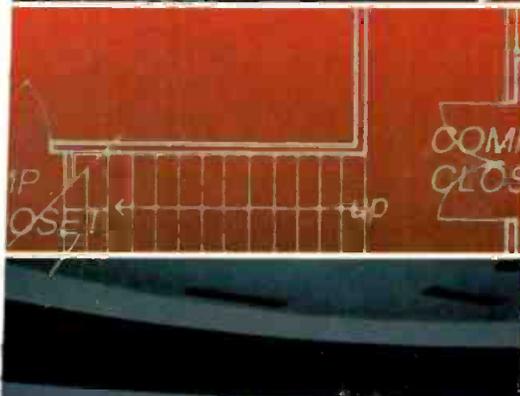


BROADCAST engineering

An INTERTEC Publication
SUPER LIVE ROOM
March 1993/\$4.50

FACILITY DESIGN SPECIAL REPORT



*****3-DIGIT 331
A33100- -- --MVE757000
RAYMOND MEYERS PRES DIR
BENCHMARK COMMUN CORP
4700 SW 75TH AVE
MIAMI FL 33155-4473

1993 NAB Preview

NEW CONTROL

Radio in transition:
New control interfaces
p. 24



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.

THE
PESA CHYRON
GROUP

PESA

CHYRON

CMX

AURORA

Circle (1) on Reply Card

www.americanradiohistory.com



LONDON



ROME



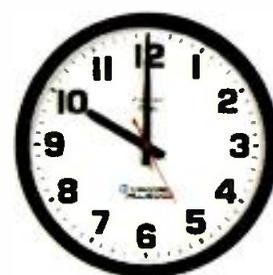
CAIRO



MOSCOW



HONG KONG



SYDNEY



NEW YORK



SÃO PAULO



VANCOUVER

Around The Clock Performance.



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 inter-

changeable 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



Contents

BROADCAST engineering

March 1993 • Volume 35 • Number 3



Page 38



Page 52



Page 62

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:

- 4 News
- 6 Editorial
- 8 FCC Update
- 10 Strictly TV
- 12 re: Radio
- 14 Management for Engineers
- 16 Circuits
- 18 Troubleshooting
- 20 Technology News
- 32 NAB Engineering Conference Preview
- 160 Applied Technology: Sony Digital Betacam
- 172 Industry Briefs
- 174 New Products
- 182 Preview
- 191 Classifieds
- 194 Advertisers' Index

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 Yanchar, Lakeside Associates

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

70 Building an Award-Winning Transmitter Site

By Roy L. Abernathy, Bartholomew 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.

SEE US AT
NAB '93!

pro-bel

At the Heart of your System

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.

PRO-BEL INC 4480 North Shallowford Road, Dunwoody, GA 30338-6410
Tel: 404-396-1971 Fax: 404-396-0595

Circle (5) on Reply Card

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/on-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 WNVN-TV operated by the Central Virginia Educational Telecommunications Corporation. WNVN 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 AT&T 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.

EDITORIAL

Brad Dick, *Editor*
Carl Bentz, *Special Projects Editor*
Skip Pizzi, *Technical Editor*
Dawn Hightower, *Senior Associate Editor*
Stefanie Kure, *Associate Editor*
Tom Cook, *Senior Managing Editor*
Pat Blanton, *Directory Editor*

ART

Neita Gumangan, *Graphic Designer*

BUSINESS

R.J. Hancock, *President*
Cameron Bishop, *Group Vice President*
Duane Heltner, *Group Publisher*
Tom Brick, *Marketing Director*
Becky Anderson, *Group Director, Special Projects*
Kathryn Buckley, *Promotions Manager*
Sandra Tomczak, *Promotions Coordinator*
Dee Unger, *Advertising Business Manager*
Mary Birnbaum, *Advertising Production Supervisor*
Shelly Larkey, *Advertising Coordinator*
Stephanie K. Carlson, *Classified Advertising Coordinator*
Lori Christie, *List Rental Sales*
Doug Conrad, *Corporate Art Director*
Julie Neely, *Circulation Director*
Customer Service: 913-967-1711

TECHNICAL CONSULTANTS

Ned Soseman, *Contributing Editor*
Eric Neil Angevine, *Broadcast Acoustics*
John H. Ballison, *Antennas/Radiation*
Dennis Cipura, *Radio Technology*
Dane E. Erickson, *P.E., Systems Design*
John Keen, *Subcarrier Technology*
Donald L. Markley, *Transmission Facilities*
Harry C. Martin, *Legal*
Curtis Chan, *Audio/Video Technology*

MEMBER ORGANIZATIONS

Sustaining Members of:
• Acoustical Society of America
• Society of Broadcast Engineers
• Society of Motion Picture and TV Engineers

Member,
Association of Business Publishers
Member,
Business Publications
Audit of Circulation



BROADCAST ENGINEERING is edited for corporate management, engineers/technicians and other station management personnel at commercial and educational radio and TV stations, teleproduction studios, recording studios, CATV and CCTV facilities and government agencies. Qualified persons include consulting engineers and dealer/distributors of broadcast equipment.

BROADCAST ENGINEERING (ISSN 0007-1994) is published monthly (plus three special issues) and mailed free to qualified persons within the United States and Canada. In occupations described above. Second-class postage paid at Shawnee Mission, KS, and additional mailing offices. POSTMASTER: Send address changes to **Broadcast Engineering**, P.O. Box 12960, Overland Park, KS 66282-2960.

SUBSCRIPTIONS: Non-qualified persons may subscribe at the following rates: United States and Canada: one year, \$30.00. Qualified and non-qualified persons in all other countries: one year, \$60.00 (surface mail); \$115.00 (air mail). Subscription information: P.O. Box 12937, Overland Park, KS 66282-2937.

Authorization to photocopy items for internal or personal use, or the internal or personal use of specific clients, is granted by Intertec Publishing, provided that the base fee of U.S. \$2.00 per copy, plus U.S. \$0.00 per page is paid directly to Copyright Clearance Center, 27 Congress Street, Salem, MA 01970 USA. For those organizations that have been granted a photocopy license by CCC, a separate system of payment has been arranged. The fee code for users of the Transactional Reporting Service is 0007-1994/1993 \$2.00 + \$0.00.

CORRESPONDENCE

Editorial and Advertising: 9800 Metcalf, Overland Park, KS 66212-2215. Telephone: 913-343-1300; Editorial fax: 913-967-1905; Advertising fax: 913-967-1904.

© 1993 by Intertec Publishing
All rights reserved.



**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 800-52-NIKON or (516) 547-4355 for our complete brochure. Or write: Nikon Electronic Imaging, Dept.D1, 101 Cleveland Avenue, Bayshore, NY 11706.

SHOOTING STARS.



See us at NAB Booth #18878.

Nikon ELECTRONIC IMAGING

r e c r e a t i v i t y

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

Brad Dick, editor

PURE PROGRESS.



OPTIMOD-FM

8200
DIGITAL

POWER

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.

FEATURE-PACKED
1.0 SOFTWARE
✓ Improved Sound
✓ Greater Control
CUSTOMIZE Your Sound

OPTIMOD-FM
D I G I T A L

orban[®]

a division of AKG Acoustics, Inc.

1525 Alvarado Street, San Leandro, CA 94577 USA

Phone: (1) 510/351-3500 Fax: (1) 510/351-0500

© 1993 AKG Acoustics, Inc. Orban and OPTIMOD are registered trademarks of AKG Acoustics, Inc. AKG is a registered trademark of Akustische u. Kino-Geräte Ges.m.b.H., Austria.

Circle (7) on Reply Card

www.americanradiohistory.com

FCC Update



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 programming 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 ratemaking 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, DC.

YES!

TO BROADCAST PRODUCTION



The AudioEngine
Digital Audio
Workstation

- 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

YES!

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 upgradable 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.

SPECTRAL
SYNTHESIS

MASTERING THE DIGITAL DOMAIN

19501-144TH AVE. N.E. SUITE 1000A • WOODINVILLE, WA • 206-487-2931 • FAX 206-487-3431

Circle (8) on Reply Card

www.americanradiohistory.com

re: Radio

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

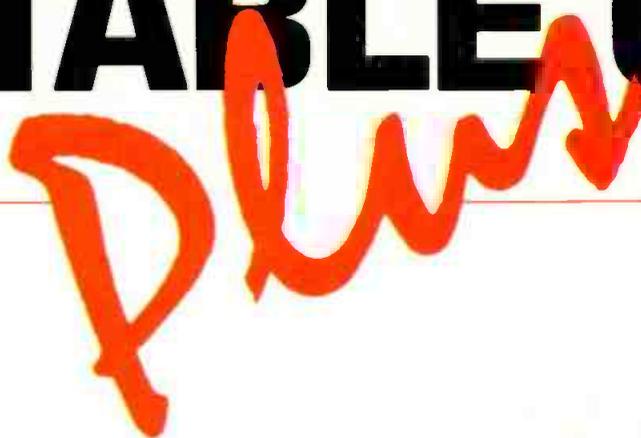
transponders of relatively high power, operating around 2,100MHz. (TDRS is used to track low-orbit spacecraft and replaces the network of ground-tracking stations used in the past.) TDRS satellites' geosynchronous nature, downlink frequency and transponder power provide reasonable approximations of proposed 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.

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

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.)

PORTABLE ONE



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.

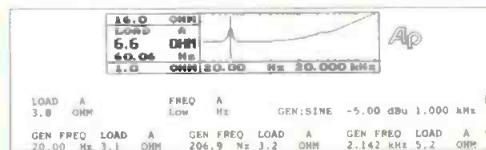
SWEEPS



GRAPHS



PRINTOUTS



- 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 150 standard 1/3 octave frequencies
- External sweep mode for test tapes, CD's or incoming signal sweep

- 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

- 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



**Audio
precision**

PO.Box 2209, Beaverton, OR 97075-3070
 503/627-0832 1-800/231-7350
 FAX: 503/641-8906, TELEX: 283957 AUDIO UR

INTERNATIONAL DISTRIBUTORS: Australia: IRT Electronics Pty Ltd., Tel: (61) 2 439 3744 Austria: ELSINCO GmbH, Tel: (43) 222 812 1751
 Belgium: Trans European Music NV, Tel: (32) 2 465 5010 Bulgaria: ELSINCO, h.e. Strelitsite, Tel: (359) 92 581 598 Canada: GERRAUDIO
 Distribution, Tel: (416) 698 2779 China, Hong Kong: A C E (Int'l) Co Ltd, Tel: (852) 424-0387 Czechoslovakia: ELSINCO GmbH,
 Tel: (43) 222 812 1751 Denmark: nbn Elektronik aps, Tel: (45) 86 57 15 11 Finland: Jervelec OY, Tel: (358) 77 13311 France: ETS Mesureur,
 Tel: (33) (1) 45 83 66 41 Germany: RTW GmbH Tel: (49) 221 70 91 30 Hungary: ELSINCO KFT, Tel: (36) 112 4854 Israel: Dan-El Technologies,
 Ltd., Tel: (972) 3-544-1466 Italy: Medea S.r.L. Tel: (39) 2/4840 1760 Japan: TOYO Corporation, Tel: (81) 3 (5688) 6800 Korea:
 Myoung Corporation, Tel: (82) 2 784 9942 Malaysia: Test Measurement & Engineering Sdn. Bhd., Tel: (60) 3 734 1017 Netherlands:
 TM Audio B.V., Tel: (31) 034 087 0717 New Zealand: Audio & Video Wholesalers, Tel: (64) 7 847-3414 Norway: Lydconsult,
 Tel: (47) 9 19 03 81 Portugal: Acoutron Electroacustica LDA, Tel: (351) 1 9414087 / 9450862 Poland: P.H.U INTERLAB, Tel: (48) 22 335 454
 Singapore: JME Systems Pte Ltd., Tel: (65) 298 2608 South Africa: SOUNDFUSION, Tel: (27) 11 477-1315 Spain: Telco Electronics, S. A.,
 Tel: (34) 1 531-7101 Sweden: Tel & Ton Elektronik AB, Tel: (46) 31 80 36 20 Switzerland: Dr. W.A. Gunther AG, Tel: (41) 1 910 41 41
 Taiwan: ACESONIC Int. Co., Ltd., Tel: (886) 2 716-8996 United Kingdom: SSE Marketing Ltd., Tel: (44) 71 387-1262

Circle (10) on Reply Card

www.americanradiohistory.com

Management for Engineers

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.

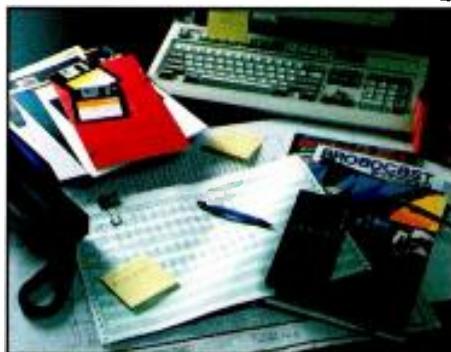
Recognizing the signs of stress

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.

Understanding stress begins with identifying its signs.

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. ■

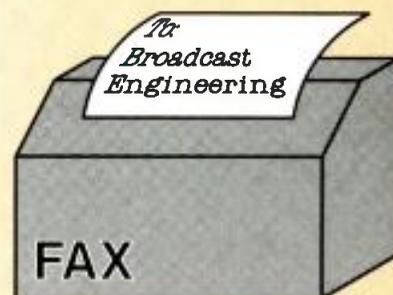
Have you got a management question?

Since 1986, the "Management for Engineers" column has addressed the kinds of problems faced by new supervisors and technical managers. The solutions provided have helped thousands of *BE* readers become better managers and advance personally and professionally. Now we'd like to do even more.

You can fax your management questions to the magazine for possible use in a future column. Reader-provided questions and concerns will be selected as topics for discussion in upcoming columns. Neither the station or reader will be identified in the column, so be as specific as necessary in describing your dilemma. Reader questions selected will be addressed only in the column and no personal responses can be provided.

Send your management questions to:

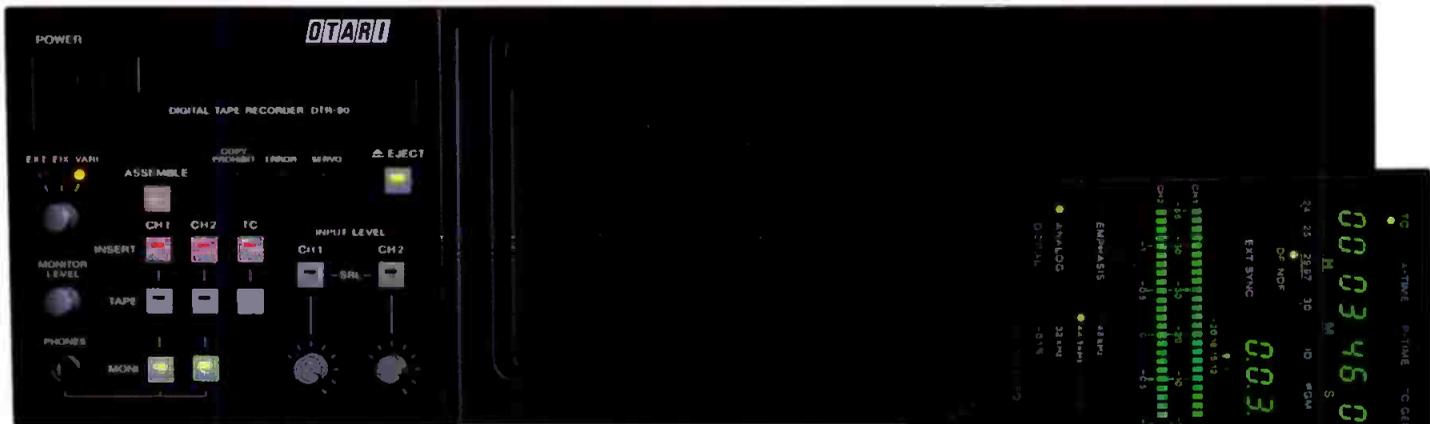
Via fax:
Management for Engineers
c/o Editor
Broadcast Engineering magazine
913-967-1905



Mailing address:
Management for Engineers
c/o Editor
Broadcast Engineering magazine
9800 Metcalf
Overland Park, KS 66212

Perkinson is a senior member of the Calumet Group Inc., Hammond, IN.

**OTARI'S NEW R-DAT:
PROFESSIONAL QUALITY WITHIN YOUR REACH.**



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.



Otari Corporation
378 Vintage Park Drive
Foster City, CA 94404
U.S.A.
(415) 341-5900
Fax: (415) 341-7200

Otari Corporation
U.S.A.
(415) 341-5900
Fax: (415) 341-7200

Otari Inc.
Japan
(0424) 81-8626
Fax: (0424) 81-8633

Otari
(UK) Ltd.
United Kingdom
(0753) 580777
Fax: (0753) 542600

Otari
Deutschland GmbH
Germany
02159-50861-3
Fax: 02159-1778

Otari Singapore
Pte., Ltd.
Singapore
(65) 743-7711
Fax: (65) 743-6430

Circle (11) on Reply Card



Circuits

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 ar-

INPUTS			OUTPUT	
C	B	A		
0	0	0	1	\overline{CBA}
0	0	1	0	
0	1	0	0	
0	1	1	0	
1	0	0	0	
1	0	1	1	$C\overline{B}A$
1	1	0	0	
1	1	1	1	CBA

OUTPUT = $CBA + C\overline{B}A + CBA$

Table 1. A truth table is used to show the desired input and output conditions.

McGaughey is an instructor at the University of Georgia Center for Continuing Education, Athens, GA.

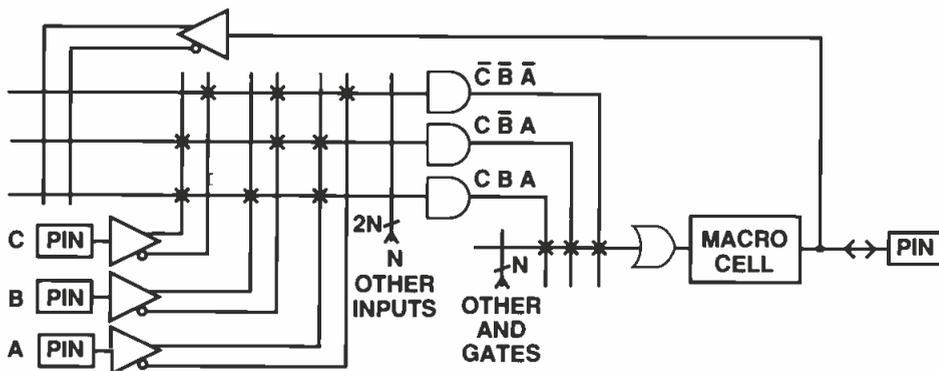
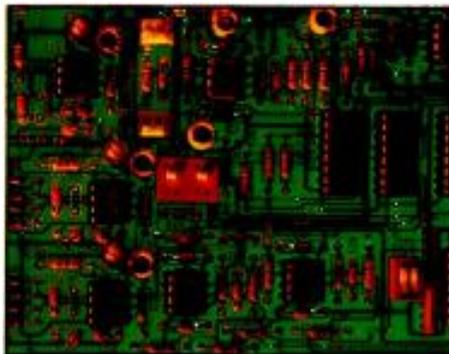


Figure 1. Inside a programmable logic device (PLD).

ray 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 erasable 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

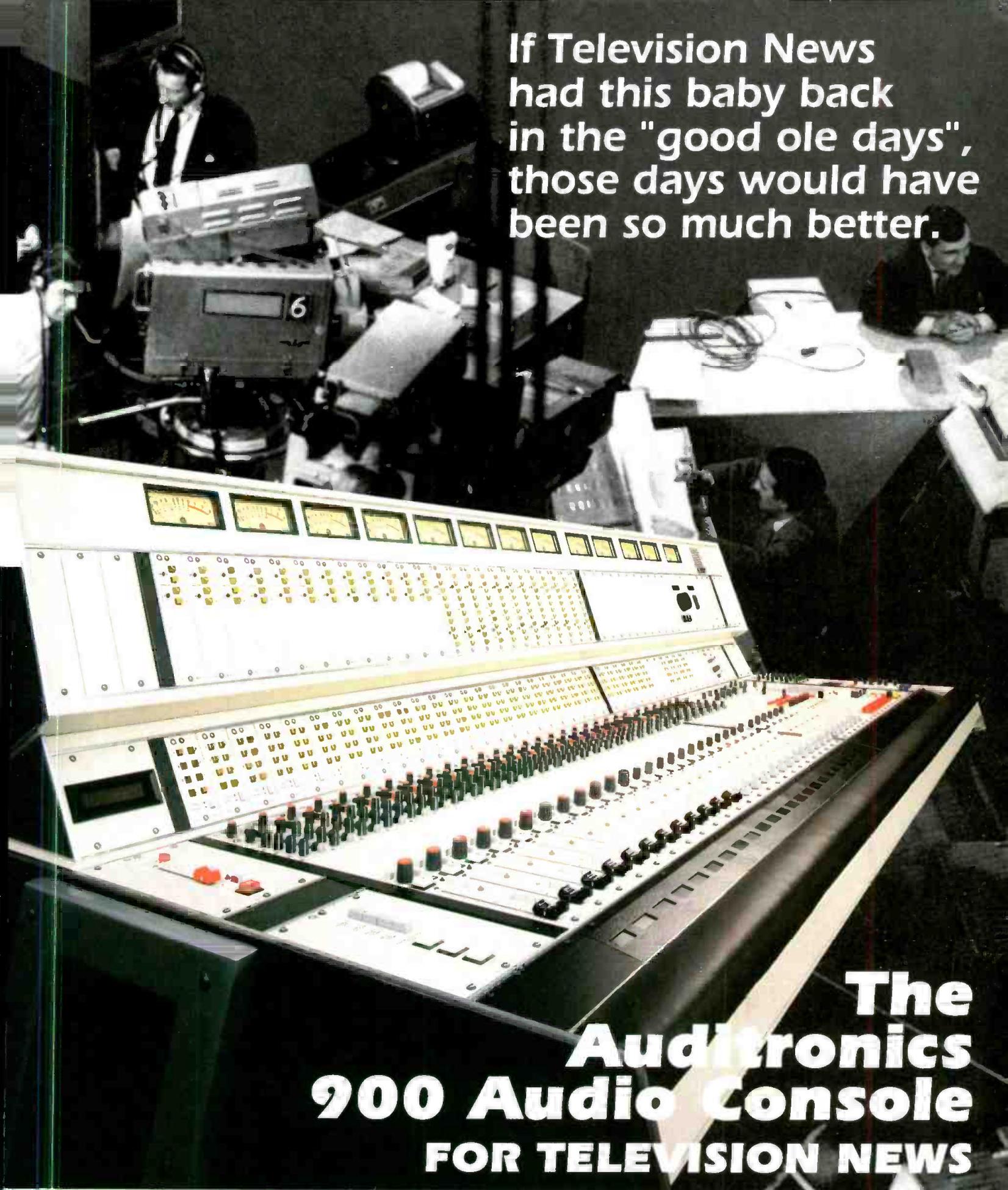
Although there are numerous PLD architectures, the majority use the *sum of*

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.

The Auditronics 900 Audio Console FOR TELEVISION NEWS

The Sound Of Perfection

AUDITRONICS

3750 Old Getwell Road, Memphis, TN 38118
901-362-1350, FAX: 901-365-8629

Circle (12) on Reply Card

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

www.americanradiohistory.com

Troubleshooting

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 of equipment 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.

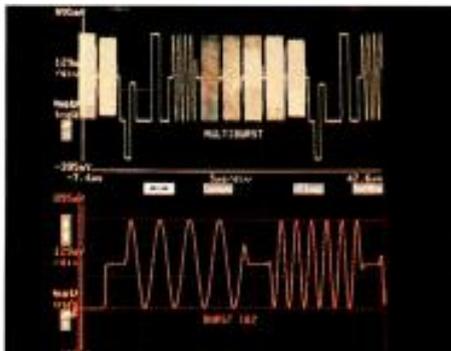
Power handling and attenuation

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.

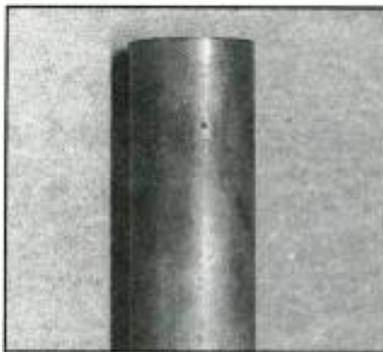
This should be conductivity relative to the conductivity of pure copper. When

Sargent is president of D.W. Sargent Broadcast Service Inc., Cherry Hill, NJ.



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



Burning as a result of using a bullet meant for a thick wall inner conductor in a thin wall inner conductor.

100MHz using this criteria, the attenuation is approximately 0.07db/100 feet for 4¹/₁₆-inch, 50Ω line. At a power of 75kW, 35° C ambient temperature and a VSWR of 1.3:1 the attenuation is 0.09db/100 feet of transmission line. This will result in approximately 2kW more power lost in the real world than the attenuation charts

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 6¹/₈-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 outers 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.



B R O A D C A S T

OFFICES & ENGINEERING
MARIA MOLINER, 74-76
50007 ZARAGOZA
SPAIN

FACTORY
CMNO. DE LOS ALBARES, 14
CUARTE DE HUERVA
ZARAGOZA - SPAIN

OMB AMERICA
TIB3555 N.W. 79 TH. AVE.
33122 MIAMI FLORIDA
U.S.A.

Solutions

Engineering by Broadcasting Experts

In OMB you will find the answer for your radio or television transmitting station.



88-108 MH: 5.000 WATTS

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

Today we are able to help you.

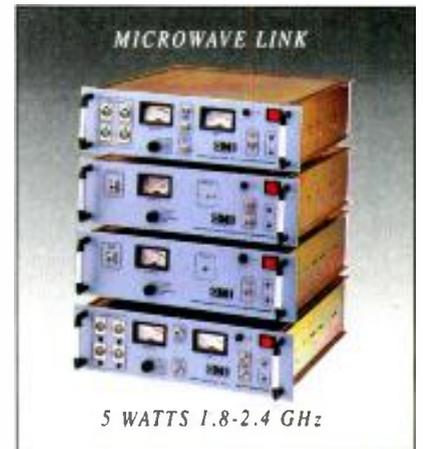
If you want the best quality and the best value for money

OMB can supply them both.

Have confidence in our services.

Facilities:

• System projects • Installation



5 WATTS 1.8-2.4 GHz

• Short delivery time • After sales service • Full technical data



88-108 MH: 500 WATTS

Indicative prices in US\$ FOB Zaragoza and Miami

DIGITAL STEREO GENERATOR 45-60 dB SEPARATION	1.375
3 kW RADIATING SYSTEM 4 DIPOLES POWER DIVIDER 112" CELLFLEX	2.750
PORTABLE TRANSMITTER 12 V 88-108 MH: 10 WATTS SYNTH.	1.550
STL 200-400 MH: 10 WATTS 800-960 MH: 5/6 WATTS TELEMETRY SYNTH.	
μPROCESSOR MONO MPX 2 SCA	4.685
FM TRANSMITTER 88-108 MH: 20 WATTS SYNTH. μPROCESSOR	2.475
FM TRANSMITTER SOLID STATE 88-108 MH: 500 WATTS	8.890
FM TRANSMITTER TUBE 3CX1500 88-108 MH: 1.000 WATTS	10.890
FM TRANSMITTER TUBE 4CX1500 88-108 MH: 5.000 WATTS	25.375
TV REPEATER 5 WATTS	6.500
PANEL RADIATOR UHF STAINLESS STEEL	790
MICROWAVE LINK 5 WATTS 1.8-2.4 GHz:	15.150

SPAIN

TEL: +34 76 274537 & 37 03 00 FAX: +34 76 37 23 36
TELEX: 57866 OMBZ-E

Circle (14) on Reply Card

AMERICA

TEL: +1 305 4770973 & 4
FAX: +1 305 4770611

TELEPHONE, FAX OR TELEX US NOW

www.americanradiohistory.com

Technology News

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 HDD-1000).

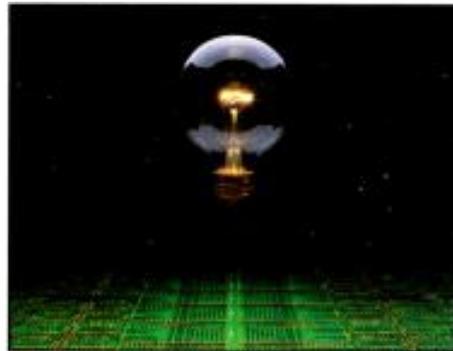
The fundamental advantage of the converter was to allow the different proponent systems to be videotaped and played back for comparison by government and industry decision makers. Without the device, each proponent could make performance claims and create demos on separate but not comparable systems. 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 $1/60$ 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_R and P_B, using certain sampling rates. It also allowed the assembly of the luminance and chrominance datastreams into data strings of 1,920



bytes/string and to clock the data strings out of memory into the DVTR at 74.20MHz. The HDD-1000 system at 59.94 fields/s provided a data clock at 1,000/1,001×74.250MHz.

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.

The values for 1,125/60 in Table 1 define the number of luminance pixels/s that the target recorder could handle. The same number of pixels/s was used for the chrominance values.

Table 2 shows how the format converter dealt with the problem of digitally recording the various formats.

As illustrated in the table, all of the proposed ATV formats were able to be recorded by the HD-HDTV/converter-recorder combination. Equally impressive were the horizontal scanning rates (F_h) of the proposed systems, expressed exactly by using ratios of integers, which made circuit design much easier.

The resultant format converter changes RGB analog video signals in any of the proposed formats into a digital data format that interfaces directly with the HD-HDTV recorder. In addition, the unit con-

verts the digital output from the DVTR into analog RGB as well as horizontal and vertical drive components for any of the proponent formats. It is also possible to simultaneously record video signals on one DVTR, while playing back from another through one format converter.

In the format conversion process, no interpolation process took place because of design goals. The only filters present were at the inputs of the Y/P_R/P_B A/D converters and at the outputs of the D/A converters. The ATV signals passing through the converter were only subject to those bandwidth restrictions to which the HD-HDTV DVTR subjects RGB in 1,125/60 (2:1) form, when recording from analog inputs or playing back analog outputs. By virtue of the HD-HDTV DVTR sampling rate, a luminance bandwidth limit of slightly less than 37MHz for luminance and 18.5MHz for chrominance was imposed.

Applications

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.

Lines/fields	Interlace	Pixels, lines, pictures/s
525/59.94	1:1	768 pixels×480 lines, 59.94 pictures/s
787.5/59.94	1:1	1,296 pixels×724 lines, 59.94 pictures/s
1,050/59.94	2:1	1,440 pixels×960 lines, 29.97 pictures/s
1,125/60	2:1	1,920 pixels×1,035 lines, 30.00 pictures/s

Table 1. Resolution parameters for ATV studio signals.

525/59.94	1:1	438×1,996×59.94=57.79 Megapels/s ¹
787.5/59.94	1:1	724×1,302×59.94=56.50 Megapels/s
1,050/59.94	2:1	966×1,996×29.97=57.79 megapels/s
1,125/60	2:1	1,035×1,920×30.00=59.62 Megapels/s

¹Megapels/s = Mega picture elements/second

Table 2. Spatial and temporal resolution of the ATV formats.

Chan is the principal of Chan & Associates, Fullerton, CA.

- **1984** MultiController full-motion control system for the future family of AutoCam camera automation products. (The launching AutoCam camera automation products.)
- **1985** AutoCam HS-110P studio camera pan/tilt head.
- **1986** Tandem operation of MultiControllers for four cameras.
- **1987** AutoCam HS-105P ENG/EFP camera pan/tilt head.
- **1988** AutoCam Newsroom Computer Interface for enhancing operational flexibility.
- **1988** AutoCam ACP-8000 touch screen, menu-driven eight camera controller.
- **1989** Patent awarded for SP-200/X-Y targeting system.
- **1989** Copyright for ACP-8000 touch screen software.
- **1989** AutoCam SportsFocuser automatic focusing system.
- **1990** Real-time CCU control. ROP Remote Operating Panel.
- **1990** AutoCam Full-Motion control editing. MCB-1 local manual control box. Battery pack option for Sp-200/X-Y.
- **1991** Collision avoidance and studio set mapping. EMMY Award.
- **1991** Multiple screen files for quick transition for back-to-back shows.
- **1991** Powerful single screen operation.
- **1992** Full serial CCU interface. 100% redundant networking control system. Production operation by TD.
- **1992** MCB-3 vector solving Heads-Up North local manual control. Enhanced VGA graphics.
- **1992** Real-time, 100% redundant networking control system. Production operation by TD.

The promises we've kept weren't made in the dark.

**See what
lights go on
at NAB
Booth 12451**

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.



Get "On target"  " with AutoCam. Call to arrange a demo for your station.

TOTAL SPECTRUM MANUFACTURING, INC.

709 Executive Blvd., Valley Cottage, NY 10989 • 914-268-0100 • FAX 914-268-0113

Circle (15) on Reply Card

www.americanradiohistory.com

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*



The New D-2 Series Videotape

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.

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

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.

**SONY'S
NEW D-2 TAPE
EXTENDS
THE LIFE OF
VIDEO HEADS
AND
HOT HEADS.**

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.

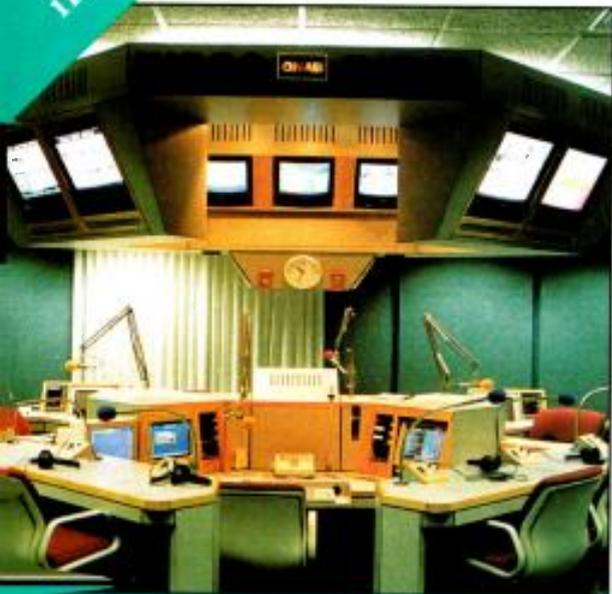
It's such endless advances that make Sony D-2 videotape a sought after media star among broadcasters, cable operators, duplicators and production houses. Advances that will keep other prominent stars shining brightly for a long, long time.

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.

SONY®
SONY RECORDING MEDIA



**ONLY
ON
SONY**
RECORDING MEDIA



New user-control interfaces

Switching and mixing of audio signals has a new look.

By Skip Pizzi, technical editor

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 develop-

ment 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 VCAs, 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 subgrouping 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

Photos courtesy of WCCO, Minneapolis, and Jerry Miller, chief engineer.

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.

Grass Valley Group

A TEKTRONIX COMPANY

NORTH AMERICA Grass Valley, CA (916) 478-3000 SOUTH AMERICA Miami, FL (305) 477-5488

EUROPE Basingstoke, UK (0256) 817817 ASIA Hong Kong (852) 5987118 JAPAN Tokyo (03) 5992-0621

© 1992 The Grass Valley Group, Inc.

Circle (16) on Reply Card

www.americanradiohistory.com

AnthroCart®



LOTS OF SIZES
AVAILABLE

HOLDS 150 LBS.

ADJUSTABLE

OVER 40
ACCESSORIES
TO ADD

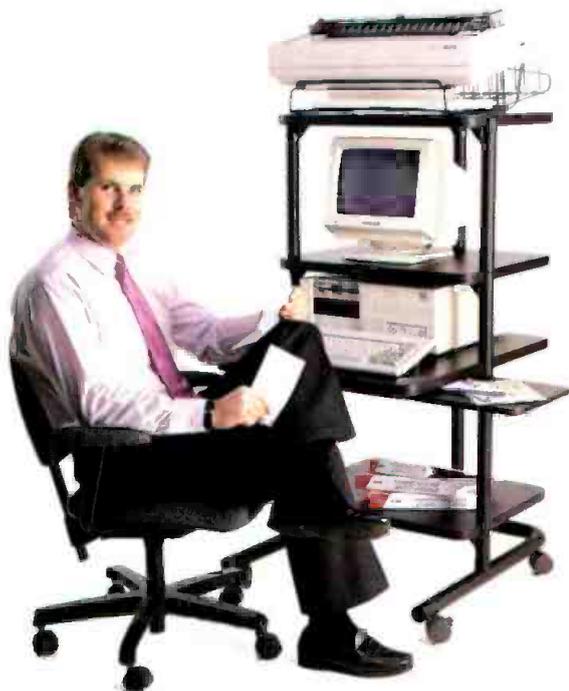


Call for a free catalog:
800-325-3841

6:30 AM - 5:00 PM, PST, M-F

Anthro Corp. • 3221 NW Yeon St., Portland, OR 97210 • (503) 241-7113 • FAX: (503) 241-1619

AnthroCart®



MOBILE

ADJUSTABLE

INCREDIBLY
STRONG

LIFETIME
WARRANTY



Call for a free catalog:
800-325-3841

6:30 AM - 5:00 PM, PST

Anthro Co. • 3221 NW Yeon St., Portland, OR 97210 • (503) 241-7113 • FAX: (503) 241-1619

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

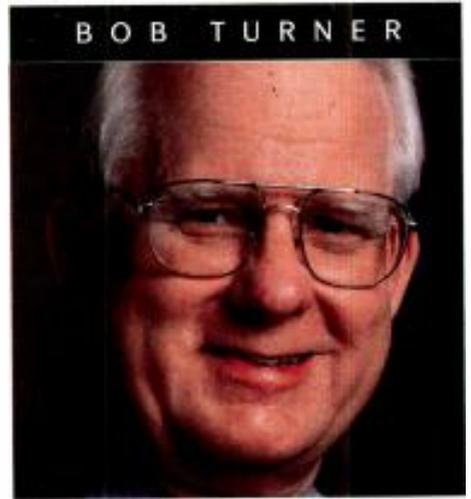
There are four major differences between RDS and the new American standard RBDS:

1. The American *program-type* (PTY) list is now general. An addition of *program-type name* (PTYN) 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 receiver 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 Picturynet.

“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



Quantel Inc., 85 Old Kings Highway North, Darien, CT 06820 Tel: (203) 656 3100 Fax: (203) 656 3459

Circle (18) on Reply Card

THE NAME IS MAGIC.

"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



HL-43 \$16,010



HC-340 \$10,820^{with lens}

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 Beta SP, MII, Hi-8 and S-VHS
- Super High Band Aperture & Super Color
- Continuously Variable - Speed Shutter

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.

HC-340 2/3" 3-Chip IT CCD

- Res: 750 TVL
- Sens f8.0, 2000 Lux, SNR 60dB
- 400,000 pixels
- Accepts S-VHS, Beta SP, MII & Hi-8
- Continuously Variable - Speed Shutter
- High Gain: + 24dB

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.



TM14 18RA \$4,030 **TM20 18RA \$4,330**

HK-343 \$49,990

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.

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

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.

HK-343 2/3" 3-Chip IT CCD

- Res: 850 TVL
- Sens: f8.0, 2000 Lux, SNR 62dB
- 400,000 pixels
- Computer Controlled CCU: Triax System
- Super High Band Aperture & Super Color

Ikegami
The Professional's Choice

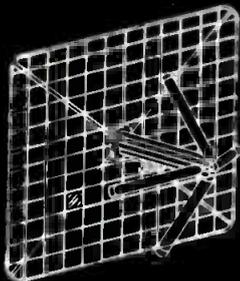
Ikegami Electronics (U.S.A.), Inc. 37 Brook Avenue, Maywood, NJ 07607
East Coast: (201) 368-9171 • West Coast: (310) 534-0050 • Southeast: (305) 735-2203 • Southwest: (214) 869-2363 • Midwest: (708) 834-9774

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.



