, companding processor; lapel, hand-held mics.
8W-3: wireless system; four switchable UHF channels; 120dB dynamic range; low noise performance.
551 VR: 2-channel VHF wireless mic; 120dB dynamic range; IF-10 handheld mic; STLC-30 wearable bodypack transmitter; electret condenser in-ear mics.
8W-1 wireless receiver: true diversity reception; 120dB dynamic range, for one-of-five VHF channels.
Circle (798) on Reader Service Card

Nagra Audio Technologies 12206
Product line: Nagra audio tape recorders.
Circle (799) on Reader Service Card

Nagra Kudelski 12206
Product line: Analog, digital audio recording products.
Nagra-D: 8-channel, self-contained, professional digital recorder; open reel ¼", helical rotary heads; flexible editing, mixing; 24-bit sampling for 16-bit dynamics.
Nagra (800) on Reader Service Card

Najpak Video Sales 20927
Product line: Utility grip products, TuffPaks, molded rack cases, Travel Karts.
Magline Cart enhancements: Quick mount shelf support brackets; MagBag of Dupont cordura-plus includes numerous pockets for small items.
Magline Trucks: three versions, professional camera filter for motion picture and TV work.
Circle (801) on Reader Service Card

National Supervisory Network 4308
Product line: Transmission plant monitoring service.
Circle (802) on Reader Service Card

National Transcommunications 18178
Product line: Satellite uplink, downlink products; broadcast network facilities; advanced TV scan upconverters; video compression systems.
NTL 300, NTL 1000: advanced TV scan upconverters for extended HDTV applications.
NTL 2000: video compression enables 4 broadcast signals to be conveyed in spectrum normally occupied by one; multichannel MPEG system offers high-quality pictures between 1.5Mb/s and 12Mb/s; developed in association with Scientific Atlantic.
Circle (803) on Reader Service Card

Nautel 1915
Product line: Solid-state AM, FM radio broadcast transmitters.
AMPET FM10: 10kW solid-state, modular PM transmitter; combined configuration for 20kW operation; Solid-state AMPET ND AM: transmitters from 1kW to 50kW, integral CQAM AM stereo.
Circle (604) on Reader Service Card

NDG Phoenix 17277
Product line: Software products for graphics, facilities management.
LMS 1.8: library management software; barcoding in several formats, tape logging module.
Mac Graphics: integrated paint software for 2D, 3D.
OMS Operations Management Software: multi-user business system; use with existing accounting software in DOS, MAC or UNIX; marketing, scheduling, invoicing, labeling, equipment maintenance.
Circle (805) on Reader Service Card

NEC 16831
Product line: Stage and studio lamps by Thom, GE.
1500PAR64: 1.5kW tungsten-halogen lamp.
ACL series: lamps for production effects.
CME GEL: gel filter, spun diffusion materials.
CSR2500: 2.5kW single-ended discharge lamp.
Circle (713) on Reader Service Card

Nemal Electronics International 11562
Product line: Precision audio, video cable, flexible mic cable.
Composite cables for audio video: round and flat.
EMRF suppression: N, BNC, UHF, D-subminiature, circular connector cable assemblies; ferrite beads reduce effects of EMI, RFI interference.
Circle (808) on Reader Service Card

Neotek 4912
Product line: Audio mixers.
ES-100: production console.
Esprit: production, on-air, recording console.
Circle (809) on Reader Service Card

Nesbit Systems Inc. 11562
Product line: Software systems for facilities, equipment tracking, business tracking, reporting.
FITs File Tracking System: cross-reference, cataloguing system manages records retention; tracking, research tool.
Text retrieval module: word indexing for Media Li-
Network Music
Product line: Production music libraries.
Primetone library: CD music library from Italy
(811) on Reader Service Card

Neumann USA
17576
Product line: Microphone products, stereo, shotgun mics.
Model U67: tube mic.
KMS-140, 150G: cardioid, hypercardioid vocal mics.
TL55E: transformerless pressure mic.
(812) on Reader Service Card

Neutrik USA
2800
Product line: Audio test systems; audio connectors, accessories, industrial connectors.
Model A2-2-channel audio generator, analyzer, oscilloscope: for common audio measurements; numeric, graphic sweep displays; hardcopy through printer with DOS-based PC
(813) on Reader Service Card

Nev/AMS Industries
2302
Product line: Audio consoles, TV/prodution mixers; audio processors; analog, digital audio recorders; stereo mics; audio editor/workstations.
AMS Logic: 2: large format workstation.
AMS SoundField Mx: V stereo; advanced format coincident, Mx-to-mics modes.
AudioFile OPTICAL: 4-track system records to reusable, removable MO media.
AudioFile Spectra: digital audio editing system; MO disks, Easycopy tape; selectable sample rates.
Neve Flying Fader Junior: software with Master Touch Record function, channel reassignments, mix copy, backup routines; Stores set-upet RAM or disc.
Neve VR: stereo modes: controls stereo sources.
System 5Kc integrates Nev/AMS audio processors.
(814) on Reader Service Card

New EVS Unassigned
Product line: Slow motion video equipment, the LSM Live Slow Motion system.
(815) on Reader Service Card

NewSound Systems
19459
Product line: Newsroom automation interface product for titlers.
NewsMaker for Windows: complete newsmaker automation compatible with MS-DOS versions; includes 100-channel tuner on card for NTSC, PAL, PAL-60 reception.
(816) on Reader Service Card

NewTel
1661
Product line: Video production products, Video Toaster. Announcements to be made at exhibition.
(818) on Reader Service Card

Nigel B Furniture
19471
Product line: Custom furniture meeting ergonomic requirements for less operator fatigue.
Back Saver chair: emphasis on comfort for those who spend many hours editing.
(819) on Reader Service Card

Nikon Electronic Imaging
18878
Product line: Camera lenses for studio, ENG, HDTV; optical converters.
FIW-ENG: cost-effective means to expanded special effects with Nikon’s SI lenses on ENG cameras.
S15xSB.8II Nikkor: enhanced S15x for 4½" cameras; 5.8x M12, removable servo housing; wide zoom ratio.
S18xSB.8 TV Nikkor: ENG lens, f1.55, f-16, 85mm focal lengths; 1:7 maximum aperture.
S9.5B TV Nikkor: ultra-wide angle lens; internal focusing system accepts male bayonet, filters.
Circle (820) on Reader Service Card

Nomad International Inc.
1502
Product line: Satellite communications receivers.
System 60: satellite receiver, MC 60 controller, power supply, control modules; with tuners, downconverters, demodulators, SMATX modulators.
Circle (822) on Reader Service Card

North American Publishing
18184
Product line: Satellite delivery services.
Northern Technologies
18672
Information not provided.
(824) on Reader Service Card

Nova Systems
13843
Product line: Modular video processing systems; PC compatible TRC/synthesizers, encoders, decoders, transcoders, DAs, routers.
NovaBox additions: low-cost frame synchronizer, sync generator cards.
TRC/synchronizer products: NOVA 550 transcoding TRC; NovaMate single, dual and multichannel TRC; NOVASync frame synchronizers.
(825) on Reader Service Card

NPR Satellite Services
4607-08
Product line: Satellite transmission radio services.
(826) on Reader Service Card

NXT Audio
2226
Information not available.
(827) on Reader Service Card

Nucom
13341
Product line: Antenna products for ENG, microwave.
FMT, FME, FME series: 70MHz modulator, demodulator; AM audio subcarrier, four FM subcarriers and video.
F3, F3R series: IF heterodyne transmitters, receivers; 70MHz interface; for 1.9GHz to 1.35GHz.
Shadow automation: for ENG vans, central receive applications; single, multiband models; single, dual, quad polarization; Super-Shadow for central receive sites.
(828) on Reader Service Card

Nutel Electronics Corp/Telenet
16927
Information not available.
(829) on Reader Service Card

Nyse Electronics
16637
Product line: Fiber/slide transfer, 35mm slide transfer, image editing system with pan, zoom.
Slide-to-Print: transfer system provides image fade transitions between slides.
(831) on Reader Service Card

O’Connor Engineering Labs
16649
Product line: Camera support products, fluid heads for portable cameras.
33 series: tripods, rigid spreader, assist assisted column.
SSC series: tripods with assisted columns.
Circle (832) on Reader Service Card

O.E. Lightworks
10259
Product line: Lightworks editing control systems.
Circle (833) on Reader Service Card

Obedis Broadcast
18927
Product line: Videocassette playback automation, break-tape manager; time lapse logger; automated playback libraries.
MultiChannel Playback: feature for multiple output

OMC/TransAmra Inc
5200
Product line: Radio/TV transmitters.
AM 1000, AM 1000 VR: 1kW FM transmitters.
BMS 622: table-top audio mixer.
EM FM exciters: 2-100W.
EM transmitters: solid-state FM systems; 250W to 2000W, EM exciter, multiple 500W amplifiers.
OMB-MPRO TV repeater: 1.5W Band IV-
TV amplifiers: for Bands IV/V 100W to 1.6W.
(835) on Reader Service Card

Omnimus
10963
Product line: Production assistance products, sound effects libraries.
(837) on Reader Service Card

On-Amp Labs
15752
Product line: Audio, video, signal distribution, switching equipment, video/audio press feeds boxes.
A2x2ML: 2input, 2output audio press box.
A2x2L: 2input, 4output audio DA.
MS/8x8/4A: 8x8 stereo audio/video switcher.
RS:4S: stereo audio/video 4-in, 1-out router.
TCB-10K: dual 10k audio transformer.
VA-8, VA-32: 1x8, 1x32 mic-line/VA press boxes.
(838) on Reader Service Card

Optical Disc Corporation
16072
Product line: LaserDisc recording systems; recordable laser video systems (RDVS) compatible with standard LaserVision or LaserDisc format consumer players; recording system accepts composite video for single-copy or low-volume duplication.
(839) on Reader Service Card

Optimum Productions
11462
Product line: Versioning, dubbing, of videos, films with translations from and into English from other languages; broadcast, feature film specifications. Language services: script translations, adapt script to visuals; replace titles, opticals; create animation; cast necessary talent; record script in desired language(s), remix music, effects, dubbing, distribution.
(841) on Reader Service Card

Options International
18943
Product line: Telecon utility products: speed serve, audio-assisting converter, film-to-tape transfer stabilizers for Rank telecines.
Low mass particle transfer removal: clean film on telecine using roller configuration.
Super 16 telecine gate.
(842) on Reader Service Card

Orban/AKG Acoustics
29066
Product line: Over-the-air audio processor systems. Digital Optimal Modular System.
Model 8200 ST: level controller.
(843) on Reader Service Card

Ortel
18172
Product line: Fiber optic links; TVRO links connecting earth station antennas with receivers.
Model 10038A: transmit monitoring system.
System 10000 FO links for TVRO systems. CATV headends or broadcast facilities: distances 4km. Uplink FO link feeds uplink system from excitor lo-
Introducing **SIAT MAX**

the go everywhere do everything

audio test generator from Schmid

The biggest thing in audio testing now fits in the palm of your hand. Introducing SIAT-MAX, the fully portable, hand-held, automatic audio test generator from Schmid.

Weighing in at less than a pound, this self-contained, battery-powered unit, used in combination with a Schmid measurement receiver, gives you a remarkably versatile, practical audio testing tool.

Use SIAT-MAX to initiate fast, accurate audio tests prior to receiving incoming feeds—it’s so easy to use, even a reporter in the field can handle it.

Use SIAT-MAX to insert test tones anywhere in-house—whether you need to test the path from your demodulator to distribution switch, or from studio to transmitter.

Use SIAT-MAX to check a line after you’ve installed new equipment. Or use it to troubleshoot in the field, without lugging complex, bulky equipment, and without having to send a highly skilled technician.

Use SIAT-MAX with a measurement receiver to monitor frequency response, signal-to-noise ratio, THD, crosstalk and every other key audio parameter.

Most of all, use SIAT-MAX to save money, reduce man-hours, improve testing accuracy, increase testing frequency and make the whole process as simple as it can be.

But with all the things SIAT-MAX does, there is one it doesn’t: Cost a lot of money. The SIAT-MAX audio generator finally makes advanced audio testing affordable.

Which all goes to show, good things do indeed come in small packages. When they come from Schmid, the worldwide leader in audio testing solutions. For a free SIAT-MAX brochure, call 800-438-3953 toll-free today.
The Leaders in Specialized Products

Mark has a 40 year history of dedication to the design and manufacture of the highest quality microwave antennas. Mark's guaranteed performance specifications are a result of experienced attention to detail.

Radiation Systems Inc.
Mark Antennas Division
P.O. Box 1548, Des Plaines, IL 60017 U.S.A.
Tel 708-298-9420 / Fax 708-635-7946

Circle (84) on Reply Card

Affordable... Portable... Power!

BCS: Portable, Hand-held, Powered Coax Cable Stripper
Now there's a faster way to strip coax cable for Trompeter's Tough BNC's!

Easy: Quick-change cutting heads for 3- or 2-level (Tool Crimp) or 2-level (Wrench Crimp) stripping of coax cables (O.D. - .070" to .430") for Trompeter BNC's.

Precise: Tool steel cutter blades hardened to Rockwell 64 and precision ground for up to 15,000 strips. Blades independently adjustable for critical applications.

Portable: Lightweight (< 2.25 lbs.), portable driver. Ideal for production and field use. 7.2V Ni-Cad battery (without memory affect) gives up to 250 strips per charge.

Powerful: Cutter heads rotate at 2,220-2,500 RPM.

Fast: 2-3 seconds! All cuts made simultaneously. Reduces labor cost.

See us at NAB '93-Booth 12801 or at Electro '93-Booth 2543 for a Free Demo of the BCS & Trompeter BNC's

For pricing and availability contact your Local Trompeter Rep or call our New 800# for Sales/Service/Technical Support
(800) 982-COAX
Inside California Call...
(800) 655-2028

Quality doesn't cost... it pays. Additional information available on request.

Circle (85) on Reply Card

cated as far as 20km from the HP.
Circle (844) on Reader Service Card

Oaram Sylvana
Product line: Studio microphones
Circle (845) on Reader Service Card

Other

Pacific Radio Electronics
Product line: Rack, panels, precut holes accommodating various manufacturers' connector products.
Circle (847) on Reader Service Card

Pacific Recorders & Engineering
Product line: Audio recorders, cassette recorders; digital audio workstations.
ADX systems: digital video workstation; disk-based, 8-16/24-track recorder; Input automated production mixer on Macintosh platform.
Circle (848) on Reader Service Card

Paco Electronics USA
Product line: Nitec battery products; DP series.
Circle (849) on Reader Service Card

PAG Ltd.
Product line: AR series batteries, chargers and analyzers, PagLoc products and associated products.
Circle (850) on Reader Service Card

Paltex
Product line: Video editing controllers; composite digital mixer-keyer.
EDINEX, A-Bell desktop video editor; 486-class CPU, 40MBabyte hard drive, 35" floppy disk, standard keyboard, trackball; for RS-442, VTRs, video switcher, serial control for Video Toaster; 999-line EDL, list management, EDL ripple, Auto-assembly, Animation mode.
EDDL, EDDI vision series desktop video production centers for Windows; enhanced new system software utilities; DddlWipe internal video switcher, 24 wipe patterns; DSK, NTSC, PAL composite, Y/C, YUV components, Y/C component EDDIT external titler.
Circle (851) on Reader Service Card

Panasonic
Product line: Video cameras; D-3, M-L, S-VHS recorders; monitors; TV automation system; switchers.
AG-755SR: 5-VHS VTR with frame store, HiFi audio; 3-pin parallel or RS-232.
AG-730R: S-VHS VCR with HiFi, linear audio; 3-pin parallel or RS-232, daisy-chain control for 32 VCRs; Dolby noise reduction: 1/2-hour record time; 1-4 step shuttle.
AG-700: multiscr, power selector switches, video, audio, remote sources in edit suite; 4 x 4, 2.5 x 2.5.
A-HD32B: portable D3 VTR 64-minute record time with two AU-BP4M2 or Antion/Bauer Magnam 14 batteries.
A-HD13P: digital rate frame converter interface between D1, D1/D2, test signal source; auto sync selection; analog output; embedded audio facilities and four AES audio channels.
AG-A570: single-event edit control for AG-5700 5-VHS VTRs, RS-232 connects controller, transports.
AG-20D: digital processing camera: 3 FIT CCDs for 750-line resolution; 4Sc composite digital output; fiber optic adapter.
AG-285: digital processing studio camera, 2" S-FT
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

The D/ESAM® 400
Digital Edit Suite Audio Mixer

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 ESAM protocol assures compatibility with any major editing system...now and into the future. Familiar operation gives editors more capability in less time.

For more information contact:

Graham-Patten Systems, Inc.
P.O. Box 6060, Grass Valley, California 95945 USA
Telephone: (+1) 916-273-8412 or 800-422-6662
Fax: (+1) 916-273-7458

© 1993 Graham-Patten Systems, Inc. D/ESAM is a registered trademark of Graham-Patten Systems, Inc.
CCDs; FO cable; 750-line resolution, 1/8 2000lux.

AS-D590: serial digital video router; 32x32 composite digital matrix for 1438bit/s data; peripheral interface with analog-signal, serial-parallel converters.

AS-D700: composite digital switcher; 4 bus, multilevel M/E; 10 input; 2 key levels; parallel digital and analog I/O boards.

AU-55H Enhanced portable VTR; Integral TBC; 2 FM, 2 linear audio channels; LTC/VTC generator/reader, S-video out, component input check/output; NTSC, 169 aspect ratios; picture-in-picture; series includes AU-45H dockable VTR; AU-62H studio player; AU-63H studio player with auto tracking.

AU-AS60: on-line edit controller for 5 VTRs, switcher, audio mixer; 2000-event EDL; expands to 8play, 2 record VTRs, 10 GPI triggers; A/Y/C roll editing, pre-read control split edits among any M/E or D-Audio channel.


AQ-1HD digital processing camera with 3 FT CCDS; composite digital output; compatible with AG-200 component digital fiber optic adapter.

HD fiber optic system: digital transmission with compression, multiplexing of studio BTA format, four PCM audio channels; 8x compression per B/ASON specs.

HD still store: archives 1,500 images on M-O disk; JPEG compression; 2-second image access time.

HD video display: 36" receiver, 1/2" HD player, system controller, message generator; auto repeat for unattended operation.

HD TV acquisition system: portable field production equipment; AU-2700 UNHI recorder, 3/4" 3-CCD HD camera and 20" monitor.

HDTV cinema projection: 6 tube rear-projection system for 110-250" screens; multiple HD VTRs play two 2-hour tapes; Ramza audio components produce surround sound.

M.A.R.C. D-Cart: smaller robotic system with two D3 VTRs; capacity of 35 cassettes.

M.A.R.C. Type BI: automation system with 16Q VTRs; MAJF. automation software; multiple output channels, scheduled recordings; compiler for breaks.

MultiStation software: manages for two or more output; common or completely different material.

OMDR software drivers: Macintosh, PC drivers for optical memory disk recorders.

S-VHS projections: PT-B1010UJ/UF for 80-120" or PT-B2010UJ/UF 150-200"; 700mm output, 800-line resolution or 1,100-line in RGB; direct optical coupling.

WJ-MX580 audio, video switcher; 2 channel frame synchronizer allows effects on A and B buses.

WWVD5160H: modular camera: E1.4, 3.5 lux (-18dB) gain with single 8/2"3 CCI four lens options; electronic shutter.

WF-V5000H 3 FIT CCD camera; stand-alone or dock to AG-7450 S-VHS, AG-410 M18 VCRs; component or separate YC outputs; 750-line resolution.

WF-V500: compact camera with digital signal processing; 3 FT CCDS for 700-line resolution; docks to Enhanced M18VTRs.

Enhanced still products: integral TBC, 2 FM/2 linear audio channels, LTC/VTC generator/reader, S-video out, NTSC 169 aspect ratio capability; AGU-45H dockable VTR; AU55H portable VTR; AU62H studio player; AU63H studio player with auto tracking.

AG 3 SAHSC Camcorder: three 1/3" CCDS; 350-line resolution; 1 lux low light sensitivity; 10x optical, 20x digital zoom; image stabilizer; color viewfinder, digital TBC; noise reduction; wide-screen recording feature.

AJ-DX16: 5" digital component studio VTR; 300Mbps class VTR; video performance superior to D-1 without compression; operational features similar to D-3; record, plays digital audio, CCIR-601 digital video in 10bit form; 13.5/18MHz sample rates; optional playback back of D3 composite digital VTR.

AJ-D340-150HD digital composite studio VTR; smaller, more compact version of the AJ-DS100 D3 studio VTR.

Circle (852) on Reader Service Card

Panther

Product line: Camera support equipment, Super Panther, Mini Panther camera dollies.

Circle (853) on Reader Service Card

Parallax Graphics Systems

Product line: Video, graphics, paint, animation software.

Circle (859) on Reader Service Card

MATADOR: integrated 2D package automates painting, keyframe animation, rotoscoping, chromakeying, smart brush effects. warping high-speed operation with SG processors.

Circle (854) on Reader Service Card

Parrot Communications Int'l.

Information not available.

Circle (855) on Reader Service Card

Patch Bay Designation

Product line: Label, designation strips for patch bays.

Circle (856) on Reader Service Card

Peerless Sales

Product line: Monitor/TV wall, ceiling mounts.

Circle (857) on Reader Service Card

Penny & Giles

Product line: Digital controllers; microprocessors; interface boards; precision controllers.

Circle (858) on Reader Service Card

Pentax Laboratories

Product line: Distributor for RF power devices, tubes.

Circle (859) on Reader Service Card

PEP

Product line: Vedio tape editing software; digital recorder, player cart replacement.

Circle (860) on Reader Service Card

DigSpot: digital audio system uses 3.5" diskette store

INTRODUCING THE SHURE FP410; THE "HANDS OFF" MIXER THAT DELIVERS PERFECT SOUND AUTOMATICALLY.

The new Shure FP410 is not just another pretty face. It's a whole new concept in portable mixing, one that forever solves the nagging problems of multiple open microphones. By automatically keeping unused microphones turned down, the FP410 dramatically improves your audio quality.

The secret: Shure IntelliMix — the patented operational concept behind the revolutionary FP410. It thoroughly shatters existing standards for portable mixer performance and ease of operation.

Just set your levels and flip the switch to "Automatic." Shure IntelliMix does the rest.

Its Noise Adaptive Threshold activates microphones for speech but not for constant room noise, such as air conditioning.
Forget It.

☐ Its MaxBus limits the number of activated microphones to one per talker.

☐ And its Last Mic Lock-On keeps the most recently activated microphone open until a newly activated microphone takes its place.

With Shure IntelliMix, you'll get a "seamless" mix that's as close to perfect as you'll find. Providing the cleanest, clearest sound you've ever heard from a portable mixer. And freeing you from the tedious task of turning microphones on and off.

For a closer look at the world's first portable automatic mixer, call for more information including the article “Why Use An Automatic Mixer?”. We think you'll agree: The Shure FP410 is automatically a classic. Call 1-800-25-SHURE. The Sound Of The Professionals...Worldwide.

See us at NAB Booth #11901.
Potomac Instruments 2309

Product line: RF test/measurement products, directional antenna monitoring system, MF, AM, VHF, UHF field intensity meters. Circle (874) on Reader Service Card

Practel Sales International 18963

Information not available; Circle (875) on Reader Service Card

Prime Image 15685

Product line: TBCs, synchronizers; still store products. Model 2X: dual channel time base corrector. 10 by 10 Sync: wideband direct synchronizer; 10-bit, 10MHz, 4-input, 4-field memory; D2 output. TBC-PCR: plug-in TBC board; single-channel, 525-line device; for Betacam (SP), M4, U-matic (SP), Hi8, S-VHS, VHS, ED-Beta formats. Multi/TBC-Sync 18X: for 10 plugin TBC/synchronizer modules; any or all modules operate independently or locked; for any VCR source. Circle (877) on Reader Service Card

Pro Battery 12908

Product line: Premium nickel-cadmium battery pack: NP1As, NP1Bs, 12V, 13.2V, 14.4V brick types; VP-90s, belts; chargers; rebuilding services. Circle (878) on Reader Service Card

pro-bel INC

Pro-Bel Ltd 10545


Production Garden Library 16475

Product line: Production music libraries. AV/Video:20k full length themes, edits; 15 CD set. Broadcast: 100's; 15 volumes, 50's, 30's, other elements. New CDs: Idea Tracks; Energy Tracks; Cool Tracks; Off the Wall; Motivation; and Journey. Air Assault/PG CD 301:240 elements; stingers, sweepers, lackers, promo, traffic beds; explosive effects. Circle (880) on Reader Service Card

Professional Design Products 17969

Information not available. Circle (881) on Reader Service Card

Professional Label Inc. 17679

Information not available. Circle (882) on Reader Service Card

Professional Sound Corp. 1708

Product line: Audio production product distributor; lavalier mics; boompoles; audio DAs; battery supply; mic power supplies; sound carts, custom cables. M4 portable mixer: 4-input system, MS stereo compatible; 20-hour operation. Circle (883) on Reader Service Card

Progressive Image Technology 19766

Product line: Computer-to-video scan converters. CP-10: cross pulse adapter; shows vertical interval on any composite monitor. Kitchen Sync: synchronize two independent sources; two TBCs on a card for one IBM AT slot. Circle (884) on Reader Service Card

Promusic 13043


Propel Systems 3002

Product line: Radio automation. Audio Wizard: automation on 485/33 PC controls 15 audio devices; DAT backup, audio storage; large hard disk stores 35,000 minutes stereo; digital switcher. Circle (886) on Reader Service Card

Q-99

16649


QEI 4220

Product line: Digital STL products: digital stereo generator; FM transmitters, exciters. QSS-10000 transmitter: solid state; 10kW FM; redundant modules; liquid cooling; 65% overall efficiency; #695 exciter; AUTOMOD modulation control. #691 VPDM variable peak duration test for modulation monitor; 695FM exciter; adjust response time from 0.1ms to 1ms; lights flasher when peaks in 5ma period exceed programmable threshold of 1-15 peaks. Circle (890) on Reader Service Card

QSI Systems 16333

Product line: VXI signal, data products. Circle (891) on Reader Service Card

SES.COM Celebrates Its 25th Anniversary

Come visit us at NAB Booth #13601 and pick up your invitation to our party on Tuesday, April 20th at 6:00 PM for a Western Barbecue and plant tour

SES.COM, INC.

Circle (69) on Reply Card
Some of our best work goes unnoticed.

We’re talking about the signal routing, processing, timing, and format conversion products that make or break your video facility. The same products we’ve been building and supporting since we introduced our first video DA in 1964.

Look behind our production switchers, digital effects, graphics and editing systems. You’ll see GVG driving video signals from source to destination with the ultimate in ease, transparency and confidence.

So if you’re building a facility or simply looking to get the most from your video system, arrange a consultation with your nearest GVG customer representative. We’ll show you just how unnoticeable your signal distribution, and your budget, can be.
we've inserted 24-color full-frame image over NTSC video; 256-step keyer, CMOS non-volatile memory; PAL version available.

#890: inserts 8-bit color full-frame images in video with 768x480-pixel resolution; 8-bit key signal; CMOS non-volatile memory; auto fade feature; 8BPP for PAL.

#9000 Image manipulator, Inserter: menu-driven system captures full NTSC frame for editing, resizing, linear keying; hard disk storage; imports PCX, IMG, TIF, TARGA, BMP and other graphic formats.

Circle (891) on Reader Service Card

Quality Video Supply

Product line: Kramer video processors, encoders, decoders; computer-to-video interfaces; switches, DAS; TV standards converters.

Circle (892) on Reader Service Card

Quanta

Product line: Video titlers.

Macintosh Interface: enhancement for Delta titler/image generator and Orion character generator. Circle (893) on Reader Service Card

Quantel

Product line: Electronic paint, titlers; image libraries; video editing systems; standards converters. New products announced at the booth.

HAL digital compositing system: effects, graphics, keying functions with high quality audio, 75s random access storage; Chatter disk management; manipulates multiple layers of live video.

HENRY concurrent editor: simultaneous multilayering, non-linear working; 15-minute true random access storage with Chatter disk management.

Harriet upgrade: interface to Paintbox, Picturebox, shared disk storage via Picturesnet; improved graphics preview, library picture search; timeline control.

Picturebox: stills preparation, storage, management, networking; dedicated still store using custom ASCII hardware cut-paste graphic creation; Headline text for integrated captions; Innovative dual-bus architecture.

Paintbox Ver 8.0: zoom feature for graphics, pastepix, effects; radial, parallel lines; glue functions; extended translation of numeric data to graphics; Pictureport interface to Macintosh.

Circle (894) on Reader Service Card

Quickcast

Product line: Camera tripods, fluid heads.

Computerized controls for pan and tilt heads.

QPT-15: electromechanical pan/tilt system.

Circle (885) on Reader Service Card

R-Columbia Products

13145

Product line: Wireless intercom products, IFB/ENG headphones; pocket telephone.

RL-100: wireless talent cue hearing aid type telephone; no battery pack needed.

TR47B: long range FM wireless intercom headphone.

Circle (896) on Reader Service Card

Radamec EPO Ltd

17353

Product line: Automated camera support equipment, for simultaneous multicamera movement control.

RP2 robotic pedestal: 2nd generation unit for ENG/EFP cameras; lenses; full manual operation of all pedestal functions.

Type 435 P/T head: with manual control, adjustable fluid damping; loads to 70kg; maximum speed of 60'/s.

SAS See and Select: computer facility; frame grab stores key frames at 1/sec full size; replay of shots is initiated by selecting required frames on the monitor.

Circle (897) on Reader Service Card

Radiation Systems Inc

20614

Product line: Earth station systems for fixed sites, transportables; tracking; remote control systems; microwave, broadcast antennas.

Model 240K/2S: offset-feed SNG antenna system.

Circle (898) on Reader Service Card

Radio Computing Services

4012

Product line: Music library software; digital audio, data networks; live assist, full automation software.

Linksys: integrates commercial, music logs on paper or for transfer to automation system.

R/C Works: integrated programming, traffic, billing, continuity, news, sales, production package; Selector, Songtrack, Musicbase, RCS Traffic, Linker, Pro-Route, Master Control, Prosonics, Tractel software.

Circle (899) on Reader Service Card

Radio Design Labs

5406

Product line: Utility audio products, Stickon amplifiers, mixers, relays, noise monitor; digital audio router.

Rack-up series: R1-MOS 5-input mixer; RUD-AD/4 4x4 44 stereo DA; RUDMD/4 4x4 video DA; RUSM12 dual audio meter; 19" rack adaptor holds three Rack-up products.

Circle (900) on Reader Service Card

Radio Express

4902

Information not available.

Circle (901) on Reader Service Card

Radio Systems

2012

Product line: Audio mixers; audio recorders, cart machines, DAT recorders.

RS-24 mixer; 24 linear faders for 48 stereo or mono sources; production, on-air, min minus.

RS Master Clock: analog system with drivers, slave for broadcast facilities.

RS-Squared: 24dB noise reduction encode-decode unit based on Dolby S; for cart, reel sources, STL links, single-ended stereo phase correction.

Circle (902) on Reader Service Card

RAM Broadcast

4002

Product line: Audio products; routers, on-air mixers.

32000C: communications system; 32-user, program-
Teach Your PC to Speak Engineer

Adjustable style parameters

Full 3-D architectural tool set

Auto cable length calculations

Edit database from inside AutoCAD

Cable labels, runlists, bill-of-materials

Draw system interconnects from dBase

Front/rear jack panels from dBase

Some of the available DA styles

View style changes before insert

Hundreds of racks and accessories

Extensive 3-D furniture library

2-D & 3-D ergonomic analysis tools

Create cable in 10 Sec in Dwg & dBase

Custom routers to 1000x1000x24

Calculate systems timing in 30 Sec

Over 1.5 million style choices

FlexiBLOCK 3D Style

1/0 Length: X Long 0 Short

1/0 Spacing: 0.0

Min. Height: 12

Width: 12

Text Placement...

Select Style...

Some style parameter choices

OK Cancel Block

VidCAD 3-D

Architectural VDP Furniture

Winsifed

Stanton

Emcor

GKM

Equipto

Generic Racks

Utilities 3-D Commands

QUERY Import text

Layer Change

2-D DIAGRAM

2-D DIAGRAM

Some of the available DA styles

View style changes before insert

Hundreds of racks and accessories

Extensive 3-D furniture library

2-D & 3-D ergonomic analysis tools

Create cable in 10 Sec in Dwg & dBase

Custom routers to 1000x1000x24

Calculate systems timing in 30 Sec

VidCAD : 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.

VDP • The CableDOC Company

Circle (92) on Reply Card

www.americanradiohistory.com
mable for 8-character alphanumeric destination: separate talk, listen, IFB, mix-minus conferencing.

Circle (903) on Reader Service Card

Tamio Audio/Panasonic 19019

Product line: Audio mixers, monitors; R-DAT systems. WR54400: 4-bus mixers; 1214 channel models, 2-inputs per channel; 3-band EQ; four groups, L/R stereo masters; four aux sends; D-out switch reroutes signal path for expanded output capabilities. WP-1000 series: class H circuit audio power amps. WX-RP410/RP700: 30-channel 800MHz LHF wireless mics for ENG/EFP; synthesized receiver mounts on camera/recordor; 30mW RF output.

SV-3200: R-DAT recorder. 

WS2712, WST215: speaker systems.

Circle (904) on Reader Service Card

Rank Cintel 12441

Product line: Teletone systems, integrated video studio. Jumpfree update: USRA teleline enhancement increases vertical stability helps real-time transfer with accurate matte; pan, zoom in live still frame mode. Turbo 2 teleline: digital deflection for Turbo Mill flying-spot system; expands adjustment range in image rotation, zoom, positioning, aspect ratio changes, pan. Photomile: still image transmission by phone line; Windows interface allows multitasking. Super 16mm gate: USRA enhancement; ideally suited to widescreen TV.

Ax 4: 4:4:4 option: USRA enhancement: digital output; extension to digital video channel; increases resolution with field-installed replacement electronics assembly for vector color controllers da Vinci Renaissance 888, Pandora Pogue DCP, key signal. MK III HD demix: 787.5-line, 60Hz field sequential scanning with flying spot system.

Lowcost: updates: USRA teleline enhancement extends operating speed to 5 frames per second; includes preset of 1/4 audio/normal frame rates.

Circle (905) on Reader Service Card

RFE Electronics 18019

Product line: Test, measurement equipment for audio, RDS transmission products.

d920 digital video interface: 2-channel with serial I/O; CCR 601 component converter, CCR 656 parallel digital video processing.

d930 digital audio interface: analyzes, permits modification of digital audio stream; transparent to 24-bit.

d940 headphone interface: to monitor digital audio data; 16-bit.

RE533 Slim Profile: RDS coder; stores 16 data records; supports Program Service name, Program Type, Traffic Announcements, Radio Test and other service types; RES31 adds page capability.

RE8720/8730: tie line audio codec for 15kHz stereo transmission by telco, twisted pairs; 1.2kb data channel for RDS system; error concealment, muting.

RE880 sound interface: encodes, decodes four 2.5kHz speech channels to 64kb/s; 15kHz modules option.

d920 interface: serial digital reference generator; conforms with AES synchronization for digital audio equipment in studio operations.

Circle (906) on Reader Service Card

Rec Recomincate 16830

Services include: Architectural services.

Facility: business planning service.

Circle (907) on Reader Service Card

Register Data Systems 4820

Product line: Business software for broadcast for sales, traffic, billing, accounting.

Digicorder: digital alternative to cart machine; operates as non-music source in automation systems. The Phantom: complete digital audio automation for recording, scheduling, playback of commercials, liners, promos, ecc.; rotates voice elements, schedules voices.

Circle (908) on Reader Service Card

Research Technology Inc/TK11 13716

Product line: Videotape evaluation, cleaner systems. Lipsner Smith film cleaners.

C3000-MK V: ultrasonic film cleaner; submerged buffering for enhanced cleaning; to 200 feet per minute.

DMX-11 dropout counter: for D1, D2, D3, analog tape formats.

D-11 dropout counter: analyzes analog videotape for dropout prior to recording; loading, editing, duplication; for Betacam SP, B, C, SVHS, U-matic, Ml formats.

TapeCheck 680M: Ml cleaner, evaluator, recycler.

TapeCheck 612C: evaluates 1" video tape; Micro-Pulse detection checks for flaws before media is reused.

TapeCheck DVL produces audible signal when a tape defect in the video is sensed.

Proline 4100: Betacam SP tape recycler, automatic cleaner, evaluator, rejuvenator of Betacam cassettes.

TapeCheck XCI: VHS cleaner, conditioner, rewinder.

Circle (909) on Reader Service Card

RF Technology 13129

Product line: Fixed microwave systems for STL, TSL, ICR configurations; 1.7-15GHz; 18GHz, 23GHz.

D series portables: transmitters, receiver in 1.7-15.5GHz, video detect transmit switch, remote control, ac/dc power; for truck, backpack, tripod applications.

M3000 transmitter, 200DX receiver: effective for surveillance, applicable to LPTV STLs.

DM-2, DM-8: digital coders for 2Mb/s, 8Mb/s data transmitted above video on conventional analog link; (DM-34, DM-45 for 34Mb/s, 45Mb/s capability in narrow bandwidth with QPSK techniques).

UPL series: includes 1.7-15GHz capability; dual audio, synchronized frequency control.

SVX-140T: satellite video exciter; high quality audio/video transmissions over Ku, C-band.

Circle (910) on Reader Service Card

RGB Computer & Video 17985

Product line: PC editing control systems.

AmiLink editing systems: controls VTRs, production switchers, effects, audio devices, peripherals; consumer/industrial version for Panasonic SVHS AG-1950; production control for Video Toaster; POD jog shuttle wheel: Logger.

Jow shuttle wheel console: operates with VLAN inter-
However, this is.

Introducing the new Dolby DSTL.  It's the world's only digital STL designed from the ground up to combine high quality audio coding with sophisticated digital modulation and ultra linear RF sections.  This results in extremely high audio quality, significant advances in spectrum efficiency, and unparalleled freedom from interference and fade that only a systems approach can accomplish.