JAHD CP
Arrowhead
Screen Dipole

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



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 recorder start-commands. Furthermore, in-house data for control and status of remote station equipment can be included in the RBDS datastream.

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 (\$50 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





NAB engineering conference preview

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.



The information age will arrive in full force at this year's NAB Convention. New and converging technologies are in evidence throughout the program, and harbingers of things digital will be heard at every turn.

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 keynote 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. Fjeldstad, 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 evalua-

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.



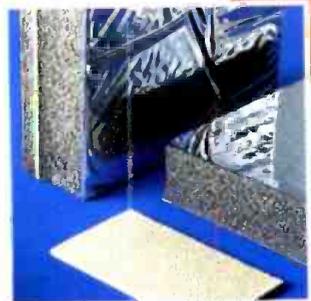
SONEX 1

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

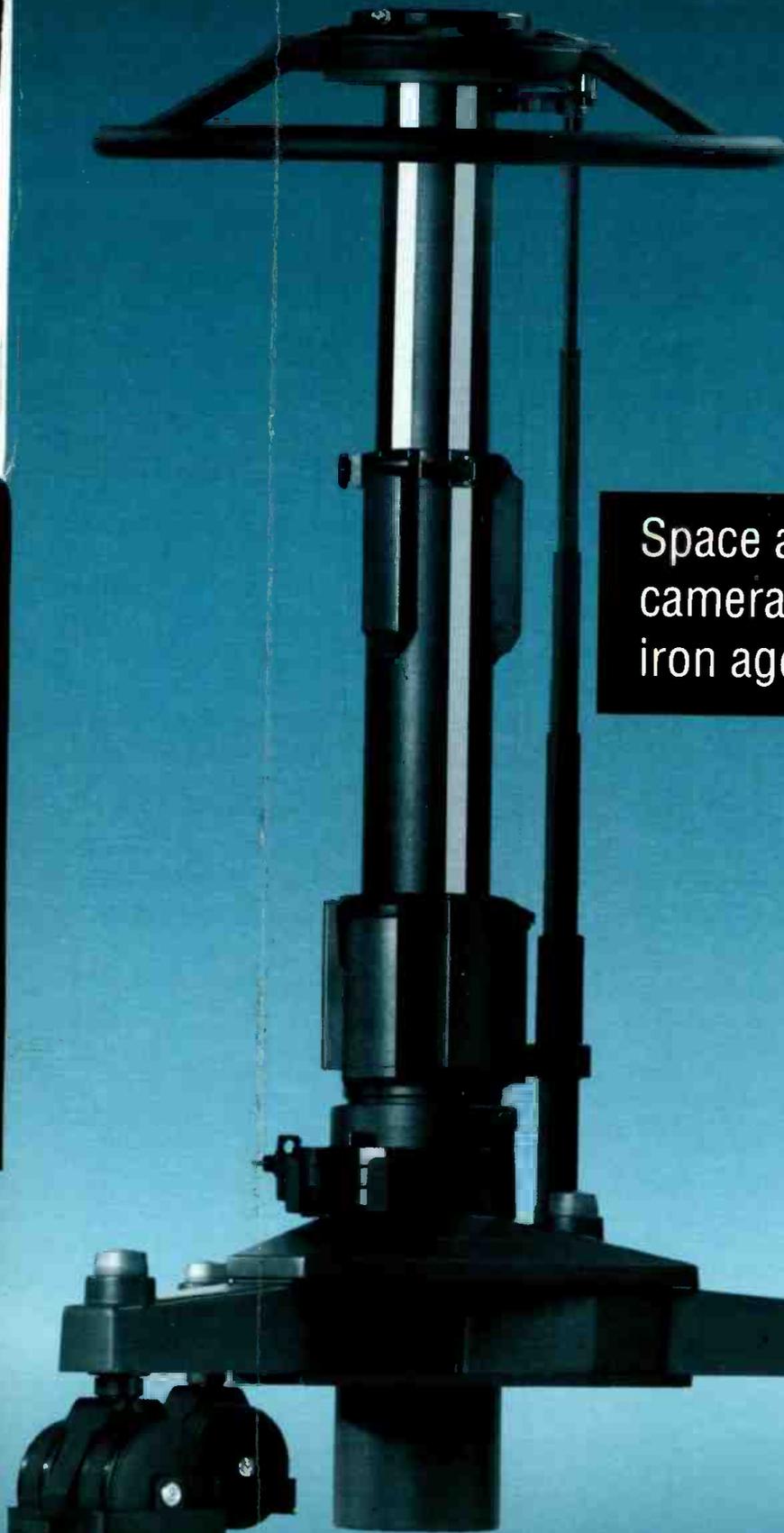
When the problem requires more than absorption, illbruck barriers deliver. Single layer vinyls to multi-level laminates. Lead performance without lead price or problems.



illbruck

3800 Washington Ave. N.
Minneapolis, MN 55412
1-800-662-0032

Circle (127) on Reply Card



Space age CCD-cameras don't fit on iron age pedestals

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!

sachtler®
 corporation of America
 New York office:
 55, North Main Street
 Freeport, N.Y. 11520
 Phone (516) 867-4900
 Fax (516) 623-6644
 Telex 140107 sac frpt

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
 Telefax (089) 32 158 227
 Telex 5 215 340 sac d



sachtler
 Support & Lighting

Circle (126) on Reply Card.

Friday 4/16	Saturday 4/17	Sunday 4/18	Monday 4/19	Tuesday 4/20	Wednesday 4/21	Thursday 4/22
BROADCAST EDUCATION ASSOC.			BROADCAST ENGINEERING CONFERENCE			
			TELEVISION MANAGEMENT CONFERENCE			
			RADIO MANAGEMENT CONFERENCE			
ABA/NAB			TVB MKTG. CONF.			
			HDTV WORLD CONFERENCE			
			MULTIMEDIA WORLD CONFERENCE			
			B'CAST. LAW & REG. CONF.			
			RAB MKTG. CONF.			

Table 1. The many conferences of NAB '93.

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 Bar-

on, managing director of technical development at NBC; Herbert Schubarth, vice president for engineering at Gannett Broadcasting; and consulting engineer Robert Silliman.

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 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.

SUNDAY 4/18			MONDAY 4/19			TUESDAY 4/20		WEDNESDAY 4/21			THURSDAY 4/22	
Opening session			Inter-nat'l.	DAB I	UHF Xmsn.	(SBE Day)		Data Broadcasting Tutorial			ISDN, T1 & Switched 56	Video Camera Workshop
Dig. audio sys.	New TV Technology	AM/FM improvement				Dealing with RFI	Serial Digital Video	Data Broadcast: Radio	Data Broadcast: TV & HDTV	Impact of Consumer-Grade Video Equipment in Broadcast Facilities		
Dig. audio work-sta.	TV automation & fac. planning	Graphics & video editing	Mgmt. in B'cast Eng.	DAB II	B'cst. Stds.	Dealing with Disasters	EBS Summit Conference	RFR Mgmt.	Video Compression	FAA & FCC		
Dig. audio proc.										Sat. & Aux. Svc.		
Dig. storage												

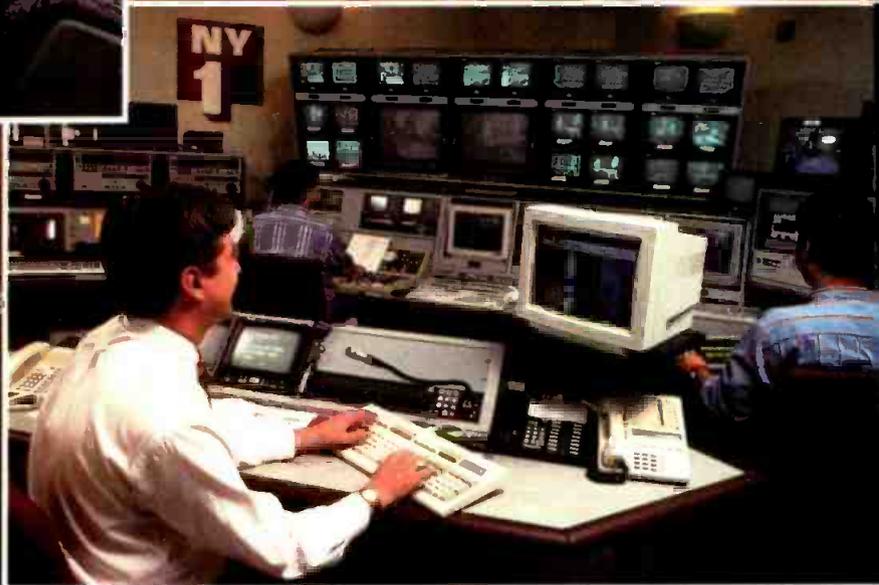
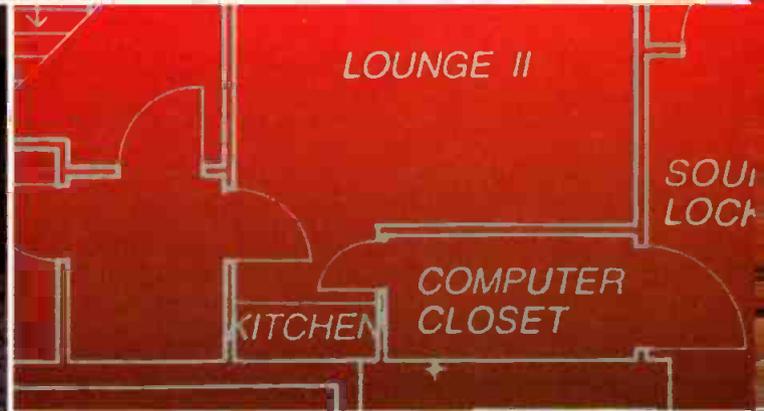
Table 2. The Broadcast Engineering conference schedule at a glance.

existing CONTROL ROOM I

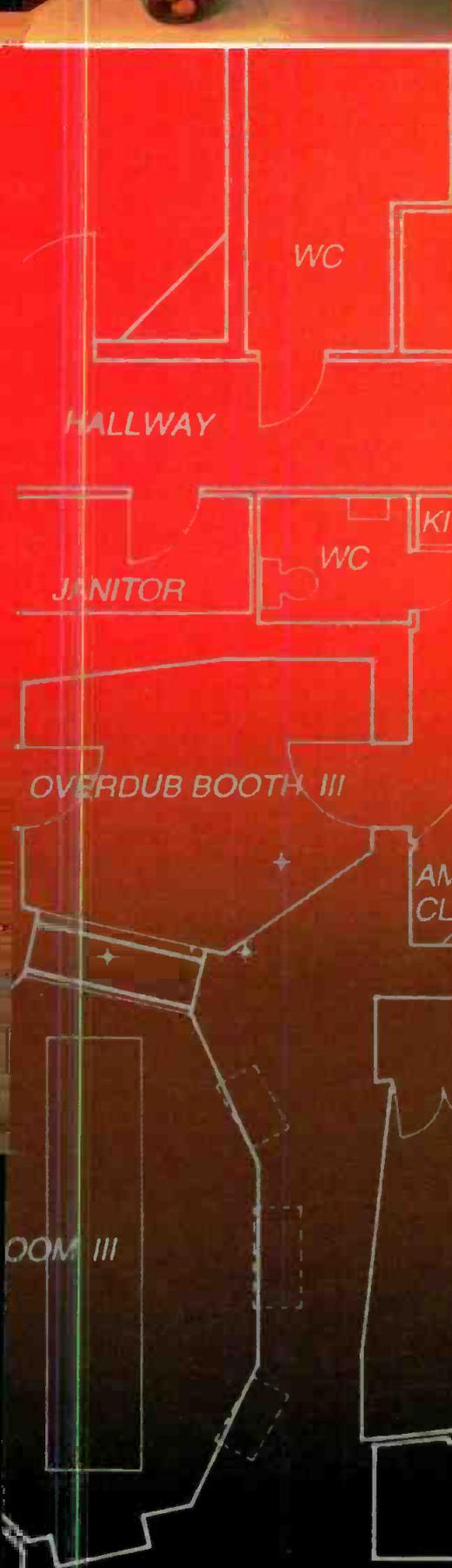
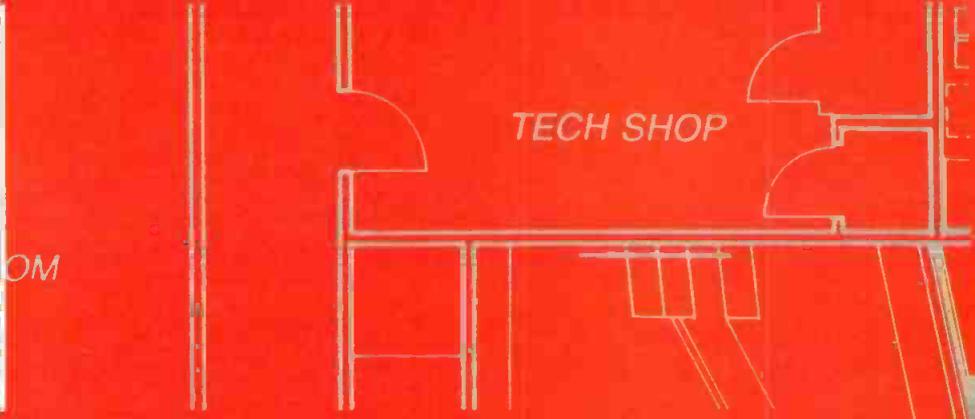
existing STUDIO I

Facility design special report

Beat your competitors to the punch by increasing your facility's technological advantage.



existing CONTROL ROOM II



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
 Brad Dick, editor

Hollywood Digital: Designing for the future

Building for the future is possible.

By Chris Leonard

The Bottom Line

Digital technology has now matured enough so that it is feasible to build a facility with a native serial digital format. Although digital technology's evolution is still in progress, many efficiencies are available today that did not exist a year ago. These advantages make it worthwhile to build with serial digital in mind. However, with the evolutionary process not yet complete, any design must be able to accommodate future advances.

\$

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



The curved wall behind the countertop provides proper acoustic backdrop for the speakers, which are hidden behind the black fabric just above the video monitor.

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:

D
DATATEK
CORP.

1121 BRISTOL ROAD, MOUNTAINSIDE, NEW JERSEY 07092
PHONE: 908-654-8100 ● TOLL FREE: 800-882-9100 ● FAX: 908-232-6381

- 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



Sophisticated routing and control systems are used to reallocate hardware resources to any desired studio.

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 5/8-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 stand-

ing 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 soffett-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

Client:	Hollywood Digital William Burnsed, chief executive officer John Williams, chief operating officer Tom Tippets, vice president of marketing
Architect:	Andresen and Associates Chris Andresen
Systems integrator:	B & B Systems Dave Bartalone, president
Project engineer:	Hollywood Digital Nathan Simmons
Project manager:	B & B Systems Dave Jennings
Acoustical consultant:	Smith, Fause and Associates Ken Fause
Construction company:	JCP Construction Joe Callahan, president

EVER WONDER WHAT HAPPENS TO THE OTHER LAYERS WHEN YOU HAVE TO CHANGE THE 15TH?

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 set 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.

AMPEX DCT®

Ampex Systems Corporation
401 Broadway, M.S. 3-23, Redwood City, CA 94063-3199
©1993 Ampex Systems Corporation

Circle (22) on Reply Card

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



Digital edit suite at Post Logic. Machine room is visible across corridor in background.

Bourdeau is an associate at Lance Gordon Architectural Photography, Irvine, CA.

All photos ©1993 Lance Gordon, Richard Bourdeau. Photo assistant, Meghan Bourdeau.

THE PAST:
MOBILE PRODUCTION UNITS
FOR ABC SPORTS (1976)



THE PRESENT:
COMPLETE REGIONAL
CABLE NEWS CHANNEL
FOR NEW YORK 1 NEWS (1992)



THE FUTURE:
NEW BROADCAST CENTER FOR
USA NETWORKS (FALL 1993)

1968

1993

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!



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

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!

Circle (29) on Reply Card

NAB #17353

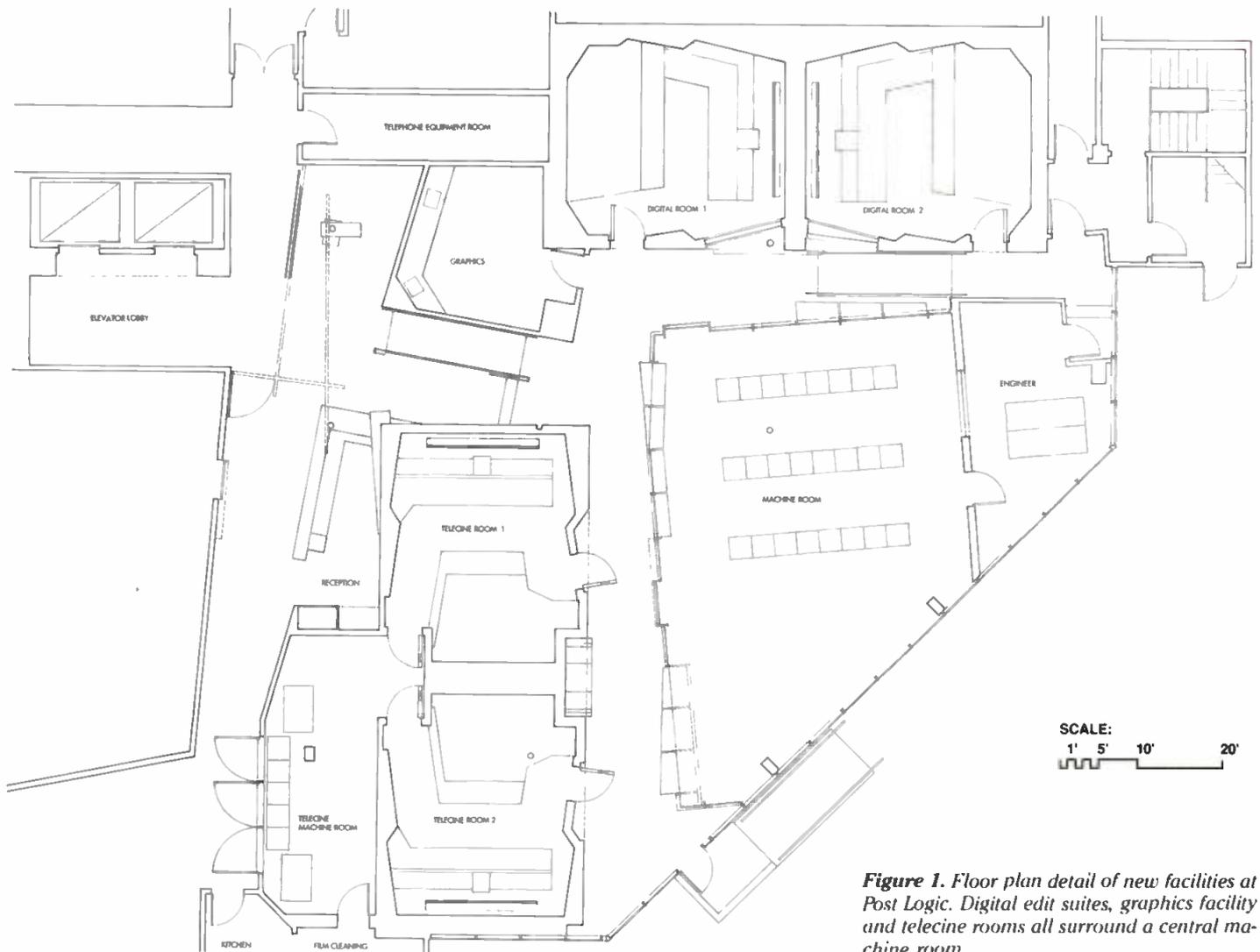


Figure 1. Floor plan detail of new facilities at Post Logic. Digital edit suites, graphics facility and telecine rooms all surround a central machine room.

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 Rick Henriksen, owner
Architect:	studio bau:ton George Newburn, Peter Maurer and Peter Grueneisen
Clients:	Post Logic Miles Christensen, owner Record Plant Rick Stevens, owner

THE WORLD OF TELEVISION
IS ABOUT TO CHANGE.

SONY

PAL

15

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.



SONY

Sony Business and Professional Group
3 Paragon Drive
Montvale, NJ 07645-1735

©1993 Sony Corporation of America.
All rights reserved.

Sony, Betacam and Betacam SP are
trademarks of Sony.

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





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.

trol/tape area, a graphics suite and a central equipment room.

News computer

The news computer system was the key to the facility's operations. The tightly structured newswheel format still had to allow producers access to rundown control so they could update the wheel as warranted. Operations are largely tape-delayed, except for breaking news. All segments are recorded as individual elements, including story package, anchor lead and anchor tag. The computer system therefore serves as the central database for all news functions and operations. These include scriptwriting, wire capture, creation of rundowns, integration of traffic information and preparation of final list for the tape playback system. In effect, this provides a dynamic link to the playback system from the news computer.

The computer system is PC-based, runs on a LAN and is extremely user-friendly. More than 100 people had to be taught to use the system within a 4-week rehearsal period. The system is also automation-friendly, controlling a character generator (CG), a still-store, tape machines, router and robotic cameras. It is based on

Continued on page 56

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. Try 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 also would 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 a console is directly related to the number of visual inputs a person can focus on at any given time. For 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-

Tessier is vice president of sales for Zero Stantron, Twin Peaks, CA.

dius should range between 18 and 28 inches with no more than two racks running parallel. Additional space requires the use of a 45° wedge to maintain a comfortable operating distance. Console height is determined by the installation environment. In general, console height should be limited to 42 inches.

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 micro-processor-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 op-

tions 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 TELELEX

Circle (31) on Reply Card

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 1 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 1 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

The design team

Architect:	Hans Knutzen Associates Hans Knutzen, architect James Lee, project manager
Electrical/mechanical engineers:	Lehr Associates Tom Jordan, electrical design Lou Piccirillo, mechanical design
General contractor:	Herbert Construction Bill Fleck, project manager James McDonagh, project supervisor
Systems integrator:	A.F. Associates Ray Buccerl, project manager Rickey Bonstein, project leader
Technical facilities design:	John Missale, vice president, broadcast operations & video engineering, Time Warner New York City Cable Group
Transmission consulting:	Interlink Network Corp. Bruce Allen, principal
Client:	New York 1 Paul Sagan, vice president news & programming Stephen Paulus, news director Harlan Neugeboren, director of operations Steven Georges, director of finance

Watch out for the new range of precision controllers from Penny & Giles.

Advanced conductive plastics technology, built into a polycarbonate and steel hybrid shell, will glide you smoothly through the toughest mix - time after time.

Glide through the mix...

Your progressive force

Penny & Giles Incorporated, 2716 Ocean Park Boulevard #1005 Santa Monica California 90405 USA. Tel: (310) 393 0014 Fax: (310) 450 9860

Penny+Giles

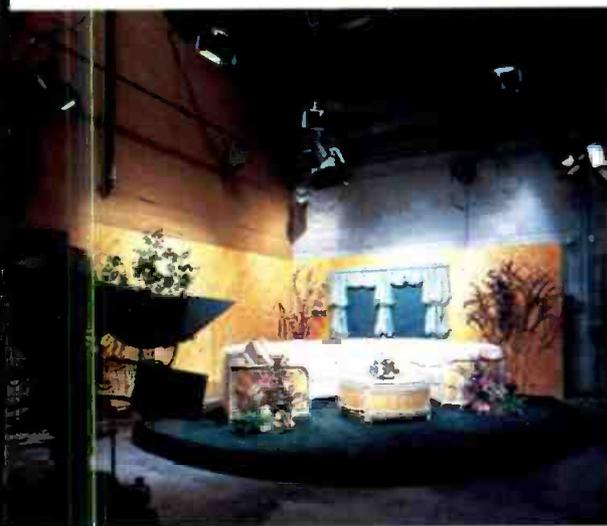
Circle (34) on Reply Card

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 infinit!/Max and Leitch still-store. Both were chosen be-

Continued on page 170



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.

The Austin Company, 3650 Mayfield Road, Cleveland, Ohio 44121. Telephone: (216) 382-6600. Facsimile: (216) 291-6684. Offices in principal cities worldwide.



CONSULTANTS
DESIGNERS
ENGINEERS
CONSTRUCTORS

Circle (35) on Reply Card

www.americanradiohistory.com

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

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



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 SR Sensor. Quite simply the best there is. Only the FT-5 SR 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



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.



BTS

A PHILIPS AND BOSCH COMPANY

BTS Broadcast Television Systems Inc.
94 West Cochran Street, Simi Valley, CA 93065 USA

Call toll-free (800) 962-4BTS

Outside the U.S. and Canada, call (800) 977-1551

Creative Television Technology from BTS

Circle (36) on Reply Card

www.americanradiohistory.com

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 sys-

tem. 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.

One Take. One Choice.

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.



 **SENNHEISER**

6 VISTA DRIVE, P.O. BOX 987, OLD LYME, CT 06371 · TEL: 203.434.9190 FAX: 203.434.1759
IN CANADA: 221 LABROSSE AVE., PTE-CLAIRE, PQ H9R 1A3 · TEL: 514.426.3013 FAX: 514.426.2979

Circle (37) on Reply Card

www.americanradiohistory.com

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 lower octaves. 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 incor-

porated. 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 iso-

lation 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



Winsted®

space-saving tape MOVABLE STORAGE SYSTEMS

Organized, efficient storage for all types of videotape. Sliding cabinets move effortlessly on low-profile tracks for easy access and maximum storage capacity in limited space. Available in a variety of designs and sizes, with 5" to 36" depths, to suit your special storage needs. All steel construction.



• HIGH CAPACITY SYSTEM



• SUPER DENSITY SYSTEM



• PULL-OUT SYSTEM

For Free Full-color FULL LINE CATALOG
Write or call toll-free

800-447-2257

THE WINSTED CORPORATION

10901 Hampshire Ave. So. • Minneapolis, MN 55438 • FAX 612-944-1546

Preferred by Professionals Worldwide

Circle (38) on Reply Card

introducing

FASTBREAK™ Event Management Software

for the

PIONEER VDR-V1000
Rewritable Laserdisc Recorder

Increase reliability and reduce maintenance costs with this TAPELESS solution! Each removable disc holds 32 minutes of composite or component Betacam quality video.

Locate logged Events by key-word search. Build and play random access, non-linear Event Lists. Import Play Lists from your existing traffic system.

And it's great for spot playback in stadiums and sports arenas!

- IDs
- STILLS
- BUMPERS
- COMMERCIALS
- NEWS STORIES



Join the TAPELESS revolution — with **FASTBREAK**.



SUNDANCE
TECHNOLOGY
GROUP

NAB Booth #13162

6309 N. O'Connor Rd LB 128 Irving, TX 75039
(214) 869-1002 • fax (214) 869-1026

Circle (39) on Reply Card



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.**



3M Professional Audio/Video Products Div.
3M Center, St. Paul, MN 55144
36USC380 © 1992 3M

3M | 
Worldwide Sponsor 1992 Olympic Games

Circle (40) on Reply Card

www.americanradiohistory.com

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 paper¹, Cohen and Fielder re-addressed 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 *rms 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

1. E. A. Cohen and L. D. Fielder. "Determining Noise Criteria for Recording Environments." *J. Audio Engineering Society*, Vol. 40, pp. 384-401. May 1992.

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 internal 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 sounds being recorded fall 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 airtight sealing of all penetrations for doors, windows, cables and air ducts.
3. The physical separation from 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- to 4-foot centers with an integral steel reinforcing grid. Concrete is poured over the mounts and grid. After the concrete has cured sufficiently (approximately

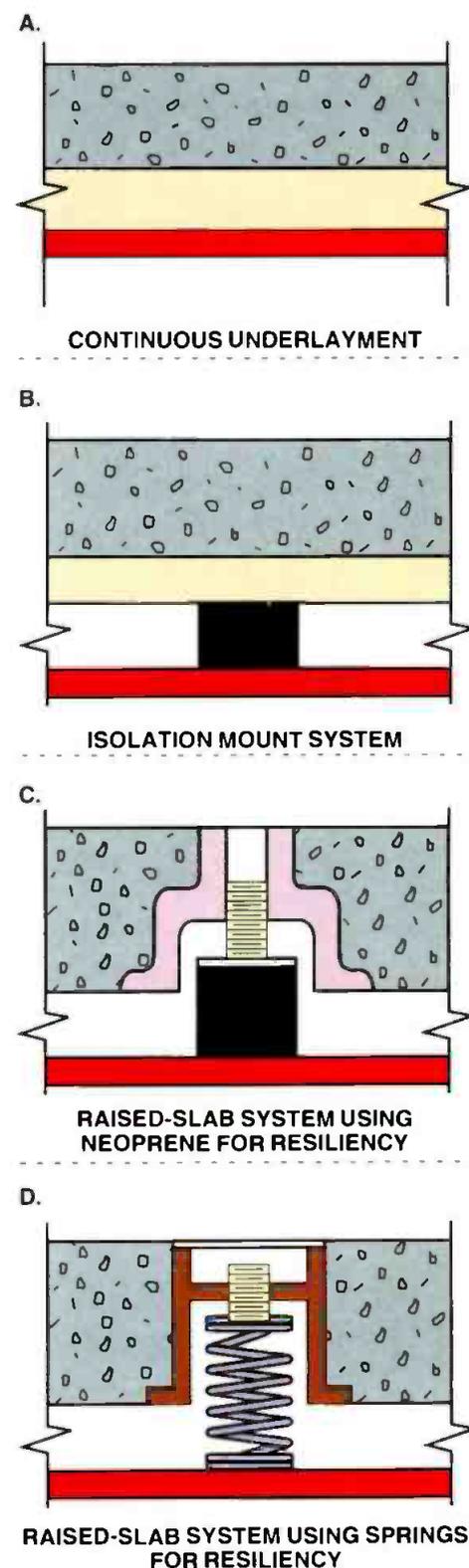


Figure 1. Various floating floor systems.

What's the big attraction at NAB this year?



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

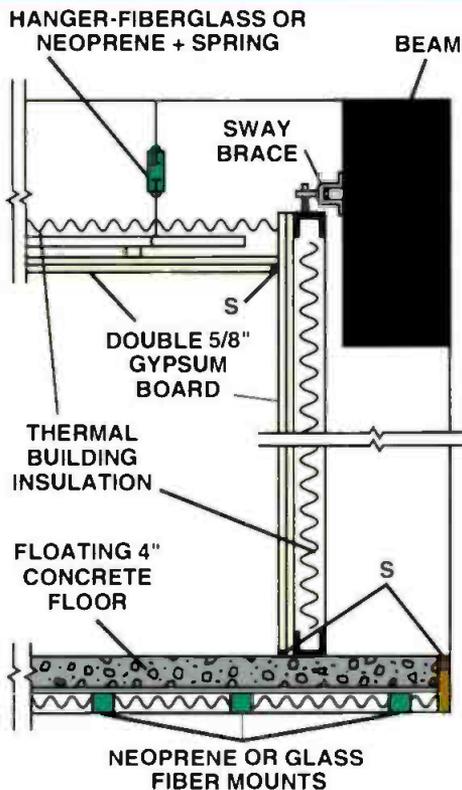
Here's how you can be a big winner.

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.

BROADCAST[®]
engineering



S = SEALANT

Figure 2. This is a concept of a room within a room.

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 through 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 crackling 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



Booth 13833

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

TMSPD3998

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 com-

ponents 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.



NADY SYSTEMS, INC. • 6701 Bay Street • Emeryville, CA 94608 • 510/652-2411

Circle (42) on Reply Card

www.americanradiohistory.com

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.

\$

A custom-designed ice bridge links the transmission tower to the transmitter building. It also extends to create a gabled roof. The walls are colored concrete, and glass block allows light into the transmitter rooms.

Abernathy is director of marketing for Bartholomew Associates Inc., Raleigh, NC.

Photos by Jim Sink of Artech.

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.

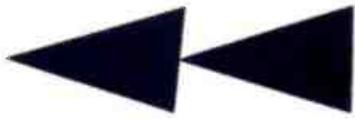
At approximately 8 a.m. the 2,000-foot tower for WPTF-TV collapsed, crushing the transmission facility. As the engineers for WRAL-TV and WTVD-TV looked on, the ice along the southern guy lines for the other two stations' tower slowly melted, leaving the towers, weighted by the northern lines, gyrating 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.

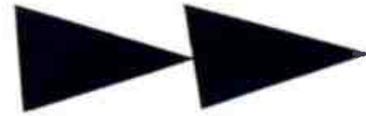
As the residents of Raleigh, NC, arose to find their televisions and radios quiet, WPTF rushed to transfer its signal to its old transmitter site in Apex, NC. WRAL was forced to temporarily lease the transmitting facilities of WKFT-TV 40, making Channel 40 WRAL-TV. WRAL-TV was able to uplink to local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



REW



F FWD



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.



THE PIONEER REWRITABLE VIDEO DISC RECORDER WITH INSTANT ACCESS.



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

See us at NAB Booth #18481.

Pioneer VDR-V1000 Rewritable Videodisc Recorder is a registered trademark of Pioneer Electronic Corporation.

Circle (43) on Reply Card

elite uplink, it was off the air until the next day when WRAL loaned WPTF its transportable uplink. This act of friendship between two competitors planted the seed for many things that would follow.

While the TV stations scrambled to arrange cable transmission, WRAL-FM was forced to begin transmitting by using an old antenna suspended from a crane. A 2-bay loaner antenna was transported to Raleigh and suspended from the same crane

to allow WRAL-TV to resume some transmission on its original Channel 5.

After temporary arrangements were made for transmission, the two stations decided to combine efforts and erect one supertower to carry both stations.

Bartholomew Associates Inc., an architectural firm, was enlisted to design the transmitter facilities. The owners met with the project architects on Feb. 1. From that point through the design and into con-

The design team

Clients: Capitol Broadcasting Company Inc.
Raleigh, NC
Jim Goodman,
president/CEO
Wilbur Brann,
corporate engineer

Durham Life Broadcasting Inc.
Raleigh, NC
Bob Butler,
president/CEO
Chuck Britt,
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
(design and fabrication)
Columbia, SC
Tower King (erection)
Marietta, GA

ScheduALL's New Personnel Manager

THE COMPUTERIZED FACILITY MANAGEMENT SYSTEM

Scheduling System

1991 Mon Apr 15 Tue Apr 15 Wed Apr 15 Thu Apr 15 Fri Apr 15

Monday, April 15

9a FDOR 8a FDOR 8a ADSUS 8a TEST 8a ADSUS

4p EDIT 1 | EDIT 2 | EDIT 3 | HFER1 | AUDIO | GRAPH | ENG1 | ENG2 | TRUCK | STAGE

8:00a | | | | | IBM | HARRIS | | | PEPSI

Personnel Shifts

February 1993

	Mon 1	Tue 2	Wed 3	Thu 4	Fri 5	Sat 6	Sun 7
830a 530p	3 ASSIST	1 ASSIST	1 ASSIST				
	1 AUDIO						
4 CAMERA	2 CAMERA	2 CAMERA					
1 COLARIS	1 DUB MAN	1 DUB MAN					
1 DUB MAN	3 EDITOR	3 EDITOR					
5 EDITOR							
1 MANAGER							
330p1200a	1 MANAGER						
400p1200a	1 AUDIO						
	2 EDITOR						
400p1200a	1 COLARIS						

← ↑ → TAB Calendar ← Zoom Alt-H Copy Alt-B Display Alt-G Scheduling

- 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

SEE US AT NAB
BOOTH 12162

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

VIZUAL 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

struction, weekly meetings between architect, owners and contractor kept the building process moving forward.

Saving time

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

The new transmission facility would consist of one supertower 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

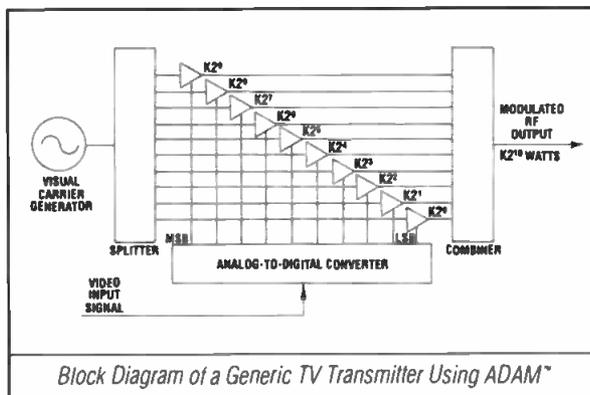
INTRODUCING

ADAM™

A CRODYNE'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.



The very high efficiency of modulation sideband synthesis is due to the use of drive switched solid state Class C CW amplifiers combined to create modulation at power and on channel.

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.

The digital TV transmitter company.

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.

NAB '93 LAS VEGAS BOOTH #15704

Circle (45) on Reply Card

www.americanradiohistory.com

(EIA-222-E) or RS-222-C combined ice- and windload of 20PSF with 1-inch radial ice under 300 feet; 25PSF with 1½-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 3¼ 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 8¾-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.



WJ-MX50 DIGITAL A/V MIXER

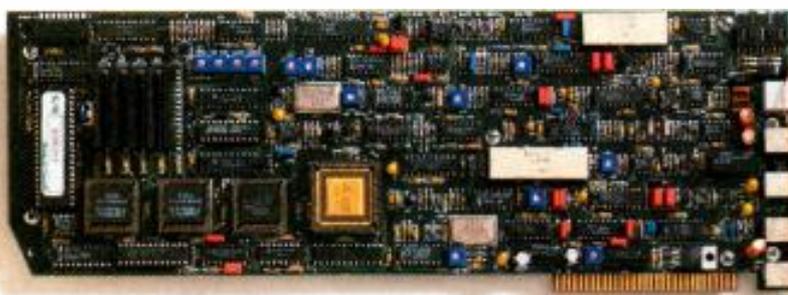
Panasonic
Broadcast & Television Systems Company

VIDEOTAPE
PRODUCTS INC

320 North Madison Avenue
Los Angeles, California 90004
800•422-2444

Circle (46) on Reply Card

Sync To An All-Time Low.



ES-2200 Dual Channel Expansion System



ES-2000 12-Channel Expansion System

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[™], VDA[™] 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 proc amp settings, black clip, nonvolatile memory, adjustable vertical blanking width, two clamp speeds and a



choice of hot switch modes. Production effects include Freeze Frame, Freeze Field and Variable Strobe.

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



DIGITAL
PROCESSING SYSTEMS INC.
If you want to look your best

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

DPS MicroSYNC[™], DPS PERSONAL V-SCOPE[™], and DPS PERSONAL VDA[™] are trademarks of Digital Processing Systems, Inc. DPS PERSONAL TBC[®] is a registered trademark of Digital Processing Systems, Inc. PC[™] is a registered trademark of IBM Corp.

Circle (47) on Reply Card

See us at NAB Booth #11930.

CLEAN

**Clean Erase
Clean Surface
Clean Tape**

Recycle your videotapes over and over in one fast, automatic operation.