Add-on schemes yield compromises that just won't fly in the end.

For further information, contact your Dolby DSTL distributor, or Dolby directly.

Dolby Laboratories Inc.  |  106 Patton Avenue, San Francisco, CA 94103-2513  |  Telephone 415-938-0200  |  Facsimile 415-938-1373  |  Telex 34908
346 Capham Road, London SW9 8AB  |  Telephone 071-720-1111  |  Facsimile 071-720-4113  |  Telex 911109
Dolby, DSTL and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation ©1992 Dolby Laboratories Inc.  925916.

Circle (93) on Reply Card

March 1993  Broadcast Engineering  139

Have you heard of Dolby DSTL?  It's the world's only digital STL designed from the ground up to combine high quality audio coding with sophisticated digital modulation and ultra linear RF sections.  This results in extremely high audio quality, significant advances in spectrum efficiency, and unparalleled freedom from interference and fade that only a systems approach can accomplish.  Add-on schemes yield compromises that just won't fly in the end.

For further information, contact your Dolby DSTL distributor, or Dolby directly.
THE GOLD STANDARD IN DIGITAL AUDIO DATA COMPRESSION

Endorsed by the world's most innovative manufacturers of broadcast equipment, apt-X™ digital compression technology has been incorporated at the heart of a host of products designed for the transmission or storage and retrieval of broadcast quality stereo audio.

Designed specifically for professional applications, the apt-X system delivers field-proven performance and reliability with a multitude of powerful features offering negligible coding delay while maintaining audio transparency.

Discover more. Find out for yourself why the broadcast industry overwhelmingly prefers the apt-X solution - the first hardware solution - the first single IC solution - the first choice solution.

Broadcast equipment currently incorporating apt-X technology includes products from:
- Advent Communications
- A.S.C.
- Asaca
- B.B.C.
- Broadcast Electronics
- Canopus
- Computer Concepts
- Digital Broadcast Associates
- Eela Audio
- E.R.I.
- Fidelipac
- Gentner
- Hitachi Telecom Technology
- International Datacasting Corp.
- Ikegami
- International Tapetronics
- Intraplex
- J.T.M.
- Kowa
- KW Electronics
- Maycom
- Moseley Associates
- Positron
- Scan Acoustic
- Sonifex
- Southern Broadcasting Systems
- S.S.V.C.
- Systembase
- Tiesseci
- TFT
- The Management
- Ubitech
- Vistek.

apt-X™ means compression technology you can bank on. Call today for further information.

The Industry Preferred Digital Audio Compression System.

Audio Processing Technology
Edgewater Road, Belfast BT3 9JQ
Northern Ireland
Tel 0232 371110 Fax 0232 371137

Audio Processing Technology
6255 Sunset Boulevard Suite 1026
Los Angeles CA 90028 USA
Tel 213 463 2963 Fax 213 463 6568

apt-X and apt-X are registered trademarks of Audio Processing Technology Ltd.
Television Lighting Systems that: Dramatically Reduce Power and HVAC Costs
Provide Artistic Control
Enhance Camera Performance

VIDESENSE
Sustained RGB Light
(800) 697-7033
FAX (415) 697-7032
P.O. Box 1188
Burlingame, CA U.S.A. 94011

VIDESENSE and Sustained RGB Light are trademarks of VIDESENSE, Inc.
VIDESENSE products are manufactured under license to U.S. Patent #5,012,396

Circle (95) on Reply Card

142 Broadcast Engineering March 1993

www.americanradiohistory.com
MAKE YOUR BETACAM A DIGITAL BETTER-CAM.

SURE STEPS TOWARD THE FUTURE...
Lead to booth 18019 at NAB '93.

With a Panasonic Emmy Award winning DSP camera.

There's no need to wait to add Digital Signal Processing to your Betacam SP VTR. Right now, Panasonic, and only Panasonic, offers a full line of Digital Signal Processing cameras, from the full-featured AQ-20D to the value-packed WV-F700 and WV-F500, for all professional VTRs, including Betacam SP.

Panasonic's DSP Cameras dock directly to most Betacam SP decks, or use a simple adaptor.

With Panasonic Digital Signal Processing camera set-up is easier, certain and repeatable. DSP cameras maintain strict uniformity in RGB signals and ensure that phase and frequency characteristics remain stable. They provide for 2-dimensional cross-color filtering, variable enhancements, high-chroma aperture correction, accurate one-touch gamma adjustment and auto knee circuitry.

Others ask you to wait for digital, and then you'll be up-to-date. But, for Panasonic, then is now.

Panasonic Broadcast & Television Systems Company

For more information call: 1-800-528-8601 (upon request enter code 67)
One Panasonic Way, Secaucus, NJ 07094

Panasonic Broadcast & Television Systems Company
When it's time for change
trust Harris Allied
to have the answer

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 will provide you with exceptional redundancy, headroom and protection with such features as main/standby exciters, EEV-approved thyatron crowbar protection for the IOT and reserve IPA power. You'll appreciate the low-maintenance design with user-friendly controls, easy sub-assembly access and the lowest ambient noise level available.

Our field-proven IPA and newly developed exciter should give you years of trouble-free operation. What's more, a wide range of configurations and options will ensure you get the best transmitter for your application now or when you move to HDTV.

We invite you to find out why Sigma is the no-compromise choice for now and the future. Trust Harris Allied to have the answer. The world's leader in broadcast technology.

Phone: 217-222-8200   Fax: 217-224-1439
record modes; digital mixing; signal processing; 5-band EQ, event-based automation; code synchronizer; Mac System 7 control software.

Dyade Lite: workstation for newsroom, call-in/edited, short format programs; Mac Classic/II computer, hard

Circle (988) on Reader Service Card

Studio Film & Tape

Product line: Exalated video recording tape.

Evaluated tape: 1", Betacam, Betacam (SP), 3/4" KCA/KCS, D2 formats.

Circle (989) on Reader Service Card

Studio Spectrum Inc

Information not available.

Circle (990) on Reader Service Card

Studio Technologies

Product line: Mic preamps, audio processors, studio simulators; digital audio workstation accessories.

Generation II stereo simulator: for on-air TV broadcast, post-production, film applications.

StudioComm series: adds monitoring, communications functions to small digital audio workstations; StudioComm 50 central controller; Model 51 control console; Model 55 talent amplifier, I/BB Plus Model 2: controller for IFB with ENG, SNV, mobile production facilities.

Circle (991) on Reader Service Card

Studio Technology

Product line: Stereo systems.

Circle (992) on Reader Service Card

Sendane Technologies Group

Product line: Video editing products with MAC software control, Q-CUT editing, Q-BASE scene logging database.

RADO: random access digital I/O editing software.

FASTBREAK: event management software: for Pioneer VTR-V1000 rewritable laserdisc recorder; build, play random access, non-linear sequences for broadcast, sports applications; supports stills, IDs, bumps, news stories, sports.

Circle (993) on Reader Service Card

Superior Electric

Product line: STABLELINE series power protection equipment; UPS7: uninterruptible power supplies, power conditioners, transient suppressors, RFI filters; WHR series voltage regulators; AC disturbance monitors.

Circle (994) on Reader Service Card

Sure Shot Teleproductions

Product line: Ku, C-band portable earth stations; mobile production facilities.

Gemini: 48-foot mobile unit; GV 1680 switcher, Chy

ron 4200 titles, Akekas A-42, A-53; 5 Sony BVP 360, 3 Sony BVP 350 cameras; Yamaha PM-2000 mixer, Sony FM-2000 VTRs, BVN-75s with N", ½" VCRs, Discovery: 48-foot mobile unit; CVS 300 switcher, Chy

ron 4210 titles; Akekas A-42, A-53,5 Reels, 3 legs/1, 3 legs/2 cameras; Yamaha FM-3000 mixer, Sony KV 3100 VTRs, BVN-75s with N", ½" VCRs.

Circle (995) on Reader Service Card

Swintek Enterprises

Product line: Wireless mic, intercom products, Mark 2000 intercom, Mark U/SNG microphone, Mark 90C: wireless transmitter, converts hand-held mic into a wireless unit.

Mark 90L: diversity receiver.

Mark 2000/TVS: wireless mic system with security scanning feature.

Circle (996) on Reader Service Card

Switchcraft

Product line: Full range of audio components, accessories.

Video patching: expanded line of patch panels and cables.

Circle (997) on Reader Service Card

SWR Inc

Product line: RF feedline, TV, FM antennas featuring economical performance. Field Engineer Service, 5-

year limited parts, labor warranty.

Circle (998) on Reader Service Card

Symetrix

Product line: Audio processors, single-ended noise reduction system.

Model 425: dual compressor, limiter, expander; stereo or dual-mono modes; downward expansion, compres-
sion with peak limiting; 112:1 dynamic range; 0.04% distortion.

524E: multmode crossover: four crossover bands.

1500M: dual compressor, limiter, expander; stereo or mono, on/off; or stereo 2-way; adjustable crossover points, filter slope/individual processing per band with driver protection limiter, phase alignment compensation.

Circle (1000) on Reader Service Card

System Associates

Product line: Used broadcast and equipment brokers.

Circle (1001) on Reader Service Card

Systems Wireless

Product line: Wireless mics, intercoms, field production equipment from HME, Vega, Lectrosonics.

Lectrosonics LSP: wireless microphones, Vega IFB-12: wireless IFB system.

HME 800 Intercom: UHF wireless system.

Circle (1002) on Reader Service Card

Tasso

Product line: Recording media degrausers.

MAGTA telephone set: for communications over bi-directional 2-wire circuit, unidirectional 4-wire circuit.

Model 90F: 53" or 12" on/off; or 12" on/off, controlled erase for MB, BetaSP, VHS, U-Matic. 1" reels.

#09/M: table-top eraser for metal tape to 75-85DB below recorded signals.

TS2990A automatic hybrid: automatic system with microprocessor control.

Circle (1003) on Reader Service Card

Tally Display Corp.

Product line: Specialized tally indicators to indicate status of equipment.

Tricolor interactive displays: system creates matrix-type color display; remotely, indicate status of equip-
ment with red, green, yellow colors; senses router configurations, etc.

Circle (1004) on Reader Service Card

TAO/Technical Aesthetics Operations

Product line: Windows-based A/B Control system designed for 35'x40' facilities.

Circle (1005) on Reader Service Card

Tapanac

Product line: Marketing research software, QualiTap, TargetONE.

Retail Spending Power: added feature to Tapanac software package.

Circle (1006) on Reader Service Card

TASCOM

Product line: Audio recorders, tape recorder.

Circle (1007) on Reader Service Card

Technoflex

Product line: Wiring harness management slewing, of braided monofilament material.

FLEXO series: FR flame retardant for cable manage-
ment; black, white; HF heavy wall abrasion resistant black, PCFT Standard chemical, abrasion resistant ma-
terial in assorted colors.

Circle (1010) on Reader Service Card

Tecnosol

Product line: Special purpose tools.

Circle (1015) on Reader Service Card

Technomysp SA

Product line: Microwave links 2-4GHz; modulators, converters, solid-state, tube transmitters, transmitters; transmission system accessories: turnkey station, net-
work designs, construction; field maintenance service. TXS2000 transmitter: solid-state UHF, transmitter; UL-
10 modulator, ULS-200 200W amp; NTSC, PAL, SECAM.

Solid-state TV: transmitters, transmitters; exciters to 1kw output; synthesized and frequency control continu-
ously tunable on Band III, IV; V: replaces tube versions of 30W to 1kw; combined carrier amplifier.

Circle (1016) on Reader Service Card

Tecnologia Electronica Miami/TEM

Product line: Radio-TV transmitters, translators.

Circle (1017) on Reader Service Card

TEKNO Balcar

Product line: US distributor for Balcar (France) lighting equipment.

 Fluidite System: high-frequency fluorescent lighting for TV/video conferencing: cool daylight to tungsten;
What are Broadcasters around the World turning to?

"ScreenSound and SoundNet have given our mixers more flexibility in the way they work; now we spend our time on the creative aspects of the overall project, rather than worrying about which patchcords to put together."

Fox Tape
Los Angeles

"We looked at other hard-disk editing systems, but felt that ScreenSound met our needs far better. After having used it operationally for six months or so, I can say that we made the right decision."

STAR TV
Hong Kong

"ScreenSound offers us a secure upgrade path through SoundNet, with its off-line back-up and networking facilities, and compatibility with Scenaria - which we already have an option on."

Carlton TV
London

"ScreenSound's easy-to-use interface has helped to speed up the post-production process on our most successful drama programme Urban Police 24."

ABC Asahi Hoso
Tokyo

Solid State Logic

Circle (98) on Reply Card

Solid State Logic
International Headquarters: Begbroke, Oxford, OX5 1RU, England • Tel: (0865) 842310
Paris: (1) 34 60 46 66 • Milan: (2) 612 17 20 • Darmstadt (6151) 9386-40
Tokyo: (3) 54 74 11 44 • New York: (212) 315 1111 • Los Angeles: (213) 463 4444
US Toll Free: 1-800-343 0101

www.americanradiohistory.com
**Discover Fiber Options...**

broadcast-quality video, audio, and data transmission.

- Digital audio links
- Multi-standard video links
- SMPTE 207M, RS-232, RS-422 serial data transmission
- Intercom, time code and control
- Single-fiber bidirectional multiplexing

**EXCLUSIVE FIVE-YEAR WARRANTY**

For reliability, performance, and unparalleled after-sale support, call...

Fiber Options
... light years ahead

See us at NAB Booth 16314-16414

80 Orville Drive, Bohemia, New York 11716-2506
516-567-8320 • 1-800-342-3748 • FAX 516-567-8322

Circle (106) on Reply Card

---

200W unit equivalent to 1kW/2kW halogen units: dims to 10% with minimal shift in color temperature. Circle (1018) on Reader Service Card

Tekskll Industries 17275
Product line: Videoprompting systems, Companion and 14" Easy View studio prompter. Circle (1020) on Reader Service Card

Tektronix 17119
Product line: Professional TV, audio test, measurement, monitoring equipment for broadcast, cable production, manufacturing, audio, telecommunications: waveform/vector monitors, signal generators, synchronizers.

ASG 140: audio generator

DAC 422: component D/A converter.
CTIME package for VMT700A: audio/video delay measurement option for video measurement set.
Pathfinder: handheld NTSC signal generator.
TDC10 tunable down converter.
TSG200, TSG202: NTSC generators for production, maintenance; -200 with six 10bit test signals; -202 generates SMPTE bars, black burst, output: half rack width; by 1 rack unit high.
VS2/8 synchronizer: with four times the accuracy, resolution of 8bit systems; analog, composite digital I/O for mixed format systems, NTSC.

WFM601 serial component monitor: digitall direct digital audio input waveform monitor: adjusting serial digital component signals; 2000 through inputs, analog display of signal, EDI error alarm LED, RGB parade display; Tek-standard operator interface in 1x2 rack width.
Model 1765S combo waveform, vector monitor. Circle (1021) on Reader Service Card

Telemetrics 19051
Product line: Camera support, control products, robotic pan/tilt units. ENG camera truss adapters.
TM-925S coaxial camera remote control for lower end industrial cameras; RG59U combination cable, base station, with RS-11-U. for Beta, H8, Mil.; 5-VHS cameras. TM6608S: pan/tilt control, RS-232: outputs for four cameras with 16 presets.
TM-925S: coaxial camera remote control; interface for Sony, Panasonic, Hitachi, JVC camcorders.

Circle (1022) on Reader Service Card

Telex Communications 19107
Product line: Equipment transport products: conversion items, briefcases; full line of solutions for broadcast facilities.

Circle (1023) on Reader Service Card

Telescript 18811
Product line: Studio, portable monitor prompters; prompting software for compatible PCs.

Circle (1024) on Reader Service Card

Television Engineering 13117
Product line: Mobile TV production, ENG vessels, system design, construction, IFB controller, IFB-19A: audio controller.

Circle (1025) on Reader Service Card

Television Equipment Associates 13411
Product line: Audio filters; broadcast video switched box delay lines; brickwall filters for subcarrier removal; boxed filters for general noise elimination; Matthey Electronics E296 HDTV filters, delays.

70MHz IF filters for: INTELSAT, EUTELSAT systems.
Delay DAS: high performance, 0.4µ delay range.
Group delay equalizer networks: for pretransmission signal correction.

11MHz delay lines: switched, box style rack-mountable package, DIP style.

Circle (1026) on Reader Service Card

Tlex Communications/Pro-A-V 13914
Product line: Audio tape duplication units, wired, wireless, microphones, receivers, headphones.

AD-200 VHF: wideband diversity antenna splitter, combiner; use up to 8 antennas from 4 diversity wireless systems to 2 antennas.

FMR-200 advanced: VHF true diversity wireless receiver, single rack space with improved phase diversity; two 4.5λ antennas provided.

Audiocon intercon enhancements: 2 user 2 channel station, 1-channel expansion station, power supplies, powered speaker monitor.

Custom frequencies: 8 Radiocon wireless intercon systems operate within one 6MHz TV channel.

EGM: goose neck Microphone Electret condenser mics.

ACC series duplicator: copies both sides of three cassettes at 16x speed or can make 4 copies.

ENG-1: wireless receiver for video cameras, camcorders.

RTS CS series: software for E&M signalling of nonintelligent 4wire devices. XYZ panel control, CSD/EAR intercom keypanel setup editor, power fail recovery.

SAX224 system interface: converts 20kHz signals among RTS-Audiocom. RTS-RTS, RTS-4wire, Audiocom-Audiocom intercoms.

Varies: lightweight professional headset.

ELM33: unidirectional lapel Micro-bmics.

Circle (1027) on Reader Service Card

Tell Telecom 19052
Product line: RDS exhibit, Grand Lobby.

Circle (1133) on Reader Service Card

Tellus Systems 1026
Product line: Telephone hybrid products. LINK telephone intercom interface.

Circle (106) on Reply Card
Advanced wireless intercom system

Vega Q600

- Rugged, reliable, metal beltpack remotes
- Hybrid UHF/VHF operation to conserve scarce VHF frequencies
- Inexpensive VHF monitor receivers to lower system costs
- High-quality, low-noise, low-distortion audio
- Up to six beltpacks per master station
- Designed specifically for broadcast and production
- Directly compatible with all standard wired intercoms
- Many advanced circuit and system design features

In the studio or on the set, Vega’s wireless intercom systems are the choice of professionals who demand ruggedness, reliability, broadcast-quality audio, and a full set of professional features. Designed from the ground up for broadcast and production work, the Q600 UHF/VHF system provides all the functions and technical capabilities required for these demanding applications.

The Q600 system provides continuous, full-duplex, hands-off communications between up to six people plus an unlimited number of “listen-only” users.

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.

The PL-2 VHF mini-receiver provides a high-performance, low-cost solution to providing one-way “listen-only” communications. Very often, individuals need to receive instructions but are not required to speak. Using PL-2 receivers for this application avoids the expense of additional full two-way remotes and can significantly lower the cost of a typical system. The PL-2 is fully compatible with the Q600 system and is designed to provide reliable communications in the most demanding RF environments.

When the job demands hands-free, full-duplex operations in the most demanding environment, go with the Vega Q600, the system recommended by professionals worldwide.