TapeChek®



Pro Line 4100 for Betacam SP

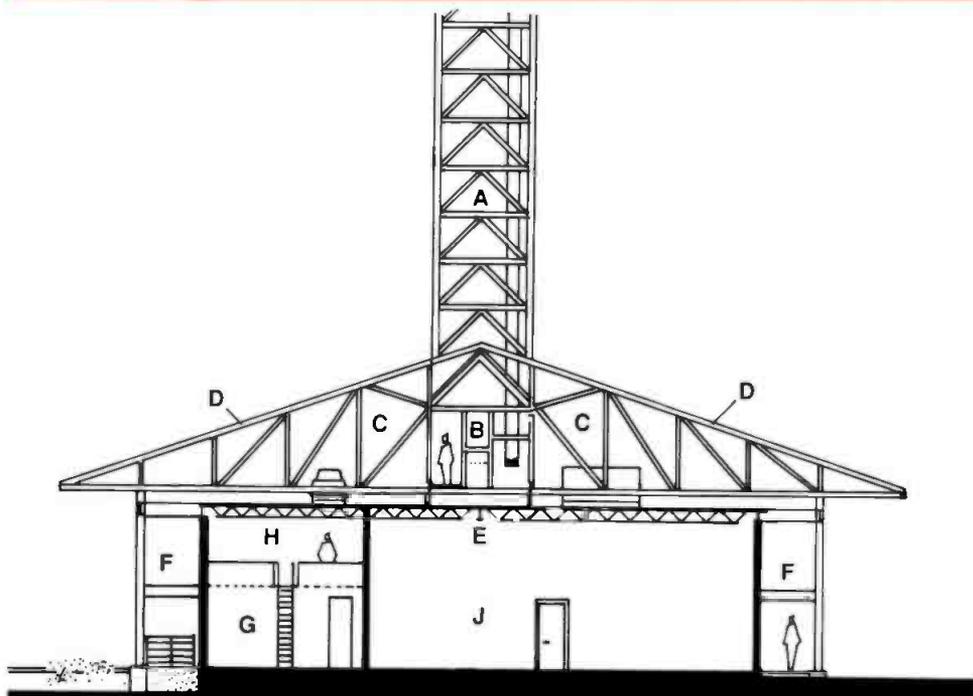
- ★ Erases metal and oxide tapes to original blank condition
- ★ Removes loose particles and dust to reduce dropouts
- ★ Locates damaged tapes quickly
- ★ Fast payback! Confidently use recycled tapes
- ★ Models for Betacam SP®, MII, U-Matic, S-VHS, 1" and other formats

Call Toll Free
800-323-7520



4700 W. Chase, Lincolnwood, IL 60646
708-677-3000 FAX 708-677-1311

See us at NAB Booth #14046
Circle (48) on Reply Card



LEGEND:

- | | |
|---|---|
| A 2000FT TRANSMISSION TOWER BEYOND | E CONVENTIONAL METAL DECK AND STEEL BAR JOIST |
| B GALVANIZED STEEL "ICE BUNDLE" WITH CAT WALK | F LOW ROOF BEYOND |
| C GALVANIZED STEEL "ICE TRUSSES" | G SHOP |
| D REPLACEABLE GALVANIZED STEEL GRATING PANELS | H FEMA SHELTER AND STORAGE MEZZANINE BEYOND |
| | J TRANSMITTER ROOM |

Figure 1. A building plan that shows the various sections of the transmission facility, including steel columns and beams that support roof trusses.

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 fa-

cility, 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-

Continued on page 170



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

See Us at NAB!
Booth #18011

Circle (49) on Reply Card

© 1993 Clear-Com Intercom Systems. Matrix Plus is a registered trademark of Clear-Com.
945 Camelia Street, Berkeley, CA 94710. Tel. 510-527-6666, Fax 510-527-6699

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.

S

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-



One of the master control points in ESPN's expanded facility.

Rheinhold is a free-lance writer.

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

Circle (50) on Reply Card

THOMSON BROADCAST - 17, rue du Petit-Albi - B.P. 8244 - 95801 Cergy-Pontoise Cedex FRANCE - ☎ (1) 34.20.70.00 - Fax : (1) 34.20.70.47. - Telex : 616 780 F
USA - THOMSON BROADCAST, Inc - 49, Smith Street - P.O. Box 5266 - ENGLEWOOD NJ 07631 - USA - ☎ (1 - 201) 569 1650 - Fax : (1 - 201) 569 1511
UNITED KINGDOM - THOMSON BROADCAST, Ltd - 18, Horton Road - DATCHET - BERKSHIRE SL3 9ES - ENGLAND - ☎ (44 - 753) 581 122 - Fax : (44 - 753) 581 196

www.americanradiohistory.com

cific 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 areas 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 off-line 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 on 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-XI 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

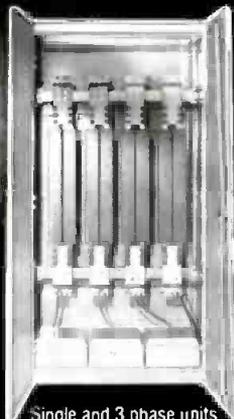


Now Outstanding Protection for a reasonable cost with Islatron-Plus: The real solution for today's power line related problems.

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 results? Prevention of catastrophic equipment failure and loss of air time.



Single and 3 phase units through 1200A. Mean time between failure (MTBF) in excess of 100,000 hours, 5 year warranty.

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 (51) on Reply Card

FM SUPERGALAXY TRANSMITTERS FROM 2 kW TO 10 kW

A MODULAR SOLID-STATE WORK OF ART

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

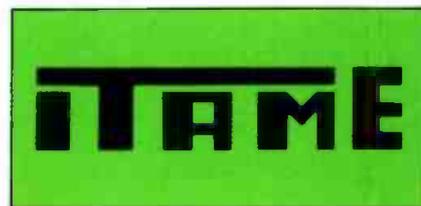
FM SUPERGALAXY 10-kw TRANSMITTER ▶
Two 5-kw transmitters combined via a 3-dB coupler. 5 + 5 hot-standby configuration.



▲ BASIC 1-kw POWER AMPLIFIER MODULE.

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

Because
broadcast
stations
keep
changing



c./Campezo 6 Pol. Ind. Las Mercedes
28022 MADRID SPAIN
Tel: (34-1) 747 74 44 - Fax: (34-1) 747 75 07
Telex: 28257 ITAME

- PRIMARY PRODUCTS MANUFACTURED BY ITAME:
 - FM transmitters or repeaters:
 - Solid state: GALAXY SERIES: 100 W, 300 W, 600 W, 1 kW and 2kW.
 - SUPERGALAXY SERIES: from 2 kW to 10kW.
 - 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.

Circle (52) on Reply Card

PI = PROTOCOL INTERFACE

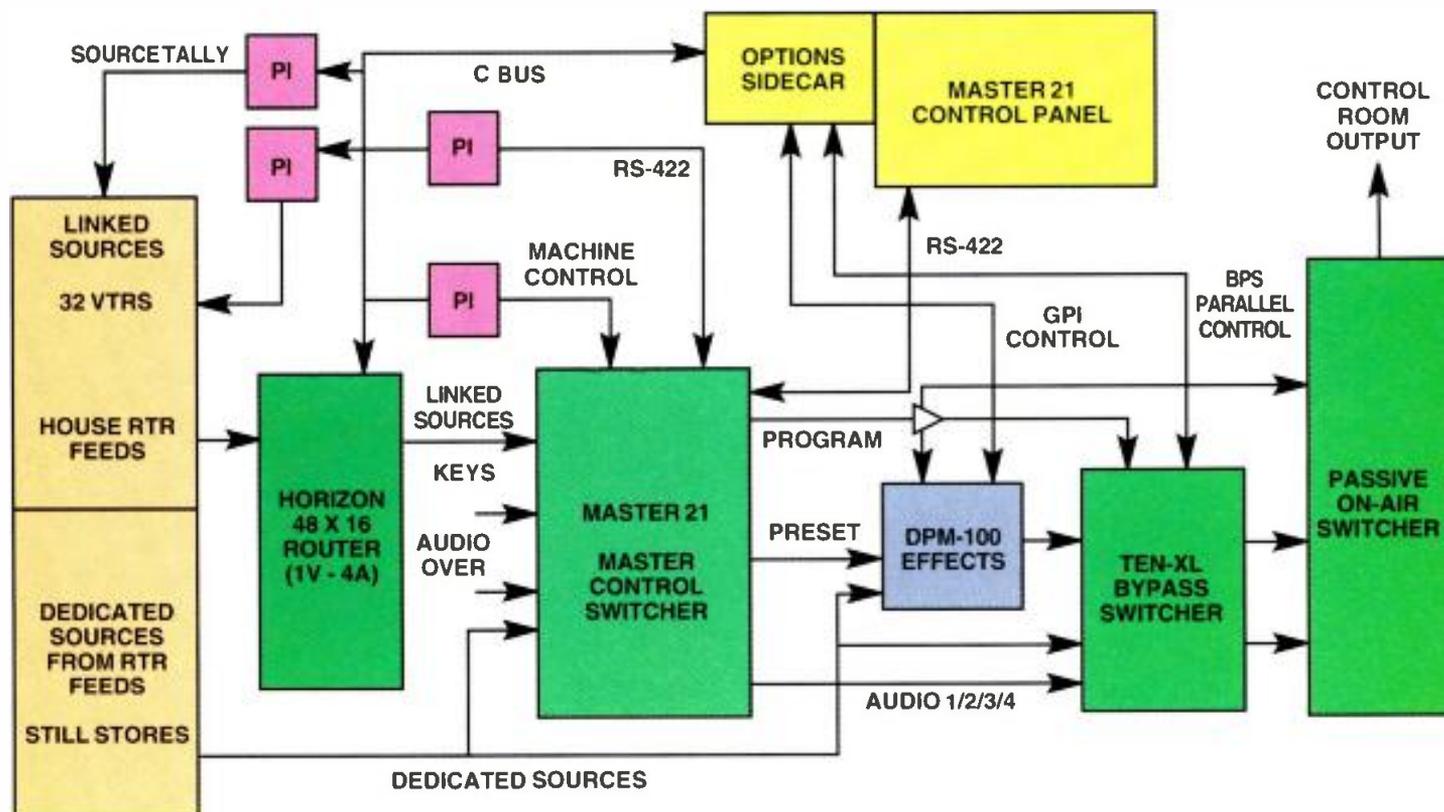


Figure 1. Block diagram illustrates one of the four new control rooms at ESPN.

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 switcher 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 switcher 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 switcher. 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.**



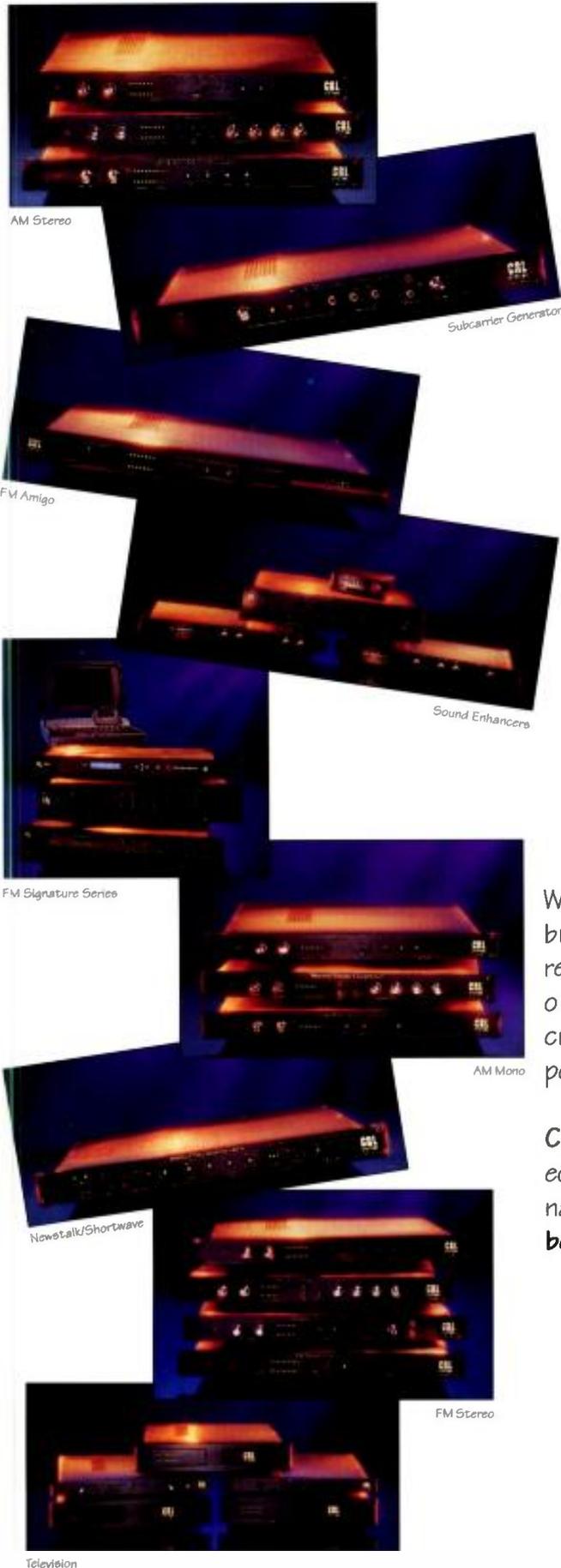
*Experience
Reliability
Performance*

CRL SYSTEMS

2522 West Geneva Drive Tempe, Arizona 85282
800/535-7648 602/438-0888 Fax 602/438-8227

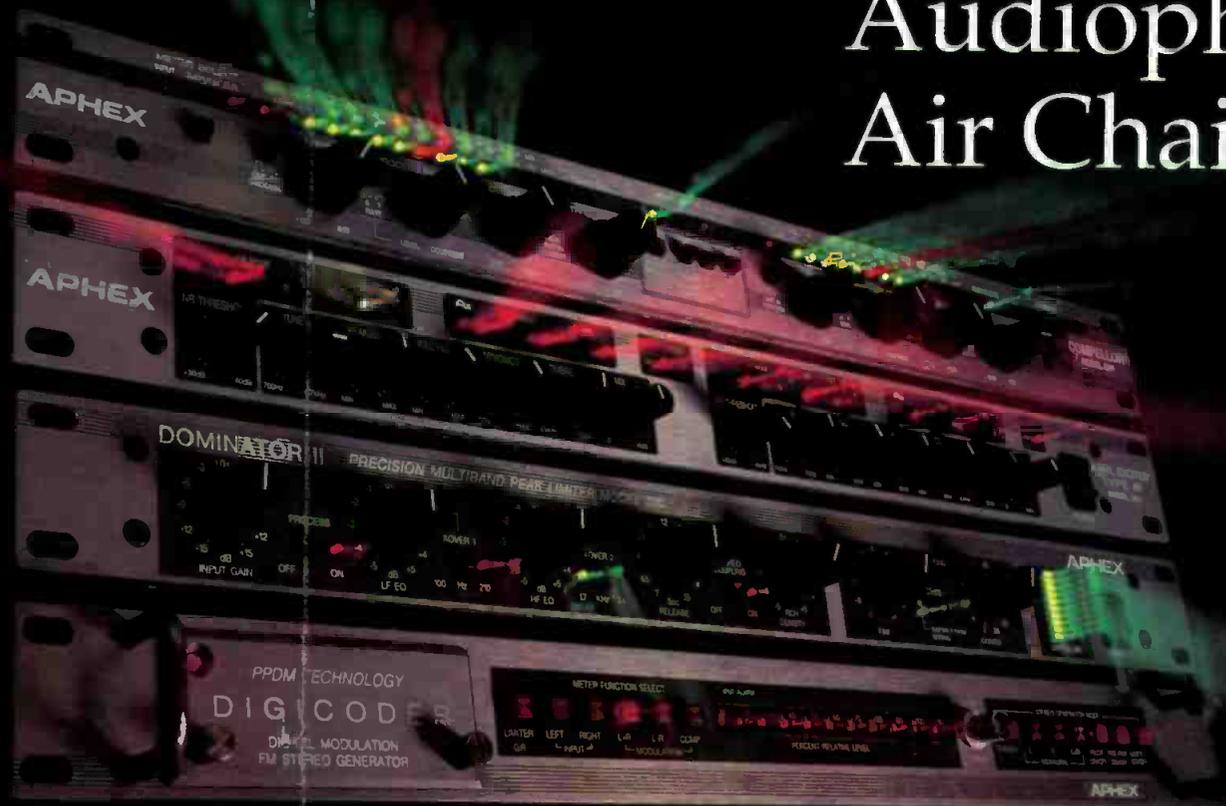
See us at NAB Booth #1918.

Circle (129) on Reply Card



Television

The Aphex Audiophile Air Chain



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 *Compellor*® 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—Gould 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 sri; 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

11068 Randall St.
Sun Valley, CA 91352
(818) 767-2929

Aphex is proudly American ...
100% owned, engineered and
manufactured in the U.S.A.

©Aphex Systems

Circle (128) on Reply Card

www.americanradiohistory.com

Highlights of NAB'93

What you'll see at NAB '93

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 alphabetic, allowing you to see every-

thing 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.

A-A-A

AAVS Advanced Audio Visual Systems (Sencore) 12747

Product line: Automation products, routers, multi-image displays; cable programming guides.

EVA: TV automation using EBus.

S-90 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 with real-time displays.

Circle (301) on Reader Service Card

Abekas Video Systems 11551

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

A83 component digital switcher: three mix/effects modules, keying; user-defined inputs, signal system networking, ASPiK, internal digital disk recording, LINC integration software.

A82 production switcher: composite digital processing ASPiK; two keyers, pattern generator per M/E.

A81 component digital switcher: framestore-based layered-video architecture; 4-, 6-, 8-layer configuration; 10-, 8-bit CCIR-601 I/O; LINC timeline control.

A51 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 expands switcher M/E resources with input pre-transform, background keys; Superwarp shapes and other features.

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

A65 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: SCSI/Ethernet interface for file transfers; 50s record, play of 4:2:2 video per signal system; networking increases storage to 200s.

A72 titler: instant font access, character sizing, attribute adjustment; digital scan-in, animation.

A42 digital still store.

A34 SOLO production system: TBC, video switcher, audio mixer, digital effects.

A26 D/A, A25 A/D: convert between digital and analog component video w/key; parallel, serial I/O.

A27 D2 to D1 converter: decodes, converts NTSC digital composite w/key to digital component; parallel, serial input.

A28 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

ACCUM 12956

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

Axdal 2020: visual on-line editing system.

Digital Image Store: for video, key,

Image Compositing module.

RTD 4224: 10-bit video, key data recorder.

Circle (303) on Reader Service Card

Accurate Sound Corporation 2704

Product line: Audio recording, logging products.

Model 315/925: high-speed audio duplicator.

Model 4000: twin drive cassette recorder; two recordings or sequential taping; logging, time-delay with 24 hours per C-90 cassette.

Circle (304) on Reader Service Card

Accu-Weather 18613

Product line: Weather graphics, NEXRAD services.

Accu-Call 2000: call-in general news service from 900# service bureau.

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

Ultragraphics -PLUS: high resolution graphics access, paint, display system; automates graphic downloads from Accu-Weather.

Circle (305) on Reader Service Card

Acoustic Systems 13405

Product line: Announce booths.

Series BB: voice-over booths; 3x3x7 to 8x8x7-foot.

Circle (306) on Reader Service Card

Acoustical Solutions/Alpha Audio 13620

Product line: Acoustic treatments, Sonex materials.

Acoustical forms: pyramid, wedge shapes.

Alphasorb: fabric-covered fiberglass panels.

Sound Barrier: blanket, vinyl barrier forms.

Soundtex: acoustical wall fabric.

Circle (307) on Reader Service Card

Acrodyne Industries 15704

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

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

TLH/1K: 1kW solid-state VHF translator, transmitter.

TLU/100SE: 100W solid-state UHF TV translator.

TLU/1KSCE: 1kW UHF TV transmitter, translator.

TRU/30KV: single-tetrode 30kW UHF TV transmitter.

Circle (308) on Reader Service Card

Adams-Smith 13415

Product line: Editing, transport synchronizer, time code products.

Q-GEN: generates ADR cue displays; inserts multi-format timecode, MIDI code into video.

Serial Manager: inter-product interface between RS-232, RS-422, MIDI I/O.

Circle (309) on Reader Service Card

ADC Telecommunications 18854

Product line: Signal distribution products, ProPatch 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: 9-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

ADM Systems 18454

Product line: Audio mixers, distribution products.

Post-Pro: post production mixer; 8-16 inputs, 4x1 pre-selectors; 3-band EQ; VCA control.

Circle (311) on Reader Service Card

Adrienne Electronics 19539

Product line: Signal routers; EBus interface, analyzers for PCs; PC time code reader, generator cards.

AEC-Box 8/18/28: LTC/VITC generators.

AEC-Box 89: parallel adapter for serial remote VTRs.

MC-LTC, MC-VITC, MC-VLTC, LTC/VITC: plug-in time code cards for IBM PS/2 PCs.

VTR emulation: for Box 2/10/20 timecode readers.

Circle (313) on Reader Service Card

Adtec Productions 17150

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 5 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.

LITE-NING: controls 8 transports on 2 channels.
Telecaster I: low-cost titler.
 Circle (314) on Reader Service Card

Advance Products Unassigned
Product line: Utility equipment, projector tables, carts.
AV2C-42J, AV6-54JPDMobles: 42" table with cabinet, 54" table with optional cabinet.
AVOH-39J, CTOH-39JS: A/V tables with overhead projector well, shelves for computer equipment.
CT-31JS: 31" tables on 4" casters; monitor shelf.
VT5CM-54J: A/V table with cabinet, locking doors.
 Circle (315) on Reader Service Card

Advanced Broadcast Systems 15380
Information not available.
 Circle (316) on Reader Service Card

Advanced Designs 11707
Product line: Weather radar, graphic display systems.
DOPRAD 32: Collins turbulence detection; DOPRAD, timelapse, 32-bit graphics VISTA board, map builder; Lightning, NWS RRWDS, acquisition, Mean Velocity.
DOPRAD III: Collins turbulence detection radar; DOPRAD, timelapse, 8-bit graphics, map builder, lightning, NWS RRWDS, acquisition, Mean Velocity options.
WDDS systems: custom configurations.
 Circle (317) on Reader Service Card

Advanced Digital Imaging 20051
Information not available.
 Circle (318) on Reader Service Card

Advent Communications 15681
Product line: SNV systems for TV, radio, data, telephony; Mantis Flyaway systems; Lynx vehicular uplinks, motorized antenna trucks; fixed and trailer-based earth stations.
Lynx 2000-MA: lightweight vehicle w/Mantis flyaway package; new antenna design.
Mantis 1500, 1900 Ku-band: SNV terminals; complete systems, QPSK, BPSK, TDMA, DAMA, PAMA options.
 Circle (320) on Reader Service Card

AF Associates 17353
Product line: Turnkey system design, engineering, fabrication; consulting services; Radamec-EPO camera robotics, RP-2 pedestal, See-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 2806
Product line: Audio processors, dbx noise reduction, noise gates; MicroMic mic; K270HC headset mic; Orban FH-8200 digital audio processor.
Blue Line: modular mics; Modulock positive bayonet coupling; TransAct transducer capsules; cardioid, omni, figure-8, short shotgun types.
C 547 boundary mic: hypercardioid; nonreflective.
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.
C5900, C5600: condenser mics in Tri-Power series.
 Circle (323) on Reader Service Card

Alamar USA 12429
Product line: Automation control products.
Novell Gateway: automation, media management, net delay, shifts, satellite recording, control via Novell LAN.
MC-2075: automation system for 486 50MHz PC with XENDX; control 32 channels, 256 devices.
MC-900: smaller system on 486 50MHz PC with XENDX; 4 automation channels, 64 devices.
MC-950FX: automation with Sony Flexicart.
Media Manager IV: central library management; RISC computer; bar code tracking.
Mini-Media Manager: library management catalogs all media within the facility.
NDP-100SX: net delay; time shifts 1-min to 24-hr.
SC-2100: dual interface, general purpose; each handles

two serial devices.
SPS-100SX: automates satellite dish functions.
 Circle (324) on Reader Service Card

Alcatel Network Systems/Telospace 19562
Product line: Microwave link products.
 Circle (325) on Reader Service Card

Alden Electronics 18610
Product line: Weather graphics systems; NEXRAD data demos.
WSR-88D, ALRAD: Doppler radar units with PC software for NEXRAD data acquisition, display.
 Circle (326) on Reader Service Card

Alesis 5127
Product line: Digital audio multitrack recorder, remote control equipment.
ADAT: 8-track digital recorder using S-VHS media.
RMB option: 32-channel meter bridge.
X-2: 24-channel, tape monitor, 8-bus recording mixer.
 Circle (327) on Reader Service Card

Alexander Batteries 11113
Product line: Batteries, tri-analyzers, Smart chargers.
BP1-11: 13.2V, 1.5ah replaces Sony NP1.
BP1A: 12V, 1.8ah replaces Sony NP1A.
BP1B: 12V, 2.2ah replaces Sony NP1A, NP1.
 Circle (328) on Reader Service Card

Allen Avionics 19558
Product line: Hum eliminator; video delay lines.
AVS filters: miniature LP video filters.
Isolation transformers.
#2873: zero-loss active video delays fit #2800 3U rack; from 25-540ns, -1050ns, -1540ns, -2040ns, -2540ns.
TDL-487: delay lines for Video Toaster.
 Circle (329) on Reader Service Card

Allen Osborne Associates 19462
Product line: Hilomast pneumatically operated mobile telescoping masts.
 Circle (330) on Reader Service Card

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

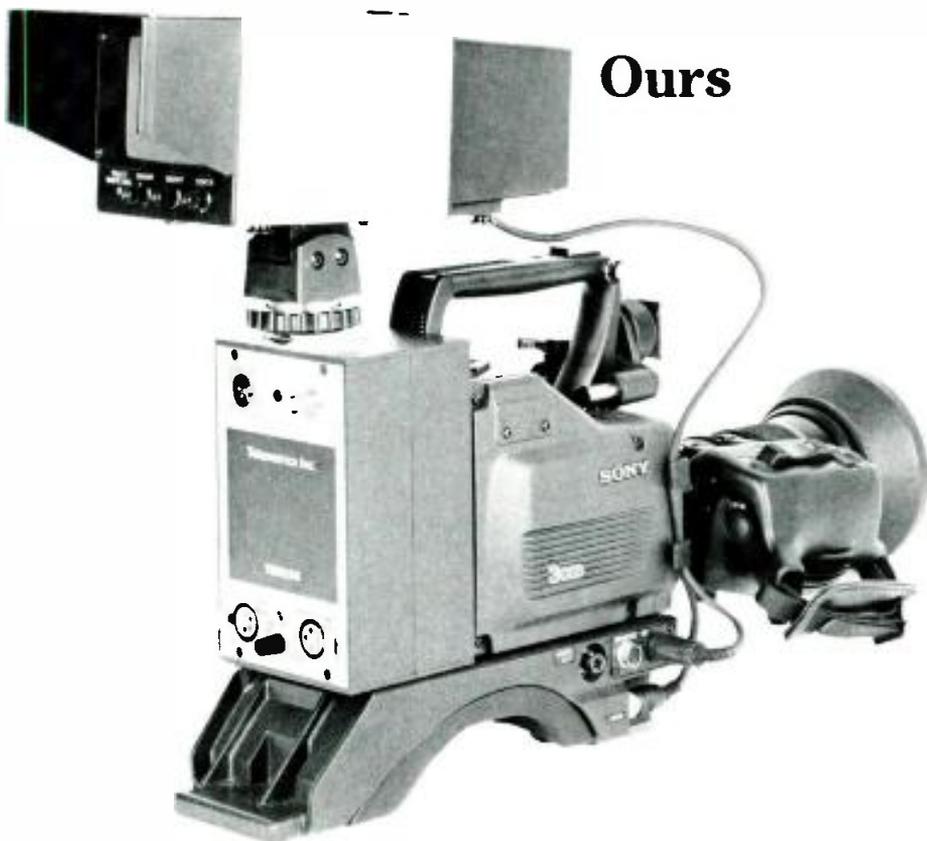
NATIONAL TRANSCOMMUNICATIONS

NATIONAL TRANSCOMMUNICATIONS LIMITED · CRAWLEY COURT · WINCHESTER · HAMPSHIRE · SO21 2QA · UNITED KINGDOM
 TEL: 0962 822243 · FAX: 0962 822374 · TEL INT: +44 962 822243 · FAX INT: +44 962 822374.

Circle (53) on Reply Card

**If you haven't
kept up with Telemetrics,
you're not alone.**

**Neither has our
competition.**



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

Circle (65) on Reply Card

www.americanradiohistory.com



Sachtl

SONY

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 / 50H featherweight on-board lights.
Reporter 200DI the new single ended 'daylight' fixture.
Reporter 575D compact and lightweight.
Reporter 650HS / 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) 867-49 00
Fax (516) 623-68 44
Telex 1 40107 sac frpt



California office:
3316 West Victory Blvd.
Burbank, CA 91505
Phone (818) 845-44 46

Headquarters:
Sachtler AG
Kommunikationstechnik
Germany, Gutenbergstraße 5
D-8044 Unterschleißheim
bei München
Telephone (0 89) 32 158 200
Telefax (0 89) 32 158 227
Telex 5 215 340 sac d



sachtler
Support & Lighting

Circle (66) on Reply Card

Allied Tower 5121
Product line: Communications towers.
Circle (331) on Reader Service Card

Alpha Image 18032
Product line: Component digital production switchers, routers, signal conversion equipment.
Alphaie: digital production switcher.
Circle (332) on Reader Service Card

Alpha Lyracom/Panamsat 17346
Product line: Program distribution, transmission.
Circle (333) on Reader Service Card

ALTA Group 18032
Product line: Video recording, processing equipment.
AP-30 production system: 4:2:2 analog video component switcher, effects, linear keyer; records to.
Centaurus SSR-1 still store: for 179 fields, 85 frames on removable hard drive; switcher, audio mixer, effects.
Circle (334) on Reader Service Card

Altec Lansing 15716
Product line: sound system components; mic mixers, speakers, processing systems.
#8553B equalizer: programmable room EQ for control rooms, studios.
#1674C mixer: automatic operation; gain sharing, multitim system.
Circle (335) on Reader Service Card

Altronic Research 3803
Product line: RF power metering equipment, VHF air-cooled OmegaLINE loads.
Circle (336) on Reader Service Card

Amber Electro Design 2103
Product line: Programmable audio test systems.
Ambler 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

AMEK Consoles/TAC 18974
Product line: Audio consoles, console automation.
BCIII modules: BC 348 mono mix-minus outputs; BC 344 4-to-2 monitor mixer; BC 324 quad group module.
EINSTEIN: automated mixer; comprehensive metering, monitoring; 64 inputs, 4-band EQ; SUPERTRUE automation; VIRTUAL DYNAMICS gating, autopan.
Circle (339) on Reader Service Card

American Broadcast Systems 13413
Product line: TV automation equipment.
MicroCart 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

AMI Publications 19477
Circle (342) on Reader Service Card

Ampex Recording Media 17101
Product line: Video, audio recording media in all popular formats.
Circle (343) on Reader Service Card

Ampex Systems Corporation 17101
Product line: Professional video products, D-2 VTRs, ACE25 editors, Vista switchers, Alex titler; ACR 225 automated cassette system.
DCT system: CCIR-601 digital component production system; multigeneration with digital layering for post production; 19mm digital component tape drive DCT 700d, DCT 700s post production switcher, DCT 700e

edit controller, DCT 500a digital effects; DCT 700t tape.
Circle (344) on Reader Service Card

AMX Corporation 20021
Product line: Teleconferencing, multimedia products.
Master port expander.
AXU-MLCD uni-mount: mini-LCD panel.
Softkey+: liquid crystal touch panel.
PCS 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, 3.6M ESA systems: motorized, complete with controllers, receivers.
3.7M, 4.6M ES Antennas: with INTELSAT type approvals (F-1 for 4.6M); significantly reduces field test costs, expedites system turn on.
60 kilowatt ALP: 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 HMD/MMDS coverage, power contours.
HRLine: rigid transmission line; reliability increased by 800%.
Circle (347) on Reader Service Card

Angenieux Corporation 17729
Product line: Video camera lens systems.
20x8.5: 20x zoom for 2/3" CCD camera; coatings reduce chromatic aberration; 0m MOD; Multi Range Extender for on-air selection of extenders; Teleshot focus.
14x8.3AIF: "Assisted Intelligent Focus" ENG lens includes pushbutton instant tele zoom for faster focusing; 1/1.6, 2x extender; stationary front element.
14x Anamorphic: converts 3:4 aspect ratio camera to 16:9; 14x6.7 for 2/3", 14x5.6 for 1/2", focus to 2.6ft.
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 slot antenna: wireless cable wideband directional or omnidirectional; for VPOL, HPOL or CP installations.
Circle (350) on Reader Service Card

Antenna Technology 13644
Product line: Earth stations and related components; Simulsat multibeam antennas; receivers; LNAs, LNBS; test equipment; system design, consultation services.
PROFLINE 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

Anthro 17146
Product line: Technology furniture.
Anthrocarts: 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.
DM-4 discharge module/battery evaluator: diagnostic accessory for Logic Series MP-4D charger; test routines calibrate battery capacity, identify failure modes; prints report.
Logic Series digital battery system: advanced NiCad

charging technology with μ P control; accesses capacity, charging cycles, serial number.
MP-4D: 4-position, sequencing fast 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.
Automatique: lights UltraLight2 camera light when VTR records.
Circle (353) on Reader Service Card

Anvil Cases 12833
Product line: Transport cases; A.I.R. isolated rack types.
Circle (354) on Reader Service Card

Aphex Systems 4524
Product line: Audio spectral exciter; Compellor, Dominator dynamics controllers.
#400 DigiCoder: FM stereo generator; HP limit, LP filter.
#8126: modular audio DA; 6 out, 1 in.
#9901: parametric EQ uses tone shaping with overlapping filters for multiple EQ settings.
Circle (355) on Reader Service Card

Aplicaciones Electronicas Quasar/AEQ 1702
Product line: Audio mixers; digital telephone hybrids; line terminal equipment; power amps.
Systel-3000: digital multiconferencing telephone system; supports 16 full duplex lines; CR-01 remote control console.
BC-500 broadcast mixer: for small broadcast stations.
SSR-10: recording, reproducing system for solid-state messages.
TLE-02: portable frequency extender, digital hybrid.
Line distribution amplifier.
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

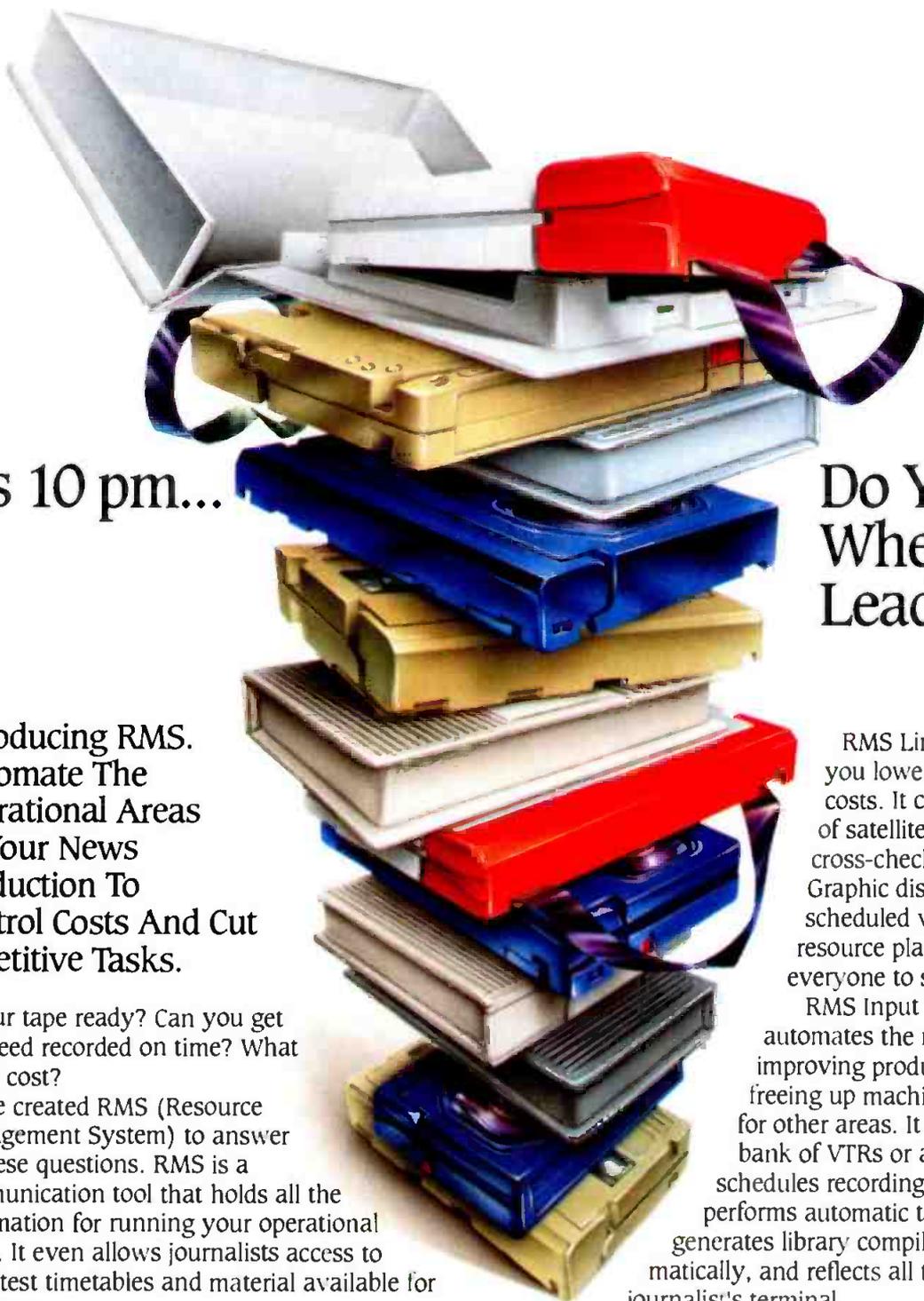
Applied Memory Technology 18282
Product line: Digital component video recorders.
Model 7422 component video recorder: 100s disc-based, real-time, 4:2:2 storage; for NTSC, PAL; parallel, serial D-1 compatible I/O; 24-30/30-24 fps conversion feature.
Circle (357) on Reader Service Card

Arrakis Systems 5202
Product line: Audio mixers; studio furniture.
Digilink system: replace standard cart machines for live, automated radio; 16-bit CD sound.
Circle (358) on Reader Service Card

Arriflex 16342
Product line: Film cameras, support products; ARRI geared head; lighting products.
Electronic Ballasts: for 575W to 12kW.
ArriSoft/Fresnel: portable light kit; ArriSoft 1000, ARRI 650 Fresnels; ArriSoft accepts 500/750/1kW lamps.
ArriSun HMI: fixtures for 2.5kW, 400W.
Compact HMI fixtures: 575W to 2.5kW.
ArriSoft 1000, 2000: softlights, interchangeable reflectors.
Circle (359) on Reader Service Card

ART Applied Research & Technology 2208
Product line: Audio processors, mixers.
Phantom: recording consoles.
Multiverb LTX: 16-bit processing effects system.
SGX production processors: SGX-T2 multi-effector, pitch transposer; SGX-LT pre-amp/effects processor; Multiverb Alpha 2.0 sampler/effects with pitch shift.
DR-X 2100 Wonder Processor: studio, live sound 24-bit digital.
Circle (360) on Reader Service Card

ASACA ShibaSoku 16619
Product line: video cart systems; tape cleaners, evaluators; 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; sync generators.
CM205N: 20" auto setup monitor; 900-line resolution; NTSC decoder with I/Q demodulation; adaptive 3-line comb filter; RGB, component, Y/C inputs; D1, D2, D3



It's 10 pm...

Do You Know
Where Your
Lead Story Is?

**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 blanking, 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.



See Us At Booth #19247 At NAB Las Vegas

BASYS Automation Systems is a Digital Equipment Corporation Company

Circle (135) on Reply Card

www.americanradiohistory.com

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 decoders 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, On-air; integrated video processor for cuts, wipes, dissolves; remote control panel.

AG31A digital audio generator: AES/EBU digital oscillator, signal source; AU50 D/A converter, AX50 multi-channel expansion module.

ADC-920: D1, D2 tape cleaner, rewinder.

ADR-6000: NTSC 1.2Gbyte removeable M-O disk recorder; full-band 4FSC composite digital format.

VM2207: composite, component, TGB waveform, vectorscope monitor.

Circle (362) on Reader Service Card

ASC Audio Video Corporation 11708

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 off-line 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 13412

Circle (364) on Reader Service Card

Associated Production Music 13637

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

Circle (365) on Reader Service Card

Astrodesign/Mira Vision 17582

Product line: Programmable signal, sync, test genera-

tors for NTSC, HDTV; HDTV converters, still recorders, frame grabbers, superimposition, switching devices; chroma key products.

MC-2001 multimedia scan converter: multi 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 Synthevision: background link-up unit; tracks graphic background image with pan, zoom, tilt, focus movements of NTSC foreground image for added realism in keys.

Circle (366) on Reader Service Card

AT&T 18558

Product line: communications equipment, services.

Circle (367) on Reader Service Card

ATI Audio Technologies 12902

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

System 10,000 modules: distribution, line-buffer, mic units; 10 plug-in modules per frame.

Circle (369) on Reader Service Card

Atlantic Representations 4300

Information not available.

Circle (370) on Reader Service Card

Audi-Cord 3926

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

Circle (371) on Reader Service Card

Audio Accessories, Inc. 13844

Product line: Audio jack, patch panels, jacks; patch cords, cord holders; Polysand; video panels; RS-422 patching; Edac connectors; accessories.

Circle (372) on Reader Service Card

Audio Action 11547

Product line: Production music libraries on CDs.

FEX 01-10 Sound Effects.

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

KOKA Media: CDs of music, effects.

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

Circle (373) on Reader Service Card

Audio Developments 16630

Product line: Portable mixers; audio processors, DAs.

AD006-13 Flex-EQ: 2-channel, 2-band peak/dip, parametric EQ; switch links two channels for 4-band EQ; use Port-A-Flex AD066-5 HP/LP filters for comprehensive response shaping.

AD083 Flex-EQ The Ultimate Equalizer: parametric, non-interactive control of all parameters; eight 3-state variable filters per Flex-EQ rack.

AD146 on-location mixer: 4-output; M-S decoding; 6-12 inputs; C, NiCad cells, 12-24Vdc source.

AD261 ENG mixer: stereo, M-S decoding; 4 mic/line XLR inputs; C, NiCad cells, external 10-24Vdc power.

Circle (374) on Reader Service Card

Audio Precision 3215

Product line: Audio system analyzers, System One, Portable One Plus, System One Dual Domain.

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

Enhanced FAST TRIG: software performs 160 measurements from stimulus of less than 1s.

Circle (375) on Reader Service Card

Audio Processing Technology Ltd 4301

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

ACE100 PC expansion card: includes simultaneous playback record features, balanced I/O.

DSM100 digital audio transceiver: enhanced with Inverse Multiplexer option.

Circle (376) on Reader Service Card

Audio Services Corporation 3906

Product line: Audio mixers, recorders, mics, speakers, PSC MilliMic, wireless boompole; Microtec-Gefell mics.

UHF Full Duplex Wireless Intercom System



UP TO 12 FULL DUPLEX CHANNELS

Four independent wireless channels in each base station, with local audio level controls to balance voice levels. Expandable to

12 channels — all can operate simultaneously.

OPERATING RANGE TO 2000 FEET

Get a large, interference-free working area of up to 2000 feet from belt-pac to belt-pac. The Series 800 uses the less-cluttered UHF frequencies and a tone-coded security system for extra protection.

HANDS-FREE OPERATION

On each belt-pac, choose hands-free "Lock" for continuous operation or "Push-To-Talk" for less frequent communications.



CABLED INTERCOM INTERFACE

Interfaces to 2-, 3- and 4-wire cabled intercom systems, with a switchable disconnect.

RECHARGEABLE OR ALKALINE BATTERIES

Get up to 10 hours typical operation in Push-To-Talk mode from a rechargeable battery pack, or 15 hours from AA size alkalines. The base station operates from 115/230 VAC or 11-30 VDC.



HM ELECTRONICS, INC.

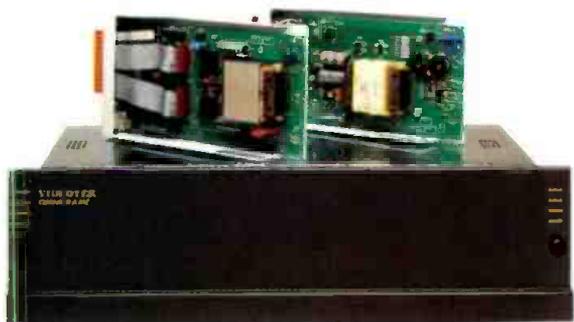
6675 Mesa Ridge Road, San Diego, CA 92121
 Phone: (619) 535-6060 Fax: (619) 552-0139

Look for us at NAB!

Circle (55) on Reply Card

Front Runners.

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.



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.



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.



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

VIDEOTEK™
A Zero Defects Company

243 Shoemaker Road, Pottstown, PA 19464 1-800-800-5719 (215) 327-2292 Fax: (215) 327-9295

Circle (56) on Reply Card

See us at NAB Booth 16253.

PSC M-4: portable audio mixer.
Circle (377) on Reader Service Card

Audio Technica US 11906
Product line: Mic for all applications; accessories.
AT825 OnePoint: stereo mic for pro DAT recordings.
AT822 OnePoint: stereo mic for field recording, DAT, video camera compatible.
MT830R: ultra-miniature condenser for lavalier, concealed applications.
AT4033: transformerless studio condenser.
AT933 Engineered Sound Microline: mini condenser.
Circle (378) on Reader Service Card

Audio Video Engineering 13611
Product line: Video hum-stop coils.
Circle (379) on Reader Service Card

Audio/Digital 15713
Product line: Audio delay products, TC-4 digital processors with profanity delay.
Circle (381) on Reader Service Card

Audiomation Systems/Sellmark 1706
Information not available.
Circle (382) on Reader Service Card

audiopak 4018
Product line: NAB tape cartridges; leader tape, graphite liners in various styles as components for DCC compact cassettes.
Circle (383) on Reader Service Card

Audiotronics 1002
Product line: Audio mixers, for on-air, TV news production; IFB/Mix-Minus system.
800 series: on-air mixers; stereo program, audition, utility, aux, 2 mono output buses; multi-user programmable logic; three frame sizes; telco module; faders use stereo-balanced VCA control.
850 series: production consoles for smaller market news, on-air, production.
AirMaster 90: low-cost consoles for broadcast with satellite delivery, live-assist operations; thick-film hybrid technology; user-programmed logic; stereo-balanced VCAs, three frame sizes; electronic pushbutton controls, LED indicators.
Circle (384) on Reader Service Card

Augan Instruments 1400
Product line: digital audio hard disk workstations.
Circle (385) on Reader Service Card

Aurora Systems 19401
Product line: Electronic graphics systems.
Liberty: Hi-Res paint, animation; hardware/software or software only; paint, typography, image processing, rotoscoping, morphing, comprehensive 2½D animation for video, HDTV, film, pre-press.
Circle (386) on Reader Service Card

Autogram 4021
Product line: Audio mixers for radio, production.
Mini-Mix 8: mixer with two stereo, one mono buses; 12 stereo inputs; VCA control.
Circle (388) on Reader Service Card

AVCOM of VA 13430
Product line: Portable spectrum, network analyzers; display monitors; SCPC, video, SCS satellite, portable receivers; microwave video links, accessories.
SDM-42A spectrum display: panoramic signal display for VHF scanners, communications receivers.
NASA 1000A network, spectrum analyzer: combo instrument permits network analyzer to make sweep measurements of filters, duplexers, amplifiers from 1MHz-1GHz over a 90dB dynamic range; spectrum analyzer function has frequency range of 1MHz-1GHz with -0.5dBm sensitivity.
Circle (389) on Reader Service Card

AVID Technology 17111/MM
Product line: Digital non-linear editing systems.
Broadcast series: Media Recorder digitizes signals directly to disk for editing; Newscutter program editor for TV news; Airplay direct-to-air broadcast of digital format programming.
AudioVision: cost-effective multitrack digital audio

editing; sync-locks digital picture to audio for precise work; compatible with Media Composer.
Media Composer ONLINE: random access video editor; advanced editing functions, effects with interactive, graphic timeline editing.
Media Suite Pro: desktop video production system; for Macintosh in corporate, educational program production.
Circle (390) on Reader Service Card

Avitel Electronics 17673
Product line: Signal distribution products, digital video patch panels.
ADA 3233, 3234: audio DAs with remote gain control; single, dual-channel.
ERF 3300: communication frame.
TSL RMA assemblies: standard rack-mount cabinets for videocassette units, monitors.
VDA 3214: 3-channel component analog VDAs; 5 outputs; 30MHz, 50MHz bandwidth EQ; clamp.
VDA 3320: serial digital video DA.
VDF 1026: serial digital video patch panel.
Circle (391) on Reader Service Card

AVS Broadcast 17353
Product line: Standards conversion systems, Film Noire video processor, digital video mixer.
CYRUS standards converter: upgrade to full motion-compensated interpolation; 10-bit processing, 5.5MHz bandwidth; D-1, D-2 interfaces; analog composite NTSC, PAL, SECAM, component YC-525/-625.
DX120, DX210: digital format translators.
EOS TV converter: bidirectional conversion among all composite, analog component standards.
INTEGRA: digital mixer with video effects; 4:2:2:4 architecture; internal router, priority positioning; multi-format interfacing.
ISIS Q: standards converter upgrade; adaptive digital comb filter, motion adaptive post processor; noise reduction feature.
Circle (392) on Reader Service Card

A-Ware Software 2227
Information not available.
Circle (393) on Reader Service Card

Aydin-HPA/Magnetics 15484
Product line: HPAs for S, C, X, Ku-band satellite communications uplinks; magnetic assemblies; turnkey TV transmitter upgrade with high-efficiency UHF klystrons.
Circle (395) on Reader Service Card

B-B-B 12147
Product line: Audio monitoring products, Phasemonitor, Imagescope.
Circle (396) on Reader Service Card

BAF Communication 15174
Product line: Satellite news, ENG, EFP vehicles; turnkey earth stations; systems engineering; SNV switching systems; transponder time sales, networking.
VSAT-18: EBS mobile satellite uplink.
IFB-MS I: IFB management system.
SNV 3.7a: network sports uplink.
SNV-8000c: satellite news vehicle.
DPS-2000: Dual-Path uplink RF system.
Circle (397) on Reader Service Card

Band Pro Film/Video 20019
Product line: Film, video production equipment.
From SM Technologies: time code sender.
From Track Factory: SuperTrack for smooth camera motion where conventional track may not work.
Rear viewfinder mount.
From Keywest: Magic Dolly, Black Track mini jib arm.
For Steadycam: Genio remote control; M5 greenscreen monitor, digital frangenerator, electronic bubble level.
From Alfred Chrosziel: 4x4 Mark III mattebox, wide-angle housing, clamp-on sunshade; studio follow focus; fluid zoom drive.
From Elmo: lipstick camera in underwater housing, remote control; MicroForce zoom control. Oppenheimer panhandle mount.
Circle (398) on Reader Service Card

BARCO Industries 13836
Product line: Video monitors, projectors; audio, video routers; CATV headend monitor, supervisor system.
CVM2551, 2070: 20", 28" multistandard monitors.
CVM 2137, CVM 2537: 14" CVM series: for OB van, monitor walls; front-mounted keyboard (-2537); soft keys on bezel margin (-2137).
CVM 2500: grade 2 monitors; 14" hi-res, 20" mid-res CRT; menu-driven; composite, RGB, S-VHS inputs; quad decoder.
CVS/CVM 2000: D1, D2 inputs for serial, parallel.
CPM 2000: grade 3 monitors; 21", 28" flat square CRT; menu-driven; composite, RGB, S-VHS inputs; quad decoder; RF input option.
FSM 860: field strength monitor for CATV headend; monitors, evaluates level, modulation of carriers in cable or similar RF network.
HDM 2051, HDM 2081: 20", 32" HD multistandard monitors, CVS "intelligent" philosophy; auto setup.
TC450: frequency-agile converter for cable, satellite.
Circle (399) on Reader Service Card

Barco-FMT 13836
Product line: Digital cartridge recorders, players; audio routers.
Circle (400) on Reader Service Card

Barrett & Associates 1906
Product line: Broadcast equipment distributors.
Circle (401) on Reader Service Card

BASYS 19247
Product line: Newsroom automation systems, NetStation PC workstations, machine control, archiving.
Archive II: text storage, retrieval system; fast response RISC hardware.
D-Cart: digital audio editing, playback system with hard disk storage.
LKT 200: pay-per-view system controlling videodisc players.
RMS resource management software: tape tracking, input recording and Lines Booking.
Circle (402) on Reader Service Card

BCS Broadcast Store 19255
Product line: broadcast equipment sales, brokerage.
Circle (403) on Reader Service Card

Beaveronics 13611
Product line: Studio clock, timing systems; facilities master, secondary clocks; programmable facilities clock system by Moser-Baer.
Circle (404) on Reader Service Card

Ber Technologies 2701
Product line: Fiber optic, wired analog/digital interlace products.
AudioPlex/Pro-Line products: 16-channel A/D transmitter, repeater; MP16 16-channel mic pre-amp, splitter; FB2 fiber optic transceiver; RPS redundant power supply; fiber-optic snake.
Circle (405) on Reader Service Card

Beck Associates 18069
Product line: Custom configured console components.
Series "A" modular rack consoles: accommodates any room, all equipment; countertops configure individually for consoles; design assistance; factory installation.
Circle (406) on Reader Service Card

Belar Electronics Lab 2015
Product line: Modulation monitors for radio, TV; The Wizard digital FM analyzer; FM RF amp. Featuring:
AMMA-1 digital AM modulation analyzer: remote control, PC, Wizard software.
FMM-2/FMS-2: FM modulation monitor set.
FMRR-1A, FMRR-4 receivers: for FM rebroadcast; -1A fixed frequency, -4 frequency agile; RF input with composite output; <0.03% distortion; >65dB separation at 1kHz; sensitivity 100µv.
Circle (407) on Reader Service Card

Bencher 19111
Product line: Camera support products, copy stands.
VP400 Replicator: supports heavier video, still cameras to 40 pounds; 15.5x15.5" movable copy stage; opal

Tower Lighting Technology— The SMART Way!

NEW!



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.



**Flash Technology Corporation
of America®**

Circle (67) on Reply Card

plexiglass insert, backlighting, effects; 300W quartz-halogen lights.

Circle (408) on Reader Service Card

Benchmark Media Systems 11321

Product line: Audio control, distribution products, pre-amp ps. reporter control station.

Jr. Audio Director: combines mode, level controls, selections for left only, right only mono, stereo, reverse, right channel polarity.

Circle (409) on Reader Service Card

BEXT 2112

Product line: FM transmitters, solid-state amps, exciters, FM composite receiver.

Circle (410) on Reader Service Card

beyerdynamic 1912

Product line: Wireless equipment, handheld, pocket mics, diversity receivers; headsets, headphones.

MC834: large diaphragm condenser mic for on-air, vo.ce-over.

TE 170: VHF wireless mic system; DT505 earphones; mini receiver with body pack transmitter.

U 700 series: UHF wireless; 12 channels in an 8MHz band; handheld, body pack transmitters; frame holds 12 diversity receivers; ground plane antennas, amp.

MC 833: stereo condenser mic; internal M-S, X-Y.

DT 150: stereo monitoring headphones for in-studio, on-location monitoring of dialogue, music or special effects.

DT 190 series: headset with mic; high sensitivity, high rejection characteristics of off-axis sound.

M 424: mini supercardioid dynamic mic; high sensitivity; fast transient response with high SPL levels.

Circle (411) on Reader Service Card

BGW Systems, Inc. 4208

Product line: Audio power, distribution amps; computers; accessories.

Model 2242: high output DA.

Models 85, 200: "U" model amplifiers.

Performance Series 2 stereo amp: 200W /channel to 8Ω; welded steel, modular circuitry; 2-speed fan in 2RU.

Rack-mount PCs: U86, upgradable ISA bus; EISA + local bus design.

Circle (412) on Reader Service Card

Bi-Directional Microwave 19462

Product line: ENG, STL microwave systems.

HDTV microwave: for all HD formats, Y/C (PA, PB) and digitally compressed formats.

Fiber optic video transformer.

DS-1, DSC, DS-2 microwave: for telephone, data bypass applications.

Circle (413) on Reader Service Card

Bio-Electronics 16471

Product line: Video black burst generator; titler.

BPS: video bypass switch.

PS4x1: production switcher.

YCC: Y/C to composite video converter.

VS8x8: crosspoint video switch.

Circle (414) on Reader Service Card

Bogen Photo 18516

Product line: Camera support; Mini-Pro tripods.

Circle (415) on Reader Service Card

Bonneville Broadcasting 20001

Information not available.

Circle (416) on Reader Service Card

Bowen Broadcast Service 5221

Product line: Replacement parts for RCA automated cart equipment.

Circle (417) on Reader Service Card

Bradley Broadcast Sales 4224

Product line: Distributor; Telos telephone systems; Unity audio processors; audio signal bandwidth filters.

Circle (418) on Reader Service Card

Bretford Manufacturing 18966

Product line: Wall, ceiling mounts; A/V tables, TV/VCR security center.

TVWY20BK: wall/yoke mount for 20" monitor.

TVMP: ceiling/wall plate.

TVPW27R-BK: platform/wall mount with VCR bracket.

TVCY35T-BK: ceiling yoke mount for monitors to 35".

Circle (419) on Reader Service Card

Broadcast Automation Inc. 4904

Product line: Radio automation systems.

Circle (420) on Reader Service Card

Broadcast Electronic Services 18515

Product line: Video signal distribution, format conversion products, GPI Network 410 4x router; Betabox interformat editing unit.

Betabox BBS-900.

Bitree RS422: patch panel.

TBC/r remote control: presets for unity gain of video, chroma, hue, setup control.

Circle (421) on Reader Service Card

Broadcast Electronics 2115

Product line: FM transmitters; digital audio storage equipment, AV-90 AudioVAULT; cartridge recorders; audio mixers.

Air Trak 100: configurable linear console.

AM series: AM transmitters, Class E PAs; AM-1 1kW, AM-5 5kW, AM-10 10kW; solid-state; C-QUAM stereo.

Disc Trak: digital cart machine uses 3½" floppies; 112s full-band stereo per disc; 16-bit sampling.

FM-1C: 1kW FM solid-state transmitter; FX50 exciter.

Circle (422) on Reader Service Card

Broadcast Int'l Group 18082

Information not available.

Circle (423) on Reader Service Card

Broadcast Marketing Int'l Unassigned

Distributor: Statpower Technologies ac-dc inverters.

Circle (424) on Reader Service Card

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.

ZERO
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

www.americanradiohistory.com

Broadcast Microwave Services 12302
Product line: Microwave radio equipment, antenna pedestals, frequency agile portable transmitters.
Circle (425) on Reader Service Card

Broadcast Programming 4218
Information not available.
Circle (426) on Reader Service Card

Broadcast Software Ltd./BSL 10555
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 alarm.
SVS 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 1620
Product line: Distributor, 200 lines of professional au-llo, RF/radio products.
Circle (428) on Reader Service Card

Broadcast Video Systems/BVS 16730
Product line: Signal distribution, video processing products, comb filter decoders, downstream keys.
CARDKEY: linear keyer for GVG, Leitch Video DA frames.
CP-600: video proc amp for GVG, Leitch Video DA frames.
VM-400: 4x1 video switcher for GVG, Leitch Video DA frames for composite, component video; expands to 4x4, 8x2 with 3 or 4 layers; remote control via coax.
Delay lines, filters: passive and active types.
RGB/component transcoders
Circle (429) on Reader Service Card

Broadcasters General Store 5212
Product line: Distributor, audio products for radio, Telos Systems digital hybrids.
CRL event timer: produces timed relay closures for day-parting with Audio Signature.
Mhwitronics MCS: multiline coordinator; frame holds 18 auto coupling phone cards or cards and DAs.
Roiman/Brown Desk Jockey: hard disk commercial storage; total automation for 14-day walk-away time.
ST60 VTR controller: by DNF Industries.
Circle (430) on Reader Service Card

Bryston 5115
Product line: Audio monitors.
4B/NPB 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

BSA/AKG Acoustics 2806
Product line: Specialty audio processors; mic splitters.
FCS 926/920 Varicurve: parametric EQ, analyzer; -296 features digital control of 12 parametric EQ sections; -920 slave provides same functions, but controlled from -926 or wireless remote system control.
Circle (432) on Reader Service Card



BTS Broadcast Television Systems 18001/MI
Product line: Video, HDTV cameras, recorders, switchers; titlers; routers; video production systems; edit controllers; signal distribution systems; master control switchers; video noise reducers; telecine systems, FDL 90.
BCS-3000/PC master control: PC-based BCS-3000 control system.
Beta cam SP equipment: VTRs, .
LDK-910SR, LDK-491: mid-studio camera and camcorder for ENG/EFP.
MINI-9: noise reduction system with 3D median filter leaves H/V bandwidth intact; motion detection cuts motion smear; grain reduction.
LDK-9SR, LDK 9PSR: studio, companion portable

cameras; FT-5SR CCD sensors.
MARS router: 24x8 matrix; I/O expandable; 30MHz bandwidths; RAM retains 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 custom operation menus; four units in parallel record HDTV.
Dyad² keyer: for D-2 VTRs, for digital layering.
ENClips: desk top video production application; access Windows word processors, paint, graphics packages.
FDL-90 telecine: CCD system with switchable aspect ratios; 4:3, 16:9 in 525-/625-lines.
Motif titler: uses PostScript Type 1 fonts; dynamic rolls, crawls; developed with Paltex, Aston Electronics; Vector display effects; Super Vectors animation.
Prizm DVE: full-featured broadcast/post-production DVE with DVEator 3-D graphics maps.
Venus: high-density router; 2,048 audio, 1,024 video crosspoints per unit; intermix HDTV video, 400Mbit/s serial digital video, stereo analog audio, AES digital audio.
Alamar: master control switcher.
Circle (433) on Reader Service Card

Burk Technology 4506
Product line: Remote control, AutoPilot multisite units.
LX-1: 6-input stereo audio selector.
Circle (434) on Reader Service Card



Cablewave Systems/RF Systems 15708
Product line: Antenna products, Bogner wideband, MMDS, ITFS, FM, STL antennas; high power FlexWell transmission line.
Bogner directional antennas: LP, medium power TV.
E-30 waveguide, connectors: for MMDS, ITFS.
Flexwell: coaxial cable, elliptical waveguide.
FM: power dividers, directional antennas.
Circle (435) on Reader Service Card

Calaway Editing 18032
Product line: Editing controllers.
CE-400: on-, off-line editing; 80486SX CPU; VGA color display; 12 RS-422 VTR ports; 9998-line main EDL memory, 65,000 lines in 50 EDL bins.
Circle (436) on Reader Service Card

Calzone Case 16466
Product line: Equipment cases, Titan, Ultime 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 19213
Product line: Distributor; rental programs; video, audio production equipment.
Circle (438) on Reader Service Card

Canare Cable 11118
Product line: Patchbays for video; tools, wire, connectors, BNC crimp plugs; audio transformers.
241U-VJ22W-C: video patchbay; 24 dual video 75Ω jacks; baseband analog to serial digital.
The Stripper: coax cable strippers.
V*-5C: 75Ω mult cable; 3-, 4-, 5-channel; LV-77 (#8281) type low-loss.
DA206: 110Ω cable for AES/EBU digital audio.
RP-C4 RCA video plug: 200MHz bandpass.
BCJ-XJ-TR, BCJ-XP-TR: impedance transformer for AES/EBU digital audio lines; 110Ω XLA female, male to 75Ω BNC receptacle connections.
BPC-C51: 75Ω BNC crimp plug for #8281 cable.
Circle (439) on Reader Service Card

Canon USA/Broadcast Optics 15757
Product line: Hi8 camcorders, laser transmission systems; camera lenses with internal focus.
J20ax8B IRS: internal focus 20:1 zoom for 3/8"; 8-160mm, 2x extender; 0.9m MOD; macro at wide end; square lens hood.
YJ17x9.5B KRS: ENG/EFP lens for 3/8" camera; 17:1 zoom ratio, 0.95m MOD; 9.5-162mm.
J33ax15B Tele: ENG lens; 9:1 zoom, 990mm telephoto;

internal zoom, focus functions; square hood.
PJ40x25BIE telephoto: 25-1000mm, 2x extender; internal focus; 40:1 zoom with 5m MOD; for sports, entertainment with 3/8" camera.
YJ17x7B KRS: ENG/EFP 1/2" lens; 17:1 zoom ratio, 0.95m MOD; 7-119mm; 3.2lb.
H20ax6 IRS: internal focus lens for 1/2"; 6-120mm; 2x extender, 20:1 zoom; 0.9m MOD; macro at wide end; square hood.
Circle (440) on Reader Service Card

Capitol Production Music 12905
Product line: Music libraries.
Circle (441) on Reader Service Card

Carpel Video 16217
Product line: Evaluated recording media, 3/4" KCA U-matic, 1"; clocks/timers.
Carpel-o-peel: label remover solution.
ST-3: waterproof stopwatch; with count-down.
T-120: VHS cassettes.
Circle (442) on Reader Service Card

CBSI Custom Business Systems 1624
Product line: Broadcast software; Classic, Elite traffic, billing, InterAcct accounting systems.
Agency Management System: expands management of stations business with agencies.
CBSI Windows: multitasking capability.
CustomNet: consolidated traffic/billing system for multiple stations at a single location.
Circle (444) on Reader Service Card

CCA Electronics 2508
Product line: AM, FM transmitters, exciters.
FM transmitter: super high power design.
FM product line: new FM exciter.
FM transmitter series: solid-state designs.
Circle (445) on Reader Service Card

CCOR/Comlux 11329
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/Comlux implementations.
Circle (446) on Reader Service Card

CEL Electronics 19772
Product line: Video encoders, standards converters, digital effects systems.
P184 converter: provides D2/D3 digital output from NTSC, PAL composite analog input; 8-bit processing.
P186 converter: switchable, dual CCIR 601 4:2:2 digital or serial inputs; dual YUV, YCrCb, RGB out; 8-/10-bit.
P163-RAM: upgrade for Maurice Minor key controller expands effects sequence memory.
P171: digital video encoder.
ImageCon: supports TIF, IFF, FIR, TARGA graphics; converts between image standards, interfaces to graphics I/O devices.
Myriad-6c: 525-line image manipulation system.
P272 router: 12-in x 5-dual out; D1, D2 signals; parallel CCIR 625/601 standard.
Worldmaster/P256: standards converter.
Meridian: video 3-D effects; D1 processing.
Circle (447) on Reader Service Card

Central Tower 2506
Product line: Tower, monopoles for broadcast; structural engineering analysis; complete construction service, antenna, line installations; turnkey projects.
Circle (448) on Reader Service Card

Century Precision Optics 18472
Product line: Wide-angle optical adapters for slide-to-video transfer. New products announced at show.
WA-8XCV: 0.8x wide-angle converter attaches to lens.
Circle (449) on Reader Service Card

Channelmatic 12827
Product line: Automation, ad insertion systems; ADCART Plus: ad insertion shares four VCRs on two channels; ROS event mode.
ADCART/D: local ad insertion replaces VCRs with digitized A/V data for analog playback.
CompEdit: compiler-editor; prepares day-part spot

reels from traffic schedule with one VCR.
Circle (450) on Reader Service Card

Chimera 17375
Product line: Lighting products.
Circle (451) on Reader Service Card

Christie Electric 12809
Product line: Battery chargers, analyzers, CASP/1200, CASP/2000 systems.
Circle (452) on Reader Service Card

Chromatek Inc. 17585
Product line: HiTV DAs, scan converters.
Circle (453) on Reader Service Card

Chyron 19401
Product line: Digital graphic systems, titlers.
MAXINE: single-channel, single-user titler, graphics; compatible with Infinalt, MAXi's; anti-aliased, full color; Advanced Font Utility, Intelligent Interface, video input, Flip Book; ethernet, RS-232 communications.
Centaur video adapter: produces video from SG IRIS Indigo workstation; interfaces with most video disk recorders, Betacam transports, other analog video devices.

CODI Font Maker: 3rd party font rendering software; other packages include: CODIMATE, CDI Control Panel for PCs; CODIFX for SG Indigo and ZFX for Macintosh.
Synesis CG Tools: 3rd party software for CODI; integral command, text file editor creates or imports text from PC word processors; control text position, color, font, transparency; use text files as pages within CODI.
Circle (454) on Reader Service Card

Cine 60 19216
Product line: Lights, batteries, chargers.
Mini-Sun-Gun: 12Vdc, camera mount or handheld; 23W, 50W, 75W; dichroic filter, diffusion filter.
4-channel charger: charges four batteries in one hour; 12.5Vdc/60W output operates video camera.
The VAMP: volt/ammeter tests in-use battery characteristics; digital readout.
Circle (455) on Reader Service Card

Cinema Products 11633
Product line: Camera support; remote camera control systems, SteadiCam.
Circle (456) on Reader Service Card

Cinemills 16660
Product line: Lights; studio furnishings.
Circle (457) on Reader Service Card

Cipher Digital 13101
Product line: Time code products, transport synchronizers; random access digital audio recorder CDI-328.
Circle (458) on Reader Service Card

Circuit Research Labs 1918
Product line: Audio processors, Audio Signature 4-band stereo, news/talk AM systems; FM generators; event sequencers.
DAA-100: 2-channel function generator, AES/EBU audio link analyzer.
DAA-50: digital audio interface analyzer.
RBDS & subcarrier generator system.
TVS-3005: SAP generator.
Circle (459) on Reader Service Card

Clark Wire & Cable 13262
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.
590 series, 690 series: low-loss RGB cables, 3, 4, 5 conductors; -690 subminiature.
Cable harnesses: for digital multitrack recorders.
Composite cables: 3 video, 4 audio, with or w/o power.
Piggy pack: camera unit supplies power, gen-lock, mic/line audio, intercom, video input, tally; composite cable for short-run field, ENG.
TV7559 SuperFlex: RG-59 style cable; triax, stranded center conductor; colors available.
Circle (460) on Reader Service Card

Clear-Com Intercoms 18011
Product line: Intercom systems, multichannel party-line, IFB systems.
100x100 Matrix Plus: with system linking.
Pro 40 headsets: single, double muff, comfortable, durable.
Matrix Plus upgrades: MTX-3 DTMF Inward Access crosspoint card; EFS-1: Enhanced Station Function software.
Circle (461) on Reader Service Card

Clipper Products 19569
Product line: Utility, equipment carts.
Circle (462) on Reader Service Card

CMX 19401
Product line: Videotape editing systems.
CMX Cinema: non-linear editing for video, film; user interface emulates traditional editing; compressed digital video with two full-frame moving image displays.
OMNI 1000E: high-end on-line editing system; multi-processor architecture; dynamic motion memory, list magic, look-ahead assembly; simultaneous I/O-VTR control; TBC interface; 150 equipment interfaces.
OMNI 500: on/off-line editor; high-end features; Pre-read control, multi sync groups, multi split edits, dissolves; CMX, enhanced OMNI EDI.s.
Circle (463) on Reader Service Card

Coaxial Dynamics 1610
Product line: RF wattmeters, RF loads.
Model 7998, 7999: variable signal samplers cover 20MHz-1GHz, 1.5MHz-35MHz with various in-line connectors; main RF line tap drives spectrum analyzer or other RF measurement.
Circle (464) on Reader Service Card

Cole Wire & Cable 19785
Product line: Broadcast wire and cable products; snake assemblies; custom assemblies.
Circle (1134) on Reader Service Card

ColorGraphics Systems 18032
Product line: Videographics workstations, DP/MAX.
Digital effects loop: for DP/MAX; integrates external effects unit into compositing workstation.
DP/MAX upgrades: hardware, software developments for real-time animation.
DP/Mosak-C: 8 minutes of digital disk record time with D1, component analog I/O.
Enhanced chroma processor: soften, blur, position control of chroma key mattes for DP/MAX.
Expanded layering software: unlimited live and still layers; scripting, compositing features.
On-line Editor software: disk cache editing with EDI, import, modification; EDI, analysis operates DP/MAX with two Mosaks to auto-assemble, cache entire commercial with heads and tails to be played in final form or trimmed and modified in minimal time.
VMAX2.1 software: new release in on-going development for DP series.
Circle (465) on Reader Service Card

Colortran 17619
Product line: Lights, Elite lighting control systems; ENR dimmers; lamps.
ENR 48 Rolling Rack: dimmer system houses 48 units for 2.4kW; 48x96 or 48x192 patch panel; 300-400A breaker; DMX, AMX, VMX, 0-10Vdc control.
PRO PAK: portable kits; 100091 Mini Pro, 104-341 Mini Broad; stands, barn-door attachments, accessories.
Circle (466) on Reader Service Card

Columbine Systems 16038
Product line: Broadcast automation.
Master Control Automation: PC-, AS-400-based for TV handles airing of scheduled events; as-run log for closed-loop reconciliation.
Sales Quadrant: sales analysis software, ver. 2; examines past, present, projected revenues.
Circle (467) on Reader Service Card

Comark Comm./Thomson-CSF 15746
Product line: UHF TV transmitters, "S" series with high power D-HDTV compatibility.
Dual Use: UHF TV transmitter.
IOX transmitter: IOT technology for NTSC, D-HDTV;

new exciter with linearity correction. IEC-215 safety features; flexible HVPS configuration with internal ac distribution; Class A solid-state drivers, optically isolated C-MOS control logic; adaptable to all standards.
Circle (468) on Reader Service Card

Comband Technologies 11333
Product line: Terrestrial microwave ProBand, Com-Band wireless cable systems.
Circle (469) on Reader Service Card

Communication Graphics 4206
Product line: Promotional products, professional logo design.
Circle (470) on Reader Service Card

Communications Data Services 5114
Product line: Engineering services; Real World Propagation coverage predictions; Sun Microsystems SPARC workstation; 3' digital terrain data on CD-ROM.
Circle (471) on Reader Service Card

Comprehensive Video Supply 16106
Product line: Video amplifiers, multimedia monitor cables, desktop video production accessories; PC-/Mac-based edit control; Walter Brewer lighting systems integrations services.
CV Technologies Digital Edit Master: non-linear editing system for Amiga.
Circle (472) on Reader Service Card

Comprompter 19753
Product line: Electronic newsroom software.
ENR upgrades: GraphicMaster link to titler, specifies screen locations; CaptionMaster; ArcMaster extended archive, StillMaster still store software.
ENR V2.4 enhancements: VGA color prompter; User Group, User-Desk Group utilities; interfaces for titling, still store, captioning, cameras, studio lighting and digital audio control.

PC/LAN compatible: network software.
PPS Production Prompting System: for advertising agencies, production houses, corporate production facilities.
TOTAPROMPTER portable: production prompters for laptop, notebook computers; ac/dc with 9", 12"; lightweight.
Circle (473) on Reader Service Card

Computer Assisted Technologies 19560
Product line: Equipment, repair status software.
BCAM Ver 3.0: enhanced maintenance management package; POP proof of performance module; staff scheduling; project management; VM-700 serial interface.
CAT/SV: service center maintenance software.
Circle (474) on Reader Service Card

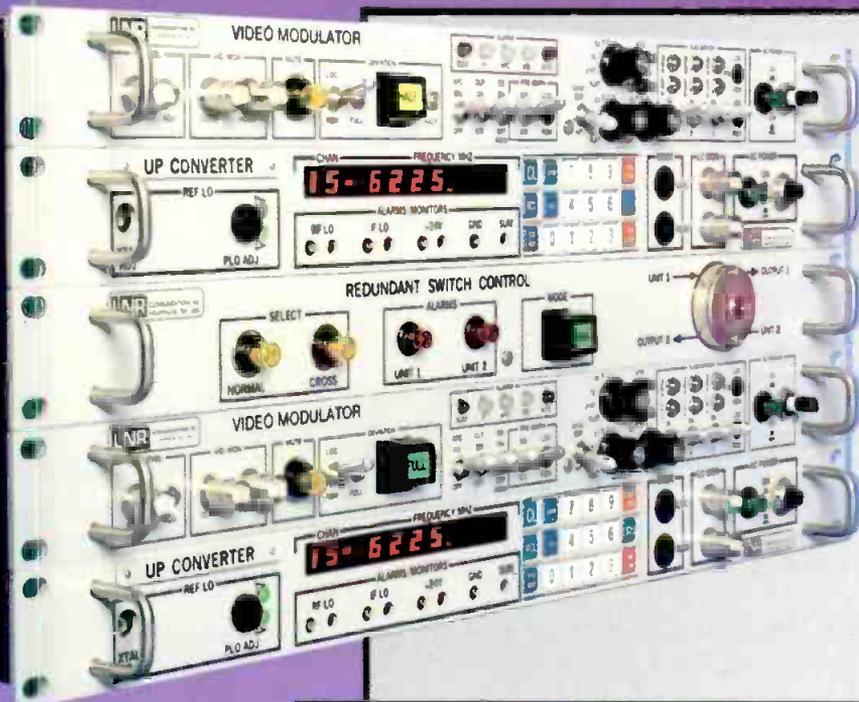
Computer Concepts 4508
Product line: Radio automation, DCS digital commercial system with editing options, Audio Switcher.
Circle (475) on Reader Service Card

Computer Engineering Associates 19758
Product line: computer newsroom systems.
CEA enhancements: wire capture, assignments, scripting, prompting, inventory, personnel management, machine control interface, spell checker; run-down segment, talent, show timing; text archive search; media library; multilanguage script editing (includes Chinese); UNIX/OS.
Circle (476) on Reader Service Card

Computer Prompting, Captioning Co. 16943
Product line: Video prompters; closed, open captioning systems; flat-screen smart display.
CPC-600 CaptionMaker: closed, open captioning system; computer clock emulates time code.
CPC-700 CaptionMaker Plus: time code-based closed, open captioning system.
Circle (478) on Reader Service Card

Comrex 12506
Product line: Audio Frequency Extenders for remote audio pickups with integrated mixing; digital audio codecs; telephone couplers, hybrids; wireless IFBs; TV aural monitors.
Talk Console: portable talk studio; two phone lines,

The Most Versatile VIDEO EXCITER of All



TYPICAL REDUNDANT CONFIGURATION

LVM Analog/Digital 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 3 1/2" 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	LVM17-D4	(17.3-17.8 GHz)
IF Output Model	LVM70	(70 MHz)

Option:

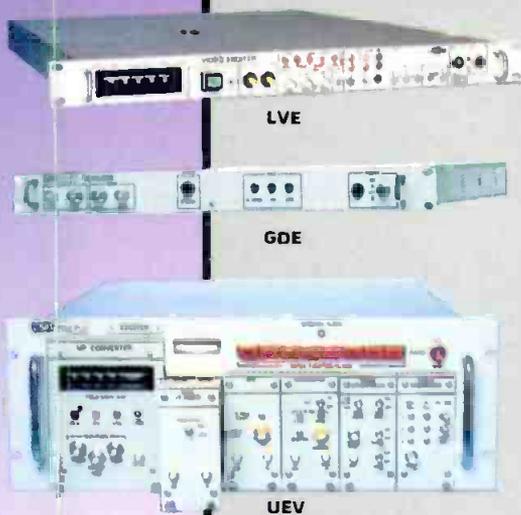
- Dual low pass filter (4.2 and 6 MHz)



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.



Also Available...

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

UEV 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.

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

FIRST

To Build and Ship Air-Cooled IOT 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 1 W 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

two mic channels; self-adjusting hybrids; mix-minus; dial-cue feature.

Circle (480) on Reader Service Card

Comsat World Systems 12829

Product line: Satellite program distribution.

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

INTELSAT-K: network services by Ku-band.

TV scheduling service: short-term, occasional-use, videoconferencing services by satellite.

Circle (481) on Reader Service Card

ComStream Corporation 2100

Product line: Satellite receivers, integrated digital audio equipment.

AE-R200: 20kHz stereo digital audio multirate, multi-mode integrated receiver for Ku-/C-band; Musicam (ISO/MPEG) compression algorithm.

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 motorized antenna system; EC6, offset uplink antenna. **1.8m flyaway:** portable, transmit-capable Ku-band antenna.

Circle (483) on Reader Service Card

ComTek 11129

Product line: Wireless mic equipment, on-camera receiver; IFB cue, talent feedback system.

High fidelity IFB products: easy-to-use base station transmitter; high performance personal receivers; true wireless-to-the-ear prompting, cuing systems.

MRC-82P: miniature high fidelity receiver; IFB, personal communications use.