Circle (100) on Reply Card

a MARK IV company

9900 East Baldwin Place
El Monte, California 91731-2294
Telephone: (818) 442-0782
Fax: (818) 444-1342
FaxBack: (818) 444-2017
Toll-Free FaxBack: 800-274-2017

www.americanradiohistory.com
Tentel Systems

Product line: Broadcast antenna products for FM, TV, HDTV offering omnidirectional, custom patterns. UHF, VHF, multi-element antenna uses K7241 broadband panel. Pattern design worksate: demo of possible panel combinations; omni, directional, beam tilt with and without null fill, power handling capability options. CP FM panel antennae: broadbroadband panel to design omni, dual patterns from pattern FM arrays for all power levels between 88-108MHz.

Circle (1029) on Reader Service Card

Tentel

13048

Product line: Video recorder repair, maintenance test instruments; Tentolometer dynamic tape tension meter; torque gauges; reference plane gauges; head protrusion, drum eccentricity gauges. T.V. amplifier electronic digital unit also measures drum eccentricity.

Betamax related: video training tape, repair/maintenance gauges.

Circle (1030) on Reader Service Card

Texaco MSI

10576

Information not available.

Circle (1019) on Reader Service Card

TFT Inc

9108

Product line: Aural STL system, booster/reciter for FM repeater applications.

9105/9107: composite aural STL transmitter, receiver; combined FM stereo generator with audio processor in transmitter.

DMM62: digital STL for spectral efficiency.

9200/9205: monaural frequency-synthesized, field programmable STL VLSI design.

Circle (1031) on Reader Service Card

Theatre Service & Supply

13640

Product line: Studio furnishings, studio cyclorama curtain, track systems; scenic supplies; grip equipment.

Circle (1032) on Reader Service Card

Thermodyne International

13127

Product line: Equipment transport cases.

Smooth wall cases: strong, highly durable with streamlined appearance; foam inserts fabricated to specific requirements.

Circle (1033) on Reader Service Card

Thomson-CSF

15746

See: Comark Communications, Thomson Broadcast, Thomson Digital Image, Thomson-LGT

Thomson Broadcast

15745


PSTORE: still store; 386 Windows-based for 525/625, 43, 1568 format pictures; Belaveza interface card; Ethernet LAN tie to ISDN; SQ/ISO compression.

BELIEVE: PC 16.9 display card for 386, 486 PCs; replaces VCA card, 24-bit color under Windows 3.1; JPEG data compression.


TFT 5790, 5791, 5775: serial digital routing switchers.

TFT 7148: serial digital DA for D1, D2/D3 signals; auto EQ to 300mV.

TFT 1625: TV 1647 camera head, CA 25 microphone adapter, CUC 1625 panel for multicore operation.

TFT 7656: serializer, deserializer, D1; D2/D3 TV processing.

TFT 7790 HD: HiDoubler image converter; 169 or 43 aspect ratios.

TFT 7780: bidirectional standards conversion among analog composite NTSC, PAL, SECAM, digital composite NTSC, PAL; analog components, 270MHz at 4:2:2.

TFT3821/3822: D1 recorders with dynamic tracking: optional slow motion; serial digital I/O.

TFT7710, 7711: Double DI splitter, combiner; splits analog HDV video signal into 4:2:2 signals for recording, processing with 4:2:2 equipment; recombines result to component, RGB output with composite, tri-level sync.

TTV 7400 DIGIMAP: serial digital phasing device.

Circle (1034) on Reader Service Card

Thomson Digital Image/TDI

15746

Product line: Interactive 3D animation, visualization for video, broadcast, corporate communications.

Metaballs Blob Modeler: for TDI Explore, TDI/3Image 3D animation, visualization packages; Boolean operations generate smooth holes, cavities with soft edges; optimized number of polygons to crisp smooth curves; real-time rendered model checks with polygon meshing: blending of Blobs and conversion to polygons.

Metaballs Blob Animator: attaches blobs to skeletons for animation of muscle, joint movement; combined with rendering engine to create melting objects, moving molecules; view-dependent adaptive subdivision of blending groups for fast, smooth rendering.

Pascal cartooning: reduces time to create cartoon series in multimedia environment; automatic coloring of a series of drawings; exposure sheet with 30 columns of images.

Circle (1035) on Reader Service Card

Thomson Tubes Electroniques

11908

Product line: Power devices for terrestrial broadcast; HPA, TWT devices for satellite, microwave communications.

TH 1001: modulator: uses screen-grid to modifies class of operation of TV transmitter during sync; improved efficiency by 15%.

TH 3754: TWT: for DBS transmission; 12.2-12.7GHz frequency; 85% efficiency from 120W tube.

TH 343 tet rod: power tube to 30kW at 120MHz. 18dB gain; Pymbro grids: in TH 18250C 800.

TH 4447 projection CRT: 9" device for HDTV projectors.

Circle (1036) on Reader Service Card

Thomson-LGT

13746

Product line: Broadcast engineering of complete stations; control systems; video equipment; satellite transmitters; transmitters; transmitters; terrestrial broadcast; solid state of TV.

Circle (1037) on Reader Service Card

SM Pro/A V Products

16605

Product line: Audio, video recording media, all formats.

Circle (1038) on Reader Service Card

Liste System

4103

Product line: Audio router systems; audio card player replacement systems.

Circle (1039) on Reader Service Card

Tuffy Manufacturing

16338

Product line: Light modification filters, lighting accessories.

Circle (1040) on Reader Service Card

TimeLine

2206

Product line: Time code products; transport synchronizing systems.

Cosole Control Unit: keypad on AMS, Euphonix, Neve, Orui, SSL consoles operate TimeLine System Supervisor multitransport controllers.

Micro-sync: machine control; synchronizes audio, video transports and MFX.

Lynx Gearcard: plug module for Lynx time code modules.

Circle (1041) on Reader Service Card

Toku America

17243

Product line: Video filter for HDTV.

VASTP: video, audio storage, transmission system.

TCD-1000: portable video codec for multimedia teleconferencing systems.

Circle (1044) on Reader Service Card

Torrey Controls & Engineering

16827

Product line: Utility timing products, analog digital time displays, digital timers.

STW: rack-mounted digital timer.

CLX-111: digital display, operates from E.S.E., SMpte, DQS-6 code.

VCLS-2: two video alarm, switch, CLX-2 combination analog digital time display, operates from E.S.E., SMpte, DQS-6 code.

CLX-50: digital master clock.

Circle (1046) on Reader Service Card

Toshiba Corporation

11841

Product line: Digital SNG/LINK systems; HDTV products; CCD cameras, VCRs, picture memories, FO transmission equipment; HFA cameras, camcorders; Pyramids video production equipment.

Digital Interface: 10-bit digital TV signal system.

HDTV PICON: picture computer system.

PAL CCD ENG camera: with 320000 pixel sensors.

SC-S21, SC-831: studio, ENG/EFP cameras using 600000 pixel CCD chips.

FO transmission: digital optical fiber system for HDTV.

Video filling system: solid-state design.

Circle (1047) on Reader Service Card

TouchVision Systems

15369

Product line: Videotape editing controllers, multimedia and professional systems.

D/Vision V1.1 enhancements: six 44.1kHz audio channels; Targa/PCX overlay; improved SuperTV image quality, animation; 60-hour video capacity; files export as Microsoft "Video for Windows", Apple Quicktime.

Indro Inedo and WAV audio files; digital video effects, source time code display; true nonlinear editing.

Circle (1048) on Reader Service Card

TRF Production Music Libraries

19528

Product line: Production music libraries.

Circle (1049) on Reader Service Card

Koala Library: 11 CDs for broadcast, AV, film applications.

Production libraries: more than 50000 selections.

Circle (1050) on Reader Service Card

Trident Audio

5106

Product line: Audio consoles for broadcast, tele/post production.

Circle (1051) on Reader Service Card

Touchscreen Graphics

5106

Product line: Touchscreen Graphics: combines touch sensitive displays, operational with multimedia applications.

Controller: keypad on AMS, Euphonix, Neve, Orui, SSL consoles operate TimeLine System Supervisor multitransport controllers.

Circle (1052) on Reader Service Card

Troll Technology

13801

Product line: Remote control facilities for ENG, camera systems.

Communications Hub: remote control eight sites from one device; may be used with local devices.

Touchscreen Graphcs: combines with real-time video for multimedia applications.

Touchmaster Controller: with "9"CRT; simultaneous control of four sites on one screen.

Portable/Laptop Master Controller: permits remote operation of ENG receive site or ENG news van via cellular telephone.

Airborne Antenna Systems: video microwave antenna equipment; for origination or repeater function in live news events; SkyPod III, NavTrack activeberger tracking systems.

Circle (1053) on Reader Service Card

Trumstrong Electronics

12801

Product line: BNC connectors: patching, distribution products.

J24W1H, J24W1HF: 75Ω dual coax patch jacks; ex-
"Go In With Sharp's Winning Game Plan For Copiers. You'll Come Out With Increased Productivity And Reduced Operating Expenses. No Question."

Chuck Daly
Championship Coach

In any arena, basketball or business, you've got to know what your players can do for you.

That's why Sharp has developed a Winning Game Plan for copiers. This booklet helps you find the right copier from Sharp's impressive line-up that's going to increase your productivity and reduce operating expenses, big time.

You may need a new high-volume duplicating system that builds in every advanced feature as standard. A highly modular mid-volume copier that lets you add on as your office needs grow. Or a compact copier that gives you more quality and features for less.

These copiers not only come with a guarantee of Sharp's reliability and authorized dealer service and support. They guarantee results. So call for your Winning Game Plan today. Or fax 1-800-3-SHARP-3. Because Sharp's got the players you need to win.

CALL 1-800-BE-SHARP FOR YOUR WINNING GAME PLAN FOR COPIERS.

SHARP
FROM SHARP MINDS COME SHARP PRODUCTS™
tended bandwidth dc to 600MHz; self-terminating and normal-ohm types.

Circle (1053) on Reader Service Card


Bravado: multimedia engine on-board VGA for ISA platform; full color video-in-a-window, audio pass-through; Windows 3.1 compatible; 64-bit entry level, 16-bit full-featured versions.

Circle (1054) on Reader Service Card

TSM/Total Spectrum Manufacturing 112451

Product line: Studio automation, robotic camera support, control systems.

ACP-4000s: portable version of ACP-8000 touch-screen controller; operates 4 cameras including all features of 8000 systems.

ACP-8000: touch-screen control system with networking; operates SP-300/X-Y servo pedestal, HS-3/0P studio pan/tilt unit, MC-3/3-local manual control.

Network LAN: provides 100% system redundancy with inter-affiliation control.

HP-10SP with multi-controller: high-speed programmable, pan/tilt for ENG; 18 arc-second accuracy; 90°/second.

Sony CU interface: controls camera paint, iris functions.

Auto-Rundown: interface for ACP controllers provides electronic rundown for robotics operator.

SM-100/X-Y; robotic positioning floor monitor; treated by system as if it were a camera.

Circle (1056) on Reader Service Card

TT/C/Television Technology 113066

Product line: Manufacturer of AM/FM, TV broadcast transmitters, XL series of UHF/LHF LP transmitters, translators.

10kW FM: solid-state transmitter.

IOT transmitter: restyled, high-performance system.

UHF transmitters/translator: 100W; low-cost system.

10kW HP: solid-state transmitter with various power levels, ancillary equipment.

Circle (1057) on Reader Service Card

TV Answer/Consumer MkIV Div. 116681

Product line: Audience response, interactive TV.

TV Answer: wireless, 2-way system uses viewer response to on-screen broadcast with hand-held remote control device.

Circle (1058) on Reader Service Card

27th Dimension Inc 114004

Product line: Production music.

Circle (1059) on Reader Service Card

TWR Lighting 11564

Product line: Tower lighting products.

Circle (1060) on Reader Service Card

U-U-U

Ultimate Corporation 112951

Product line: Video compositing systems, the Ultimate Systems; matte hanging memory head motion control.

Cineflex software: uses Ultimate algorithms with SU workstations for a new method of "blue-screen compositing" in film; Ultimate Intelligence automatically adjusts system parameters for novice or expert users.

Circle (1061) on Reader Service Card

Union Connector 116435

Product line: Power distribution equipment, Polybox company switches, CS connector strips.

DistroBox: portable power distribution boxes; four sizes from 2 circuit 100A to 3 group 48-breaker power center; carrying handles adapted with C-Clamp for pipe mounting shipable by UPS.

Circle (1062) on Reader Service Card

Unique Business Systems 116472

Product line: Productivity, business software; Rent/Trade rental equipment availability tracking.

Circle (1063) on Reader Service Card

UnSet Corporation 117701

Product line: Studio furnishings, sets.

Circle (1064) on Reader Service Card

United Ad Label 120044

Product line: Blank, custom printed tape format labels for laser, tractor-feed printers for most audio, video formats; mating, shipping labels; PC, Macintosh labeling software with UAI, formats built-in; tape management, status labels; At-Tack label adhesive remover.

Circle (1065) on Reader Service Card

United Media 180054

Product line: Editing control systems, UMI multitasking, A/B roll controllers; animation products.

PC Edit Series: for desktop video; non-linear mode Scene Loger to select, store and access scenes randomly for line-by-line assembly on linear VTR; digital audio, remote shuttle know.

VAC-100 series: video animation controller card for PC; controls RS-422 VTRs for animation, multiframe recording.

Circle (1066) on Reader Service Card

URJ 15713

Product line: Audio processing products.

LA-10, LA-12 compressor limiters.

LA-22: dual-channel parametric compressor; "spectral agile" feature processes selected aural bandwidth.

Circle (1067) on Reader Service Card

US Tape & Label 4618

Product line: Labels, promotional products.

Circle (1068) on Reader Service Card

Usha America 18666

Product line: Stage, studio lighting products, lamps.

Circle (1069) on Reader Service Card

Utah Scientific 180632


Multichannel distribution systems.

MC-691: digital master control switcher.

Circle (1070) on Reader Service Card

Utility Tower 39294

Product line: Tower products, services for AM, FM, TV, microwave, other communications.

Ultra-1201: for heights to 180 feet; galvanized inside, load range between that of solid rod tower and pole mast.

Circle (1071) on Reader Service Card

Valentine Production Music 122893

Product line: Production music, sound effects library.

New CD library packages.

CD-ROM interactive with production music, sound effects for computer markets.

Circle (1072) on Reader Service Card

Vantum Industries 1427

Product line: Tower structures, Monopoles to guyed Lattice towers.

Circle (1073) on Reader Service Card

Vantage Lighting 17972

Product line: Replacement Ker-Rad, PAR64 lamps.

Ker-Rad FLE: 2kK halogen lamp; custom-made units.

Circle (1074) on Reader Service Card

Variables Canada Microwave Products 16101

Product line: Klstron tube amplifiers for satellite communications.

Jetcast: 24-hour emergency delivery, tube repair and maintenance, bonded storage.

Circle (1075) on Reader Service Card

Variables Microwave Equipment 16104

Product line: High power amplifiers for commercial satellites, Ku-band medium power subsystem; Ka-band single/dual medium power amplifier.

C-band HPA: 3kW wideband, single and multicharrier commercial satellite service; microprocessor control section; local, remote control panel, menu driven.

Circle (1076) on Reader Service Card

Varian Microwave Power Tubes 16109

Product line: MAC electronics for UHF transmission.

Klystron rebuild service.

Circle (1077) on Reader Service Card

Varian Power Grid/X-ray Tube Div. 16106

Product line: Emissive power tubes for VHF, UHF TV and AM, FM, shortwave radio to be displayed.

Circle (1078) on Reader Service Card

Varian Travelling Wave Tube Div. 16106

Product line: YFW devices for satellite communications; 3kW C-band, 300W Ku-band and microwave tridium TWTS.

Circle (1079) on Reader Service Card

VEAM/Ultron 16364

Product line: Electrical connectors, multipin products; A/V F) products.

BLOK VDS-134: sequential mating power distribution panel; connections to 500Vac, 3phase, 600v service.

BLOK_GUE-01, 106A Spoke power.

FOMS: fiber optic micc snaker; 52-channel analog and digital to analog over fiber optic link.

BLOK’s 00A 6-Pole sequential power distribution.

Circle (1080) on Reader Service Card

Veetronix Inc./Readech Electronics 16628

Product line: Sealed reed-type switches in illuminated, nonilluminated types; panel switches t: extensive line of keypads, paging products and general purpose equipment; voice systems, high-band, low-band voice, voice systems.

Panel Switch: 1/2" square; 100ma rated rect; incandescent, LED or nonilluminated.

Circle (1081) on Reader Service Card

Vega Wireless 15716

Product line: Wireless mics, wireless intercoms.

Q-600 Intercom: split band UHF/VHF wireless.

BMT-14 wireless I/F: 4-channel transmitter with PL-2 2-channel mini bodypack PR receivers.

Sub-mm NS7: lavaliier mix with choice of Lemo LM210 or mini XLR/Tina QLM210s connectors.

Circle (1082) on Reader Service Card

Vertex Communications 17543

Product line: Design, engineering, manufacturing of earth station antennas, related components; tracking control systems; dual-receiver antenna systems (1.8m to 3m) for C, Ka, X-band frequencies, some L-Band; site testing, maintenance services.

Circle (1083) on Reader Service Card

VG Electronics Grand Lobby Product line: RDS systems components, monitoring, dynamic data management systems.

VGE 1076 series: LineUP RDS coders; supporting AF, DI, MSFI, PS, PST, TP; TA; TP services; dynamic static RDS messages.

VGE 1078: RDS receiver decoder; with PC software to control receiver functions, provide RDS data displays, including views of Tuned Service data. EDN references, historical, others.

VGE 1078M: RDS monitoring decoder.

Circle (1085) on Reader Service Card

VGV Incorpo rated 108113

Product line: Digital composite video production switchers.

DBX4: composite digital downstream keyer; key memory; auto. manual timing, six inputs; integral color bar splash color background, shadowline generator, positionable drop shadows; serial, parallel or analog input and output; NTSC, PAL available.

Circle (1086) on Reader Service Card

Vicon Industries 161473

Product line: Camera remote positioning products, desk-top or rack-mount controllers.

VICON 8800: multi-special designs accommodate small cameras; low profile indoor or outdoor; preset capabilities.

VCR241: 24-hour time-lapse VCR 12- or 24-hour.
Non-Stop.

Prizm's on-going rollout of eye-catching effects makes it so much more than just another DVE.

It isn't just the price. It isn't its extreme popularity and worldwide recognition. It isn't its ability to wrap live video around the most dynamic shapes you can imagine that makes the Prizm Video WorkStation™ so special.

More than anything else it is Prizm's ability to expand and grow—something no other effects system can do—that sets it apart. You get non-stop power to perform the state-of-the-artist effects you need to stay on the cutting edge.

Start with a complete package of advanced 3D image manipulations and superb picture quality. Whenever you want, add still store, montage, flying linear key, dual channel control, all the way to the real time effects power of DVEator™.

**DVEator breaks the effects barrier.**

DVEator maps live video onto hundreds of complex animated 3D shapes and surfaces—from spheres and toroids to four-way page turns with highlights and more—all in a single pass. No one else can match the creativity and affordability of DVEator. Plus it's surprisingly easy to pilot. You can even create your own one-of-a-kind effects using the DVEator Creation Station.