Circle (484) on Reader Service Card

COMWAVE 18474

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 COMPLEX multiplexer systems for bidirectional A/V signal, CCU data, power; for remote production.

CP-301 series: remote control unit, camera adapter; improved V/A signal multiplexing with mini FM mod/demod; video response 30Hz-6MHz, 55dB S/N; audio response 100Hz-18kHz with 60dB S/N, 0.75% THD; modules for 3-channel switchable return video, CCU data interface, μ P-control.

Circle (487) on Reader Service Card

Conifer 11301

Product line: Antennas, block downconverters, low noise preamps; frequency conversion formats.

Integrated receivers: one-piece antenna, downconverters with 32-52dB gains, noise figures of 1.5dB.

Receiving antennas: 12dB, 18dB, 24dB gains.

Circle (488) on Reader Service Card

Connectronics 13628

Product line: Connectors, One Piece adaptors.

JB jackbay series: 1/4" A-gauge jacks; 2-row/22-jack, 1-row/16-jack; 8-16 console "insert points."

XB 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, associated equipment. New products to be introduced at the exhibition.

419G/420C: shortwave transmitters for 300kW, 500kW; standard, CCM-controlled carrier level modulation or SSB; remote control; tetrode PAs.

802B FM exciter: LP transmitter, 5-50W source for

high power transmitter; PLL frequency control.

SSM series modulators: high-level digital modulation from 48-module circuit supplies controlled plate current based on modules actived by audio input level.

T line AM: solid-state, modular transmitters; 312T 300W; 314T 1kW; 314T-1 2.5kW; 315T 5kW; broadband, synthesized frequency control.

Circle (490) on Reader Service Card

Control Concepts 10330

Product line: Power protection, conditioning equipment; Isolatron, Isolatron active tracking filters; for transmitters, computers, automation systems.

LF, LCG 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 multipair snake cables.

#8281, #9292: serial digital cables.

#9180: digital audio cable.

Circle (492) on Reader Service Card

Corporate Computer Systems 3000

Product line: CCS Audio Products transmission codecs, Micro 56, 7.5kHz, Micro 66i 7.5kHz dual rate units.

CDQ-1000: codec transmitting 10kHz digital audio over one switched digital circuit (56 or 64 kbps).

CDQ-2000: multi-rate ISO Musicam codec; transmits 20kHz stereo or mono digital audio.

PACE: editing workstation for digital audio.

Circle (493) on Reader Service Card

Cortana Corporation 4814

Product line: Lightning, static protection products; Stati-Cat, Stati-Kitty and Stati-TomCat systems.

Circle (494) on Reader Service Card

Countryman Associates 18617

Product line: Microphones, the EMW series.

Circle (496) on Reader Service Card

Crouse-Kimzey Company 1606

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

360 Systems Digicart: digital audio recorder.

AKG Tri-Power series: stage mics.

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

Ramsa WP-1200: monitor.

Sony DPS-M7: digital sonic modulator effects.

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

Circle (497) on Reader Service Card

Crown International 4812

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

SASS-P MkII: stereo ambience mic.

IQ-2000: computer-controlled audio system.

LM-301, LM-300L: mini dual gooseneck condenser mics.

PCC-170: multifunction supercardioid boundary mic.

CM-311 "differoid" headworn 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 18663

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

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

Daiwa systems: pan/tilt, tripods support 8-50 pound loads; single, double-handle options; tilt, pan locks. **ENG tripod:** light-weight with 80" over-crowd height.

Soft, hard cases: for CSI/DAIWA systems.

Daiwa dollies: 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, exciters, PAs.

S/22 exciter: per FCC, CCIR, CIRI; 20W, redundant. **VL/1000:** 1kW solid-state FM amp, four MOSFET 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, transmis-

sion security equipment, Cyclocypher.

Automation Protocol Converter: routes 38.1kbaud data from Cyclocypher receiver for direct serial data interfaces in TV station automation system.

Circle (502) on Reader Service Card

D-D-D

Dalet Digital Media System 1326

Information 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

Daniels Publishing Group 12909

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.

DCM-PC: distributed processing newsroom computer.

Circle (507) on Reader Service Card

Data Security 13148

Product line: Tape degaussers.

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

Type II-A bulk degausser: DoD approved, purges classified information from S-VHS, D-1, high energy magnetic media with coercivities to 1,000 Oe.

Circle (508) on Reader Service Card

Datatek 13814

Product line: Signal routers, distribution equipment.

D-2540 digital audio switcher: 20x10 to 40x40.

D-2530: serial digital video router, 20x10 to 40x40 arrays.

D-2535: 100MHz video router; 20x10 to 20x20 array.

D-891/D-892: digital audio A/D, D/A converters.

D-2700DAS: AFS/EBU digital audio router; transformer coupling; reclocking, regeneration feature.

D-2700DVS: serial digital video routing switcher; 64x64 to 256x256 arrays.

D-890: 1x6 digital audio DA module.

Circle (509) on Reader Service Card

Dataworld 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 NBC, Thomson Consumer Electronics, Philips Consumer Electronics Company, Compression Labs.

Advanced Digital HDTV (AD-HDTV): a digital simulcast HDTV system with high video, audio quality, reliability, robustness; featured attributes include MPEG++ compression, packetized data structure, 2-tiered transmission for flexible interoperability with other TV, multimedia products.

Circle (511) on Reader Service Card

daVinci 18032

Product line: Color correction processors for video, telecines; Renaissance Hi-Res Kilovectors.

3/2 edit package: for daVinci, Renaissance series; aligns telecine with recording VTR.

EDIT/2V, /3V options: VTR/telecine editing facilities for daVinci line.

Renaissance 8:8:8: component digital color correction; enhancements announced at the exhibit.

Circle (512) on Reader Service Card

dbx/AKG Acoustics 2806
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).
#1024: 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).
#760X: dual mic pre-amp; 0-0.15dB, 20Hz-20kHz, functional bandwidth 2Hz-200kHz; gain trim, polarity reverse, overload indicator, 48V phantom power; packaged in 1RU 1/2-rack chassis.
#120XP: 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 1000
Product line: Audio recording, post production mixers.
Circle (514) on Reader Service Card

Decision, Inc 3402
Product line: Software for business management, information services for radio, TV.
Circle (515) on Reader Service Card

Dedotec USA 17572
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 2224
Product line: Transmission monitoring products, splatter monitor, operating impedance bridge.
ASE-2: low cost, high performance AM stereo exciter, C-QUAM format.
Circle (517) on Reader Service Card

Denny Manufacturing 19106
Product line: Backgrounds, props for video, photographic work.
Electravision electronic proofs: EV-2000 system used side-by-side with photographic camera to record video proofs of photo shoot.
Circle (518) on Reader Service Card

DENON 5003
Product line: CD cart recorders, cassette decks.
DN-1200F: CD changer; 200-disc capacity.
DN-720R cassette deck: variable pitch, adjustable re-ord, bias levels; real-time counter; rack mount.
DN-951FA: CD cart on-air system; AutoTrack selection; streamline profile, rugged transport.
DN-961FA CD player: loads, plays Orange Book CDs.
TU-680NAB: AM broadcast monitor; per NRSC, selectable bandwidth IF; C-QUAM stereo.
Circle (519) on Reader Service Card

DeSisti Lighting/DESMAR 17978
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

DIC Digital 15166
Product line: Recording media, MQ digital audio tape, Microfidelity 8mm video tape, 4mm width data-grade cartridges, rewritable magneto-optical disks.
Betacam SP: 5-30 minute cassettes.
Recordable compact disc: in 18-, 63- and 74-minute capacities.
Circle (523) on Reader Service Card

Dielectric Communications 15719
Product line: TDM antenna; LP UHF TV antennas.
UHF FLAGPOLE: UHF LPTV antenna fits where a flagpole could be mounted; CP, HP; 1 1/8" 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 ProArchive: tape backup system.
Pro Tools Multitrack: digital record, playback in 8, 12, 16 channels; enhanced time code entry.
ProSonus ProFX: CD ROM library; sound effects, ambients in format for ProTools, SampleCell.
Sound Tools II Ver. 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

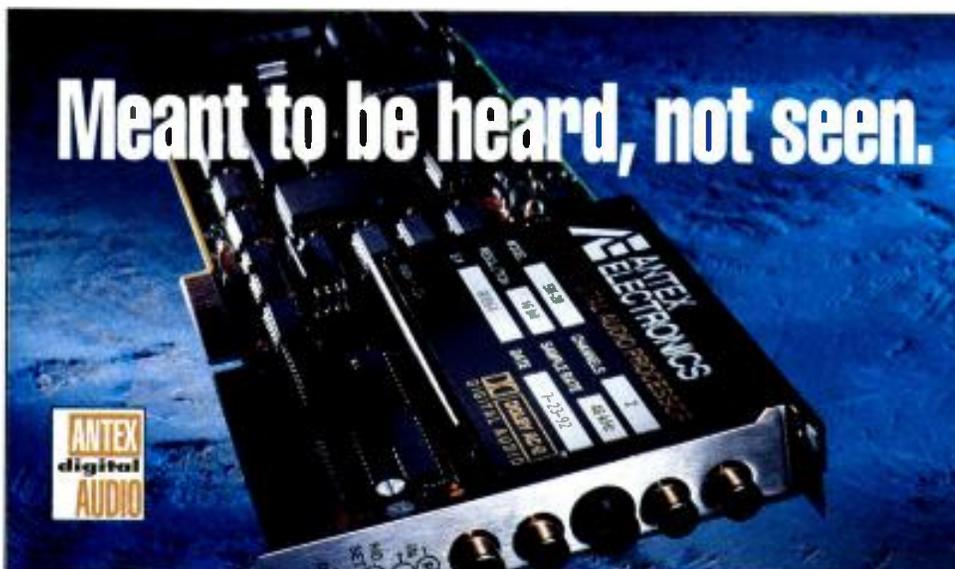
Digital Arts 18969
Product line: Digital graphics systems; drawing, animation software.
RenderManager: for Iris Indigo, 386/486 PCs; rendering, drawing, animation, font management, geometry database features; 3-D environment; extensive "surface appearance" library.
Circle (526) on Reader Service Card

Digital F/X 18881
Product line: Desktop video production solutions with digital video and audio editing workstations.
Composium 4.0: upgraded channel, edit control capabilities for edit suites; PAN F/X adds second layer of motion; Stretch, Average, 3:2 compress/expand, Snapshot, Ethernet features.
WaveFrame 1000: to create CDs, records digital audio directly to Yamaha encoder and recorder.
WaveFrame 401: digital audio recorder; VITC sync, digital I/O, mix, multitrack to 16-channel capability.
TitleMan: titler with PostScript fonts.
Video F/X Plus: improved control panel, jog/shuttle, MIDI support; Sony LVR-5000A support; enhanced effects, graphics, animation functions.
Hitchcock: stand-alone non-linear disk-based editor; Macintosh hard drive; 640x480 pixel array at 30fps.
TidalWave: 6-track software only hard disk recorder, editor using SG Indigo platform; integrates sound into multimedia applications.
Circle (528) on Reader Service Card

Digital Processing Systems 11930
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-285: master sync, test signal generator.
TBCs, Synchronizers: DPS-295 multiformat, transcoding TBC/sync; DPS-265 4-field synchronizer; DPS-375 SP multiformat, transcoding PAL TBC/sync; DPS-365 PAL 8-field synchronizer; Personal TBC III plug-in card, NTSC, PAL versions.
VM-2000 Personal V-Scope: waveform, vector monitor card for Amiga, PC, Video Toaster workstations.
MicroSYNC A/V: 4-field full bandwidth composite video, stereo audio follow synchronizer; for satellite, mobile, network. CATV feeds; solves lipsync 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, reverb, variable delay, pitch shift; RS-232, ISA bus control.
Personal TBC IV: for S-video I/O; freeze, variable strobe, GPI trigger, color balance; Betacam output, DOC, noise reduction; card for IBM, Amiga PCs.
Circle (529) on Reader Service Card

Digital Vision 19164
Product line: Digital video processors, noise, film grain reducer, color correctors.
DVIS 1000: digital image stabilizer; reduces 2D motion in video from camera or telecine; advanced variable movement filters in motion estimation.
Model ASC: conceals 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



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 20 Hz - 20 kHz 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 128 kbps over T1, ISDN and S56 digital networks.

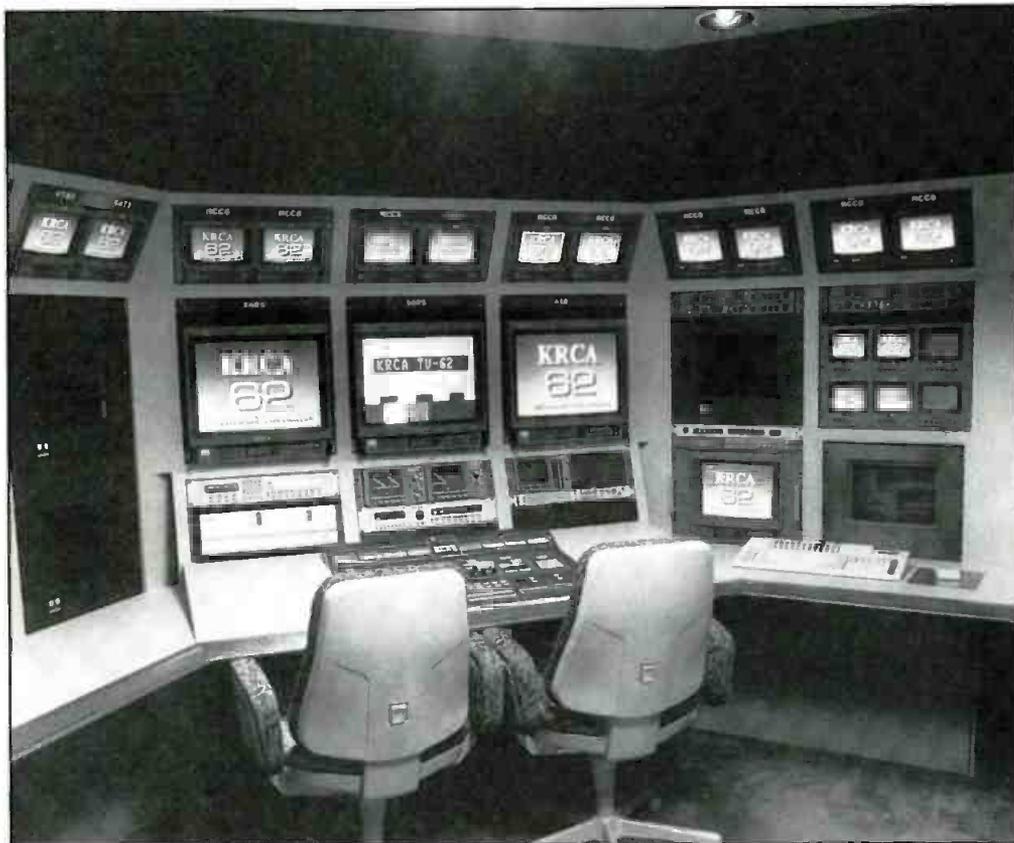
Hear the difference from the leader in digital audio—Antex Electronics.

Call us today at 800/338-4231.

ANTEX ELECTRONICS
 16100 South Figueroa Street • Gardena, CA 90248
 800/338-4231 • 310/532-3092 • FAX 310/532-8509

Circle (59) on Reply Card

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

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 616-695-6831 800-234-6831 In Canada: 613-382-2141

See us at NAB Booth #15716

Circle (70) on Reply Card

effects; animated shapes applied to effects; matting.
FLAME: emulates conventional editing systems; compatible with major 3D systems; for compositing w/o image degradation; visual effects, animation.
INFERNO: film effects, compositing; resolutions 3kx12k at 12 bits per channel; editing tools, image filtering; 3D perspective moves; paint, optical effects.
Circle (531) on Reader Service Card

Display Devices 13634
Product line: Datalift video projector support systems.
Circle (532) on Reader Service Card

Di-Tech 13103
Product line: Audio, video, data signal distribution routers, virtual matrix control.
#5430-I router: 16x1 stereo AFV; 30MHz video bandwidth; RS-232/-422 control; 3-level breakaway.
#5434 router: 12x4 stereo AFV; 3-level breakaway; 30MHz video bandwidth; RS-232/-422 control.
Meridian routers: video (5881), stereo audio (5882) frames with 128x160 matrix; 4:1 size, 3:1 power reductions over typical routers; expands to 1024x1024.
Model 5880: stereo AFV router expands to 128x matrix; compact system expanded with video combiners.
Circle (533) on Reader Service Card

Dolby Labs 3908
Product line: Noise reduction systems; digital STL; spectral processors.
DP5500 STL accessories: for 950MHz STL using advanced digital, RF techniques for high-quality audio.
Model 740 spectral processor: 2-channel dynamic EQ; raises low-level signals in three bands by 20dB without affecting high-level signals.
SRP multitrack series: 24-track Dolby SR processor.
Model 430: background noise suppressor for broadband noise reduction in on-location recordings.
Model 422: reference encoder, decoder offers Dolby B, C, S-type noise reduction for preparing duplication masters, performing quality checks.
Circle (534) on Reader Service Card

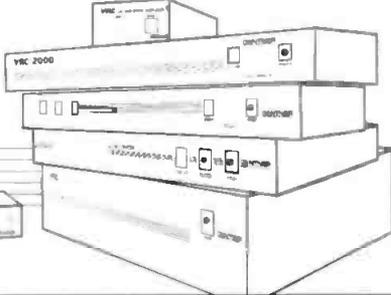
Dorrough Electronics 19113
Product line: Signal measurement products, loudness, composite video luminance meters.
AES/EBU digital reading meter.
Circle (535) on Reader Service Card

DSI Communications 18813
Product line: Engineering, construction; specialization in video, RF system design, maintenance.
Circle (536) on Reader Service Card

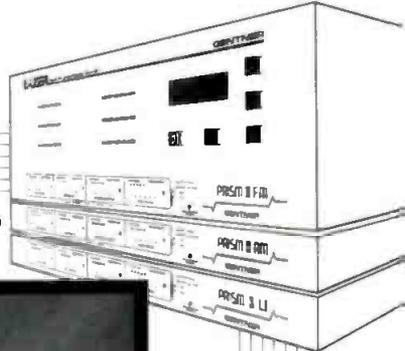
Dubner International MM
Product line: Videotape logging systems software.
Scene Stealer: PC/AT board with software, accepts NTSC/PAL video; automatically detects, marks cut points, grabs mini B/W images; stored images can be reviewed, annotated, printed; for 8-bit PC slot; cut points, annotations in CMX compatible edit list.
Circle (537) on Reader Service Card

DVS Digital Video Systems 10060
Product line: Video storage, retrieval systems.
ISP100: image sequence processor; for high-speed capture, display of HDTV sequences; multistandard with analog, digital video interfaces.
ISP400 series: modular solid-state image sequence processor; high-speed capture, display of HDTV sequences; multistandard, multi-user; ISP400-STEREO HD for stereoscopic HDTV displays; ISP400 KHOROS interface to Khoros image processing package.
Circle (538) on Reader Service Card

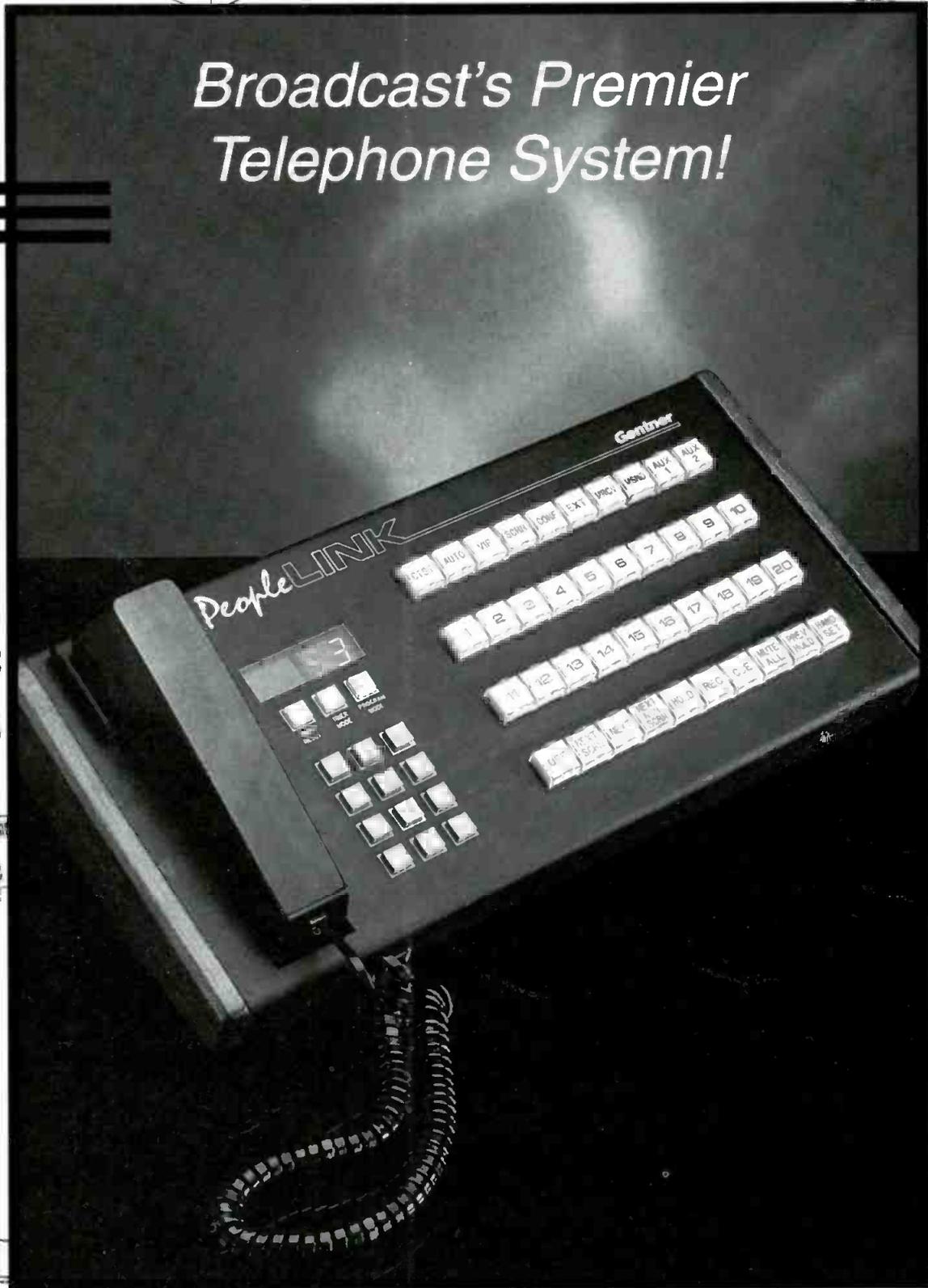
Dwight Cavendish 17272
Product line: Videotape duplication equipment, Copymaster 250-5, QC-2500 monitor system.
Aerosonic DOC 5001 verifier: mirror-mother verifier uses dual units under PC control for duplication QC.
Aerosonic VPT 9100: pancake media tester.
CS-812: automated video play system; eight VCRs.
VP-738 router: 10x10 matrix; 10 video, 10 balanced stereo loop-throughs, RS-422 control interface.
VS628-01, -04: -01 QC monitor, system controller; to 2,500 VCRs; -04 QC monitoring interface.
Circle (539) on Reader Service Card



REMOTE CONTROL

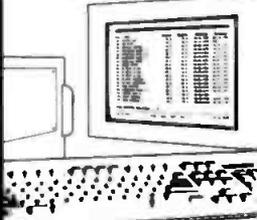


AUDIO PROCESSING

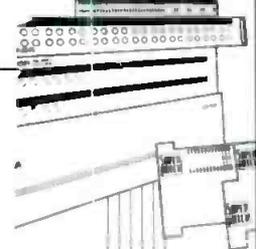


Broadcast's Premier Telephone System!

DIGITAL STORAGE

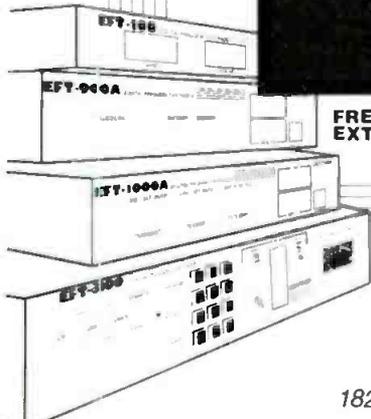


AUDIO ROUTING AND DISTRIBUTION

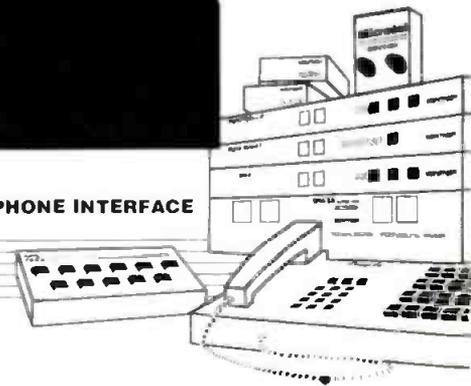


No other telephone system on the market has the versatility and expandability of the PeopleLink System

FREQUENCY EXTENSION



TELEPHONE INTERFACE



Gentner

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

DYNAIR Electronics 16623

Product line: Signal routers, distribution, control products; fiber optic transmission systems; interactive graphics/video walls.

DATA Link: broadcast-quality video, dual audio, four full-duplex RS-232 signals on one fiber.

DYNA MITE: compact router with 10x10 video/audio matrix; with control uses two rack units.

DYNASTY routers: 40MHz, 70MHz bandwidths; matrix expandable to 1,000x1,000.

DYNOPTICS: fiberoptic systems for audio, video, data; handles high resolution signals in D-1 and D-2 formats.

MiniStar: compact control panels.

STARPAK 35: advanced system controller.

Synelec PRISM: large format, interactive graphics, video wall display; simultaneous display of four graphics workstations and four video formats to 324 square feet; 1,024x1,024 pixel resolution.

Circle (540) on Reader Service Card

Dynatech Corporation 18032

See: Alpha Image; ALTA Group; Calaway Editing; ColorGraphics Systems; daVinci; Dynatech NewStar; Quanta; Utah Scientific; technology companies developing, manufacturing, supporting digital and analog products for broadcast, production and post-production businesses.

Dynatech NewStar 18032

Product line: Newsroom automation systems.

Connectivity: demos link NewStar II with a range of hardware, software packages.

NewStar II: Version 2.2 software.

NewStar Multimedia: automation capabilities of NewStar with digital disk storage.

Circle (542) on Reader Service Card

E-E-E**EarthWatch Communications** 11648

Information not available.

Circle (543) on Reader Service Card

Eastman Kodak Company 16963

Product line: Motion picture films; electronic intermediate HDTV image processing system.

Circle (544) on Reader Service Card

Echolab 13426

Product line: Video production switchers; Tempest effects with 4:22:4 processing of analog inputs.

dcf digital comb filter decoder: converts NTSC, PAL to RGB, YUV components; adaptive 3-line comb filter.

PC-3 video switcher: card for PCs using Windows; standard SMPTE serial interface; integrates with desktop edit controllers.

Uniboard mixers: analog component, composite production switchers; single, dual M/E versions with 2-5 keys; all include key matrix, digital effects loop, linear keys, time line memory, SMPTE serial interface.

PCA board: companion PC card to PC3 switcher for audio-follow-video under Windows or from edit controllers with AMX100 protocol.

Circle (545) on Reader Service Card

Econco Broadcast Service 3704

Product line: Rebuilt transmitting tubes, klystrons.

Tube line: 4CX3500A, 4CX7500A, 4CX1200A, 4CX2000A/B/C (8990), 4CX2000D.

Circle (546) on Reader Service Card

Ediflex Systems 19485

Product line: Non-linear, off-line editing control systems with rewritable MO media.

Ediflex III editing system: non-linear, off-line on 486 PC; graphic user interface, MultiCamera capability, hard-disk, compact MO drives, removable storage; capacity for 12 hours of high resolution dailies on line; bin system with optional script organization.

Circle (547) on Reader Service Card

Editing Machines Corp. 19755

Product line: Non-linear video editing control; desktop, laptop systems.

EMC Print-to-Tape: master projects directly from EMC²; CD-quality 44.1kHz audio on optical disk, hard

drives for mixing, fading, cutting master audio track. **High resolution:** 3/4" picture quality.

Circle (548) on Reader Service Card

Editing Technologies Corp. 19172

Product line: Video editing controllers.

Ensemble Pro: PC-based for 2, 3, 5 VTRs with serial switcher control, GPIs; 10-lists, 2,000 events per list; auto, quick clean; back trace; auto assemble features.

Circle (549) on Reader Service Card

EDX Engineering 1404

Product line: Engineering software, coverage based on terrain data, microwave, STL path analysis.

Engineering software: PC programs for coverage, path, contour studies of transmitted signals.

POP-90: demographic analysis of station coverage areas based on 1990 census.

Circle (550) on Reader Service Card

EEG Enterprises 16627

Product line: VBI, data receiver, line-21 encoder.

Circle (551) on Reader Service Card

ELV 16640

Product line: UHF TV high efficiency IOT7300R air-cooled, IOT7360 water-cooled inductive output tubes; KSC3371 70kW ESC klystrons.

Leddicon camera tubes: for studio, EFP, ENG cameras; 2/3", 1", 30mm.

Power tetrodes: 4CX series for AM/FM transmitters; 5kW, 15kW, 35kW power levels; improved mesh filament for longer life, reduced noise.

Circle (552) on Reader Service Card

EG+G 4621

Product line: Tower, obstruction products.

Circle (553) on Reader Service Card

egripment 19781

Product line: Camera support products, Skymote; Dinky dolly; accessories, grip kits; Kaleidoscope pan/tilt heads; cranes.

NEW from Accu-Weather®

✓ Spectacular UltraGraphix-PLUS™

New breakthrough! The best-looking graphics yet. Uses the highest resolution capabilities of your graphics system. Now used by KDKA-TV and the CBS network. See them for yourself at the NAB.

✓ Breakthrough Hi-Res Graphics Systems

By far your best value in computer graphic systems. priced from \$8990 to \$24,800 to meet any station's needs and budget. Recently purchased by the CBS network and top stations like KDKA-TV, systems include spectacular capabilities like VPIG™ Infonavigation™, 16/16" overlay resolution, paint system, UltraGraphix-PLUS access, animation and much, much more.

✓ NEXRAD Doppler Radar

Accu-Weather can now give you real-time access to all Doppler radars -plus exclusive value-added products like NOW NEXRAD™. Get the best radar at Accu-Weather's special NAB price.

✓ Be first with FirstWarn.™

Accu-Weather's FirstWarn receives official watches and warnings for your ADI and automatically generates a crawl over your broadcast signal. The industry's lowest price and fastest warnings!

Accu-Weather, Inc.

The World's Weather Leader™

619 W. College Avenue, State College, PA 16801

Call (814) 234-9601 x400 Fax (814) 238-1339

See us at
NAB
'93
BOOTH
18616

Win
up to
5
Grand
at NAB



See page 67 for complete details.

Circle (72) on Reply Card

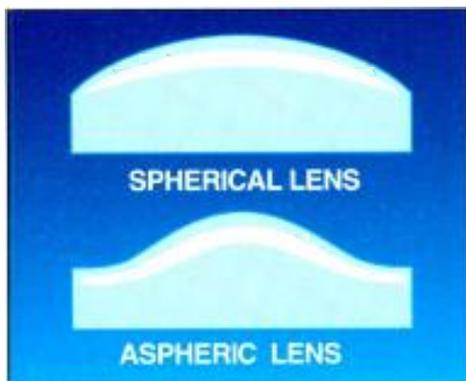
We've Just Reshaped the Future of Television Optics.

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.

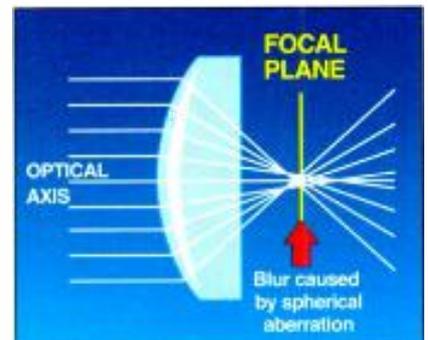


Zoom lenses can be designed with fewer elements when aspheric optics are used, so they are lighter and can be made smaller. For example,

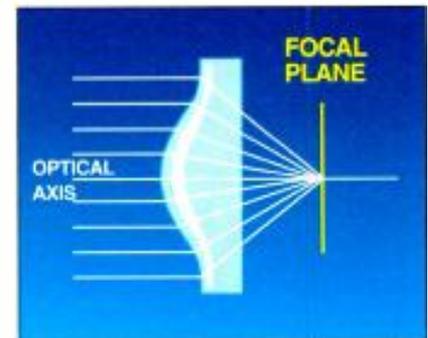
Fujinon's new A16X9 handheld lens, with one aspheric element, reduces the total number of elements by 20 percent compared to an A16X9 lens with only spherical elements. It weighs 2.64 lb. instead of 3 lb., and its MOD is 5 cm closer as well. All this in a lens that is totally compatible with existing 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.



FUJINON

FUJINON INC. 10 High Point Dr., Wayne, NJ 07470-7434 (201) 633-5600
Southern 2001 Midway, Ste. 114, Carrollton, TX 75006-4916 (214) 385-8902
Midwestern 3 N. 125 Spnngvale, West Chicago, IL 60185-1560 (708) 231-7888
Western 129 E. Savarona Way, Carson, CA 90746-1406 (310) 532-2861
South American 15181 Southwest 113th St., Miami, FL 33196-2567 (305) 388-7399
FUJI PHOTO OPTICAL CO., LTD. 1-324 Uetake, Omiya City, Saitama 330 Japan;
Phone: 048-668-2152, FAX: 048-651-8517, TELEX: J22885

FOCUSED ON THE FUTURE

See us at NAB Booth #16958

Circle (96) on Reply Card

Super Maxi Jib: quick-to-assemble crane arm for remote camera control; packs into flight case.
Dino Dolly: with special arm.
The Rocker: 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, roll features permit flying, swooping point-of-view shots.
Circle (554) on Reader Service Card

Elantec Inc 18866
Information not available.
Circle (555) on Reader Service Card

Electro-Voice 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 2.4kW dimmers; Multi-Link control.
EnAct series: lighting control; definable macros; SVGA display; edit functions; 200 or 400 control channels; 500 cues stored on 3.5" 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 9kW/level, 27kW/system; for multiple class A facilities.
#950 combiner: 30kW unit requires no assembly; for 1010 panel antenna.
Circle (558) on Reader Service Card

Electrack Products 11862
Product line: Equipment rack systems.
EVF Electrovideo racks: 19" cabinets, enclosures.
Circle (559) on Reader Service Card

Electrosonic Systems 11307
Product line: Video display systems.
PICBLOC 3 series: expanded line with high-resolution, high-definition digitizers using HDTV, VGA text/graphics as inputs; multimedia compatibility.
Circle (560) on Reader Service Card

Elenos 1024
Product line: Radio transmission equipment.
Compact Series FM transmitters: 750-2000W with triodes; single-, 3-phase power; per CCIR, 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.
TTS100HS: 100W wireless cable transmitter; broadband frequency agile tuning; high performance with integral diagnostics.
TTU1000ES: 1kW solid-state UHF transmitter.
TTV1000ES: 1kW VHF transmitter; separate visual/aural PAs for NTSC, PAL, SECAM; solid-state; soft failure feature; enhanced AB circuitry.
TUA100E, TVA100E: 100W UHF, VHF amplifiers for LP broadcast; TUA for translator service.
Wireless cable transmitters: TTS20HSX 20W, TSA50HS 50W units; MSE8033 high power signal bender for wireless cable.
Circle (562) on Reader Service Card

EMCOR Products/Crenlo 16069
Product line: Modular enclosures for electronic equipment, racks, cabinets.
Guide to Emcor Enclosures: focus on ESQ, Series 10, Emcor I enclosure systems.
Circle (563) on Reader Service Card

ENCO Systems 5221
Product line: Hard disk audio storage systems.
DAD 486x: digital audio distribution system en-

hanced permits simultaneous multi-user access to CD/DAT audio stored on shared data network; 16-bit sampling with adjustable rate; hard disk storage; programmable playlists for sequencing, automation.
Circle (564) on Reader Service Card

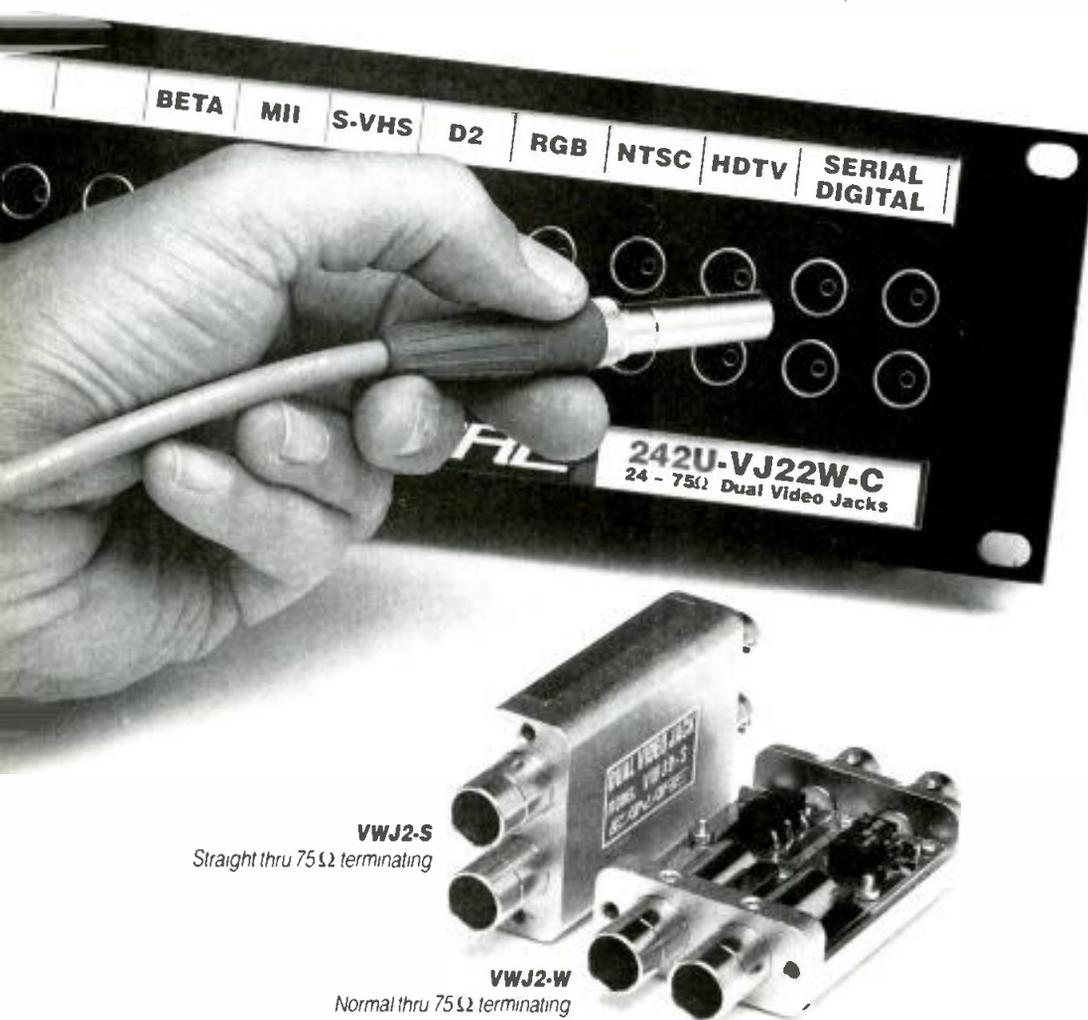
Energy Plus Inc/Video 16383
Information not available.
Circle (565) on Reader Service Card

Energy-Onix 3800
Product line: AM, FM transmitters, 1-tube FM, conventional plate-modulated AM models.
Two FM series: 30W to 10kW and higher custom powers ratings; second uses 1-tube, zero-bias triode for 1.5-35kW; Motorola MOSFET solid-state drivers.
Lightning proof 1kW AM transmitter.
Updates of established AM transmitters from 5-50kW.
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 switcher, D-2, D-3 VTRs; 10-bit processing; layering from digital or analog sources; digital mask, color mat generation, linear, additive keying; 5-input; D2, 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 RADSYS 2000 display, 486 PC/DOS 5.0; 8MByte RAM, 40MByte hard drive; AT&T Vista graphics PCA, VGA/RGB monitor for display, NTSC encoder;



VWJ2-S
 Straight thru 75Ω terminating

VWJ2-W
 Normal thru 75Ω terminating

Circle (61) on Reply Card

STANDARD EQUIPMENT.