When you buy Prizm, you buy into the future. We'll keep you ahead of the game. Expect to stay that way. Effectively non-stop.

Pinnacle Systems, Inc.
Phone: (408)720-9669
Fax: (408)720-9674
No. Europe: +932-848806 (U.K.)
So. Europe, Africa, Mid East: +41-442430 (Belgium)

Circle (101) on Reply Card
We're here to show you the best of British

Faraday Technology is a major supplier of filters to the European market. Now, we're coming to RF Expo West in San Jose and NAB'93 in Las Vegas. We're here to broaden our horizons and show what we can do for you in the frequency range 100KHz to 800MHz.

Faraday Technology for filters

Circle (102) on Reply Card
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 TH563, 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.
A/B roll editing on the desktop.

PACE: professional animation control engine; rack-mount or desktop serial, parallel video devices from any computer: one VLAN transmitter, one receiver; software downloadable device driver, for major graphics, animation software supporting VLAN.

MICRON, SuperMICRON, VLC-32 A/W- roll editing systems; VLAN network for frame accurate control of multiple VTRs, video disks, switches.

Circle (1099) on Reader Service Card

Videogulp Research

1607

Product line: Signal routors, distribution products.

BG-2 generator.

SD-2 silence detector: for two independent channel.

DAVE-2005: digital audio voice editor.

VI-2 VU/PM meter: 2-channel unit; separate extended range displays covers -40 to -22 VU or PPm.

VU, PPm meter.

MPF: mic preamp: 2-channel, 2 outputs per channel with independent gain adjustments.

Circle (1100) on Reader Service Card

Videotek

16255

Product line: Combined waveform/vector monitors; production, post production switchers; frame stores, synchronizers; sync, timing, test signal generators; distribution products, routers; audio program monitors; de-modulators.

OmniMount: versatile rack-mount frame to accommodate 10 modules including video, audio, pulse DAs, sync or test signal generators; eight outputs per DA.

SAM-4: System Auto-Measure system; performs automatic test of RS-170A, FCC (broadcast transmission), FCC (CATV distribution), NT-7, RS-232C, common NTSC, measurements; PC interface; measurements may be output to printer.

TVM-676: combination waveform, vector monitor for composite, component analog video; stereo audio phase, level measurements.

APM-680: high fidelity input audio program monitor; can monitor four stereo signals in single RU panel; two bargraph meters with switchable peak program or average response barstics.

Circle (1101) on Reader Service Card

Vidtron Broadcast

19746

Product line: Microsight robotic systems, pedestals, tripods, pan/tilt heads, cranes, accessories.

Osprey: single, 2-stage steering, portable pedestal.

Classic pedestals: Fulmar, Tern, Hawk, Teal.

Pan/Tilt heads: Mark 5, Petrel Mark II, Swan.

Vision ENG/EFP: pan/tilt head, tripods with Torque Safe leg locks in AL, carbon fiber.

Vision SD-12, SD-22: serial drag heads.

Mark 7B fluid cam pan/tilt head for studio pedestals.

Microsight robotic systems control enhancements.

Circle (1103) on Reader Service Card

Vizitron

12505

Product line: Vizitron; ELC; MicroCom II intercoms with enhanced software.

RENAISSANCE series: modular audio consoles; solid-state switching, VCA control, auto-rewind; integrates with desktop environment; Mark I Input, Mark II Input, Mark III 24 Input.

Distribution amplifier: remote sensitivity DA; stereo DA; full compatibility with existing line and may be fitted in combination with them in MF-62 rack frames.

Circle (1112) on Reader Service Card

Wavefront Technologies

19830

Product line: Video graphics software packages.

Rotator: software for real-time rotoscoping.

COMPOSER, Visualizer Paint: enhancements to 24 production.

Dynamation: 2-D animation tool to interactively create realistic images from microscopic events.

Kinematic: 3-D animation software.

Circle (1113) on Reader Service Card

Wegener Communications

5414

Product line: Satellite transmission products, Series 2500 descramblers; Series 1900 DBS FMF subcarrier receiver.

Model 2000: digital SCPC receiver; L-band input; MPEG audio algorithm for decompression.

Series 1900: digital audio storage; playbacks high quality audio in compressed digital form for business broadcast systems.

Series 1834: digital audio modulator for Subcarrier/FM applications; uses INTEC MPEG compression. Series 1900: single-channel satellite audio receiver, addressable device for C-Ka-band; usable with DBS.

Circle (1114) on Reader Service Card

Wescam Systems Int'l

11352

Product line: Helicopter, aircraft camera support systems or all types of moving vehicles and cranes.

Circle (1115) on Reader Service Card

The F. W. Scott Company

15481

Product line: Light modification products, reflectors, reflective umbrellas; backgrounds.

Halo: Apollo: light modifiers; silver, gold metalized reflective surfaces.

Silks: Softa: solid-metal framework; one or two-stop silk or black silk; collapsible; three sizes.

Reflectors: square, rectangular; collapsible, portable units; silver, gold, sunlight, white diffuser, gobin black.

Reflective umbrellas: soft white, silver, gold, blue metalized, silver/white and gold/white.

Circle (1116) on Reader Service Card

Wheatstone Broadcast Group

5108

Product line: Audio mixers for on-air, stereo production; signal processors, equalizers; distribution products; intercoms, studio furniture.

Modular studio furniture.

Ring-mount signal processors.

Wheatstone: digital audio hard disk recorder.

A-6000 master air console: mixer for radio, TV.

Smart Select: computer-controlled audio switches.

Circle (1117) on Reader Service Card

Whirlwind/LVS Audio

11627

Product line: Audio mixers, audio video cabling; distribution products; transmitters.

Pressepower: active press box; 2-input distributed to 16 outputs; XLR connectors.

Circle (1118) on Reader Service Card

Will-Burt

19201

Product line: Telescoping masts, microwave antenna support; 25' Hurry Up.

Selecto: mechanical telescoping mast.

Night Scan: remote-controlled, elevated lighting system: bolts to vehicle to elevate to heights to 15 feet; 125S, unit supports 3KW of lighting; raise, lower, pan, tilt, on/off, auto-stow functions; one minute stows unit from full extension.

 Mast extension warning kit: produces signals if tele- scoping mast is not fully retracted.

Circle (1119) on Reader Service Card

Winsted Corporation

11927

Product line: video, studio furnishings, dual pedestal editing desk, editing console; cabinet design kits; locking rack shelves.

System/90 series: expanded series of high-tech post-production consoles.

Ergonomic series: multimedia workstations for desktop editing; recessed monitor well, adjustable shelves; extra deep back with wire-management trays.

Circle (1120) on Reader Service Card

Wireworks

13604

Product line: Audio, video utility products, transformer-isolated mic splitters; A/V cable components.

Circle (1121) on Reader Service Card

Wohler Technologies

18566/MM

Product line: multimeter sources, routers, monitors.

AES/EBU digital input for AMP-1A, AMP-2 monitor speakers for direct acoustic monitoring of digital audio sources.

MAM-1A powered desktop audio monitor: low-profile speakers for multimedia, desktop video systems.

MAM series: audio visual indicators; to 20 channels of level metering in 2U package.

Circle (1122) on Reader Service Card

Wolf Craft

11933

Product line: Mobile production vehicles.

Model 450B: for SNV provides more truck in smaller package.

Circle (1123) on Reader Service Card

Broadcast Engineering March 1993
Look who’s going to improve your image.

You’ve heard a lot about Switchcraft, a leading manufacturer of quality audio components for more than 40 years. Now, see what we can do. Because Switchcraft can supply you with video components, too.

Look to us for standard video broadcast equipment, all made with the reliability and high quality you expect from Switchcraft. When it comes to our video insulated patch panels, you’ll find our eye for detail is second to none. Each one can accommodate up to 26 jacks for a variety of requirements. Dual jacks provide a normal-through signal path without the use of looping plugs or patch cords. And, each panel comes with large designation strips for your own labeling.

Our video patch cords are available in popular lengths and colors – all built for efficient video signal transmission. Our patch cords come with rugged metal handles and optional rubber “boots” for a better grip. The “boots” offer enhanced flex relief and are available in your choice of colors – red, black, green or blue. Switchcraft is dedicated to making your studio time as productive as it can be.

So whether you’re thinking video or audio components, think Switchcraft. We’ve always done wonders with sound, now we can improve your image, too.

For more detailed information, phone or FAX our Marketing Communications Department and ask for New Product Bulletins 426 and 427.
Apples and oranges. Traditional digital recording processes, such as the full-bit-rate D-1 format, process images on a pixel-by-pixel basis. Coefficient recording technology groups pixels together into conveniently processed blocks, so that talk about individual pixel processing becomes irrelevant to a discussion of picture quality.

Standard bit rates. One of the I/Os provided by Digital Betacam is the SMPTE 259M serial digital interface. This interface supports up to 10-bit resolution 4:2:2 digital component signals, commonly referred to as CCIR-601. The coefficient recording process preserves the low-frequency component of the original signal. A shallow ranged image can be recorded and reproduced without further distortion. Graphics and other electronically generated signals also benefit from 10-bit signal processing.

Evaluation. The amount of picture quality lost through the coefficient recording process is wholly dependent on image content. Audiences throughout the world have made subjective evaluations of Sony's coefficient recording through demonstrations, including those at major SMPTE section meetings in the United States and Canada. The recording/playback process has been demonstrated to be almost transparent. When test signals, such as color bars, flat field, shallow ramp or zone plate, are recorded with the coefficient recording system, quality degradation is not perceptible. But again, performance is content-dependent.

Multiple generations (now processed). First-generation picture quality is main-
• **Apples and oranges.** Traditional digital recording processes, such as the full-bit-rate D-1 format, process images on a pixel-by-pixel basis. Coefficient recording technology groups pixels together into conveniently processed blocks, so that talk about individual pixel processing becomes irrelevant to a discussion of picture quality.

• **Standard bit rates.** One of the 1/2s provided by Digital Betacam is the SMPTE 259M serial digital interface. This interface supports up to 10-bit resolution 4:2:2 digital component signals, commonly referred to as CCIR-601. The coefficient recording process preserves the low-frequency component of the original signal. A shallow ramp image can be recorded and reproduced without further distortion. Graphics and other electronically generated signals also benefit from 10-bit signal processing.

• **Evaluation.** The amount of picture quality lost through the coefficient recording process is wholly dependent on image content. Audiences throughout the world have made subjective evaluations of Sony’s coefficient recording through demonstrations, including those at major SMPTE section meetings in the United States and Canada. The recording/playback process has been demonstrated to be almost transparent. When test signals, such as color bars, flat field, shallow ramp or zone plate, are recorded with the coefficient recording system, quality degradation is not perceptible. But again, performance is content-dependent.

• **Multiple generations (now processed).** First-generation picture quality is main-
The Digital STL Advantage

- CD-Quality Audio
- Higher System Gain
- Constant SNR
- No Crosstalk
- No Background Noise
- No Phase Distortion
- Degradation-Free Multiple Hops

Open Architecture

A new transmission technology that has the power to deliver CD-quality audio and solve your STL problems.

The DSP 6000 can operate in existing FCC channel allocations from 100 kHz to 500 kHz with existing analog radios.

FCC Spectrum Compliant

Open and optimal partition of source and channel coder. AES/EBU allows for end-to-end digital connectivity.

25 dB higher system gain translates into significant savings on antenna and transmission line costs.

Instant Payback

Presenting...
The Digital STL Solution.

Introducing the first spectrum efficient CD-quality digital STL system. The DSP 6000 Digital Transmission System consists of the DSP 6000E source and channel encoder and the DSP 6000D source and channel decoder, and any Moseley digital-ready transmitter and receiver. The encoder and decoder can also be easily interfaced with any existing Moseley PCL 606/C or PCL 6000 series STL. The system can convey up to four 15 kHz CD-quality audio channels and two data channels, and has a built-in V.35 modem interface for fractional T1 applications! The DSP 6000 source coder is characterized by peak level preservation, low coding delay (3.8 ms), excellent bit-error immunity, and multiple encode/decode capability. The channel coder offers spectral efficiency, constant envelope, error detection capability and perturbation tolerance.

The DSP 6000 System offers broadcasters the digital transmission advantage, continuing the Moseley traditions of innovation, reliability, and most of all, value. Call us for a color brochure with all the facts.

Moseley Associates Incorporated
111 Castillian Drive
Santa Barbara, CA 93117-3093
Phone 805-968-9621
Fax 805-685-9638
Telax 6589448

GRC International Company

Moseley

Circle (108) on Reply Card
Sony Digital Betacam

The breakthrough of coefficient recording

By Harry Morishita

At the 1992 IBC Conference in Amsterdam, Sony unveiled the Digital Betacam VTR, a half-inch VTR. The Digital Betacam format began as the company’s response to demands from the European TV industry for a practical and affordable digital component VTR. Response from the American TV industry in a digital component workhorse VTR has resulted in the product being introduced at this year’s NAB convention for the U.S. market.

Increasing recording capacity or density by adding more heads, for instance, is one of several options available in developing a digital VTR format.

The new format shares Betacam’s component nature and cassette form, and is thus named Digital Betacam. The half-inch nature of this format differentiates the Digital Betacam from other digital VTR formats, while also providing backward compatibility by being able to playback the analog component Betacam SP format. In addition, the Digital Betacam provides a level of technical performance that fills the needs of current 4:3 aspect ratio pictures while offering a convenient path to future 16:9 aspect ratio pictures.

Coefficient recording technology

A digital VTR must process and record a much larger amount of information than an analog VTR. This has been one of the major obstacles to overcome when creating a digital VTR. Increasing recording capacity or density by adding more heads, for instance, is one of several options available in developing a digital VTR format. Unfortunately, increasing the number of heads also increases a recorder’s complexity and cost. This solution becomes impractical given the workhorse concept of VTRs, which requires durability, easy maintenance and cost-effectiveness.

The solution to the dilemma for a practical and affordable half-inch workhorse digital component VTR required a breakthrough in technology. That breakthrough is Coefficient Recording (CORE™) technology. A simplified block diagram of the process is shown in Figure 1.

Coefficient recording is an innovative and sensible form of bit-rate reduction (data compression) for professional video applications. Bit-rate reduction can be implemented in a number of ways. The Sony coefficient recording system uses several important information-handling schemes that differentiate it from other manufacturers’ algorithms in processing the digital bitstream. These features make the coefficient recording algorithm suitable for the stringent quality demands of professional video applications.

Application-specific algorithms

Data compression algorithms are application specific. The Sony technique uses statistical logic and maximizing data retention, including the less significant picture information. This allows the data to be managed more effectively. Defining the information that is less significant differs from application to application. In the case of production VTRs, important fundamental requirements must be met, including:

- High picture quality, especially multigeneration quality.
- Single-frame insert editing capability.
- Visible picture in shuttle/search mode.

Bit-rate reduction schemes designed for such applications as video image transmission or still image transfer do not require as high a level of accuracy as recording applications. Because coefficient recording has to fit a number of important applications, it was created only after a careful study of current and future broadcast and production industry requirements. Although this article does not allow for a full discussion of the specific advanced algorithms and signal procedures, keep these important facts in mind:

Digital Betacam recorders have four independently editable channels of 20-bit digital PCM (non-compressed) audio.

- The scope. Coefficient recording is an intrafield scheme in which all the compression algorithm’s calculations are completed within each specific field. Thus, unlike compression schemes, such as MPEG, coefficient recording does not introduce artifacts related to image motion.
- Post-transform reduction. Discrete cosine transform is an algorithm employed by Sony that does not change the bit rate. As with any DCT-based algorithm, the coefficients in the original video signal are reduced in the frequency domain after the transform has been applied.

![Figure 1. Coefficient recording is an intrafield scheme in which all the compression algorithm's calculations are completed within each specific field. The major signal processing steps are shown.](image-url)
From now on, one head is better than two.

VISION SD 12 and 22 with patented Serial Drag

Traditionally, pan/tilt heads use one of two drag systems. Vinten's Serial Drag (SD) technology defies tradition. It gives you all the advantages of both drag systems but none of their disadvantages. You control the smoothest pans and tilts, regardless of drag setting, speed or temperature. And have the widest range of infinitely variable, precise settings with equal drag in each direction. For whip pans, there's instant drag breakaway and recovery.

Two SD systems — each with a sealed, fluid drag (shown in red) and an advanced, lubricated-friction drag (in gold) — are in the new SD 12 and 22 heads. Main elements, including fluid drag labyrinths, are magnesium, precision cast to tolerances measured in microns! The fluid in the labyrinths, a proprietary Vinten formulation, maintains constant viscosity from ~40°F to +140°F. Of course, each head also has Vinten's exclusive, spring-assisted, counterbalance system for perfect "hands-off" camera balance at any tilt angle.

The compact SD 12 has a hefty 35-pound capacity. The SD 22 easily supports 60 pounds. Teamed with a VISION two-stage aluminum or carbon fiber tripod (the industry's lightest, strongest and most rigid carbon fiber tripods), you have an SD System. For ENG/EFP camera support and control, it doesn't get any better than this.

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, FL 33321 (305) 572-4344 West — Sun Valley, CA 91352 (818) 767-0306

Vinten® is a trademark of Vinten Broadcast Limited
Copyright 1993 Vinten Broadcast Inc.
See us at NAB Booth #19746

www.americanradiohistory.com
NEW FROM BROADCAST ENGINEERING

DIGITAL RADIO BASICS

A must for every broadcast management, engineering, operations and regulatory professional, covering the practical information you need to understand digital radio, including:

- **WHO** the key players are in terrestrial, satellite and cable delivery.
- **WHAT** benefits are provided by digital audio transmission, including clear explanations of data compression and channel coding systems.
- **WHEN** to expect the transition, including some scenarios for lucrative auxiliary data delivery.
- **WHY** digital radio is important, what has happened to date, and the issues that still need to be resolved.
- **HOW** future program formats, revenue streams and regulation could be affected.

**DIGITAL RADIO BASICS — $30/copy**

CALL 800-543-7771 or FAX 800-633-6219

Booth numbers shown are based on information from NAB and the manufacturers as of Feb. 1, 1993. It is possible that some numbers will have changed by show time. We have no control over such changes and regret any inconvenience it may cause.
Look who's going to
improve your image.

You've heard a lot about Switchcraft, a leading manufacturer of quality audio components for more than 40 years. Now, see what we can do. Because Switchcraft can supply you with video components, too.

Look to us for standard video broadcast equipment, all made with the reliability and high quality you expect from Switchcraft. When it comes to our video insulated patch panels, you'll find our eye for detail is second to none. Each one can accommodate up to 26 jacks for a variety of requirements. Dual jacks provide a normal-through signal path without the use of looping plugs or patch cords. And, each panel comes with large designation strips for your own labeling.

Our video patch cords are available in popular lengths and colors – all built for efficient video signal transmission. Our patch cords come with rugged metal handles and optional rubber "boots" for a better grip. The "boots" offer enhanced flex relief and are available in your choice of colors – red, black, green or blue.

Switchcraft is dedicated to making your studio time as productive as it can be.

So whether you're thinking video or audio components, think Switchcraft. We've always done wonders with sound. Now we can improve your image, too.

For more detailed information, phone or FAX our Marketing Communications Department and ask for New Product Bulletins 426 and 427.

Switchcraft, Inc
5555 N. Elston Avenue
Chicago, IL 60630
(312) 792-2700
(312) 792-2129 (FAX)
Belden has
BIG NEWS
for the broadcast industry

Belden is on the air with the industry's largest portfolio of new broadcast cables.

More than 60% of the products listed in Belden's new Broadcast Catalog didn't even exist just 2 years ago! Belden's new 48-page Broadcast Cable and Connector Catalog provides specifications for the industry's most complete line of cabling products, including audio multi-conductor cables, microphone cables, video coaxial cables, video biaxial cables, audio & video composite cables, bundled coaxial composite cables, fiber optic cables, cable assemblies, and connectors.

New levels of excellence and innovation
During the past few years, Belden has introduced more product innovations for more broadcast cabling applications than any other cable company. This commitment to innovation and technical excellence is the reason Belden remains the broadcast industry's No. 1 cabling choice worldwide. It's a position we've worked hard to earn and will fight hard to keep with new products, new options and even higher levels of excellence in the future.

For a FREE copy of Belden's new Broadcast Cable & Connector Catalog, plus updates on our latest product innovations, contact your local Belden distributor or call toll-free: 1-800-BELDEN-4

Circle (112) on Reply Card
www.americanradiohistory.com
tained throughout multiple generations of coefficient recording and playback, as long as picture content in each field remains unchanged (non-process mode dubbing). Simple cut-only editing is only one example where first-generation quality will be maintained even into the realm of a 100th generation copy.

- **Applications.** The only truly transparent digital system is one that records and processes the full-bit-rate signal, which is normally achieved with some form of cost penalty. Digital Betacam, like its analog equivalent, resorts to a form of signal processing that relies upon the redundancy present in the TV signal.

Digital Betacam is positioned as a workhorse format capable of fulfilling the needs of the broadcaster and tasks required by the production and post-production world. During multilayering and special effects requiring heavy processing, such workhorse processing will be satisfactory for most applications.

**Models and features available**
The first Digital Betacam recorder models to be launched include the DVW-500 and DVW-A500. The DVW-A500 is an editing recorder that has analog Betacam (SP metal and ferric oxide) playback capability. The DVW-500 is strictly a digital model for editing applications. Both are equipped with versatile signal interfaces and numerous features. For example, serial digital component I/O, analog component I/O and NTSC composite output are all standard. The DVW-500 and DVW-A500 can be equipped with NTSC inputs with an optional plug-in decoder. Also being introduced are two similar playback-only models, the DVW-50 and DVW-A510.

Digital Betacam recorders have four independently editable channels of 20-bit digital PCM (non-compressed) audio. Digital jog sound and digital Betacam. Serial digital embedded audio, AES/EBU digital, and analog interfaces are included in future system requirements and maximum flexibility.

Many of these features represent new ideas, such as the pre-read function for video and audio, program playback, auto-alignment capabilities, and automated scanning and stationary head cleaning.

The physical mechanism for these features is mounted onto a newly developed transport. This transport represents Sony’s third-generation digital transport and its fourth-generation analog component transport. The two analog-compatible models are designed to operate without compromising either analog playback or digital playback/recording performance.

A common mechanical platform exists between analog and Digital Betacam.

The Digital Betacam format employs revolutionary technology, including coefficient recording with an evolutionary approach for the benefit of analog Betacam users.

---

**Conex Electro-Systems, Inc.**

AS-101 Audio Switcher

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

**SAS 32000 Audio Routing & Mixing Systems Continue to Set the Standard!**

**COMPLETE AUDIO DISTRIBUTION & MANAGEMENT SYSTEMS**

Ideal for plant, transmitter routing, satellite and remote distribution. Full summing allows mix-minus, IFB, studio intercommunications, voice-over and more! Superb specifications & flexible control:

- Advanced multi-processor architecture for unsurpassed reliability.
- Full summing for mix-minus, IFB, mixer emulation & more.
- DAS9600 allows remote digital precision adjustment of levels.
- Complete control via RS-232, terminal, local panels and modem.
- Rack and/or Console mounted 8-character alphanumeric panels.
- We listen to you! Custom & turnkey systems our specialty.

**SIERRA AUTOMATED SYSTEMS & ENGINEERING CORP.**

2112 N. Glenoaks Blvd., Burbank CA 91504 TEL: 818-840-6749 FAX: 818-840-6751
Distributed by: RAM Broadcast Systems, Inc.

P.O. Box 3100, Barrington, IL 60011-3100 TEL: 800-779-7575 FAX: 708-382-8816 In Canada 800-433-2458

See us at NAB Booth #4002

---
Introducing the Comark IOX™
The only IOT transmitter with 3 million hours of operating experience built in.

When considering a UHF IOT transmitter, you want reliability and experience. You want the latest generation from the company that introduced Inductive Output Tube technology seven years ago—Comark.

Over 3 million hours of on-the-air Inductive Output Tube experience went into the design of the IOX. Its leading-edge crowbar design, optically-isolated solid state control logic, Class A drivers, constant impedance output bandpass filters, and IEC-215 implementation make it the most advanced UHF-TV transmitter in the world today.

Like all Comark transmitters, the IOX includes our patented aural carrier corrector technology and an advanced linearity corrector essential to meeting today's requirements for high efficiency distortion-free transmission.

Most importantly, the IOX includes our exclusive DUAL USE™ system, making it an investment that pays off today and guarantees HDTV tomorrow. The IOX operates with NTSC now and, in the future, can either be converted to D-HDTV or split apart into two systems—one for NTSC and the other for D-HDTV. It's also available in any world transmission standard.

Three million hours of transmission experience helped us build features into the IOX our competition doesn't even know they need. For more information on Comark's IOX transmitter line, or to request a set of our latest HDTV TECH BRIEFS, call us today at 1-800-688-3669.
Continued from page 68

outlet should be avoided because they reduce the net area of the duct and increase noise.

Reverberation and absorption

A reverberant room will be noisier than a non-reverberant room of the same volume. Sound is not absorbed when it strikes a boundary, it is reflected back.

For voice or Foley work, the room should be as transparent as possible. Voice and Foley studios for video are usually small. Because of their low volume, traditional reverberation time calculations are not meaningful. However, any reflected energy should be made diffuse and of essentially uniform frequency content.

Reflection room resonance can be controlled by the addition of absorpti with porous materials, diaphragms and resonators, geometric reflection control and diffusers. All of these techniques are, to varying degrees, non-linear with frequency. Porous absorbers become ineffective below 250Hz to 500Hz, depending upon their thickness. By design, diaphragmatic and resonant absorbers are frequency sensitive. Most reflective surfaces become absorptive, usually with increasing frequency. At some point, they usually can become diaphragmatic as well. Diffusive surfaces vary with frequency and can be dependent upon orientation. They also usually become absorptive and diaphragmatic at certain frequencies.

At frequencies below 250Hz, conventional techniques require a depth of porous material or a cavity equal to one-fourth the wavelength of the lowest frequency to be absorbed. At 20Hz, this is approximately 14 feet. At 40Hz, it is still more than seven feet.

Consider all possibilities

Don't underestimate the importance of good sound. As video facilities are constructed or upgraded to accommodate HDTV with stereo/surround sound of CD quality, it is important to build an equally superior acoustic environment. This article has pointed out some of the important areas that should be given attention when constructing or remodeling a room for critical audio monitoring. Although fine tuning can only be done after construction, appropriate isolation must be built in. Correcting problems after the fact will cost you valuable time and money.

---

**Table 1.** The NC curve is a method of specifying the noise level requirements in a room.

<table>
<thead>
<tr>
<th>NC curve</th>
<th>63Hz</th>
<th>125Hz</th>
<th>250Hz</th>
<th>500Hz</th>
<th>1,000Hz</th>
<th>2,000Hz</th>
<th>4,000Hz</th>
<th>8,000Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>NC-50</td>
<td>71</td>
<td>64</td>
<td>59</td>
<td>54</td>
<td>51</td>
<td>49</td>
<td>48</td>
<td>47</td>
</tr>
<tr>
<td>NC-45</td>
<td>67</td>
<td>60</td>
<td>54</td>
<td>49</td>
<td>46</td>
<td>44</td>
<td>43</td>
<td>42</td>
</tr>
<tr>
<td>NC-40</td>
<td>64</td>
<td>57</td>
<td>51</td>
<td>45</td>
<td>41</td>
<td>39</td>
<td>38</td>
<td>37</td>
</tr>
<tr>
<td>NC-35</td>
<td>60</td>
<td>53</td>
<td>46</td>
<td>40</td>
<td>36</td>
<td>34</td>
<td>33</td>
<td>32</td>
</tr>
<tr>
<td>NC-30</td>
<td>57</td>
<td>48</td>
<td>41</td>
<td>35</td>
<td>31</td>
<td>29</td>
<td>28</td>
<td>27</td>
</tr>
<tr>
<td>NC-25</td>
<td>54</td>
<td>45</td>
<td>38</td>
<td>31</td>
<td>27</td>
<td>24</td>
<td>22</td>
<td>21</td>
</tr>
<tr>
<td>NC-20</td>
<td>51</td>
<td>41</td>
<td>33</td>
<td>26</td>
<td>22</td>
<td>19</td>
<td>17</td>
<td>16</td>
</tr>
<tr>
<td>NC-15</td>
<td>47</td>
<td>36</td>
<td>29</td>
<td>22</td>
<td>17</td>
<td>14</td>
<td>12</td>
<td>11</td>
</tr>
</tbody>
</table>

---

**SUPERB RANGE**

**WITH SUPERB RANGE**

If you're serious about sound, check out our RMS 2000 range of wireless microphones.

Professionally built. Remarkably small. Reassuringly reliable. And with a crystal clear sound quality that makes them the favorite of sound recordists around the world. See us at NAB (Booth 1709).

Audio Limited USA,
21-36 33rd Road,
Long Island City,
NY 11106.
Tel: (718) 728 2654

Circle (115) on Reply Card
More than ever, seeing is believing! Go with the new Tektronix WFM 601 Digital Component Monitor and see what's happening at a glance in your serial digital signal. With its fast setup and familiar displays, you can focus directly on your signal and solve any problems before it's too late.

The WFM 601 means no more mental gymnastics, no second-guessing results. Instead you get the best of both worlds: single-wire digital technology plus crisp, clear displays in the analog format you're used to. Including:

- Component lightning display (above) for quick setup of the complete Y/B-Y/R-Y signal.
- RGB parade display of component color difference signals for easy source setup.
- Component vector display of B-Y/R-Y components.

The WFM 601 is just the latest in a long line of serial digital video products pioneered and perfected by Tektronix. Including the TSG 422 Digital Component Generator (inset) featuring the signals you need for systems installation or equipment service.

But take a closer look. Call 1-800-TEK-WIDE, Ext. TV, and see why Tek's advantage in serial digital has never been more clear!
dio and atrium were finished with RDEX, a 3,500psi, 1-inch thick, self-leveling concrete product. The control room floors were finished in a combination of RDEX at the engineer's position and carpet on the raised client platform at the back of the room.

Surface treatments in critical rooms were selected for their sound-absorbent or reflective properties, and control rooms were carefully designed with the correct geometry for a reflection-free zone (RFZ) at the mixing position. The acoustical performance of the rooms was enhanced by a combination of products, such as RPG diffusers, custom-designed doors and windows, and an acoustical fabric wall-covering system, called Whisper-Wall, applied over an insulation layer on removable grooved plastic tracks.

Other materials included pigmented plaster, plywood, fabrics, ceramics and plastic laminates, all chosen and placed for their aesthetic value as well as their absorption coefficients. Colorful and eye-pleasing cabinetry accent the lounge and kitchen spaces, and provide attractive rack-mounting for outboard gear in control rooms.

The ability of the Record Plant and Post Logic to succeed in their respective businesses is a direct result of good management, competent staff and appropriate facilities. Technically sound and aesthetically pleasing production spaces are an important asset in today's marketplace. These two successful companies have proven that function and form can work well together and complement each other.

Hollywood Digital (continued from page 44)

to adopt the 75Ω output for digital audio as a standard.

Maintaining the integrity of the digital signal requires that precise practices be used in cable installation. High-quality connectors and patch panels must be used. This is no place to short-cut costs. Pay close attention to connector installation, wiring and cable laying. The cable must be well-protected from abuse and stress.

Testing a digital installation requires new procedures. Unlike the common tests used for analog signals, serial digital signals require special checks. Waveform monitors and vectorscopes will not show transmission losses. Eye pattern monitoring should be used during and after installation. In order to quickly locate trouble spots, operators must learn to recognize a proper eye pattern.

All suites at Hollywood Digital provide for digital monitoring and a digital router destination. It is essential that operators be able to randomly check the signals without worrying about NTSC conversion artifacts. In addition, both component and composite analog monitoring is provided so that analog sources can be monitored in their native format.

Although component monitoring devices cost more and may require some additional operator training, no viable alternative exists for monitoring the signal in its purest form. Downtime and troubleshooting are minimized by the ability to accurately locate the origination of any glitches or artifacts.

Looking ahead to HDTV

Any new facility being designed must consider how HDTV will be handled. Although a standard has yet to be adopted, some important information is known. First, any HDTV signal will require approximately 1.2Gbits/s of bandwidth, which is an extremely high data rate. Second, to pass such signals in a video facility, it will be necessary to compress this data into a datastream somewhere around 360Mbits/s.

This means that anyone building a facility today must plan with such a data rate in mind. Therefore, all cable, connectors, patchbays and routing systems must be able to operate at this performance level.

In the case of Hollywood Digital, future growth was part of the initial plan. The core wiring and signal distribution throughout the facility is designed to be compressed HDTV-ready. The core signal distribution management system is capable of changing to a 16:9 format easily and straightforward. The required new devices can be interconnected with the current equipment with almost no rewiring.

Whenever possible, the equipment purchased is capable of working in 525 and 625 formats. Also, much of the equipment will probably be usable in an enhanced NTSC 16:9 component digital format, if necessary.

Build for tomorrow today

The level of technology and equipment available today makes operating in the digital domain economically and qualitatively feasible. Nevertheless, engineers and managers must keep in mind that digital technology is changing rapidly. A 16:9 format may be just around the corner, and HDTV is just ahead. Those charged with planning video facilities must keep these upcoming changes in mind. Although it may seem like gazing into a crystal ball, certain accommodations for tomorrow's needs should be made today. Whether a facility is considering rebuilding, upgrading or simply replacing old equipment, the options for the future should be in the forefront of any design decisions.
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.

Circle (117) on Reply Card

www.americanradiohistory.com
Building an award-winning transmitter site (continued from page 76)

sign replaced the older system of using discarded tires, wood pallets and rubber roof pads over deep concrete roofing systems, which was slow to construct and expensive because of the constant maintenance and continual roof leaks. This approach was economical and faster to construct.

On the air

The disaster took place on Dec. 10, 1989, and by March 1990, the design for the new tower and building was approved. In early May, ground was broken for the new facility, and tower erection began in July. On Oct. 9, 1990, the station returned to the air from its new facility. With the close cooperation of engineers, architects, contractors and owners, the entire facility was completed in less than 10 months. This revolutionary transmission facility stands as an example of team work, cooperation and ingenuity.

The outer end of the metal trusses sit atop galvanized spandrel beams and columns that overhang the building to protect transformers, service vehicles and emergency equipment.

New York 1 (continued from page 58)

cause of their ability to be controlled by the NewsMaker system. Because the infinit works on a macro command format, these commands are easily duplicated by NewsMaker. Complex sequences are stored as templates and easily recalled through macro callouts. The still-store allows D-2 and D-1 to be used within the same system. The central graphics workstation is D-1 RGB-based, and the control rooms have D-2 systems.

The design and construction of New York 1 was accomplished in seven months, including all architectural and technical systems. The project team built 25,000 square feet in 13 weeks, and finished the technical facilities in another three weeks. The hands-on approach of architect Hans Knutzen and his project manager, James Lee, helped greatly.

Building New York 1 was a once-in-a-lifetime opportunity. The attitude of Time Warner management toward the project was most encouraging. Technology is there to be used to its fullest potential, and blazing new trails is what this business is all about.

Figure 1. The working newsroom combines the on-air anchor area, producer "pod" and news desks in an open environment.
Since the beginning of portable video, professional videographers have searched for a solution to the unpredictable disruptions that occur when the camera battery runs down. These disruptions are the major cause of lost shots and wasted time on location.

The Ikegami HC-340 provides the solution. Among its many new and advanced features is an Interactive™ viewfinder "fuel gauge" display. When using the new Anton Bauer Digital Battery, the cameraman can constantly monitor remaining battery capacity during operation from 100% to EMPTY in the viewfinder. Unlike simple voltage sensing "low battery" warning indicators, this interactive "fuel gauge" utilizes a special circuit in the HC-340 that communicates directly with the highly accurate "fuel computer" in the Digital Battery.

The professional choice in on-camera fill lighting, the Anton Bauer Ultralight 2, is the perfect companion to the advanced low light capabilities of the HC-340. The unique Studio Quality Ultralight™ assures that every location scene will reflect the superior video quality designed into this advanced camera.

No more precious shots lost or time wasted. The Ikegami HC-340 with the Anton Bauer Interactive Battery and charger system delivers the performance and reliability demanded by professionals. A single Digital Propac battery will power the HC-340, docked to a typical recorder, and Ultralight, for up to two hours.

A professional chooses Ikegami and Anton Bauer for one reason...there are no second chances.

antobauer

The worldwide standard

The HC-340 featuring Interactive™ viewfinder and Ultralight is the latest in Ikegami's popular HC series. With F-8.0 chip, it offers improved sensitivity of 750 TV lines and accepts all popular on-board recorders.

For your FREE "Video Battery Handbook" call 1-800-422-3473 or fax (203) 929-9935

Interactive, Ultralight and Automagique are Trademarks of Anton Bauer

See Us at NAB Booth #12427
**Industry Briefs**

**BUSINESS SCENE**

**Panasonic**. Secaucus, N.J. has installed a complement of AJ-D350 D-3 studio VTRs at New Inspirational Network, Charlotte, N.C. Panasonic also has sold three AJ-D350 D-3 studio VTRs to KNTV, San Jose, CA.

In addition, WRLH-TV, Richmond, VA, has upgraded from a 3 1/8-inch sequencing system to a Panasonic M.A.R.C.100 Mll automated recording/playback cassette system.

**Sony**. Montvale, NJ, has installed a second digital suite at Broadcast Video Inc., Boca Raton, FL.

In addition, Lawson Productions, Seattle, WA, has purchased Sony PCM-7030 audio time-code DAT recorders.

Hungary-based Magyar Television has ordered a 12.5 meter outside broadcast trailer to be designed and built by Sony. Quantic Communications, Boston, has ordered a second Sony D-2 machine. Sony also sold a D-2 composite digital recorder to Power Station, New York. Furthermore, Telstar Editing, New York, has purchased its third D-2 machine.

Hollywood-based Fox Tape replaced its analog composite edit bays with three new Sony component digital edit bays.