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.

CANARE

511 5TH Street, Unit G, San Fernando, CA 91340
 (818) 365-2446 FAX (818) 365-0479

See us at NAB Booth #11118-11122

Eye Fidelity — Toshiba's 2,000,000 pixel (perfect) picture.

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 f5.6 at 2,000 lux, an S/N ratio of 52 dB and a wide dynamic range of 72dB.

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
FACSIMILE: +81-3-5476-4057
TELEX: J22587

Circle (62) on Reply Card

map builder, movie-loop playback of sequences.
Circle (569) on Reader Service Card

The Equipment Broker 16385
Product line: Equipment brokers.
Circle (570) on Reader Service Card

ERGO 90/Ergo Industries 19728
Product line: Equipment rack, mounting utilities.
Circle (571) on Reader Service Card

TSE 13401

Product line: Time code generators, readers, inserters; quad video DAs; signal generators; master clocks.
ES-215P4, ES-216P4: audio level meters; LEDs simulate VU meters; peak, average response modes.
ES-233: fade-to-black with digital attenuator for linear, repeatable fade rate; 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": 1x4 video DA, separate gain, EQ controls per output.
ES-770 time controller system: permits control of equipment VTRs, titlers, satellite recorders with 5000-event capability.
Circle (572) on Reader Service Card

ETC-Electronic Theatre Controls 18469
Product line: Lighting equipment, response dimmers, microVisionFX control, effects consoles.
Circle (573) on Reader Service Card

Euphonix 4600
Product line: Digitally controlled audio systems, CSII mixer, SnapShot Recall, Total Automation control.
CSII software release V 2.0: 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, 48 Multitrack buses to CSII 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, me-

tering; 48x48 exclusive or summing matrix switching with A/B switches on inputs and outputs.
Circle (574) on Reader Service Card

Eventide 4809
Product line: Time modification systems; broadcast audio, video delay systems; digital loggers.
DSP4000 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 Segue feature.
H3000 Ultraharmonizers.
BD980, BD941/942: broadcast delays.
Circle (575) on Reader Service Card

Evertz Microsystems 19534
Product line: Timecode equipment, film footage encoders; transport emulator; Keycode readers; teletext data logging software.
EV-16: Keycode reader head.
KeyPost: film/video list management software.
Model 4025: integrated film, post-production system.
Circle (576) on Reader Service Card

F-F-F

Fairlight ESP 12762
Product line: Digital audio workstations.
Edit Decision List: for MFX2 audio production system, compatible with Digiteyes Shotlister captured video information; no manual list writing required.
Circle (579) on Reader Service Card

Faraday Technology Ltd 16378
Product line: Video, RF filters, delay lines for conventional and HDTV. New products to be announced at exhibition.
Circle (580) on Reader Service Card

Faroudja Laboratories 13422
Product line: Video signal processors, encoders, de-

coders, detail enhancers, component transcoders.
LD100 line doubler: accepts NTSC, S-video inputs; produces high resolution images by doubling the number of lines of resolution; LD1000-U provides multi-standard capability with auto input switching to the appropriate standard.
Circle (581) on Reader Service Card

Farpoint Technologies, Inc 18170
Information not available.
Circle (582) on Reader Service Card

FAST Electronics 17348
Product line: Multimedia, DVI products; Video Machine desktop studio.
Video Machine: A/B editing system with machine control for PC, Macintosh; titles, graphics, audio, 400-effects; for composite, S-VHS NTSC, PAL, SECAM.
Circle (583) 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 PC to VCRs; connects to SCSI or serial port; supports Quicktime, TGA and other formats.
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-/multi-mode fiber; 10MHz bandwidth; -130B 2-way system.
Series 131B audio, video link: bidirectional transmission on multimode fiber; 8MHz video, 20-18kHz audio.
Series 170B Video Link: multimode fiber with 10MHz bandwidth; extended resolution version to 35MHz.
Series 2240B, 2241B, 2245B links: FM transmission of video/audio on multi-, single-mode fiber; 8MHz video, 20-20kHz audio; -2240B for stereo audio; -2245B also carries data.

FLEXONIC
 ACOUSTICAL PRODUCTS

NEW! Call 1-800-285-6660
 for more information.

FREE sample and literature available.

Absorb Isolate Dampen
 FIRST A I D FOR YOUR EARS

FLEXTECH CONTROL
 NOISE PROBLEMS!

Circle (63) on Reply Card

SEE US AT
NAB

BAF
 COMMUNICATIONS CORPORATION

SNV's
 ENG, EFP
 Vehicles
 Earth Stations
 Transponder
 Services

TNN
 THE TENNESSEE NETWORK

STARWATCHER

1-800-633-8223 • 508-535-1969 • FAX 508-535-1441

Circle (64) on Reply Card

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

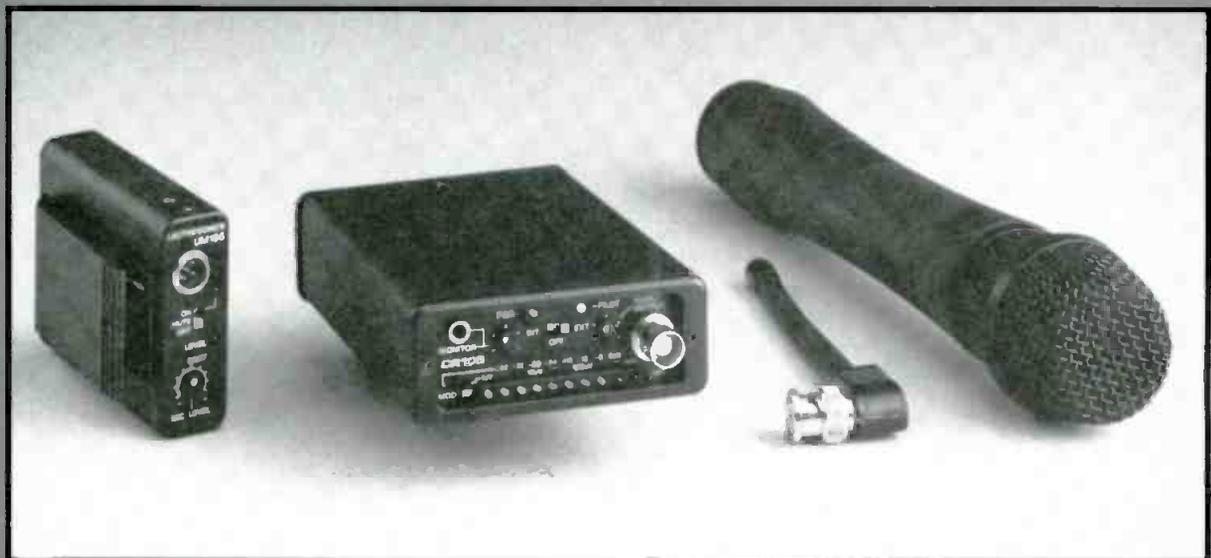
30 Hotham Parade
Artarmon 2064 Australia
Tel: (02) 439 6377 Fax: (02) 438 2819

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) 892-6243

Made in the USA

Circle (75) on Reply Card

www.americanradiohistory.com

Series 240B, 241B, 242B, 245B : video, audio single multimode fiber systems; 8MHz video, 20-20k audio; -240B for stereo audio, -242B includes data instead of audio; -245B includes RS-232, -422 data.
Series 290B digital control link: carries SMPTE 207M 4-wire machine control on single or multimode fiber; dual fiber and single fiber operation.
Series 310B, 312B, 315B audio links: balanced audio systems on multimode fiber; 0, +4dB, 600Ω; for audio distribution; -312B includes stereo audio; -315B offers digital stereo audio with 18-bit processing.
Circle (585) on Reader Service Card

Fidelipac 1920
Product line: Dynamax digital cartridge machines, audio mixers.
DCR-1000: digital cartridge machine; -1020 master player, -1025 subplayer, -1040 record module; stores spots on 3.5" floppy disk, longer elements on 13 3Mbyte disks.
Elite series: modular studio furniture by Murphy.
MX series: modular audio consoles.
Series VI: on-air consoles by Broadcast Audio Division; 3 stereo, 1 mono output on 12- to 24-channel systems.
Circle (586) on Reader Service Card

FirstCom 13614
Product line: Production assistance products, Personal Music, New FirstCom libraries.
Circle (587) on Reader Service Card

Flash Technology 1618
Product line: Tower lighting products, beacons.
FTS 2100 SMART: System Monitoring And Reporting Telemetry, self-evaluating obstruction lighting.
Circle (588) on Reader Service Card

FloriCal Systems 12208
Product line: on-air and tape delay TV automation.
AirBoss: unattended TV on-air switching accepts traffic schedule, ShowTimer cues; detects local breaks by signal analysis of network feed; compression, expansion of program material to fit air time; cart dubbing.
CartDirector robotic controller: database, control, traffic management for Sony FlexiCart; record, playback with program compression, expansion.
ShowTimer enhanced: control for satellite dishes, receivers; traffic system, LAN workstations.
Circle (589) on Reader Service Card

FM Systems 18664
Product line: Audio level controllers; digital video sync meters.
Camera Master: handheld digital meter for sync, white, iris, focus, color burst.
VM771 Video Master: auto level control sets sync to -40 RE, white to 100 IRE; removes 2V of 60Hz hum, corrects cable loss effects on high frequencies.
Circle (590) on Reader Service Card

Focal Press 18310
Product line: Professional, educational, reference material, books on technology, management, production.
Circle (591) on Reader Service Card

FOR-A 18938
Product line: Audio mixers, recorders; video production mixer; TBCs, synchronizers, effects systems, still stores, display and projector controls; scan converters; edit controllers.
PAM-300 mixer: 8-in-to-stereo-out for audio-follow-video; parallel, serial switcher-to-editor interface.
DVM-400: 10-input digital component switcher; multi-layering; PGM/PST, 2-key bus system with DSK.
UDP-2000 universal digital processor: color correction, motion-compensation median, recursive noise reducers; digital interfaces.
UDP-500 universal digital processor: TBC, motion-compensated median and recursive noise reducers.
MF-300 Multiflex: low-cost 3D digital effects; features Image Trace, Page-turn, Super-warp effects.
FA-20: plug-in TBC for compatible PCs; recursive noise filter 4:2:2 processing, freeze, gen-lock, field inversion buffer; composite, S-VHS I/O; full transcoding.
CSS-200 still store: JPEG compression stores 200 TV frames per 50Mbyte removable hard drive; 0.6s access times to images.
Circle (593) on Reader Service Card

Forecast Installations 13641
Product line: Consoles, cabinets; custom designs for video production facilities.
Circle (594) on Reader Service Card

Fostex 15743
Product line: Audio recorders, analog, R-DAT, multi-track; audio mixers.
DCM100/MXTAB: digitally controlled mixer system.
DT80: linear, digital 8-track recorder.
Circle (595) on Reader Service Card

Franklyn R. Beemish 13147
Services include: System, facility engineering, design, construction.
Circle (596) on Reader Service Card

Frezzolini Electronics 13419
Product line: TV lighting products; batteries, battery management systems.
AR304 auto-ranging charger: fast "smart" NiCad charger for 12-30V, 1-12Ah packs; 4-channels, lightweight; auto line select.
AR124 charger: auto-ranging for 6-15V, 1-12Ah batteries; 4-channel; fully automatic.
FNP-1SB: high-energy output NP-1.
HMNP, HMNP1/2: NP-1 camera battery conversions brackets.
Solar Charger.
AR301: single-channel, auto-ranging charger for 12-30V, 1-12Ah Nicads; fully automatic.
MF-NP 1: Frezzi mini-fill light with NP-1 battery connector.
Circle (597) on Reader Service Card

Fujinon 16958
Product line: Showcasing revolutionary technology in an array of lens products for ENG, studio, field, HDTV.
A14x8.5EVM: handheld lens for 2/3" cameras; f/1.7 to 103mm f/2 to 119mm 2x extender.
A18x8.5EVM, S18x6.6EVM: for 2/3", 1/2" cameras.
A20x8BESM, A20x6.2ESM: 2/3", 1/2" lens for studio use.
A24x11.5ERD: lens for handheld cameras.
A8.5X5.5EVM, A8.5X4.2EVM: for 2/3", 1/2" cameras.
EPT-10 pan/tilt head: 300' pan, 95' tilt ranges.
EPT-30 pan/tilt head: operable to 20 feet underwater; ±300' pan, ±95' tilt; 22 lb load; 24Vdc power.
HR22x18ES: high-definition lens.
HR6x12ERD: HDTV lens for 1" camera.
Circle (598) on Reader Service Card

Full Sail Center for the Recording Arts 19166
Services include: Education in film, video, audio production; 1", 3/4" and Beta SP formats; equipment from Montage, CMX, Sony, Chyron; courses provided for: production, post production, lighting, special effects, make-up, set design, creative writing, audio-for-film and video; financial aid available for qualifying students; placement assistance.
Circle (599) on Reader Service Card

Future Store Int'l 13743
Information not available.
Circle (600) on Reader Service Card

G-G-G
G&M Power Products 18510
Product line: Batteries, chargers, related products.
GM30B Lighting Belt: sun-gun battery; 30V 4Ah.
GM4XINP charger: simultaneously charges four NP1A batteries within one hour.
Circle (601) on Reader Service Card

Garner Industries 13622
Product line: Degaussers for 1", S-VHS, MII, BetacamSP, U-maticSP, D-1, D-2, D-3, 8mm, NSA Type I/II media.
CF750 Type II degausser: meets NSA/DoD specs for erasure of Type II 7500e media to -90dB.
Model 1400 degausser: erases Type C reels to 14" diameters, VHS, Beta, U-matic, D-1, S-VHS media.
Circle (602) on Reader Service Card

GE American Communications 16601
Product line: Total program delivery services for broadcasters by satellite; digital audio, SCPC network programming, SCPC data, broadcast TV, syndication, SNG,

int'l/occasional TV, business video.
Circle (603) on Reader Service Card

GE Lighting 11608
Product line: Lamps for stage, studio, Linear Halogen-IR technology for greater efficiency.
Circle (604) on Reader Service Card

GE Support/RCA Broadcast 18663
Product line: Field maintenance support for RCA equipment, parts support, technical assistance, manuals, training and 24-hour emergency services.
Circle (605) on Reader Service Card

Gefen Systems 4915
Product line: Background music systems, CDJ classical music, M&E organizer for MAC, PCs.
Filemaster: for AKAI DD1000, AMS Audiofile Plus, Lexicon Opus, Panasonic SV3900; automatic transfer of sound effects from CD to audio/editing system.
NSM CD 3101: 100-CD changer.
Pioneer CVC-V3000: 300-CD changer; control software for IBM or Macintosh.
SFX libraries: Sonic Boom, BBC, DigiFacts collections.
Touch the Music: touchscreen background music system.
Circle (606) on Reader Service Card

Gennum/Video-Broadcast 17575
Product line: Specialized integrated circuits for video; buffers; 2-input mixers; 4x1 multiplexer.
GENLIX serial digital chipset: GS9000 decoder, GS9002 encoder, GS9004 cable EQ, GS9005 retiming receiver, GS9007 cable driver; supports SMPTE 259M serial interface standard, 360Mb/s links.
GF9101 multirate digital filter: for sample rate conversions between 4FSC, 4:2:2; 40MHz computational speed, data rates; dual 10-bit inputs for Y/C processing; 12-tap FIR structure; internal RAM for 108 filters.
GS4881 sync separator: analog IC separates sync for video scanning from 10kHz to 130kHz.
Circle (607) on Reader Service Card

Gentner Communications 3406
Product line: Audio processors, bandwidth extenders, telco hybrids, patch panels, digital audio workstations; transmitter remote control systems.
Audialc: digital audio storage system, replaces standard tape cart machines.
Digital Hybrid I: digitally processed hybrid for on-air, recording; 16-bit DSP, 2x oversampling at 10kHz rate.
Lazer 2.0: digital limiter, FM stereo generator; 3-band, wide-band, composite limiter; 25-, 50µs pre-emphasis.
Circle (608) on Reader Service Card

GEPCO International 20055
Product line: Audio, video cable; single, multi-pair, dual channel audio stereo; coaxial, triaxial, multi-core, mic, component analog, digital audio, parallel digital video cables; breakout boxes, cable reelers, panels, rack rails, cable assemblies.
Circle (609) on Reader Service Card

Getris Images 19764
Product line: High-end digital graphics; Eclipse paint, animation; Venice paint, rotoscope, animation, compositing; Studio Venice 4:4:4 studio.
Dynamic Paint: with morphing, metamorphosis, non-linear paint effects; option for Eclipse, Venice systems.
Integrated systems: use Sony DNS-100 still stores.
Circle (610) on Reader Service Card

GML, Inc. 1700
Product line: High-end, discrete component processors; rack-mount mixers; moving fader automation.
GML series 2000: moving fader automation.
HRT-9100: discrete line-level mixer; 10-in, 4-out; for production, recording, transfer, disk-based audio post production; 20-bit noise floor equivalent.
Model 8200: 2-channel parametric EQ.
Model 8300: 4-channel mic pre-amps.
Model 8900: dynamic gain controller.
Circle (611) on Reader Service Card

John Gorrell Woodworking 15180
Information not available.
Circle (612) on Reader Service Card

Gorman Redlich 1710
Product line: EBS, weather service equipment, Model CFB EBS encoder, decoder, Model CRW weather radio.
Circle (613) on Reader Service Card

Gotham Audio 4209
Product line: Distributors, audio products.
Circle (614) on Reader Service Card

Graham-Patten Systems 12447

Product line: Digital edit suite mixers, D/ESAM 800 digital system; digital interface converters.
D/ESAM 400: digital edit suite mixer; 32 analog/digital inputs; virtual matrix routes four analog program, four digital program, four monitor outputs.
D/ESAM 800 Ver 2.0: upgrade EPROM adds manual crossfades, auto To/From for auto-assembly.
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, offers advanced features; disk drive stores entire system memory.
DATS: digital interface converters; passes AFS/EBU format digital audio around broadcast and post-production facilities.
Circle (615) on Reader Service Card

Grass Valley Group 10933

Product line: Signal management systems, routers, fiber optic products; videotape edit controllers; production switchers; effects, graphics systems, titlers, paint systems; master control switchers.
8800 series: high density analog video DAs; based on 8500 series; 8 outputs; 10 DAs per 2-RU frame.
Halo video typography: enhancement to Graphics Factory adds dimension to system fonts; glows, bevels, other edge effects.
MCF series: multi-channel digital fiber optic transmission system; to 12 channels of 10-bit video, each with four audio channels.
Model 1000 production switcher: component digital, serial or parallel/I/O; 10-bit processing; similar to Model 110CV.
Model 4000: component digital production switcher; similar to GVG 3000; 2M/Es, 16-input, 4000-2B; 2½M/E, 24-input, 4000-2A.
Performer-SD router: one-RU router for serial digital signals; 10x1 V/A matrix.
Sabre 4100: dynamic editing system displays pictures, graphics, text on single CRT; controls 36 devices.
SMS-8000 series: modular serial digital format conversion products.
SuperEdit Ver. 7.0: software upgrade for VPE editors.
PRONTO: cost-effective affiliate ID system operates as optional character generator.
MAX-9000 series addition: M9205-N, M9206-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-assisted film editing, safe area generators; data encoding/decoding systems.
DTR-313 reader, generator: family with independent LTC, VTC functions.
VR-321 safe title/safe action video reticle generator: dual standard; size, position, store/recall functions; crosshair, crosshatch, keying capabilities.
FDG-345 film data generators: tach-locked time code units with film data VTC generation.
DR-107B time code reader: reads LTC from 1/100 to 1000x play range, inserts character window of time, user bits; window size, position controls.
TCA-143 time code analyzer: shows code phase relative to sync reference; detects color frame, count error, bit error; memory, alarm circuits.
Circle (617) on Reader Service Card

Great American Market 16615
Product line: Lighting utilitie; 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/Techno-Light: automated lighting system; TACT control console.
TwinSpin: double pattern rotator fits iris slot of 6" ellipsoidal instrument; patterns spin in opposition.
Circle (618) on Reader Service Card

Group One Ltd. Unassigned
Product line: Distributor for Focusrite, XTA, KRK.
XTA Electronics: DS400 mic/line distribution; RT-1 real-time analyzer; 1½-octave graphic equalizer.
Focusrite Red range: RED-1 4-channel mic pre-amp; RED-2 2-channel parametric EQ; ISA 215 2-channel mic pre-amp with EQ.
KRK monitor speakers.
Circle (619) on Reader Service Card

GTE Spacenet 19442
Product line: Satellite program distribution/relay.
Global News Express: news gathering service by satellite provided through GTE network.
Circle (620) on Reader Service Card

Guicar Television Unassigned
Product line: Video tape libraries of production material, test signals.
3D & Normal effects, Fantastic Videolibrary: visual images, effects on videocassette; typical segments approximately 1-minute in length.
Videorecorder Video Test: 30-minute videocassette for checking TV/monitor, video tape equipment.
Circle (621) on Reader Service Card

H-H-H

H L Dalls 18867
Product line: Distributor for Belden wire; Neutrik, SwitchCraft connectors; Fluke products; Sony, JVC, Denon DAT, SVHS videotape.
Circle (622) on Reader Service Card

Hallikainen & Friends 1712
Product line: Audio mixers, programmable transmitter control systems.
DRC200 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: 3-channel composite, component, S-VHS waveform/vectorscope; stereo/mono bar graph, polar audio displays; front-panel probe input; auto NTSC/PAL switching; 3H, filter parade, ABC vector overlay; display mixture, full screen or ½, ¼ split displays; RS-232 control via PC, Amiga, MAC.
303 Video Scope: precision composite NTSC/PAL vector, waveform monitor; measure timing, phase, absolute SC-H; line select with cursors, function, numeric indicator; chop modes; 3H combined 3-input or filter parade; 5-function user setup memory; graticle.
304 Video Scope: multistandard, simultaneous component, composite waveform, vector displays on standard or component monitor; component mode, Bow tie, overlay, parade, Y/U/V, component vectors.
502 Stereo Scope: 4-channel mono, dual stereo on-screen display; shows left/right, sum/difference as VU or PPM, polar plot; default, user-defined setups; for analog NTSC, PAL, composite, component YUV/GBR.
535 Video Scope: 2-channel stereo on screen bar graph display, phase indicator; 1/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 ½-size split-screen displays mix with picture or black background.
Porta Scope: portable Video Scope enclosure; available with 301WV, 303WV, 304WV installed; 12Vdc operation; 4 pounds; 10.7x8.4x3.1-inch.
Circle (624) on Reader Service Card

Hardigg Industries 18565

Product line: Equipment transport cases.
Circle (625) on Reader Service Card



Harris Allied Broadcast Div. 2218

Product line: Radio, TV transmission equipment, solid-state AM, FM, UHF, VHF, MW, SW systems; KOT, MSDC UHF transmitters; phasing systems, antennas; remote control products; digital FM exciters.
Radio studio products: Roland DM-80, Arrakis Trakstar, Tascam DA-88, AKG DSE-7000 digital audio workstations; satellite equipment, furniture.
Audiometrics PC compatibles designed specifically for broadcasters.
Sigma Series: IOT UHF TV transmitters; ATV-ready 15-240kW; standard 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 1-60kW); 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-RF efficiency.
DX-150FA: frequency-agile, digital solid-state MW transmitter; 150kW rating; 83% ac-to-RF efficiency.
DT-20FM: 20kW FM transmitter featuring Digit 50W digital FM exciter.
TVT Scepter: 5kW solid-state UHF transmitter (other models 3kW-30kW); modular design; extensive on-air service capability; VDU 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 Audisk.
Platinum Sentry option: access to complete transmitter status, control capability from PC.
Navigator UTV-1000: 1kW UHF solid-state TV transmitter; (other models 10W-1kW), single-tetrode models at 5kW, 10kW).
Digit remote control: PC-based remote control; three models from 16 to 128 control, status, analog channels; HRC-128 connects with three PCs directly or through Hayes compatible modem.
HT series: FM transmitters, solid-state designs ranging from 250W-1kW; single-tube designs from 3.5kW-35kW.
GATES FIVE FA: 5kW frequency-agile, solid-state MW transmitter; Polyphase PDM technology; requires < three minutes for frequency change adjustment.
Digit: digital FM exciter; 50W output; 32-bit direct "digital synthesis" precision; 0.6Hz resolution rivals CD audio quality; available with 16-bit A/D converter for compatibility with analog air chains; use as upgrade to almost any FM transmitter.
RBDS equipment: latest RBDS technology from Re America, other manufacturers.
Platinum HT1000EL: solid-state VHF TV transmitter; 500W, 1kW, 2kW; 100% solid-state; single-phase power.
Harris Allied S-18A: satellite communications vehicle; compact unit for Ku-band; 1.8m Vertex offset-fed antenna; for news, special events; adapts to voice, data.
Harris Allied S-2A: air-transportable satellite uplink; Ku-/C-band for FCC, INTELSAT, EUTELSAT standards.
Systems: transportable uplinks for Ku-/C-band; mobile production, ENG, satellite communications systems; fixed video facilities; turnkey RF, radio studio systems.
Circle (626) on Reader Service Card

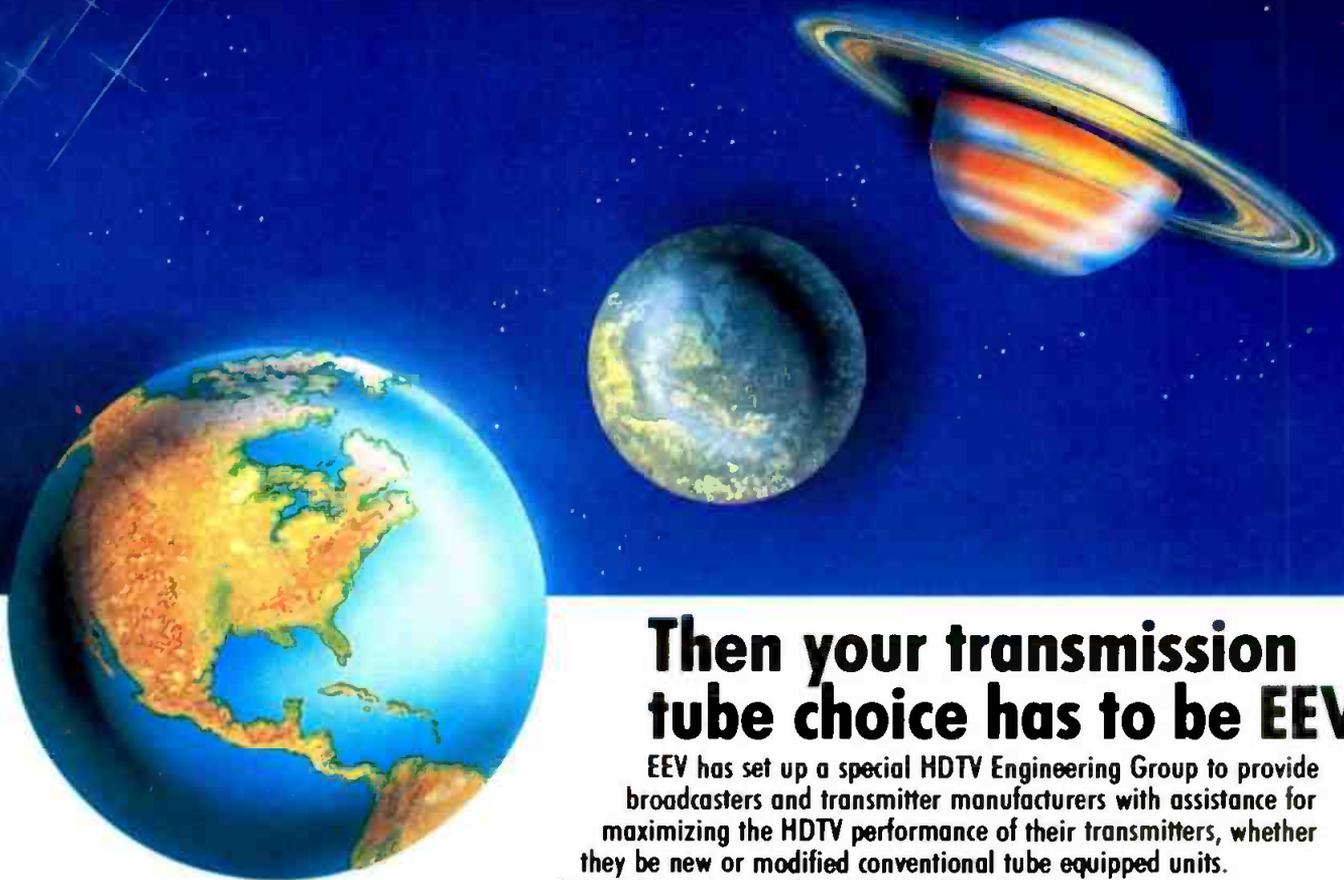
Harrison by GLW 11629
Product line: Audio mixing consoles, control equipment, Series Ten B.
Model MPC: Motion Picture Console features total automation of dubbing.
Circle (627) on Reader Service Card

HDTV Newsletter 19570
Circle (628) on Reader Service Card

HEDCO div. of Leitch 19739
Product line: Routing, distribution equipment for ana-

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 989363 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 *gac*

Circle (54) on Reply Card

www.americanradiohistory.com

log, digital audio, video, pulse, data; audio, video DAs.
ADA-Mix Box series: -816MB, -881MB stand-alone monaural audio, -883MB stereo audio DAs.
Model VCA-680MB: video clamping amplifier Mix Box.
X^{plus} series modules: for VSR-16x16, VSR-16x1 serial video, ASR-8x8 AES/EBU audio routers.
PDA-680MB: Mix Box pulse DA.
VEA-680MB, -681MB: Mix Box series stand-alone video equalizing, EQ with clamp DAs.
UDA-680MB: Mix Box utility, video DA.
SVD-680MB: Mix Box switchable video delay.
GPI-20, GPI-40: 20H/O, 40H/O GPI, joystick control panels for X^{plus} series routers.
X^{plus} series: router modules, control panels.
ATG-880: Mix Box audio tone generator.
Circle (629) on Reader Service Card

Henry Engineering 2700
Product line: Audio, control interface products, dubbing workstations.
Digicord: general purpose digital audio recorder; 5kHz to 8kHz bandwidth.
DigiStor: digital message storage.
Edit Track workstation: for dubbing, voice-over, utility audio control.
Micromixer: 4-input stereo line mixer.
Telephone Information Service: listener information service; 10 messages accessed by Touch-Tone phone.
Twinmatch: dual stereo impedance, level converter.
Circle (630) on Reader Service Card

Hewlett-Packard 13933
Product line: Test equipment, network analyzers, spectrum analyzers.
HP 3589A: time-gated spectrum, network analyzer.
Tools for Video Test/Measurement: product guide focused on oscilloscope, signal analysis instruments.
Circle (631) on Reader Service Card

HHB Communications Ltd 4626
Product line: Distributor of digital audio mixing, recording equipment.
Circle (632) on Reader Service Card

Hi-Tech Furnishings 13635
Product line: Work area furniture.
Circle (633) on Reader Service Card

High Density Circuits 19583
Information not available.
Circle (634) on Reader Service Card

Hipotronics 1616
Product line: Power control equipment, Peschel automatic voltage regulators and variable transformers.
Circle (635) on Reader Service Card

Hitachi Denshi 17546
Product line: ENG, studio video cameras, models; monitors, video recorders, D-2 digital VTR.
SK-F380, SK-F38: studio and handheld cameras; 600,000-pixel FIT CCDs 900-line resolution; digital video processing; fiber, triax, multiformat digital outputs.
RF handheld 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 f/stop sensitivity to 0.4 lux.
Z-ONEC enhanced: additional gain for 2/3" 400,000-pixel camera; RU-Z1 remote control with scene file capability.
Circle (636) on Reader Service Card

HM Electronics Unassigned
Product line: wireless mics, intercoms; specialty local area voice, data transmission systems.
System 800: UHF full duplex wireless intercom; clear, crisp sound to 2,000 feet from belt-pac to belt-pac; coupling three base stations together allows 12 belt-pacs to operate in full duplex or an unlimited number can operate in push-to-talk; uses Communicator belt-pac units.
Circle (312) on Reader Service Card

Holiday Industries 11607
Product line: Magnetic field, RF radiation metering, ELF and field strength meters.
Circle (637) on Reader Service Card

The Hollywood Edge 4627
Product line: Production music libraries.
Circle (638) on Reader Service Card

Hoodman 19207
Product line: Sunshades, Monitor hoods for glare-free viewing of field monitors, viewfinders, teleprompters.
Circle (639) on Reader Service Card

Horita 13447
Product line: SMPTE LTC, VITC time code readers, generators, inserters; TC TOOLKIT tape logging software; color bar, blackburst, sync, audio generators; safe area generators; titler, time/date-stamp generators; GPS-based time code, position logging systems.
GPS-based generators: Master Time Code, Master Sync sources.
PC cards: plug-in board with time code, blackburst, sync, tone generation.
Video DA: user configurable.
Circle (640) on Reader Service Card

Hotronc 13617
Product line: Audio delays, solid-state video recorders, video processors; TBC, frame synchronizers.
AS11: broadcast quality, PC plug-in switcher with digital effects.
AQ21: stand-alone switcher; integral Y/C, composite compatible TBC, frame synchronizer; digital effects, compression, downstream keyer, under PC control.
Circle (641) on Reader Service Card

Howe Industries 19779
Product line: Custom transit, shipping containers.
Circle (642) on Reader Service Card

Hughes Communications 16246
Product line: Broadcast satellite program distribution.
Circle (643) on Reader Service Card

Hughey & Phillips, Inc. 4404
Product line: FAA-approved obstruction lighting, controllers, remote monitoring for tall towers.
Solid-state controller: for dual red and white lighting systems with dc backup.
Circle (644) on Reader Service Card



IBM Multimedia 15171/MM
Product line: Multimedia consulting services; hardware, software.
Ultimedia series: PS/2 486-based PCs; 3-year on-site service with 4-hour response time.
Enterprise Multimedia hardware: RISC System/600, AS/400, ES/9000.
Ultimedia Tools series: products from IBM, other vendors; creativity products; Tools Series Architecture.
Circle (646) on Reader Service Card

IBSS 1324
Product line: Signal routing systems; Ghelmetti audio jackfields.
Ghelmetti GKVA2x32: jackfield for audio signal routing control for analog, digital.
Circle (647) on Reader Service Card

IDB Broadcast Group 5002
Information not available.
Circle (648) on Reader Service Card

IDB Communications 15766
Product line: Satellite communications systems; Fly-away Phone satellite terminal in a suitcase.
Circle (649) on Reader Service Card

I.DEN Videotronics 18949
Product line: TBC products, synchronizers, videowall processors, standards converters, scan conversion units; video production systems.
IP-450: standards converter for 8-bit multi-directional operation among NTSC, PAL, PAL-M, SECAM; composite, component Y/C, RGB.
IP-X50 scan converter: flicker-free scan conversion from VGA, Mac II to video; composite, Y/C, RGB outputs in NTSC, PAL.
IVT-20-1, -2: dual-channel TBC, transcoding with com-

posite, component, Y/C I/O. RGB/S inputs: -1 for 4:1:1 processing, -2 for 4:2:2 processing.
IVT-60: 1-to-6-channel transcoding TBC/synchronizer.
IVT-7, IVT-7/RGB: composite, Y/C TBC with Freeze; -RGB includes RGB I/O.
IVT-9 TBC: full transcoding TBC/frame store with strobe, freeze, sepia effects; composite, component, Y/C I/O; single channel.
Quartet: video production system; 4-input switcher, effects, dual TBCs, keyer; operates from front panel or Windows software.
TBCARD, TBCARD II: plug-in TBCs for Amiga, IBM; TR-7 remote; composite I/O; TBCARD has Y/C input; TBCARD II has Y/C I/O.
Videowall processors: VW-400 2x2 matrix, expand to 4x4 system; VW-160 series in 2x2 to 4x4 systems.
VW-300 videowall processor: modular, expandable from basic to advanced multi-input system; 4 input, 1 effects and 18 output cards in mainframe cage; HDTV input card for 16x9(4x3) ratio walls supports 1125/60; dual-mode output cards; pixel duplication achieves resolution to 1,500 points per line.
Circle (650) on Reader Service Card

IDS/SAIC 19253
Product line: Eidophor video projection systems.
Circle (652) on Reader Service Card

Ikegami Electronics 19319
Product line: 1/2", 2/3" 3-FIT CCD video cameras for field/studio, portable use; video monitors; portable microwave links; digital codecs.
16 series: 500-line display professional color monitor.
18 series, 19 series, 20 series: color monitors with auto setup; -18 for 600TVL, -19/-20 with 700TVL resolutions.
30 series: color monitor, hi-res 20" diagonal CRT, auto setup feature.
DMC-4501, -4502: digital codec multichannel compression teleconferencing processor; carries four NTSC visual, eight sound signals; DS3 standard.
HC-240A: upgraded 1/2" camera using 3 FIT CCDs.
HC-340: portable camera with three 2/3" FIT CCDs.
HK-343, HL-43: field/studio camera, portable companion uses three 2/3" FIT CCDs.
HK-355A: studio/field CCD camera; RGB wideband triaxial system; 2/3" FIT CCDs for 800-, 700-line images.
HK-377, HL-377: ultra wideband studio/field, portable companion CCD camera; resolution to 900+ lines; 2/3" FIT CCDs with 600,000-pixel arrays; triaxial cable.
HL-55A, HL-55V: 3-FIT CCD camera and camcorder.
PM9-5A, PM-9030: monochrome monitors; 9", 14".
PP-70, PP-80: portable microwave; -70 with 2/7/13GHz, -80 for 2/7GHz.
Circle (653) on Reader Service Card

ILC/Daymax 17779
Product line: Lighting products based on metal halide lamps; DSB-575W ballasts.
Circle (654) on Reader Service Card

Illbruck/SONEX Acoustical Products 4826
Product line: Acoustic material, treatments, SONEX acoustical foam, ProSPEC barriers, composites.
ProSPEC: available as pyramidal acoustical foam shapes, composite barriers.
SONEX: fabric covered panels.
Circle (655) on Reader Service Card

Image Logic Corp. 17778
Product line: Videotape editing software; Log Producer 22 automated logging on Betacam players; AutoCaption closed captioning system.
Direct Caption Card for AutoCaption system; user previews captions over video directly from the PC; eliminates line 21 encoder, decoder to view captions.
Universal EDL maker: addition to Log Producer; EDLs, scene lists can be generated from Log Producer logs.
Circle (656) on Reader Service Card

Image Video 11311
Product line: Signal routers, #9501 20x30 video, dual/mono audio; #9520/21 20x10 video, dual/mono audio router; #8010 master control switcher.
A1240 router: for AES/EBU signals 10x1, 64x64.
A860: A/D conversion of two analog audio inputs to one AES/EBU digital output.
D960: 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.

DigiCart/II A MINI WORKSTATION. A CART MACHINE.
A WELL VERSED DIGITAL AUDIO RECORDER.