**Canon**. Itasca, IL, has sold 24 J14aX8.5 ENG lenses to ChicagoLand Television News Inc., Chicago. Also, JCPenny, Plano, TX, has purchased three J20 Super lenses.

**Enco**. St. Louis, has delivered single-station DAD486x systems to WJBK-TV, Detroit, and KLPW radio, Washington, MO. The Travel Channel, Atlanta, also has purchased a DAD486x networked system. In addition, KTFL radio, Colorado Springs, CO, has ordered a multiple-station DAD486x network.

**AKG Acoustics**. San Leonadro, CA, has delivered a pair of BSS FCS-926 digitally controlled parametric equalizers to Southern California-based Universal Amphi-theater.

**Scientific Atlanta**. Atlanta, has taken an order from Cablevision Systems Corporation for $65.5 million in addressable interconnection equipment to launch a broadcast basic tier of service to subscribers in approximately 40 of its systems.

**Ramko Research**. Rancho Cordova, CA, has sold an RS1616 audio data switching system to Radio Free Europe.

**Nexus**. Southampton, England, has won a major contract to design and build a new TV center in Bucharest, Rumania.

**A.F. Associates**. Northvale, NJ, has completed construction of Time Warner Cable's New York City News Channel.

**Pioneer**. Upper Saddle River, NJ, has sold four Rewritable VideoDisc units to WFMZ-TV, Allentown, PA.

**Harris Allied Broadcast Division**. Quincy, IL, has received a major order for radio and TV broadcast transmission equipment from the Korean Broadcasting System. Seoul, Korea.

**Solid State Logic (SSL)**. Oxford, England, has sold an SSL 4048 G series console to NOB Audio, Hilversum, Holland. Also, SSL has installed a ScreenSound digital audio editor at the Johannesburg-based South African Broadcasting Corporation. Furthermore, Norwegian Broadcasting, the national broadcast organization of Norway, has purchased two ScreenSound digital audio editing systems and a SoundNet digital audio network.

In addition, SSL has sold three ScreenSound systems to Sound Services Inc., Hollywood.

**Pro-Bel Ltd.**. Reading, Berkshire, England, has launched Pro-Bel Inc., a U.S. subsidiary with headquarters located in Dunwoody, GA, a suburb of Atlanta. The address is 4490 North Shallowford Road, Suite 112, Dunwoody, GA 30338-6410; telephone 404-396-1971; fax 404-396-0595.

**Grass Valley Group (GVG)**. Grass Valley, CA, and Ultimate Corporation have signed an agreement that will enable GVG to incorporate image compositing technology developed by Ultimate into the company's model 3000 composite digital production.

**Magni Systems**. Beaverton, OR, has entered into a joint venture with Great Valley Products (GVP), King of Prussia, PA, to provide desktop solutions for the PC marketplace. Under the agreement, Magni will design and manufacture a VGA-to-video graphics card that GVP will market under private label.

---

**VIDEO MASTER VM 771**

**AUTOMATIC VIDEO LEVEL CONTROL**

**NO FRONT PANEL RACK SPACE REQUIRED**

**FULLY AUTOMATIC - NO ADJUSTMENTS, EVER!**

**INTRODUCTORY PRICE**

$285.

**LOW COST! HIGH VALUE! BUY NOW!**

**ANOTHER INNOVATIVE NEW PRODUCT FROM**

F M SYSTEMS, INC. 3877 South Main St. Santa Ana, CA 92707

MADE IN THE USA

See VIDEO MASTER at Booth #18664 at NAB

Circle (138) on Reply 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 Visteron, 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
New Products

Serial digital modules
By Grass Valley Group
• SMS-8000: serial digital modules provide digital video format conversion and frame delays for system timing applications; up to four SMS-8000 modules can be accommodated in a compact, one-rack unit frame.

Automatic test and measurement
By VideoTek
• SAM-I: auto measurement system performs automatic test of RS-170A, NTC-7, RS-250C and common basis NTSC measurements; SAM-I is controlled via PC interface, and outputs are easily routed to printer for hard copy.
• APM-800: high-quality monitor provides eight input monitoring capability (four stereo signals) in a single 2-rack unit panel; features two bar graph meters with selectable peak program or average ballistics.

Videodisc recorder
By Pioneer Communications of America
• VDR-1000A: provides enhanced capabilities, including up to three operator presets for TBC settings; audio and video levels; front panel provides one-button direct access to any control function; fully supports VITC and LTC input/output.

Digital production switcher
By Vistek
• D8001: includes 4:2:2 serial inputs and outputs, eight prime inputs, automatic timing, two key layers with priority exchange, high-quality chroma-key with unsampled processing, two aux buses with Alpha-Trak for key and video interfaces to DVE.
• V4301 525 component framestore synchronizer: digital framestore with analog component interfaces; an additional coder and VARICOMB decoder can be added in any input/output configuration, providing NTSC, analog component, Y/C and serial or parallel digital component inputs and outputs; all interfaces use the VARICOMB decoder, ensuring maximum quality of format interchange.

Video distribution amp
By ESE
• ES-201: 1x4 video distribution amplifier; separate gain and equalization controls for each of the four outputs can compensate up to 1,000 feet of cable; each of the four video outputs are independently adjustable via separate front-panel controls; loop-through input and four isolated outputs accessible via rear panel-mounted BNC connectors.

Broadcast Digital video/editing system
By Avid Technology
• Broadcast series: complete production system for direct-to-air broadcast of digital format programs; Media Recorder digitizes incoming signals directly to disk for editing; NewsCutter provides quick program editing in a TV news environment; Airplay system provides direct-to-air capability, eliminating the need to record, edit or broadcast from tape.

Personnel scheduling software
By VizAll
• Schedull: provides easy personnel scheduling for production houses, broadcast stations and other facilities; intuitive screen displays allow quick assignment of personnel with needed skills to appropriate tasks; automatic warning of overtime or other penalty conditions, such as meals or breaks.

Event management software
By Sundance Technology Group
• FASTBREAK: provides easy user interface and control over the Pioneer VDR-V1000 rewriteable laserdisc recorder; build and play random-access, nonlinear sequences for broadcast and sports applications; supports still-store, bumpers, news stories and spot playback functions.

Communications hub
By Troll Technology Corporation
• UC1000: allows users to remotely control eight sites from a single device; local devices may also be controlled, including video switchers and VTRs.

New peak power capabilities
By Andrew Corporation
• HELIX coaxial cable revised peak power ratings: may allow use of smaller transmission lines, especially at broadcast frequencies; new ratings incorporate a more realistic safety factor of 1.4 for voltage, which results in an overall safety factor of 2 for peak power.

Coaxial transmission line
By Andrew Corporation
• Andrew HRLine Rigid Line: new type of coaxial transmission line combines the handling benefits of rigid line with the flexibility of corrugated semi-flexible cable; carries high-power broadcast signals without the use of sliding inner contact “bullets,” available in 6/8-inch size, with 500 or 75Ω impedance.
AYDIN Corporation (West), offers a complete transmitter upgrade service that has been proven effective in reducing monthly energy expenses.

These savings result from the use of a new, high efficiency transmitter design utilizing a power klystron. The entire upgrade could pay for itself in less than two years.

AYDIN offers a full service retrofit of present facilities, and has the resources to ensure customer satisfaction.

AYDIN is a Fortune 500 company with a broad product mix. Our complete line of SATCOM High Power Amplifiers complements a full range of high power magnetics and power supplies for broadcasting applications.

AYDIN offers a 24 hour customer service hotline to support our customers' late-breaking needs. Call (408) 524-0461 for immediate support.
A DECADE OF INNOVATION


1983 • Introduced 750ohm video precision coaxial cables.

1984 • Triaxial cables with all-weather jackets 59/U and 11/U types.


1987 • National Electrical Code compliance — full line of both audio and video cables.

1988 • 32 Channel breakout boxes. Built of tough extruded aircraft aluminum.

1989 • 37 contact circular audio connector, solder or crimp contacts, field repairable, compatible with other manufacturers — but much improved in design.

1990 • Dual stereo balanced audio cable with parallel extruded jacket, National Electrical Code compliance.

1991 • Large double wide up to 64 channel, breakout box, extruded aircraft aluminum.

1992 • Digital audio cable, National Electrical Code compliance, compatible with AES—EBU standards.

1993 • Low triboelectric noise instrument cable.

CABLE PRODUCTS DESIGNED, DEVELOPED, AND PROVEN FOR PROFESSIONAL USE.

SEE US AT NAB '93 LAS VEGAS, NV Booth 20055

GEPCO INTERNATIONAL INC.

2225 West Hubbard St., Chicago, IL 60612

Tel: (312) 733-9555 (800) 966-0069 Fax (312) 733-6416

COMING THROUGH LOUD & CLEAR™ WITH QUALITY CABLE PRODUCTS FOR AUDIO & VIDEO APPLICATIONS

GeoVision

MiniDisc cart player/recorder

By Sony

• PMD-C1P and PMD-C1: player and recorder respectively, use MiniDisc (MD) rewriteable optical disc technology, units are capable of recording and randomly accessing up to 74 minutes of near-CD quality audio on a 2 1/2-inch rewriteable optical disc; offer large lighted-button press-and-play functionality of a standard analog cart machine plus alphanumeric display.

SEE US AT NAB '93 LAS VEGAS, NV Booth 20055

Circle (258) on Reply Card

Editing system

By Digital F/X

• Hitchcock: non-linear, disk-based editor uses JPEG hardware compression and Digital F/X Advanced Productivity Software in a single board solution for Apple Macintosh; provides digital video editing and authoring with full-motion (30 frames per second) and full-screen (640x480) playback; integrates PostScript graphics and fonts; supports PICS animation; includes digital audio capability.

Circle (270) on Reply Card

Routing switcher

By Grass Valley Group

• Performer-SD: 10x1 serial digital video/audio switcher is housed in a one-rack unit package; accepts either composite or component serial digital video as well as dual AES/EBU digital audio pairs; unit is capable of audio-follow-video or breakaway operation.

Circle (260) on Reply Card

Video DA

By Grass Valley Group

• 8802: equalizing video DA is fully compatible with 8500 series counterpart, the 8502, provides eight outputs when used in 8800 series mounting frames and six outputs when used in existing 8500 series frames.
From Studio to Field

Leader, long a major supplier of video monitoring equipment, offers a full line of instruments wherever you go. In the studio, you can depend on our accurate monitors such as the Model 5860C Waveform Monitor and Model 5850C Vectorscope in the standard rack. In the field, you can carry Model 5864A EFP/ENG Waveform Monitor and Model 5854 EFP/ENG Vectorscope. Both units are not only small and lightweight, but also provide basic video monitoring facilities, and operates from rechargeable batteries (NP-1 or BP-90) or any source of 12 V dc.

Leader offers a variety of monitors ...

Model 5870
Combined vector-waveform monitor with A and B overlay, digital SEC readout and full line select.

Model 5100
4-channel component monitor handles NTSC, PAL and HDTV with overlay, parade, component vector and timing displays.

Model 5860D
Monitors both parallel and serial D2/D3 signal as well as analog.

Model 5130
Full color picture monitor fits the standard half-rack adapter. Two channel with fixed underscan and blue-only.

See us at Booth #11701-11704.

Call toll-free
1 800 645-5104
In NY State
516 231-6900

Leader Instruments Corporation, 380 Oser Avenue, Hauppauge, New York 11788
Regional Offices: Chicago, Dallas, Los Angeles, Atlanta. In Canada call Omnitronix Ltd., 416 828-6221

Circle (123) on reply card for product information only
Circle (124) on reply card for product information & demonstration

www.americanradiohistory.com
RF protective clothing
By Doty-Moore Tower Services
- RF protective suit: lightweight Naptex fabric suit protects workers from RF radiation; material can provide attenuation as high as 40dB for frequencies below 1MHz; cut of suit allows for good arm movement for climbing; hood allows for good peripheral vision.

Circle (268) on Reply Card

Scopes
By Tektronix
- TDS 544A and TDS 644A oscilloscopes: feature a comprehensive video triggering option that includes NTSC, SECAM, PAL and HDTV triggering; this option makes the scopes ideal for advanced video applications in research and design; scopes include full-color monitors, embedded mass storage, segmented memory, FFT averaging and expanded template testing to include math waveforms.
- TDS 320: low-cost 100MHz digital real time oscilloscope uses oversampling to boost the single-shot bandwidth to the full analog bandwidth of the scope; features simple-to-use DSO; designed for service, education and design markets.

Circle (272) on Reply Card

Hard disk recorder/editor
By Digital F/X
- TidalWave: professional multitrack audio product for the Indigo platform from Silicon Graphics: 6-track, software-only hard disk recorder and editor; users can access jog/shuttle-style scrubbing, multiple track editing and mixing, looping for a range of recording, and auditioning for a predefined range of audio, features 10 markers that can be randomly dropped into a recording.

Circle (269) on Reply Card

Affiliate ID system
By Grass Valley Group
- PRONTO key ID system: inserts high-quality, graphic affiliate IDs into network promos and legal IDs in the path of the network feed; affiliates can control insertions with front panel button, via keyboard or with the use of external contact closures; system can display full-screen backgrounds and can be used locally as a downstream graphics generator/keyer; maintains and displays current time and temperature.

Circle (263) on Reply Card

Studio timing solution
By Matthey Electronics
- MDDA series: combined delay unit with loop-through input, up to eight delay channels (to 2µs each) can be housed in one 1-rack unit frame.

Circle (294) on Reply Card

Transmitter
By Comark Communications
- IOX line: inductive output transmitter includes Class A solid-state drivers, a new modulator-exciter with broadband linear-

WE KNOW THE VALUE OF TIME... AND SO DO YOU!

In 1971, a member of the Broadcast Community brought to our attention the importance of accurate time in the studio environment. Ever since then, other members of the Broadcast Community have shared their needs and each reiterated the growing importance for accurate, yet affordable time keeping equipment.

Especially important is the need for a Master Clock System. And, as you are well aware, just one person knowing the correct time is not good enough! Everybody (and everything) must... be in sync!

If your present Master Clock System (or lack of) leaves something to be desired, call ESE and allow us to demonstrate what is of value to us... YOU and solving your timing requirements.

CLOCKS AS ACCURATE AS TIME PERMITS!

142 SIERRA STREET, EL SEGUNDO, CALIFORNIA 90245 • (310) 322-2136

Circle (140) on Reply Card
WHEN THE ICE CAME,

OUR PiRod TOWER DIDN'T EVEN SHIVER.

"With more than two feet of ice at the antenna of our 1,000-foot PiRod tower, and guy wire ice eight inches in diameter, our tower bent like a banana. I recall my engineer saying that the tower wouldn't last five more minutes. But our solid rod PiRod tower stood there and straightened as the ice melted. No damage. No stress fractures. No problems. I guess that's when the quality of a solid rod PiRod tower comes through."

Solid Rod, Solid Service, Solid Value

For a free guide to tower selection and fast, courteous response to your requests for quotation, contact:

PiRod INC.
P.O. Box 128
Plymouth, Indiana 46563-0128
Telephone (219) 936-4221

Circle (125) on Reply Card
8 New Camplex® Multiplexing Systems.
Passing Broadcast Quality Signal in NTSC / PAL / SECAM

IMPROVED Video and Audio Performance Specifications
operating on a single 75 ohm Coax at distances up to 5000 feet.
Provides Video Frequency Response of 30Hz to 6.0MHz less
than ±0.5dB and resolution in excess of 600 TV Lines.
Provides Audio Bandwidth of 50Hz to 20kHz better than +1/-2.0dB with
Total Harmonic Distortion (THD) less than 0.75%.

Buy only what you need - whether you need to multiplex only
Video / Audio signals at $3995, or also require Camera Power;
Digital Data Interface; and/or Return Video -- there is a
CAMPLEX CP-301 System to meet your needs.

CAMPLEX CP-301-S1 System
1. Camera Video (NTSC, PAL, SECAM)
2. Genlock (black burst to camera) or Return Video
3. Universal Intercom (2 or 4 wire intercom system capable)
4. Call/Tally Function (to camera)
5. Mic./Line Audio (standard dynamic mic. or line level input)
6. Aux. Audio Return / IFB (from production)
7. Remote Power (to power Camera Adapter Unit only)
   For Camera Power function see below

CAMPLEX CP-301-S2 System
Adds Digital Control Data function to the above listed
basic signals by implementing the CAMPLEX PLUS PORT
Unit (a full duplex high speed modem) to relay control data
between the camera manufacturer’s CCU or Hand Controller
and remote camera.

CAMPLEX CP-301-S3 System
Adds Camera Power function to the basic signals through
application of the CAMPLEX PDC Power Unit.

CAMPLEX CP-301-S4 System
Adds Switchable Return Video in conjunction with Black
Burst function to the basic signals through application of the
CAMPLEX RVS Return Video Switcher Unit.

CAMPLEX CP-301-SS System
Combines Power and Digital Control Data functions
with basic signals.

CAMPLEX CP-301-S6 System
Combines Return Video and Digital Control Data with
basic signals.

CAMPLEX CP-301-S7 System
Combines Power and Return Video with basic signals.

CAMPLEX CP-301-S8 System
Combines Power, Return Video, and Digital Control Data
with basic signals for maximum productivity.

Digital transmission system
By Grass Valley Group
* MCF series: transports multiple channels of full-bandwidth
digitized video, audio and data over a single fiber-optic cable;
provides broadcasters with reliable, high-quality transmission
for STL, backpack or interfacility applications; offers transport
of up to 12 channels of broadcast-quality 10-bit video, each with
up to four channels of audio plus data, or up to 16 channels
of commercial-quality 8-bit video, each with two channels of
audio plus data.

Serial digital component accessory
By Sony
* DFX-C2: enables Sony D-2 VTRs to record and play back
serial digital component signals in addition to digital composites
video; allows D-2 machines to interface directly with other
component digital devices; processor includes one serial
component digital video input and two video outputs, plus an ana-
log monitor output and visible time-code window capability;
analog component A/Ds and D/As available as options.

Graphics production tool
By Grass Valley Group
* Halo series: a powerful integrated graphics production tool
in a single platform; offers post-production facilities and broad-
casters character generation, broadcast paint, still-store archiv-
ing, 3-D modeling capabilities and animation.

Software
By Grass Valley Group
* SuperEdit Version 7: for use on the VPE series edit sys-
tems; offers improved accuracy and control of variable VTR
motion; includes expanded slave capabilities and new or im-
proved device drivers; able to save an EDL with a single keys-
stroke; features revised system setup menus.
Time for RDS? 
Join the Teli team now!

Teli's RDS system is steadily gaining ground. In Europe, several countries have now selected nationwide equipment from us. For example, Norway, Finland, France and the Netherlands. On our Swedish home market we supply RDS equipment for alarm and remote control applications.

Our product range includes everything needed to build systems for transmission of both RDS information and paging messages.

Teli is a member of the Swedish Telecom group and specialized in developing equipment and systems for RDS applications. One of our most recent product lines is a series of special receivers for alarm, data reception and remote control through RDS.

Recent additions to the Teli RDS countries include Spain and the Czech Republic.

Teli is interested in meeting potential distributors for the US market. Meet us at the NAB Technology Booth at NAB '93.