360 Systems

PROFESSIONAL DIGITAL AUDIO

18740 OXNARD STREET, TARZANA, CALIFORNIA PHONE 818 342 3127 FAX 818 342 4372

Circle (131) on Reply Card

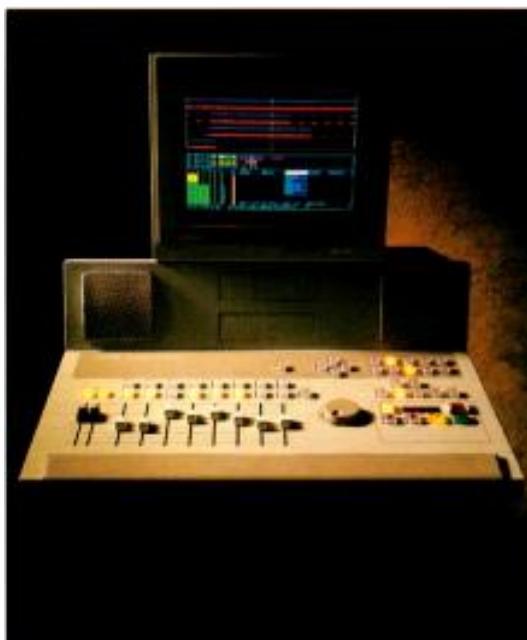
To Make Money in Radio Advertising, You've Got to Push the Right Buttons.

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

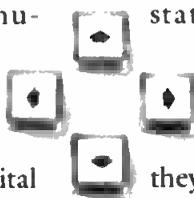


could produce spots in one-third the time. Which meant they had time for a certain luxury called creativity.



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) 351-0500
AKG is a registered trademark of Akustische u. Kino-Geräte Ges.m.b.H., Austria. ©1993 AKG Acoustics, Inc.

Circle (130) on Reply Card

APC980 station automation: for small to intermediate markets for real-time programming.
Circle (657) on Reader Service Card

Imagine Products 10553

Product line: Timecode equipment, editing software; software for production organization with off-line editor EDLs, timecode management.

Micro Reader: miniature LTC reader for laptops; battery powered.

Serial Converter: PC control of RS-422 devices; self-powered for field use.

TEP V1.4 software: Executive Producer with VTR control, time-of-day, search/replace, ASCII tab-delimited output; AVID, EMC compatibility, SMPTE VITC readers.

Circle (658) on Reader Service Card

IMC/International Music Corp. 5420

Product line: Akai digital recorders, DD1000 MO disk recorders; stereo digital samplers.

CD 3000: sample player with integrated CD-ROM drive.

DD-QMac II: editing software for DD1000 disk recorder.

DR 1d: multitrack hard disk recorder.

S01: MIDI digital sampler.

S200, S3000, S3200: stereo digital samplers.

Circle (660) on Reader Service Card

ImaMX 16684

Product line: Digital post-production workstations

VideoCube: workstation for video post production; disk-based non-linear editing; real-time effects creation; high resolution, anti-aliased character generator; edits, mixes CD quality audio; one hour storage of video, two hours audio, expandable with additional storage modules.

Circle (661) on Reader Service Card

Industrial Acoustic/IAC 13841

Product line: Acoustic, sound control products.

STC 49 door: acoustical door; Noise-Lock design.

Circle (662) on Reader Service Card

InLine 16483

Product line: Signal distribution products, video DAs, universal computer interface; line doubler.

IN1240: handheld scan doubler and quad decoder.

IN3710/20 RGBS switchers: 4, 6-port RGBS, video switcher, DA.

IN40000 V-Net: hi-res video network.

IN60000 Pathfinder: matrix switchers; 16 channels for 120MHz video, audio routing; reconfigurable.

IN7000, IN8000, IN9000 series: cable, connectors.

Circle (663) on Reader Service Card

Innovation Optics 17569

Product line: Special purpose camera lens, Probes for 1/2", 3/8" cameras; Lumemyte fiber optic lighting.

3-axis Mini-Jib arm: table-top, portable camera precision motion control; attach to heavy tripods, dollies, professional fluid or geared heads.

Mini-Mover enhancement: portable motion control table, joystick controllers; 4-axis movement; memory for motion repetition.

Right angle Probe: 90° angle-of-view for cameras shooting table-top presentation.

Series 6000: 15"x1/2" 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 2306

Product line: Audio processing systems, digitally controlled system; FM generators, FM/FMX system.

DAVID: stereo audio processor, FM stereo generator.

The Sentinel 550: 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 32-bit to video converters.

Component Modules: accepts, transmits 3-wire component video; RGB, YUV, Betacam SP, MII.

Software Release 3.0: user-configurable, open architecture system control IR products.

Circle (668) on Reader Service Card

Intelliprompt (DREAMDATA) 19328

Product line: Video prompter systems using IBM PCs, Intelliprompt II.

Circle (669) on Reader Service Card

Intelvideo 19205

Product line: Video pre-coder/color detailer, digital color encoder, color corrector, SG sync generator.

DEC 7: NTSC color decoder; digital adaptive comb filters, linear digital color modulation.

INR 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. 3918

Product line: Receivers for satellite data transmission.

Circle (672) on Reader Service Card

International E-Z UP, Inc. 19851

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; 8x8 to 10x20 feet.

Circle (673) on Reader Service Card

International Tapetronics/ITC 4602

Product line: Audio recorders, ITC 99B, Series 1 cartridge machines; digital recording products; audio signal control products, Audio Switcher.

DigiCenter: 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 reproducer, recorder, mono, stereo with Dolby HX Pro headroom extension, digital timer; active balanced I/O.

Circle (674) on Reader Service Card

Intertec Publishing Corporation 15181

Publication titles:

- **Broadcast Engineering**
- **Video Systems**
- **World Broadcast News**
- **Live Sound**
- **Sound & Video Contractor**

Circle (675) on Reader Service Card

Intraplex 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

IRT 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; IFB available.

VA-393, VA-394: 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 spec.

Video Isolator: 500V protection; hum isolation between studio buildings, other locations; 60dB isolation, differential input, cable EQ to 330 feet, back porch clamp; >10MHz bandwidth.

VA-391, VA-392: for fiber-optic transmission of video, four audio channels on 1300nm single-mode fiber.

VISCAS: 7.5kHz vertical interval audio system; carries audio within the video signal.

Circle (678) on Reader Service Card

Italiana Ponti Radio SRL 15169

Product line: Radio transmission, STL products.

Circle (679) on Reader Service Card

Itame SA 4606

Product line: AM, FM radio transmitters, translators, STL microwave. New products to be introduced at the exposition.

Circle (680) on Reader Service Card

ITELCO spa 15722

Product line: Radio, television transmitters, STLs.

Circle (682) on Reader Service Card

ITS/Information Transmission 12136

Product line: UHF TV transmitters; UHF Exciter Plus replaces older parts of transmission systems; wireless cable products.

Exciter Plus system: VHF exciter, other stages, except final PAs; replaces 8791 stage of RCA F-line systems.

ITS-1232A transmitter: 2nd generator -1230A; high picture quality, external diplexing, redundant parallel high gain amplifiers in solid-state 1kW UHF translator.

Wireless cable products: 1610E 20W, 1615E 50W, 1658E 100W, 1640D frequency-agile transmitter, 1694D channel combiner, 650 horn antenna with booster; complete 12-channel 20W wireless cable transmitter system.

Circle (683) on Reader Service Card

J-J-J

J-Lab 12436

Product line: Video production utilities; field, portable video switcher; DAs, EQ, tone source.

CCD-3: 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 15733

Product line: Video processors, Yamashita scan converters, sync generators; Feral Industries TBC/synchronizers; Hamlet Video video test equipment.

Feral Industries C-100: TBC/synchronizer; multiple inputs, outputs, transcoding; NTSC, PAL; freeze with field 1, field 2 select, fade-to-black; proc amp controls with input memory; C-100 Plus adds adaptive digital comb filtering, automatic DOC.

Feral Industries MICRO: PC plug-in TBC/synchronizer; 4:2:2 processing; adaptive digital comb filter, auto DOC; composite, Y/C I/O, transcoding, enhancement, gen-lock, freeze with strobe.

Feral Dual 4:2:2 TBC.

Hamlet HVI 300 series: combo waveform, vector monitors; waveform, vector, audio signal displays on standard monitor, full-screen or combined with video.

YEM Sync generators: gen-lock dual generator; rubidium-controlled system.

YEM ENC-3000: gen-lock color encoder.

YEM SW-950: computer graphics video switcher.

YEM DA-950AT: super wide-band video DA.

YEM scan converters: CVS-980, 980M monochrome, 980H high-resolution; CVS-970AL graphics to HDTV/31.5kHz; CVS-907 VGA-to-NTSC; CVS-910 real-time automatic system.

YEM EDEC-2000: digital decoder, line doubler; 3-D comb filter, motion adaptive line scan interpolation.

YEM VSG-2000A: digital test generator.

Circle (686) on Reader Service Card

Jampro Antennas 3424/11251

Product line: TV, FM CP transmission antennas.

JHD: low VHF dipole panel antennas.

JUHD: broadband UHF panel antennas, 4-dipole.

JLHP: HP translator antennas.

JLST: CP translator antennas.

JY-series: YAGI antennas for VHF, UHF, FM.
Circle (687) on Reader Service Card

JBL Professional 15713
Product line: Audio monitor products, speakers, amplifiers; audio processors.
Control 8SR: 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.
M712: 2-channel gating compressor, limiter.
4400A series: monitors; 4408A 8" 2-way, 4410A 10" 3-way, 4412A 12" 3-way; Symmetrical Field Geometry (SFG) magnets; extended listening without ear fatigue.
4206, 4208: 2-way, 6", 8" console-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 (690) on Reader Service Card

Jensen Tools 13406
Product line: Numerous tools, kits for technicians, engineers; meters, signal source generators, computer maintenance kits; Fluke DMMs.
Circle (691) on Reader Service Card

JNS Electronics 2306
Product line: Signal distribution products, the Frame 8000 series, CD quality audio routers.
8000 series modules: SDA.8705 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: MA.8711 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 100x1 router; panel, PC control.
9000 series: audio router; mono, stereo to more than 100x100 matrix; panel or PC control.
D-MUX 500 series: stereo/mono audio multiplexing system; 16-bit technology; multiple 15kHz, 7.5kHz, 3kHz audio feeds with digital or microwave interconnecting circuits; D-MUX MC 501/502 auto change over.
RFL700 series: 1.5-2.3GHz digital microwave link for D-Mux; E-1, T-1 structure.
Circle (692) on Reader Service Card

JVC

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; 750-line horizontal resolution; 62dB S/N.
BR-S411UB S-VHS recorder: docking portable with time code; XLR audio I/O; search to 7x play speed.
BR-S525U S-VHS player: still, slow-motion, Vari-Tracking from -2x, +3x play speed; programmable playback changes ±20% time range in 0.1% steps.
BR-S605UB S-VHS recorder: accepts computer video; video insert edits; SA-K27U time code; extension slots.
BR-S622U recorder, edit feeder: similar to -S822U w/o editing functions.
BR-S822U S-VHS editing recorder: uses compact, standard S-VHS cassettes; open architecture system.
KY-17B, KY-17FIT: CCD cameras; -17B with IT MicroLens devices; -17FIT with FIT CCDs.
BR-S422U S-VHS docking recorder.
RM-G870U edit controller: 9-pin RS-422, GPI interface;

A/B-roll; 128-event EDL memory.
TK-F7300U: single CCD camera captures still-frame HDTV, computer images; 2,200x1,728-pixel.
GY-X2U S-VHS camcorder: full-size with 3 1/2" IT CCDs with MicroLens; light to 3 lux; 650-line resolution from camera; 2-hour record capacity; 15.5 lbs, low power consumption; plug-in VTC/LTC generator.
Circle (693) on Reader Service Card

K-K-K

K&H Products 16369
Product line: Camera support products; transport cases, shoulder case, camera case.
AR-222: case for Marantz PMD-222, -201, -021, -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.
RS537/5 rain slicker: fits Sony DXC-537, BVV5 VTR.
AR-D10: case for Sony TCD-d10 recorder.
Circle (694) on Reader Service Card

Kaleidoscope 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 wheel control choices; dc/ac power.
Circle (695) on Reader Service Card

Kangaroo Video Products 16117
Product line: Production bags, utility products.
EMIKOTE 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

Drop by the Intertec Publishing Corporation booth #15181; visit with the editors.



SCA Data Systems, Inc.

The Leading Manufacturer in SCA Products

Standard Products

- RD-57 RDS Generator
- 9600 BPS subcarrier data system
- Music 4® four channel audio/data system
- PG 57-3 phase-locked paging generator

Introducing

- Music 4® plus 9600 high speed data and audio system

SCA questions...We are the solution.

Come visit us at the NAB Booth #4402

225 Arizona Avenue, Suite 350, Santa Monica, CA 90401 • Tel. 310/576-0655 • Fax. 310/576-0566

Circle (76) on Reply Card

Karl Heltz 13631
Product line: Mic fishpoles; GITZO tripods, fluidheads, monopods, related equipment.
#180, #280: fluid heads; 90° tilts; 360° pan; for cameras to 7 lbs, 10 lbs; Sport Eco Report Eco tripods.
#380: fluid head; 90° front, 45° rear tilts; 360° pan; adjustable drag; quick release. shift plate centers cameras to 15 lbs; Inter Pro Studex tripod, levelling ball 3.
Circle (697) on Reader Service Card

Kavouras 11303
Product line: Doppler weather radar; color radar access system.
NEXRAD service access: displays Doppler weather radar data on Kavouras weather systems.
RADAC 2100: color weather radar shows 6-color graphics; database; access National Weather Service, FAA networks; multi-image, high resolution.
RADAC DBS: real-time national composite, regional composite, single-site weather network.
TRITON 17: advanced graphics, weather workstation; 386/486, i960/i860 RISC pipeline processor; 8-, 16-, 24-bit animation with HR 24-bit backgrounds; fly-through perspective; 256Mbyte animation memory.
Circle (698) on Reader Service Card

Kay Industries 4901
Product line: Conversion products for 3-phase power from single-phase input.
Circle (699) on Reader Service Card

KD Kanopy 5000
Information not available.
Circle (700) on Reader Service Card

Keystone Communications 12433
Product line: Production services.
K2 skylink: trans-Pacific service with Japan.
Circle (701) on Reader Service Card

Killer Tracks Music 5218
Product line: Production music libraries.
Circle (702) on Reader Service Card

Kings Electronics 16831
Product line: Connectors, TTTE PAK digital video jackfield; KCM-5000 cable management program.
Front load jackfields: 26-, 32-position, standard, mini jacks; self-terminating, non-normal circuits.
Serial Digital video jack: matched 75Ω self-normalizing, internal termination; dual video jacks.
Circle (703) on Reader Service Card

Kintronic Laboratories 4824
Product line: Antenna directional phasing, isolator for AM/MW radio facilities.
HF Baluns: feedthru panel; open-wire feedline.
Mating network: matching system permits rapid AM/MW transmission system tuning.
Circle (704) on Reader Service Card

Klark-Teknik 1000
Product line: Digital audio recording systems, DN735 RAM recorder, DN726 stereo delay line.
Circle (705) on Reader Service Card

Kline Dielectric 20053
Product line: Joint venture; turnkey design, fabrication, construction, installation of towers; transmission equipment; inspection, maintenance services; HDTV feasibility studies; structural design analysis.
Circle (706) on Reader Service Card

Kline Towers 20053
Product line: Design, fabrication, erection of all tower types, space frame structures, special structures; new tower designs, analyses of existing structures; inspection, maintenance service.
Circle (707) on Reader Service Card

Knowledge Industry Publications 20069/MM
Product line: Industry reference publications.
Circle (708) on Reader Service Card

Knox Video 16433
Product line: Video graphics equipment, titlers, desktop post-production systems.

Desktop Video Manager DVM: PC platform with 4-layer, 4-input switcher, on-line editor, event controller, downstream keyer, gen-locking sync generator.
PC 40: real-time titler on PC card.
RS series routers: 3-channel, 8MHz bandwidth; RS-8x8 8 audio, 8 video NTSC; PAL (no audio), NTSC or PAL (mono or stereo audio). Y/C 525 or 625 (mono audio); RS-12x12 and RS-16x16 with stereo audio available.
Circle (709) on Reader Service Card

KORG USA Unassigned
Product line: Audio production, post equipment.
SoundLink production system: 8-track random access hard disk recorder, editor; digital mixer, EQ, effects processor; 110-minute record capacity; 48kHz sampling; expands to 11-hour; 16-track MIDI recorder.
Circle (710) on Reader Service Card

Koto Luminous Corp. 17970
Product line: Metal-halogen, argon lamps.
Circle (711) on Reader Service Card

Kowa Optimed Inc 1615
Product line: Magneto-optical disk recording for audio.
AF245 audio filing system: 3.5" MO disk with SCSI interface, hard disk (four maximum); LAN interface for multiple controllers; random access; one-touch simultaneous record, play; 2-channel playback option.
Circle (712) on Reader Service Card

L-L-L
Lakeside Associates 2102
Product line: Production facility design, construction.
Design consultants: video, audio, post production and motion picture studio projects.
Circle (714) on Reader Service Card

LDL Communications/Larcen 19734
Product line: VHF TV transmitters; low-band VHF CP transmitting antennas.
TTS VHF transmitters: TTS16M 16kW transmitter

GOOD NEWS FOR VIDEO BATTERIES.



CASP® BATTERY CHARGER/ANALYZER/RECONDITIONER

Christie's microprocessor-based CASP® systems maintain your video batteries at peak amp-hour performance. CASP® analyzes and charges all battery makes, and electrochemically rejuvenates nickel-cadmium types, even if badly faded.

CASP®/2000 is a versatile model, programmable from its own keyboard. CASP®/1200 is a cost effective, pre-programmed, GO-NO GO model. Both models use Christie's exclusive ReFLEX® charging technique, have six channels for battery processing, indicate the process step on an LCD display, and operate unattended.

For full details contact Christie today.

CHRISTIE®

18120 So. Broadway, Gardena, CA 90248
 (310) 715-1402, FAX (310) 618-8368

® CASP, CHRISTIE and ReFLEX are registered trademarks of Christie Electric Corp.

Circle (77) on Reply Card

See us at NAB Booth #12809

It can help you measure
**both in-house and
 outgoing audio paths.**

It lets you check the
**quality of your
 incoming audio feeds.**

(same exciter as TTS30M); TTS5M 5kW TV transmitter with CCIR exciter; TTS250M 250W transmitter for small community markets.

Remote Diagnostic System: for Larcam transmitters; PC assists in solving system problems through pictorial presentations of control panels and flow diagrams.
Circle (715) on Reader Service Card

Leader Instruments 11703

Product line: Audio, video, RF test equipment; component/composite multistandard waveform monitors, signal generators.

#2250: 4-channel oscilloscope; 250MHz bandwidth auto-setup, auto-calibration; 100 front-panel settings; 4-cursor readout, 4-digit sync frequency readings; separate A/B trigger processing; TV line select.

#406NPS: test signal, sync generator for NTSC, PAL, SECAM III; 22 signals with programmable parameters; VHF, UHF output 39-900MHz; composite, component outputs; store, recall 100 test setups.

#5872A: combined waveform, vector monitor; full line select; R-Y operation for DG/DP measurements; overlay of vector, waveform displays, A and B inputs.

#952: TV/CATV/SAT signal level meter; auto-ranging, auto-search, programmable level readings in choice of engineering units for VHF, UHF, CAT and satellite IF frequencies; simultaneously measures, displays 128 channels.

Circle (716) on Reader Service Card

Lectrosonics 12508

Product line: Wireless mics, plug-on transmitter mics. DC1 mic preprocessor: for automated audio consoles to prevent late mics and permit lower noise levels.

UHF wireless: ENG/EFP field configurations, studio diversity systems; pilot tone squelch for noiseless power up/down; dual-band companding, S/N ratio; anomaly-free audio, wide-band deviation.

Circle (717) on Reader Service Card

Lee Filters Unassigned

Product line: Color effect, correction and diffusion lighting filter media for professional lighting designers, cinematographers.

Circle (718) on Reader Service Card

Leightronix 17377

Product line: Time event controller for automated playback, recording, switching; telephone remote equipment control; PC-based VHS/S-VHS commercial insertion control software; interactive video equipment control; custom control engineering, design.

C-VOICE: telephone remote video equipment controller; remote access to 64VCRs, 64 switcher destinations.

LGX-DUB: PC-based duplication control software.

Mini-T-IR event controller, switcher: for automating multiple VCRs with A/V switching.

PRO-16: programmable videotape playback, record controller and switcher.

LGX-Request: videotape playback controller; VCR control and A/V switcher for telephone remote control of videocassette programming.

TCD-RT event controller: to automate VCR, routing.
Circle (719) on Reader Service Card

Leitch Video 19738

Product line: Specialized analog, digital equipment for broadcast; signal distribution, processing products; sync, test generators; signal encryption, converters; still storages; clocks, timers, time code products.

ARG-880, VRG-680: audio, video remote gain DAs.

MDX-7000 series: digital interface series converters, parallel-to-serial, serial-to-parallel video.

SPG-1312N: master sync generator.

1302/2602 series: sync and test generators.

STILLFILE interfaces: PC Paint, linear key capabilities.

DigiBus: integrated format conversion systems.

STILLFILE Special Edition: still storage system includes new features.

6800 series: serial digital distribution amplifiers; compatible with MDX-7000 series converters.
Circle (720) on Reader Service Card

LEMO USA 11317

Product line: Audio, video connectors.
Circle (721) on Reader Service Card

Blaine Lentz Lighting Assoc. Unassigned
Lens accessories. (See in booth 18001, 15757, 17729, 16958.)

Pro Lens Shade: film-style lens accessory eliminates lens flare; for larger lenses with protective housings.
Circle (1134) on Reader Service Card

Leonard Studio Equipment 16084

Product line: Lighting, camera support products.

Lenny Arm: camera crane arms; 4.25-29.25' maximum lengths; greatest height, 56' from horizontal.

Sidewinder: camera dolly with battery-powered steering; for lens height 22" to 9'; load to 900 pounds.

Super Peewee II: small camera dolly, hydraulically operated arm; 23.5" pneumatic tires.

Circle (722) on Reader Service Card

Leonetti Company 16375

Product line: Studio lights, Sunray HMI, ballasts.

Electronic ballasts: EB 1200 120Vac; EB 2500, EB 4000 240Vac units.

Fluorescent 4-tube or 8-tube fixtures producing high output flicker-free lighting.

Sunray 18,000: HMI Fresnel instrument.

Sunray 2500W: HMI PAR instrument.
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 & S-DIF-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 1713-16

Product line: Digital audio workstations; stereo audio time compressor, expander systems.

CP-1, CP-2, CP-3: digital surround sound processors.

MIDI remote Ver 4.0: software for bidirectional communications with digital audio processors; stores setup information.

Opus Software V 3.0: external machine control; AutoMix console automation; CPEX time compression, expansion, pitch 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: 9-light HMI system.
Circle (728) on Reader Service Card

Lightning Eliminators & Consultants 12901

Product line: Lightning prevention systems, Spline Ball ionizer, Dissipation Arrays; Chem-Rod chemically activated grounding electrodes; transient suppression.

Grounding Augmentation Fill: low resistance material for low resistance grounding.

Guy Charge Dissipation Choke: protects against static charges.

Circle (729) on Reader Service Card

Lightning Master Corp. 12062

Product line: Bonding, grounding products, services; Loresco Power Fill, tower leg ground straps; design, analysis services; surge suppression; structural lightning protection products, Streamer retarding air terminals.

Circle (730) on Reader Service Card

LINK 11662

Product line: Signal distribution, system timing, test, measurement equipment; audio monitor amplifiers.

IEC-721, -722: black burst generators; -722 includes gen-lock, tone source.

PSW-826: video, audio switcher; 16x1 or dual 8x1.

Starflex 3690: transcoder for RGB to Beta, MII.

PRC-865: video AGC proc amp; auxiliary 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 12Vdc/110-220Vac mini-Scrollbox; runs on Palmtop DOS computer; dual-screen editing, instant corrections, Runorder.

A-6000: enhanced A-6000 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

LNR Communications 3012

Product line: Satellite communication products; video exciters; digital audio system; automatic ID device.

DAVSAT: cost-effective digital satellite communications; capabilities include audio, video, voice, data, fax via C/Ku-band; MVC-10 mobile voice communication; DAD-10 digital audio distribution; DVC-10 digital video compression.

LVM series: low-profile data quality video exciters; combine compact video modulator with low-phase noise digital-ready upconverter.

Circle (733) on Reader Service Card

Logitek 1424

Product line: Audio mixers; audio level metering systems; audio DAs.

Bright-VU LED: audio level meter; larger display range, peak-hold indicator; desktop, rack-mount, panel meter models; percent mono meter.

4VUB: four 3/2" analog VU meters in 2RU package; lighted movements; balanced, bridging inputs.

Mariner enhancement: digitally controlled analog faders; low distortion of direct audio faders with reliability and tracking of VCA units.

ADA-4x4 DA: 1RU rack-mount unit configures as four 1x4, two 1x8 or one 1x16 DA.
Circle (734) on Reader Service Card

Louth Automation 20016

Product line: Broadcast automation systems.

ADC-10, ADC-100: automation for low end/cable markets and advanced systems for multilist, multichannel operation.

Circle (735) on Reader Service Card

Lowel-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: unlicensed applications, hearing assistance, localized rebroadcasting.

LPB 7000 series: stereo audio consoles; P&G linear faders, three stereo output buses; mono mixdown, mix-minus option; 12-, 18-input models.

Message Manager.

PC-based audio: storage, retrieval system.

Telephone Access Remote controller.

Travelers Information System: 1610kHz operation will provide NAB convention information.

Circle (737) on Reader Service Card

LSI Logic Corporation MM

Product line: Integrated circuitry supporting data compression.

L64111: audio decoder designed for MPEG applications; delivers CD-quality sound with synchronization of audio and video.

L64112: video decoder designed for MPEG applications; produces studio-quality component video signals.

Circle (xxx) on Reader Service Card

LTM Corp of America 16081
Product line: Superlite and Cinepar HMI lighting.
20K: incandescent light.
Cinepar 200W S/E: single-ended PAR HMI light.
Cinepar 575 S/E: single-ended PAR HMI fixture.
Torch: hand-held 200W S/E HMI light.
Circle (738) on Reader Service Card

Lucasey 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

Lyan Greenberg Electronic Prompting 19567
Product line: Computer-based prompting systems, universal camera display system.
Telescroll International: extended software; foreign language character sets for Spanish, French, Japanese.
Circle (740) on Reader Service Card

Lyon Lamb Video Animation 11315
Product line: Animation systems; RTC real time scan converter.
I-VAS: animation controller for SG Iris Indigo workstation; compatible with MiniVAS 2; integral TC reader, generator; connections for two RS-422 VTRS, two RS-232 VTRS, two Control L/S vtrs.
VASTools4Mac: assists in recording Macintosh graphics to videotape or disc; supports 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

Macrovision 11349
Product line: Videotape security and nonduplication protection products.
VES-TD: video transmission scrambler for business.

teleconference, educational programming; complete concealment of audio, video.
Circle (743) on Reader Service Card

Magic Teleprompting Inc 12804
Product line: Prompting systems.
Circle (744) on Reader Service Card

Magni Systems 19158/MM
Product line: Signal monitoring products; multimedia equipment.
MM-W/V: Magni Monitor waveform/vector overlay with automatic standard detection.
SC-CSD: Signal Creator, serial 525/625 D1/D2 output.
VGA-Pro: VGA Producer Pro, VGA-to-NTSC or PAL encoder fits 8-bit PC expansion slot for direct connection to VGA card connector; vertical text scroll, pan, zoom features.
Circle (745) on Reader Service Card

Magnum Tower 4309
Product line: Manufactured radio, TV and communications towers.
Circle (746) on Reader Service Card

Mainframe Computer Graphics 19565
Product line: Newsroom, graphics products.
ATM/TrueType font conversion: software changes mainstream fonts to Inscraper type; enhances font library of 2000 Roman, non-Roman video typefaces.
Inscraper titler with RTX: supports Matrox Studio/Illuminator Pro, VMAXX board from Interlace Engineering; 32-bit pixel-depth, linear key channel, component video output; multistandard resolution.
Circle (747) on Reader Service Card

Major Engineering 17770
Product line: High density storage for D2, Beta, M-II, VHS videotape cassettes.
Circle (748) on Reader Service Card

Management Graphics 16477
Product line: Solitaire Image Recorders for animation,

special effects, digital compositing.
Circle (749) on Reader Service Card

Manhattan Production Music 13629
Product line: Production music, audio effects libraries.
Audiophile Sound Effects: library of 495 popular effects for radio, TV, film.
Circle (750) on Reader Service Card

Marco Inc 17578
Product line: Modular rack systems.
Circle (751) on Reader Service Card

Marconi Communications Systems 2526
Product line: Test, measurement equipment; radio/TV transmitters.
B6600 series: FM radio transmitters; solid-state redundant 300W modules; hot pluggable; dual drive with output to 10kW in one cabinet.
Circle (752) on Reader Service Card

Mark Antennas/Radiation Systems 20014
Product line: Grid-type microwave antennas.
Truncated antenna: 8' category A performance with 6' tower windloading; 2GHz, 7GHz, 13Hz.
Circle (753) on Reader Service Card

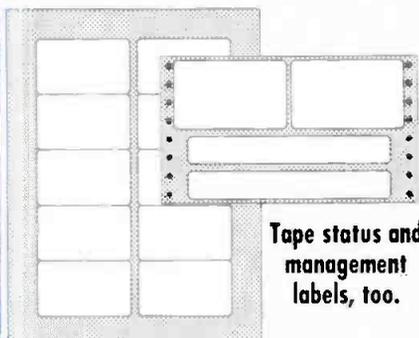
Mark IV Pro Audio Group 1000
Product line: Distributor for concert sound products; Midas, DDA consoles; Klark-Teknik audio processors.
Circle (754) on Reader Service Card

Mart Electronics 3921
Product line: ENG products. STL-10 studio transmitter link; RPT-30 ENG transmitters.
Circle (756) on Reader Service Card

Matco Mfg & Test 11114
Product line: Video record, playback automation, MA-201 playback system; MA-300 tape duplication control. MA-204A: automated playback with 22x3 stereo AFV router; loss-of-video protection; random, sequential list scans; parallel, serial, IR VTR control; 24 control

Labels

The largest selection of video and audio labels for laser and pin-fed printers. Available blank or custom printed with your company logo.



Tape status and management labels, too.

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
 Business Division 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.

outputs for VTRs, other devices.

MA-130: DTMF decoding interface; for local commercial insertion into satellite transmissions; supports five 4-digit DTMF decoders; come with one decoder board.
Circle (757) on Reader Service Card

Matrox Electronic Systems 16615/MM
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, multimode alpha channel output; integral TBC, digital video effects.

Matrox Marvel: multimedia controller; applications for video conferencing to frame grab in DTP.

Matrox Studio: complete desktop editing; for EISA PC; A/B/C roll editing, 5-layer video and graphics mix effects; integral TBCs, 32-bit graphics; three DVEs, two keyer channels; 12-track audio mix, editing software.

Matrox Studio enhancement: non-linear editing; 3D DVE add-on board with A/B roll system; fast cuts editor, D1, analog Y/R-Y/B-Y component 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 16653
Product line: ITE pedestal, pan/tilt series; cranes.

Bates cables: Y-cables connect two 60a units to 100a source; 100a cables in 25' incremental lengths to 100'.
Classic C-stand: 40" riser, grip head, single extension gobo arm.

Hollywood boxes: power distribution; duplex or stage plug facilities; 40a, 60a.

Runway bases: C-stand with wheels; 20", 40" riser.

TPD Box #387601: temporary power distribution box; 3' 3-color coded cables with ground cable.

ITE H80, H90: fluid heads, quick-release mechanism,

slide plate, 100mm ball, telescoping handle.

ITE MHCS, MHCL: hex shipping cases for T/H80, T/H500, T/H48 or T/H90, T/H600.

ITE T50/H80: tripod, fluid head with spreader.

ITE T50/H90: tripod, fluid head with spreader.

ITE T85 ENG tripod: 3-stage, spreader, 100mm bowl.
Circle (759) on Reader Service Card

Maxell Corporation of America 16122

Product line: Audio cassettes, reel-to-reel; U-matic, VHS, D-2, Betacam (SP), 8mm videocassettes; Type C reel media.

D-3 high-density digital videocassettes.
Circle (760) on Reader Service Card

McCurdy Radio Industries 13111

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. 20024

Product line: TWT amplifiers for C, Ku-band.

M/N 10541: C-band TWT; 400W; switch mode power supply operates directly from incoming AC with filtered full-wave bridge; 5.85-6.425GHz.

M/N 10886: C-band TWT; 57W, 125W; 5.85-6.426GHz; LED fault monitoring, LCD multifunction metering.
Circle (762) on Reader Service Card

Media Computing 11106

Product line: Broadcast automation packages, PROtec and ANGIS 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 inter-

face with closed captioning, script writing.

Circle (763) on Reader Service Card

Media Concepts 11354

Product line: Used broadcast production equipment.
Circle (764) on Reader Service Card

Media Touch Systems 1006

Product line: Automation control products, satellite-studio integration; digital audio playback unit.
Circle (765) on Reader Service Card

Meret Optical 12728

Product line: Fiber optic products.

HR VIEW 6000: control graphic workstation monitor, keyboard, mouse to 1km from CPU depending upon bandwidth; 120-150MHz video channels.

LiveLink 100/200: fiber optic links for mobile ENG/EFP systems; 4 video channels, 3 audio pairs, 3 digital channels with intercom.

LiveLink 450: HDTV FO transmission to 10km; 60dB with 3 video, 4 audio, 3 digital channels, intercom.

OmniSpeed 500: serial digital link; transmits 5-400Mb/s to 10km without repeaters; video, audio, compressed signals such as HDTV.
Circle (766) on Reader Service Card

Merlin Engineering Works 11323

Product line: Video processing equipment, synchronizers; data encoder, decoder.
Circle (767) on Reader Service Card

Micro Communications 18946

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.

#412000 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.

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 1776
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

#41500: medium power UHF diplexer.
 #61000: coaxial transfer switches.
 #955000: HDTV all-band panel antennas.
 7/8 coax switch for LPTV.

HDTV feasibility study service evaluates current transmission site for HDTV conversion; tower inspection, analysis; pattern analysis; design of antenna; final design for HDTV site.

HDTV filters: constant Z absorptive filters for HDTV transmissions; rejects out-of-band components for pure transmission of digital signal.

HDTV multi-channel "all UHF band" antenna for sites wishing to use a common antenna.

LPTV bandpass filters: interdigital type for out-of-band protection.

Circle (768) on Reader Service Card

Micro Technology Unlimited Unassigned
Product line: Digital audio workstations.

MicroEditor 2.1: software package; includes DAT archiving; up to 50 stereo track mix projects at 8-48kHz sample rates; delete edits with instant undo/redo, record in mix project for overdub, effects; mastering 8-16-bit .WAV files for multimedia; 486 PCs with Windows, 500Mbyte-2Gbyte hard drives.

MicroSync: optional synchronization board permits vari-speed sync-lock with video black or SMPTE time code on ATR/VTR recorders for video post.

MicroSound workstations: digital audio workstations in rack, tower configurations; MicroSound peripherals, compatible with existing IBM/compatible PCs.

Circle (769) on Reader Service Card

Micron Audio Products 17772

Product line: Complete line of wireless systems, accessories; SQN audio mixers; TRAM lavalier mics.

TV-631/SR-623: wireless mic transmitter and receiver, each with switchable frequency control.

Circle (770) on Reader Service Card

Micron Tool & Manufacturing 19778-878

Product line: Camera support systems, Black Magic boom extensions with remote head, pan/tilt control.

CamMate System II: 12-20 foot boom extension; remote camera head, VTR controls; integrated battery charger; crab dolly, boom extension, track sections.

Circle (771) on Reader Service Card

MicroNet 17570-670

Product line: Video transmission services - domestic and international.

Circle (772) on Reader Service Card

Microvideo Ltd. 14681

Product line: A/D, D/A 8-/10-bit converters; serial digital interfaces; digital signal processors, test pattern generators.

Digital proc amp: adjust black level, Y/U/V gain, Y-C delay, picture position in digital domain.

Digital test pattern generator: 10-bit 270Mb/s serial, RP-125 parallel signals; new patterns check serial digital systems.

Dual 10-bit D/A converter: enhanced mechanical design allows two plug-in modules in IRU frame.

D1 serial digital to NTSC/PAL: modules for monitoring with six units in IRU cases; 270Mb/s.

Digital video data inserter: transparent insertion of Teletext, data, ITS signals into digital video feed.

Circle (773) on Reader Service Card

Microwave Networks Unassigned

Product line: Microwave radio equipment, 15GHz, 18GHz, 23GHz products.

IDS1: microwave radio product for 15, 18, 23GHz; point-to-point, data in commercial microwave disaster avoidance, cellular, private network emergency restoration; local distribution radio, VSAT networks.

Circle (774) on Reader Service Card

Microwave Radio 13801

Product line: ENG, microwave radio products, direct modulation and heterodyne systems, 2GHz portables.

Circle (775) on Reader Service Card

MIDAS 1000

Product line: Audio mixers.

MIDAS XL3-16: audio mixing console.

Circle (776) on Reader Service Card

Millstek 19463

Product line: BNC connectors, cabling for analog, digital video; cable tools; computer networking adapters, cabling, connectors; distributors for Trompeter, North Hills, ADC.

Circle (777) on Reader Service Card

Miller Fluid Heads (USA) Inc. 15738

Product line: Camera support systems, pan/tilt heads.

Miller 25 fluid head: for ENG with self-contained camcorders; sealed clutch-controlled adjustable drag, counterbalance, sliding; quick release camera plate.

Carbon fibre tripods: single, 2-stage unit, high rigidity, high twist resistance, light weight.

Circle (778) on Reader Service Card

Minolta 11605

Product line: Light meters, analyzers with upgraded white balance process for TV, computer monitors.

CC-100: CRT convergence meter; provides numerical measurement of CRT phosphor convergence.

Circle (779) on Reader Service Card

Miralite Communications 13347

Product line: Satellite communications products, digital telephone service system.

Compressed digital video system: SpectrumSaver encoder, integrated receiver/decoder, data expansion unit uses Compression Labs technology.

Educational downlink package: Monterey 100C receiver, VCII Plus descrambler; C-/Ku-band LNBs, feed; 3.1M commercial earth station; surge protector.

VT261 Spaceline system: PC-based videoconferencing equipment; echo suppression; high quality audio; Windows 3.1.

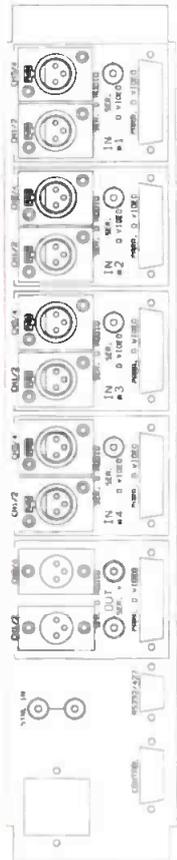
Circle (781) on Reader Service Card

Miranda Technologies Unassigned

Product line: A/D and D/A converters; oversampling converter between component video, serial/parallel

D2

**MODEL 558-41/N
 NTSC D2 DIGITAL
 COMPOSITE VIDEO
 BIT-PARALLEL/BIT-SERIAL
 ROUTING SWITCHER**



Omicron Video MODEL 558-41/N is a routing switcher with 4 in/1 out, 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 relocked.

The serial digital video input circuit has automatic cable equalizer which equalizes up to 300m of 8281 type coaxial 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

21818 LASSEN ST. UNIT H
 CHATSWORTH, CA 91311
 PHONE (818) 700-0742
 FAX (818) 700-0313

Circle (80) on Reply Card

**It's automatic, lightweight
 and incredibly
 easy to use.**

**It goes wherever
 you need to take it—in the
 studio and in the field.**

video to composite, S-VHS NTSC, PAL; NTSC encoders. **SDM-300:** serial, parallel 4F_{sc} to NTSC/PAL D/A converter.