Circle (133) on Reply Card
Mr. Benny certainly knew a great bargain when he made one. And we think he'd appreciate the brilliance of the bargain-priced Tascam BR-20 Broadcast Production Recorder.

The BR-20 is built to do one thing—broadcast production—and to do it exceedingly well. It's a rugged, reliable 2-track with features that make every job easier and more efficient. Like independent reel-size selection, Splice block, Built-in monitor speaker, Independent LR record for monitoring on one track while recording in sync on the other for overdubs and voiceovers. Fader start, And Quick Cue with Auto-Repeat.

The $2,299* BR-20 It's got everything you need in a broadcast production recorder. Including a price even your station manager can live with.

Come see it today at your nearest Tascam dealer.

© 1990 TEAC America, Inc., 7733 Telegraph Road
Montebello, CA 90640 213/726-0903
*Manufacturer's Suggested Retail Price.

Circle (121) on Reply Card

April...

Facility Automation

- Automated Commercial Insertion for Cable
  Cable systems are increasingly turning to local commercials as an important source of revenue. The key to these dollars is the ability to insert local commercials in the many channels of satellite and locally produced programming.

- Multicasting for Dollars
  Next to HDTV, the most important concern of station managers and engineers is being able to feed more than one channel of programming. Although cablecasters have done this for years, it's only recently that TV stations have had the need to send programming to multiple outlets.

- Radio Automation Techniques
  A look at new ways to automate the radio station. An examination of the three areas of radio automation include live-assist, satellite and CD jukebox.

- Radio in Transition
  A look at new ways to complete the audio production process.

May...

Program Transmission Systems

- Building an STL System
  Building an STL system requires careful design because of the high reliability required. The author describes a process to help ensure that adequate fade margins are built into a station's STL.

- Measuring RF Levels in Complex Environments
  Learn about the complex process of measuring RF field intensity at the New York World Trade Center. In what is probably the most comprehensive analysis of an RF environment, the author discusses the problems in measuring the multestation installation.

- Selecting a Transmission Line
  Selecting the correct coaxial transmission line and then properly installing it is the key to long equipment life.

- Replacing TV Antenna Systems
  As a TV station antenna system approaches 30 years old, it needs to be replaced. The question becomes what system to buy and how to have it installed with as little downtime as possible.

- 2A-B and Other Intermodulation Nightmares
  Despite the sophistication of today's transmitter and antenna systems, intermodulation products do develop and can cause interference to your viewers or listeners.

- Sectionalized AM Towers
  With the increased use of antenna farms, reradiation and cross-modulation problems are a common occurrence for AM stations.

- Radio in Transition
  News is one of the most profitable formats for radio. Yet, the format is expensive to support and maintain.
Why broadcasters prefer Emcor enclosures...
More choices, accessories and colors plus quick ship and custom options.

Your broadcasting equipment belongs in a high quality Emcor enclosure. A functional modular design gives you unlimited flexibility in meeting your enclosure and console needs. Frame style choices include vertical, slope front, low silhouette, and more. A wide variety of accessories includes sliding shelves, tapped mounting angles, power strips, and writing tops to fit any console configuration.

Broadcasters know that appearance is important. Emcor provides an attractive and durable paint finish in a choice of 16 standard colors. With custom color matching and decorative trim options, you can achieve the exact appearance you desire.

Best of all, Emcor offers quick solutions. Instant Emcor stocks hundreds of popular items for shipment in as little as five working days... ten days with choice of color. If you have a custom requirement, Emcor's complete design engineering and manufacturing services will provide you with enclosures exactly to your specifications.

See us at the NAB Show, Booth #16069

Emcor enclosures at KTCA, Public Television for Minneapolis - Saint Paul.
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.
**Product Showcase**

The Abekas A83 Component Digital Switcher

Companion product to the Emmy Award winning A84 compositing switcher, the A83 features three Mix Effects modules and exceptional keying quality. Designed for post production and broadcast applications, the A83 offers user-definable inputs, signal system networking, ASPIK™ (Adaptive Sub-Pixel Intelligent Keying), internal digital disk recording, and LINC™ systems integration software.

Abekas Video Systems Inc.
101 Galveston Dr.
Redwood City, CA 94063
415-369-5111

Circle (146) on Reply Card

Pro-Bel Model 6610 Digital Video Analyzer

The 6610 Digital Video Analyzer uses advanced techniques to assess the integrity of signals in the digital video domain. The 6610 accommodates all component and composite digital video formats in both B and 10 bit standards. The operator interface is menu driven with a multi-function vacuum fluorescent display. There is an external configuration port for custom applications such as an automated manufacturing testing, and a built in precision digital test signal generator is optional.

For more information contact:
Dave Spindle
Pro-Bel Inc.
4480 N. Shalorford Road Ste. 102
Dunwoody, Ga 30338-8410
Tel: 404-396-1971
Fax: 404-396-0595

Circle (147) on Reply Card

The ACRODYNE TRU/30KV 30kW single tetrode tube UHF TV Transmitter utilizes parallel solid state amplifiers in the driver stage and a single tetrode final amplifier. The unit provides overall power consumption of only 50kW and the TH563 tetrode continues to operate with 15,000-20,000 hours. The TRU/30KV units can be combined for a 60kW system.

Recent overseas installations include 2 units for Maracaibo, Venezuela and 2 unit for San Jose, Costa Rica (scheduled for early summer).

Acrodyne Industries, Inc.
516 Township Line Road
Blue Bell, PA 19422
800-523-2596 or 215-542-7000
Fax 215-540-5837

Circle (148) on Reply Card

**Professional Services**

**NETCOM**
STATE-OF-THE-ART ENGINEERING FOR AUDIO & VIDEO
TURN-KEY SYSTEMS
DESIGN & DOCUMENTATION
EQUIPMENT SALE
CAD SERVICES
1465 PALISADE AVE., TEANECK, NJ 07666 / (201) 837-8424

**JOHN H. BATTISON PE.
CONSULTING BROADCAST ENGINEER**
FCC APPLICATIONS AM, FM, TV, LPTV
Antenna Design, Proofs, Fieldwork
2684 State Route 60 RD '1
Londonville, OH 44842
419-994-3849

**East Coast Video Systems**

A full service Company providing:
- Consulting
- Engineering & Design
- Installations
- Training

A diverse range of video systems in: Cable Systems, Corporate Facilities, Broadcast Facilities, Teledistribution Facilities

52 Ralph Street, Belleville, NJ 07109 (201) 751-5655

**Classified**

**FOR SALE**


COMPLETE INTRAPLEX TDM-153 T-1 SYSTEM with Kentco CSUs. 2.19kHz, 3-7 coupled and 3 four voice voice modules per side. Includes expansion shelves, backup power supplies and spare master modules. System used for nine months only. Perfect condition. Will consider any offer. Contact Ron Rust. KBLA. 213-665-1580.

WARD-BECK Custom 32x8b2 T.V. Audio console with external 24 row patchbay. Excellent condition, on air until 6/81: $7,500.00 or B.O. Buyer Ships Audio Consulting and Engineering (415) 512-7391.


19 TEKTRONIX 526 WAVEFORM MONITORS, like new $1250 each. 11 Best TV 118 A/AF 1 Kilowatt Wattmeters like new $275 each. 415 388-0838.

Circle (149) on Reply Card

**TRAINING**

FCC GENERAL CLASS LICENSE. Cassette recorded lessons with seminars in Washington, Newark, Philadelphia, Bob Johnson Telecommunications, Phone (213) 379-4461.

**WANTED:** USED VIDEO EQUIPMENT. Systems or components. PRO VIDEO & FILM EQUIPMENT GROUP: the largest used equipment dealer in the U.S.A. (213) 989-0011.

March 1993 Broadcast Engineering 191
Classified

FOR SALE

TAPE ERASERS
garner industries
WHEN COST IS IMPORTANT AND QUALITY IS CRITICAL
1-800-228-0275
Erasers all formats in quantities of 1 to 1,000,000
4200 North 48th Street • Lincoln, NE 68504

BCS DELIVERS!
Changing the way you buy video equipment
Over 5,000 pieces of new and used video equipment for sale. Experienced and knowledgeable Sales Engineers. We also buy, sell, consign and trade video gear and we service nearly everything we sell.
BCS LA: 312-551-5858 BCS NY: 212-268-8800

SAVE A SMALL FORTUNE!
broadcast camera tubes
"Pre-screened with warranty"
Tubes for Ikegami, Sony, RCA, G.E., Thomson, Hitachi, etc.
equal to:
XQ1416, XQ1415, XQ1427, XQ3427, XQ3427, XQ2070, XQ2075, XQ1430, XQ1435, etc.
sets and singles.
We also supply new and used: broadcast/video equipment, stage & studio lamps, CCTV, test equipment, microwave, video tape, duplicators, audio equipment, electronic parts, transmitting tubes, vacuum caps, cable, etc.
Fusion Eve, Inc., 15 Main St. F., Rockaway, NY 11571 800-964-2300 x510665-4600 x FAX: 516-695-6485

SUPER CIRCUITS
TINY 4oz. VIDEOCAM!
WORLDS SMALLEST ALL-IN-ONE COLOR VIDEOCAM! ONLY BARREL INCLUDING LENS CREATE AN AFFORDABLE SPORTS ACTION OR READY "SCOUTCAM" SYSTEM WITH OUR MICROVIDEO TRANSMITTERS OR NEW SUPER MICRO & SDRS UNBEATABLE PERFORMANCE! CALL US TODAY FOR CATALOG AND SPECIFICATIONS!
13015 Debaur Drive Austin, Texas 78729 512-335-9777

USED EQUIPMENT
Place free classified ads to sell video equipment. Call 708 673 9200 or Fax 708 673 9205 to receive list or to sell equipment. List updated daily!
Broadcast Equipment Classifieds

SONY • AMPEX • BTS • DUBNER
GRASSVALLEY • PANASONIC
If You’re Looking for the Best in Used Equipment and You Want the BEST: • DEAL • VALUE • SERVICE
CALL MIDWEST: (708) 251-0001 • CANADA (604) 850-7969

CALL US
For New and Rebuilt
Radio Broadcast Equipment

HALL Electronics
(804) 974-6466
1305-F Seminole Trail • Charlottesville, Va. 22901

NEW! MET-ERASER ME-II
BETA SP, MII TAPEs down
2417 EMBARCADERO
PALO ALTO, CA 94303
415-493-3811

Sony Interface for your VPR-2 or NEC-7000
- Converts Sony w/3 to parallel control.
- Complete editing capability.
- RS 422 interface for editors and automation.
- Controls ATI's and VCRs.
Phantom II VTR Emulator
For information Call 1-800-331-9066
dabor digital 605 PARTNERS COURT • PO BOX 171
FREDERICK, MARYLAND 21701

SONEX Source
58 Nonotuck St., Northampton, MA 01060
"Your Source for Savvy Acoustical Foam" Best Prices—Nationally Delivery
334-1832 Ext. 3032
Credit Cards Accepted

BETTER EQUIPMENT AT CONSUMER PRICES
FOR THE PRO AND SEMI-PRO USER
(800) 674-3457 FAX (702) 565-4828
SESCOM, INC. "The audio source" 2100 WARD DR • HENDERSON, NV 89015 USA

REQUEST YOUR FREE CATALOG OF OVER 300 AUDIO ACCESSORIES FOR THE PRO AND SEMI-PRO USER

AEASES
TABER TRADING CO. $2,495
2017 EMBARCADERO
PALO ALTO, CA 94303
415-493-3811

Erases for tape, video monitors, low cost & high quality. Professional look-up of interference minutes rather than hours.

IDENTIFY AND PREVENT RF COMMUNICATIONS SITE INTERFERENCE IN MINUTES RATHER THAN HOURS.
Powerful PC software that picks up where all other intermodulation programs leaves off.
- Transmitter Noise/Receiver Desense Analysis
- Intermodulation Signal Level Analysis
- Eliminates Manual look-up of filter curves

COMSITE PLUS
For a brochure, call 1-800-845-0408

For Classified Advertising or Professional Services information Call Renée Hambleton at (913)967-1732.

www.americanradiohistory.com
FOR SALE

The Best Audio Test Meter Made!

Advantage Model 310

Precision Audio Signal
And Noise Level Meter

Professional Price!

$399

- Low THD/HF Reject With
- Valley Audio’s Trans-Amp™
- Low Noise Wideband Circuitry
- Large Dual Scale Meter
- Super-Accurate Filters
- Average, RMS, DC Peak. Det.
- +100 dB to +30 dB Range
- Scope and Prepamp Monitoring Outputs

Call For The Nearest Dealer:

1-800-800-4345

HELP WANTED

EL/ELECTRONICS FIELD/SHOP ENGINEER. Swidden & Elec-
tronics, Inc., located in the Chicago 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", 1/4", & 1/2" VTRs and related equipment. Full time position. Full
company benefits. Send resume & salary history to: Human
Resources Dept. 1200 Greenleaf Ave., Elk Grove Village, IL
60007. Fax resumes to: (708) 364-5019.

STUDIO MAINTENANCE ENGINEER. Group-owned TV
station accepting applications for future openings. Must be
highly qualified in studio maintenance. ACR225, Beta SP,
Amperex 1", RCA cameras, etc. and have excellent systems
planning knowledge. VHF transmitter and S/NV operations
experience required. Limited tower climbing. Able to lift
broadcast equipment. An FCC General Class License or
SBE Certificate preferred. Location, climate and benefits a
big plus. Send resume to: John Augustine, WIS Chief En-
gineer. P.O. Box 367, Columbia, SC 29022. NO PHONE
CALLS. E.O.E.

RS422 VTR REMOTE CONTROL

SONY, AMPEX, JVC

PANASONIC, HITACHI

Low Cost - Lots of Features

DNF INDUSTRIES (213) 650-5256

1032 N. Sweetzer Avenue, #212

LA, CA 90069

THE 6X GPI MATRIX

OEI ELECTRONIC SYSTEMS INC. 908-735-0543

Circle (145) on Reply Card

EQUAl OPPORTUNITY EMPLOYER. AN INTERNA-
TIONAL TRADING COMPANY is seeking a MANAGER
OF EUROPEAN OPERATIONS. Excellent knowledge of French
language, fluent in English with working knowledge of Span-
ish and Eastern European languages. Minimum three years
of international sales and marketing experience is required.
Preferably in electronic equipment and spare parts business.
Experience required in international trading operations, in-
cluding sales, marketing, public relations, customs, freight
forwarding and banking regulations. Will be maintaining
contacts with overseas customers and suppliers. Travel
required. Computer literate. The company requires a college
degree. Salary for this position will be $35,000. The Manager
of our European Operations will be responsible for utilizing
our current contacts, and other that may come available, to
maintain current business and to develop new businesses in
Eastern Europe. This expansion will come through advertis-
ing and marketing ourselves and our services. The position
will be responsible to establish a new market, developing
business contracts into sales, quoting materials, arranging
initial financing and ensuring customer satisfaction. To ap-
ply, send letter of application and current resume to Order
# 892492, Attn: Peggy Dostal, Dept. for Employment Ser-
vices. 600 West Cedar Street, Louisville, KY 40202-2396.

Fax your ad to: 913-967-1901

Attn: Renee Hambleton

It's that EASY!

MASTER CONTROL OPERATOR needed. Must have mini-
mum two years "ON-AIR" switching, videotape, editing and
ability to maintain proper audio and video levels to transmit-
ter. Successful candidate will have a technical background,
SHD diploma or equivalent, be willing to work 10 HR shifts
day (day work week) and be a team player. EOE. Submit resume, salary history and references to: WXEL PERSONNEL, P.O.
Box 6607, W. Palm Beach Fl. 33405.

ASSISTANT CHIEF ENGINEER. Group-owned TV station,
offering best of all worlds for a hard-working person inter-
ested in opportunity and development. Must have excellent
systems planning knowledge, management ability, foresight
and a practical approach. VHF transmitter experience, ability
to drive satellite truck and uplink. Limited tower climbing. Able
to lift broadcast equipment. Hands on required. An FCC
General Class License or SBE Certificate preferred. Loca-
tion, climate and benefits are a big plus. Send resume to: John
Augustine, WIS Chief Engineer. P.O. Box 367, Columbia, SC
29022. NO PHONE CALL. E.O.E.

WHNS-TV FOX21 has an opening for a RF Engineer.
Minimum five years experience with high powered UHF
Transmitters. UHF Transmitter experience a plus. Person will
be based out of Western North Carolina to service transmi-
ter and seven translator locations. Must be able to work
independently and still disciplined. Send resume to: WHNS-
TV, Attn: Jerry Gavin, Chief Engineer, 21 Interstate Court,
Greenville, S. C. 29615 NO PHONE CALLS. E/O/E M/F/H.

Benefit from the value of BE's classified readership. Reach nearly 74,000 Management level decision-makers.

Sell your product, offer your services or fill your recruitment needs! Only $1.75/word or $102/column inch (12x rate). What are you waiting for?

(Ad closing date is the 5th of the month, preceding each issue). Call 1-800-800-4345

Your name: ___________________________ Date: ___________________________
Company (if applicable): ___________________________ Phone: ___________________________
Address: ___________________________
City: ___________________________ State: ___________________________ Zip: ___________________________
Ad COPY: ______________________________________________________________________
Headline: (i.e., For Sale, Misc., Help Wanted, Service).
Ad Copy: ______________________________________________________________________

☐ Please run my ad in (designate month or months preferred).
☐ Call me about questions regarding my ad. Signature: ___________________________

March 1993 Broadcast Engineering 193

www.americanradiohistory.com
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 1 800 726-4266.

Circle (2) on Reply Card

www.americanradiohistory.com
Why Have We Sold Thousands Of Our Serial DAs?

1. All DAs Meet Industry Standards Using the Latest Technology
2. Format Independent with Automatic Selection of 143/177 Mbs or 270 Mbs
3. Frame Designed for Over 360 Mbs
4. 10 Modules in a 2 RU Frame (4 Modules in a 1 RU Frame)
5. VSM-6800 Monitoring DA - 4 Serial Video Outputs Re-clocked and Equalized
6. VSE-6800 - 8 Serial Video Outputs Re-clocked with Equalization up to 300 Meters
7. VES-2200B Serial Digital Black Generator - 8 Outputs of Digital Black in Component 4:2:2 with +3 to -5 Lines of Phasing with an Analog Black Reference
8. Versatile Frame Accepts Other Modules such as VES-2200 Serial Digital Logo Generator
9. EMI Tested to Comply with FCC Part 15

(And The Price Helped!)

The Digital Glue For Your Digital Systems. 1-800-231-9673

Leitch Incorporated, 920 Corporate Lane, Chesapeake, VA 23320 Tel: (800) 231-9673 or (804) 548-3200 Fax: (804) 548-4088
Leitch Video International Inc., 230 Duncan Mill Rd. #301, Don Mills, ON, Canada M3B 3S3 Tel: (866) 387-0233 or (416) 445-9640 Fax: (416) 445-0595
Leitch Europe Limited, 24 Campbell Ct., Bramley, Reading, England, U.K. RG26 6EG Tel: +44 (0) 256 880088 Fax: +44 (0) 256 880028

Circle (3) on Reply Card

www.americanradiohistory.com