SEL-1604: 16x4 serial digital selector for 4:2:2, 4F_{sc}.
TTTANIA: 3-D digital effects system for Matrox Studio.
SDM-100A: 4:2:2 to RGB/YUV D/A converter.
ASD-100: component analog video to serial 4:2:2 A/D converter.
SER-200: 4F_{sc} serial-to-parallel, parallel-to-serial digital coders.

Circle (782) on Reader Service Card

Mitsubishi PED 16258
Product line: High resolution, large screen monitors; monochrome and color printers; industrial VCRs.
Circle (783) on Reader Service Card

Mocce (Laird) 19208
Product line: Digital graphics, titlers.
Circle (1135)

Modulation Sciences 5118
Product line: Audio processors, spatial image enlargers; modulation meters, digital FM peak deviation monitor; subcarrier receiver for ENG/mobile crew communications.
PROcelver enhancement: antenna diversity system with 12/28Vdc power adaptor.
Circle (784) on Reader Service Card

Mohawk/CDT Broadcast Cables 11128
Product line: Design, development of copper, fiberoptic products for audio, video; multi-pair, shielded, audio snakes, mic cables; coax, triax, Ultra flex video cables; composite camera cables; fiber optic video link.
Circle (785) on Reader Service Card

Mole-Richardson 16633
Product line: Lighting products, lamps, fixtures.
#4251 Big Mole: 20kW Molequartz Solarspot Fresnel.
#6351: 18kW HMI Fresnel Mole Solar-Arc Solarspot.
Circle (786) on Reader Service Card

Montage Group 11115
Product line: Non-linear videotape editing systems.
Montage III Mod 35, 75, 100 Professional: nonlinear editors; write electronic grease pencil notes on digitized picture labels; video data compression in Windows environment expands to access 12 optical discs for 6 hours of "work quality" video.
Personal Picture Processor: software for desktop PC with IBM/Intel ActionMedia II board; edits material digitized by Professional Picture Processor.
Circle (787) on Reader Service Card

Moseley Associates 2824
Product line: Aural, digital STL; remote control systems and software for transmitter remote control; remote programming link.
CDQ 2000 option: selectable, high spectral efficiency mode for digital audio for video STL system.
DPS 6000 option: selectable high spectral efficiency option for DSP 6000 STL.
Master-Touch: interface for MasterController for MRC2, MRC160 control products.
MRC1620 LP: flash reprogramming option; low power option; intelligent interfaces for MRC 1620 system.
PCL 6000 multichannel: 16-channel STL.
Circle (788) on Reader Service Card

Motorola/North American Group 4527
Information not available.
Circle (789) on Reader Service Card

MSE Video Tape Services 11646
Product line: Videotape 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 (791) on Reader Service Card

Multidyne Electronics 13619
Product line: Video/pulse DAs with EQ; test generators;

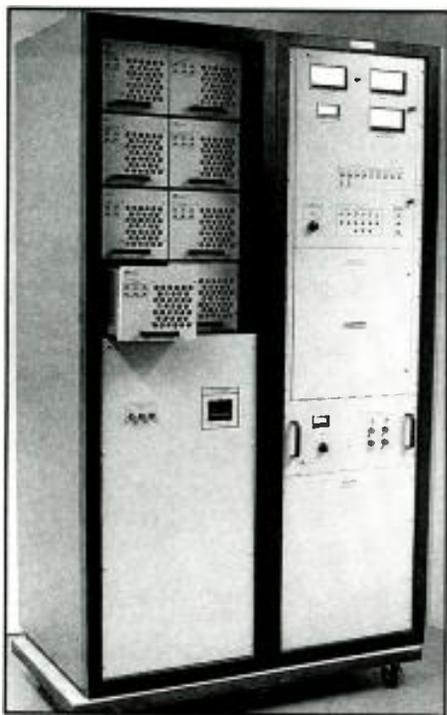
solid-state audio recorders.
ADA-8550: adapts screw terminals to XLR connectors.
SSR-90: solid-state recorder; 1.5 minute capacity for audio source ID; playback alternates between the messages and tones or external audio source.
TS-4: SMPTE color bar generator with black burst; genlock, video ID, spoken ID.
TS12-RM signal generator: rack-mount test set; 12 signals with VTTS, 5MHz line sweep, black burst, stereo audio tone; inserts 16-character VI ID in external video; loop-through for external video, stereo audio; automatic by-pass of external signals.
TS20-RM NTSC generator: rack-mount test signal source like TS12-RM; capability exceeds RS-250C.
Circle (792) on Reader Service Card

Murry Rosenblum Sound Assoc. 1709
Product line: Audio Ltd. wireless mic systems.
Dx2000: miniature diversity receiver fits in a pocket; includes multiway connector for use in custom 19" 8-channel receiver rack.
MX2000: 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; 1/8" to 3/16".
FM harmonic filter: tunable quarter wave device.
Flex-Section line: 50Ω material in 1 1/8", 3/8", 6/8" sizes.
Circle (796) on Reader Service Card

Visit with the editors of Broadcast Engineering, Video Systems; Booth #15181; 2:00pm-4:00pm, April 19-21.



Totally solid state AMPFET ND 10 10kW AM

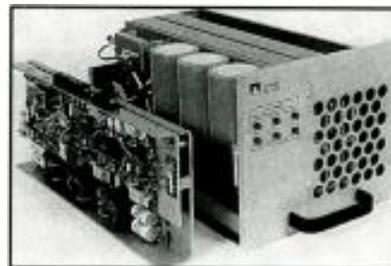
FOR THE WORLD'S STRONGEST AM TRANSMITTERS, LOOK TO NAUTEL.

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.



Nautel Maine Inc.
201 Target Industrial Circle
Bangor, Maine 04401 USA
Phone: (902) 823-2233

Nautel
(Nautel Electronic Laboratories Limited)
R. R. #1, Tantallon, Halifax County
Nova Scotia, Canada B0J 3J0
Fax: (902) 823-3183
See us at NAB, Booth #1915.

Circle (81) on Reply Card

N-N-N

N Systems 13133

Product line: Microwave antennas, remote controls for ENG, point-to-point applications.

MC's controller: digital remote with 80286 CPU operates 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 Hiss Mute circuitry; diversity receiver; 120dB dynamic range; various mic capsules.
351 VR: camcorder wireless system; receiver connects to external mic jack on the camera.

750 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.
950 UHF: 10-channel wireless system; diversity, comparing processor; lapel, handheld mics.

RW-3: wireless system; four switchable UHF channels; 120dB dynamic range; low noise performance.

551 VR: 2-channel VHF wireless mic; 120dB dynamic range; HT-10 handheld mic; SX/LT-30 lavalier bodypack transmitter, electret condenser lavalier mics.

RW-1 wireless receiver: true diversity reception; 120dB dynamic range; for one-of-five VHF channels.
Circle (798) on Reader Service Card

Nagra Phi 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: 4-channel, self-contained, professional digital recorder; open reel 1/4"; helical rotary heads; flexible

editing, mixing; 24-bit sampling for 16-bit dynamics.
Circle (800) on Reader Service Card

Nalpak Video Sales 20027

Product line: Utility grip products, TuffPaks, molded rack cases; Travel Karts.

Magline Kart enhancements: Quick mount shelf support brackets; Mag-Bag 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 900, 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; multicarrier MPEG system offers high-quality pictures between 1.2Mb/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.

AMPFET FM10: 10kW solid-state, modular FM transmitter; combined configuration for 20kW operation.

Solid-state AMPFET ND AM series: transmitters from 1kW to 50kW, integral C-QUAM AM stereo.

Circle (804) on Reader Service Card

NDG Phoenix 17277

Product line: Software products for graphics, facilities management.

LMS 1.3: 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 Unassigned

Product line: Video monitors; editing controllers.

Circle (806) on Reader Service Card

L E Nelson Sales 16631

Product line: Stage and studio lamps by Thorn, GE.

1500PAR64: 1.5kW tungsten-halogen lamp.

ACL series: lamps for production effects.

CMC 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.

EMI/RFI 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. Unassigned

Product line: Software systems for facilities, equipment tracking; business tracking, reporting.

FTS File Tracking System: cross-reference, cataloguing system manages records retention; tracking, research tool.

Text retrieval module: word indexing for Media Li-

SOURCE

OF

ADC

TROMPETER

- Competitive Pricing
- Large Stock
- No Minimum Order
- Fast Delivery

CONNECTORS • TOOLS
CUSTOM CABLE ASSEMBLY
PATCH PANELS

MileTek™

1-800-524-7444

See us at NAB Booth #19463

Circle (82) on Reply Card

In fact, there's **only**
one thing this
remarkable test
generator doesn't do.

Cost a lot of

money.

brary, Equipment Tracking System; for PC on LAN.
Circle (810) on Reader Service Card

Network Music 13123
Product line: Production music libraries.
Primerose library: CD music library from Italy.
Circle (811) on Reader Service Card

Neumann USA 17576
Product line: Microphone products, stereo, shotgun mics.
Model U67: tube mic.
KMS-140, -150: cardioid, hypercardioid vocalist mics.
TLM-50: transformerless pressure mic.
Circle (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.
Circle (813) on Reader Service Card

Neve/AMS Industries 2302
Product line: Audio consoles, TV/production mixers; audio processors; analog, digital audio recorders; stereo mics; audio editor/workstations.
AMS Logic 2: large format workstation.
AMS SoundField Mk V: stereo mic; advanced B-format; coincident, M/S stereo modes.
AudioFile OPTICA: 4-track system records to reusable, removable MO media.
AudioFile Spectra: digital audio editing system; MO disks, Exabyte tape; selectable sample rates.
Mitsubishi X-8620E: master recorder; 20-bit data bus.
Mitsubishi X-880EX: multitrack digital audio recorder; 18-bit A/D converter for 16-bit conversions.
Neve Flying Fader Junior: software with Master Touch Record function, channel reassign, mix copy, backup routines; Stores setup to RAM or disc.
Neve VR stereo module: controls stereo sources.
System Six: integrates Neve, AMS audio processors.
Circle (814) on Reader Service Card

New EVS Unassigned
Product line: Slow motion video equipment, the LSM Live Slow Motion system.
Circle (815) on Reader Service Card

NewsMaker Systems 19459
Product line: Newsroom automation interface products for titlers.
NewsMaker for Windows: complete newsroom automation compatible with MS-DOS versions; includes 100-channel tuner on card for NTSC, PAL reception.
Circle (817) on Reader Service Card

NewTek 16611
Product line: Video production products, Video Toaster. Announcements to be made at exhibition.
Circle (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.
Circle (819) on Reader Service Card

Nikon Electronic Imaging 18878
Product line: Camera lenses for studio, ENG, HDTV; optical converters.
FW-ENG, F-ENG: cost-effective means to expanded special effects with Nikkor SLR lenses on ENG cameras.
S15x8.5B II Nikkor: enhanced S15x for 2/3" cameras; 0.8m MOD; removable servo housing; wide zoom ratio.
S19x8B TV Nikkor: ENG lens, 8-152mm focal lengths; f/1.7 maximum aperture.
S9x5.5B TV Nikkor: ultra-wide angle lens; internal focusing system accepts matte boxes, filters.
Circle (820) on Reader Service Card

Norpak 16366
Product line: Teletext data transmission products, receivers with integrated VCR.
Circle (821) on Reader Service Card

Norsat International Inc. 1502
Product line: Satellite communications receivers.
System 60 line: satellite receiver, MC 60 controller, power supply, control modules; with tuners, downconverters, demodulators, SMATV modulators.
Circle (822) on Reader Service Card

North American Publishing 18184
Circle (823) on Reader Service Card

Northern Technologies 18072
Information not provided.
Circle (824) on Reader Service Card

Nova Systems 13843
Product line: Modular video processing systems; PC compatible TBCs, synchronizers, encoders, decoders, transcoders, DAS, routers.
NovaBlox additions: low-cost frame synchronizer, sync generator cards.
TBC/synchronizer products: NOVA 950 transcoding TBC, NovaMate single, dual and multichannel TBC; NOVASync frame synchronizers.
Circle (825) on Reader Service Card

NPR Satellite Services 4807-08
Product line: Satellite transmission radio services.
Circle (826) on Reader Service Card

NSE Radio Network 2226
Information not available.
Circle (827) on Reader Service Card

NUCOMM 13341
Product line: Antenna products for ENG, microwave.
FMT, FMR series: 70MHz modulator, demodulator; AM audio subcarrier, four FM subcarriers and video.
FT3, FR3 series: IF heterodyne transmitters, receivers; 70MHz interface; for 1.99GHz to 13.25GHz.
Shadow antennas: for ENG van, central receive applications; single, multiband models; single, dual, quad polarization; Super-Shadow for central receive sites.
Circle (828) on Reader Service Card

Nutel Electronics Corp/Telemet 16927
Information not available.
Circle (829) on Reader Service Card

NVISION 17726
Product line: Digital audio accessories, sample rate converter; router; terminal equipment.
NV1000 terminal equipment: performs digital audio signal conversion, plant distribution, synchronization.
NV4448 converter: digital sample rate conversion; supports all current sample rates from 32kHz to 50kHz.
NV5000 series: functions as timing reference for simultaneous lock of NTSC/PAL video, AES/EBU and SDIF-2 digital audio; all outputs simultaneously available.
Circle (830) on Reader Service Card

Nytone Electronics 16637
Product line: Film/slide transfer equipment, 35mm slide system with pan, zoom.
Slide-to-Print: transfer system provides image fade transitions between slides.
Circle (831) on Reader Service Card

O'Connor Engineering Labs 16649
Product line: Camera support products, fluid heads for portable cameras.
35 series: tripods, rigid spreader, air assisted column.
55C series: tripods with air assisted columns.
Circle (832) on Reader Service Card

O.L.E Lightworks 10259
Product line: Lightworks editing control systems.
Circle (833) on Reader Service Card

Odetics Broadcast 18927
Product line: Videocassette playback automation, break-tape-manager; time lapse logger; automated playback libraries.
MultiChannel Playback: feature for multiple output

program automation.
TCS90 Expansion Module: enlarges TCS90 library.
Circle (834) on Reader Service Card

OMB/TransAmerica Int'l Broadcasting 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-PRO TV repeater: 1-5W Band IV-V.
TV amplifiers: for Bands IV/V 100W to 1.6kW.
Circle (835) on Reader Service Card

Omicron Video 13041
Product line: Signal distribution products, A/V routers; A/V DAS; video keyers, genlock systems.
Model 558-41/N: NTSC, D2 digital video 4x1 router; bit-parallel, bit-serial with four levels of digital audio; RS-232, -422 control.
Omni-Gen 703/704: NTSC, PAL gen-lock systems for composite video for AMIGA PC; RGB or Y/R-Y/B-Y output, 200ns delay line; Y/C S-video output for component or composite production systems.
Omni-Gen 751/752: AMIGA gen-lock systems feature NTSC or PAL component video features; output switchable between RGB, Y/R-Y/B-Y; no keyer/overlay.
Circle (836) on Reader Service Card

Omnimusic 13643
Product line: Production assistance products, sound effects libraries.
Circle (837) on Reader Service Card

OpAmp Labs 17573
Product line: Audio, video signal distribution, switching equipment, video/audio press feed boxes.
A24-2ML: 2-input, 24-output audio press box.
A4/2L: 2-channel 1-in, 4-out audio DA.
MS/8x8/VSA: 8x8 stereo audio/video switcher.
RSP-4S: stereo audio/video 4-in, 1-out router.
TCB-10K: dual 10k; 10k audio transformer.
VA-8, VA-32: 1x8, 1x32 mic/line V/A press boxes.
Circle (838) on Reader Service Card

Optical Disc Corporation 16072
Product line: LaserDisc recording systems; recordable laser videodiscs (RLVs) compatible with standard LaserVision or LaserDisc format consumer players; recording system accepts composite video for single-copy or low-volume duplication.
Circle (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.
Circle (841) on Reader Service Card

Options International 18943
Product line: Telecine utility products; speed servo; autoshading corrector; film-to-tape transfer stabilizer for Rank telecines.
Low mass particle transfer removal: cleans film on telecines using roller configuration.
Super 16: telecine gate.
Circle (842) on Reader Service Card

Orban/AKG Acoustics 2806
Product line: Over-the-air audio processor series.
Digital Optimod Model 8200.
Model 8200 ST: level controller.
Circle (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 to 40km.
Uplink FO link: feeds uplink system from exciter lo-

See audio testing
taken to the MAX at
NAB Booth 1812-1814

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.

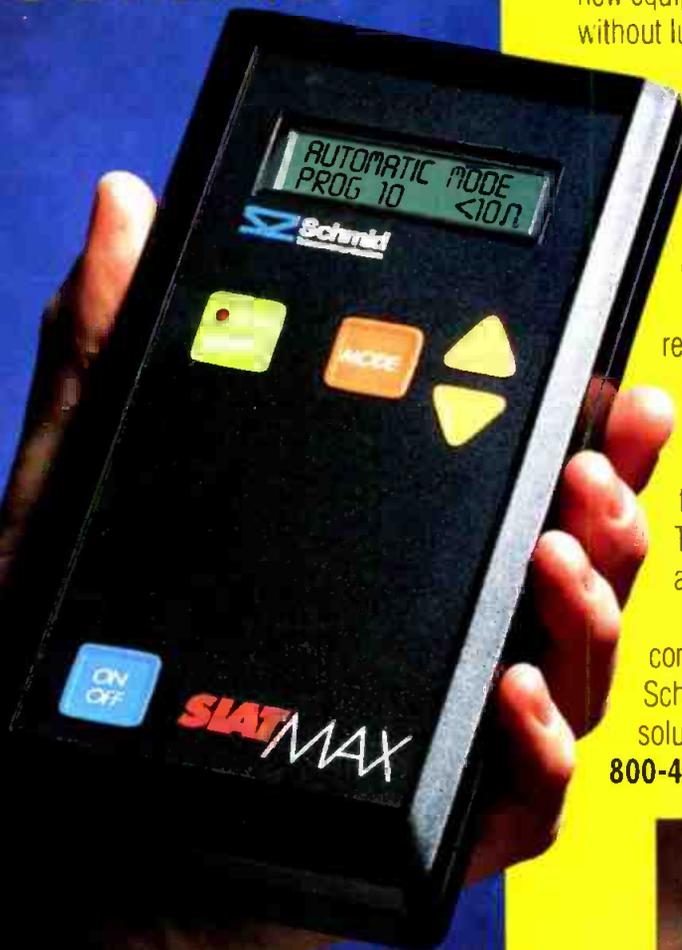
Use SIAT-MAX to check a line after you've installed new equipment. Or use it to troubleshoot in the field, without lugging complex, bulky equipment, and without having to send a highly skilled technician.

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.



SIAT-MAX works in tandem with Schmid measurement receivers to give you a complete, low-cost audio testing solution.



Schmid
Telecommunication
Intelligent by design

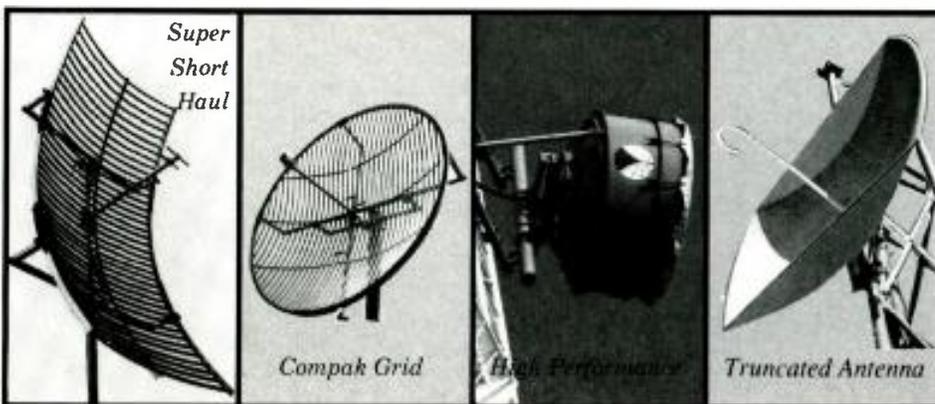
U.S. Headquarters

Schmid Telecommunication America, Inc.
15 W. 26th Street, New York, NY 10010
Tel: 212-213-2099 • Fax: 212-779-7305

U.S. Sales and Service

Schmid Telecommunication America, Inc.
7249-B Browning Road, Pennsauken, NJ 08109
Tel: 609-663-0228 • Fax: 609-663-0864

Circle (83) on Reply Card



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

cated as far as 20km from the HPA.
Circle (844) on Reader Service Card

Osram Sylvania 12201
Product line: Stage, studio lamps.
Circle (845) on Reader Service Card

Otari 4612

Product line: Audio mixers; analog, digital audio recorders; console automation.

Concept I audio console: for production; digitally-controlled, symmetrical dual-path architecture; 24-track buses and 10 auxiliary buses; individual 4-band EQ; dynamic DISKMX dual-path VCA automation.
DISKMX 2-: hard disk storage, editing for ARMS2, compatible console automation; runs DISKMX 3 Ver 4.0 moving fader, VCA automation with graphic displays, pull-down menus; hardware compatibility with 80286/80386 PCs.

MADI interface: option for DTR-900 II PD 32-track digital recorder; multichannel audio digital interface answers requests for new generation of digital mixer with provisions to address the MADI protocol.

Circle (846) on Reader Service Card

P-P-P

Pacific Radio Electronics 13047
Product line: Racks, panels; precut holes accommodating various manufacturers' connector products.
Circle (847) on Reader Service Card

Pacific Recorders & Engineering 3912
Product line: Audio mixers, cassette recorders; digital audio workstations.

ADX system: digital audio workstation; disk-based, 8-/16-/24-track recorder; 8input automated production mixer on Macintosh platform.

Circle (848) on Reader Service Card

Paco Electronics USA 19115
Product line: NiCad battery products; DP series.
Circle (849) on Reader Service Card

PAG Ltd. 13419
Product line: AR series batteries, chargers and analyzers, PagLok batteries and associated products.
Circle (850) on Reader Service Card

Paltex 16249
Product line: Video editing controllers; composite digital mixer-keyer.

EDDSX: A/B-roll desktop video editor; 486-class CPU, 40MByte hard drive, 3.5" floppies; keyboard, trackball; for RS-422 VTRs, video switcher; serial control for Video Toaster; 999-line EDL, list management, EDL ripple, Auto-assembly, Animation mode.

EDDI, EDDI vision series: desktop video production centers for Windows; enhanced new system software utilities; EddiWipe internal video switcher, 24 wipe patterns, DSK: NTSC, PAL composite, Y/C, YUV component; Y/C component EDDIText internal titler.

Circle (851) on Reader Service Card

Panasonic 18019

Product line: Video cameras; D-3, M-II, S-VHS recorders; monitors; TV automation system; switchers.

AG-7355R: S-VHS VCR with frame store, HiFi audio; 34-pin parallel or RS-232C.

AG-7350R: S-VHS VCR with HiFi, linear audio; 34-pin parallel or RS-232C daisy-chain control for 32 VCRs; Dolby noise reduction; 2-hour record time; 17-step shuttle.

AG-J700: multisource switcher selects video, audio, remote sources in edit suite; 4-in x 1-out.

AJ-D320: portable D3 VTR; 64-minute record time with two AU-BP402 or Anton/Bauer Magnum 14 batteries.

AJA13P: digital rate format converter interface between D1, D3/D2; test signal source; auto sync selection; analog out; embedded audio facilities and four AES audio channels.

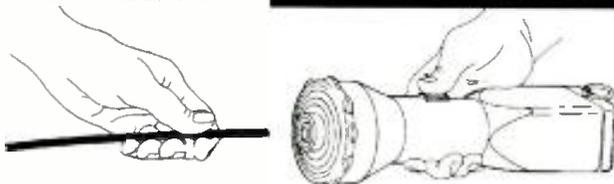
AG-A570: single-event edit control for AG-5700 S-VHS VTRs; RS-232C connects controller, transports.

AQ-20D: digital processing camera; 3 FT CCDs for 750-line resolution; 4xF_{sc} composite digital output; fiber optic adaptor.

AQ-255: digital processing studio camera, 2/3" FIT

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-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.



31186 La Baya Drive • Westlake Village, CA 91362

(818) 707-2020 Fax (818) 706-1040

Circle (85) on Reply Card

Our Commitment Continues...

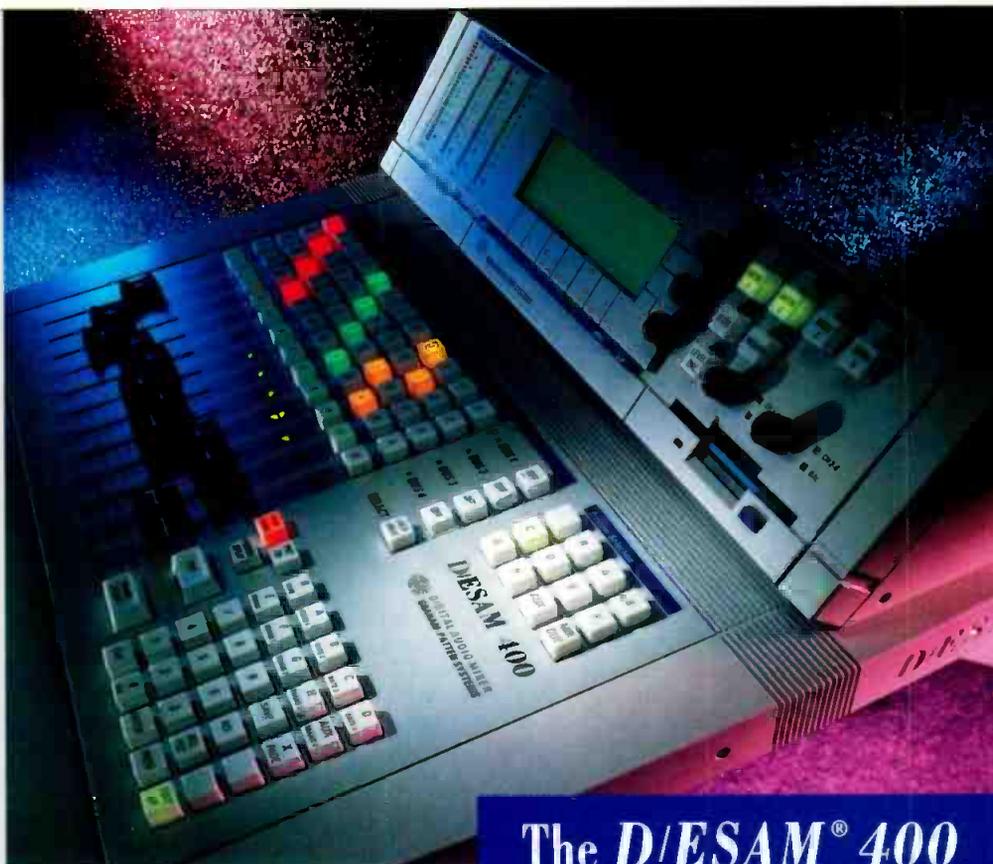
With the new
D/ESAM® 400
we offer a total
integration of
highly advanced
technology
and customer
requirements.

*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 1960, Grass Valley, California 95945 USA
Telephone: (+1) 916-273-8412 or 800-422-6662
Fax: (+1) 916-273-7458

**See the entire array
of Graham-Patten
products at the
NAB—Booth #12447**

© 1993 Graham-Patten Systems, Inc. D/ESAM is a registered trademark of Graham-Patten Systems, Inc.

Circle (86) on Reply Card

www.americanradiohistory.com

CCDs; FO cable; 750-line resolution, f/8 2000lux.

AS-D590: serial digital video router; 32x32 composite digital matrix for 143Mbit/s data; peripheral interface with analog-serial, serial-analog 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/VITC generator/reader, S-video out, component input check/output; NTSC, 16:9 aspect ratios; picture-in-picture; series includes AU-45H dockable VTR; AU-62H studio player; AU-63H studio player with auto tracking.

AU-A950: on-line edit controller for 5 VTRs, switcher, audio mixer; 2000-event EDL; expands to 8-play, 2-record VTRs, 10 GPI triggers; A/B/C roll editing, pre-read control; split edits among any M-I or D-3 audio channel.

AU-CSFM2003 software: automatic conflict resolution, manual operation features for automation.

AQ-11D: digital processing camera with 3 IT CCDs; composite digital output; compatible with AQ-20D components; fiber optic adaptor.

HD fiber optic system: digital transmission with compression, multiplexing of studio BTA format, four PCM audio channels; 8:1 compression per B-ISDN specs.

HD still store: archives 1,5000 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.

HDTV acquisition system: portable field production equipment; AU-Z7000 UNIH1 recorder, 2/3" 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; Ramsa 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 III: automation system with 10 internal VTRs; M.A.I.F. automation software; multiple output channels, scheduled recordings; compiler for breaks.

Multi-Station software: manages for two or more out-

puts; common or completely different material.

OMDR software drivers: Macintosh, PC drivers for optical memory disk recorders.

S-VHS projectors: PT-B1010U/UF for 80-120" or PT-B2010U/UF 150-250"; 700-lumen output; 800-line resolution or 1,100-line in RGB; direct optical coupling.

WJ-MX50: audio, video switcher; 2-channel frame synchronizer allows effects on A and B buses.

WV-D5100HS: modular camera; f/1.4, 3.5 lux (+18dB gain) with single 2/3" CCD; four lens options; electronic shutter.

WV-F250BH: 3 FTI CCD camera; stand-alone or dock to AG-7450 S-VHS, AU-410 M-I VCRs; component or separate Y/C outputs; 750-line resolution.

WV-F500: compact camera with digital signal processing; 3 IT CCDs for 700-line resolution; docks to EnHanced Mill VTRs.

EnHanced Mill products: integral TBC, 2 FM/2 linear audio channels, LTC/VITC generator/reader, S-video out, NTSC 16:9 aspect ratio capability; AU-45H dockable VTR; AU-55H portable VTR; AU-62H studio player; AU-63H studio player with auto tracking.

AG 3 S-VHSC Camcorder: three 1/2" CCDs; 530-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-DX10: 1/2" digital component studio VTR; 300Mbps class VTR; video performance superior to D-1 without compression; operational features similar to D-3; records, plays digital audio, CCIR-601 digital video in 10-bit form; 13.5/18MHz sample rates; optional playback of D-3 composite digital

AJ-D340: D-3 1/2" digital composite studio VTR; smaller, more compact version of the AJ-D350 D-3 studio VTR.

Circle (852) on Reader Service Card

Panther 20058

Product line: Camera support equipment, Super Panther, Mini Panther camera dollies.

Circle (853) on Reader Service Card

Parallax Graphics Systems 15177

Product line: Video graphics, paint, animation software.

MATADOR: integrated 2D package automates painting, keyframe animation, rotoscoping, chromakeying; smart brush effects, warping; high-speed operation with SGI processor.

Circle (854) on Reader Service Card

Parrot Communications Int'l 17982

Information not available.

Circle (855) on Reader Service Card

Patch Bay Designation 19469

Product line: Label, designation strips for patchbays.

Circle (856) on Reader Service Card

Peerless Sales 16438

Product line: Monitor/TV wall, ceiling mounts.

Designer Series: ceiling, wall mount units for 20"-27" diagonal monitors; tilt, swivel adjustment; VCR mount attaches underneath.

Tall pedestal mount: heavy-duty column supports 20-27" monitors from 4-7 heights; special orders.

Circle (857) on Reader Service Card

Penny & Giles 2803

Product line: Signal controls, faders; M3000 linear, MRF 11 rotary motorized series; T-bar controls; precision controllers.

Analog faders: 100mm stroke length with stainless steel-headed polycarbonate casing, conductive plastic tracks; interchangeable unit.

Digital T-Bar: for video effects generators, switchers, mixers; incremental optical encoder generates two channels of data for 1,024 pulses over 90° of travel.

Circle (858) on Reader Service Card

Penta Laboratories 2702

Product line: Distributor for RF power devices, tubes.

Circle (859) on Reader Service Card

PEP 19101

Product line: Videotape editing software; digital recorder, player cart replacement.

DigiSpot: digital audio system uses 3.5" disk to store



Set It And

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.

2 minutes of uncompressed stereo audio.
Circle (860) on Reader Service Card

Perrott 'The Battery People' 16317
Product line: Complete line of batteries, chargers, all carrying 12-month replacement warranty; repair services for all products.

System 90 battery charger: charger/discharger unit with selective discharge and battery fault indication; optional battery conditioning and analysis with digital display; available 1-gang to 6-gang units.

Circle (861) on Reader Service Card

PE&A Chyron Group 19401

See: Aurora Systems, Chyron, CMX Editing Systems, PE&A Switching Systems.

PE&A Switching Systems 19401

Product line: Audio, video router; graphic titlers; video monitors.

CG4733: anti-aliased titler; 4:4:4 architecture, instant character sizing; graphics plane; template management, multi mini graphic pages.

RM 4000: 100MHz bandwidth router; control board for 48-in/40-out matrix or use 16-level RC5000 system; available with serial D2/D3 matrix.

D2 D3 matrices: for System 5; serial digital capability for 143Mb/s (NTSC), 177Mb/s (PAL) signals; permits router with mix-and-match facilities.

Circle (862) on Reader Service Card

Phasetek Inc 3802

Product line: Manufacturers of AM antenna phasing equipment, antenna tuning units, RF components and RF inductors.

Circle (863) on Reader Service Card

Philip Drake Electronics Unassigned

Product line: Routing, signal distribution products, intercoms; Turnkey systems.

5000 series: for analog, digital audio; automatic stereo corrector, stereo monitors, A/D and D/A converters.

DCS 3000 intercom: fully digital matrices to 128x128

in 9RU with redundancy; single coax connection for outstations; Intelligent Ethernet Networking combines as many as eight matrices.

6000 series intercoms: 16x16 to 128x128 matrices; Intelligent Networking combines 8 128x128 systems.

MicroCompact intercom: matrices to 32x32.

Circle (864) on Reader Service Card

Philips Components 16114

Product line: Video camera tubes, UHF klystrons, CCDs. **YK1285:** MSDC klystron; reduces power consumption by 50% over conventional YK1265 device.

LXE18300x: microwave power transistor; 32W output at 1.85GHz.

XQ5002: camera tube for high resolution imaging.

PLB16030U: microwave transistor; 30W at 1.6GHz.

Circle (865) on Reader Service Card

Philips Publishing 19215

Circle (867) on Reader Service Card

Philips TV Test Equipment A/S 16116

Product line: Video signal generators; waveform, vector monitor.

PM 5644HD: HDTV pattern generator; sin $\frac{1}{2}$, multi-burst, moving signals for spatio-temporal evaluation; sync generator gen-locks to HDTV and normal definition TV signals.

PM 5695M: NTSC monitoring demod; multichannel with keyboard-operated front-end; mono or BTSC stereo versions.

PM 5639/10: projection color balance meter; relative measurement technique.

PM 5639/20: color analyzer with color sensor and software for PC to align CRT-based color TV sets.

PM 5640AM: NTSC test pattern generator; includes Ghost Cancellation Reference signal.

composite inputs, integral test signal source; may be used as sync generator.

Circle (868) on Reader Service Card

Phoenix ENG Unassigned

Product line: ENG vehicle construction, design.

ENG Van: in Chevrolet 1-ton van; Will-Burt Sky High mast, mast warning system; 5kW generator; air conditioning; racks; ENG antenna pan/tilt control; wiring for communications antenna; customized per request.

4WD ENG: Ford Bronco, Chevrolet Blazer chassis; Will-Burt Sky High mast, mast warning system; 1kW dc converter; air system; remote pan/tilt for ENG antenna; communications antenna wiring; racks.

Circle (869) on Reader Service Card

Photomart Cine-Video 19481

Information not provided.

Circle (870) on Reader Service Card

Pinnacle Systems 16126

Product line: Integrated video production workstations, Prizm with DVEator 3D effects and real-time video mapping; still storage and management system; 2D effects, still store and paint system. New products to be announced at the exhibition.

Circle (871) on Reader Service Card

Pioneer 18481

Product line: Optical rewritable disc video recording systems.

VDR-V1000 rewritable videodisc recorder: dual-head broadcast quality component recording system; instant start, real-time non-linear playback; virtual instant access to any cue point on 32-minute disc.

VDR-V1000A: enhanced rewritable videodisc recorder; allows three presets for TBC settings, audio/video levels, etc.; access control functions on front panel; timecode board for VTC, LTC I/O.

Circle (872) on Reader Service Card

Plateau Digital Technology Unassigned

Product line: Video test equipment.

PVM-07 Opt Camera Pixel Tester: for PVM-1073 system; locates, measures camera pixel errors; for mono, color cameras to 900 lines resolution; 7s required to test each pickup.

Circle (873) on Reader Service Card



FP410 Mixer shown actual size.

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.

SHURE®

See us at NAB Booth #11901.

Circle (87) on Reply Card

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-PCB: plug-in TBC board; single-channel, 525-line device; for Betacam (SP), M-II, U-matic (SP), Hi8, S-VHS, VHS, ED-Beta formats.
Multi/TBC.Sync 10X: for 10 plug-in 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

Pro-Bel Ltd 19485

Product line: Analog, digital video, audio HD series routers; signal processing, distribution equipment; DAs for all signal formats; AES reference generator.

Korum 4:2:2: digital video keyer.

A/D, D/A converters: stereo oversampling design.

Model 6610: digital video analyzer.

Multi-format routers: 24x12 and 16x4 matrices.

Switching modules: 8x1 form.
Model 6510: digital audio analyzer.

Circle (879) on Reader Service Card

Production Garden Library 16475

Product line: Production music libraries.
AV/Video 200: full length themes, edits; 15 CD set.
Broadcast 100: 15 volumes; :60s, :30s, 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, lasers, 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; boom poles; audio DAs; battery supplies; 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 adaptor; 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

Product line: Music, sound effects libraries.
Match Music Library: 50-CD set with variety of styles useful for broadcast.
Claire Music Library: French musical talent brings

new color, concepts to enhance productions.
Spain Is Music Library: journey through Spain, Mallorca; historical, flamenco, romantic themes.
File Effects: 10-CD set of ambient sounds; approximately 3-minute duration each.

Circle (885) on Reader Service Card

Prophet Systems 3002

Product line: Radio automation.
Audio Wizard: automation on 486/33 PC controls 15 audio devices; DAT backup, audio storage; large hard disk stores 25,000 minutes stereo; digital switcher.

Circle (886) on Reader Service Card



Q-TV 16649

Product line: ComputerPrompTer software for PC, laptop computers; closed captioning.
Lightweight on-camera prompter: superimpose copy directly over taking lens for eye-to-eye contact.

Executive Speech Prompter.
FDP series flat panel prompters: 9", 11", 15", 17" prompter displays.

Prompting accessories: VGA/NTSC encoder; talent operated controls.

Circle (889) on Reader Service Card

QEI 4220

Product line: Digital STL products; digital stereo generator; FM transmitters, excitors.
QSS-10000 transmitter: solid-state 10kW FM; redundant modules; liquid cooling; 65% overall efficiency; #695 exciter; AUTOMOD modulation control.
691 VPTDO: variable peak duration test for modulation monitor, 695 FM exciter; adjust response time from 0.1ms to 1ms; lights flasher when peaks in 5ms period exceed programmable threshold of 1-15 peaks.

Circle (890) on Reader Service Card

QSI Systems 16333

Product line: VDI signal, data products.

ECONOMY EQUIPMENT RACKS



- Adjustable for either 19" or 23" equipment
- Available in 3', 4', 5', & 6' heights
- Made of formed 11 GA. (.120) steel
- Zinc plated with gold chromate finish
- Accessory Options:
 Wall mounting hardware
 Gated rack hardware
 Caster support hardware
 Rack caster set

Write or call for our free catalog. It's an engineering manual with helpful illustrations on installation procedures.



NEWTON

INSTRUMENT COMPANY, INC.

Manufacturers of Aux. Framing, Cable Racks, Misc. Hardware, Equipment Racks, Main Frames & Card Storage Cabinets.
 111 East "A" St. • Butler, North Carolina 27509-2426 • Phone (919) 575-6426 or FAX (919) 575-4706

Circle (88) on Reply Card

SESCOM

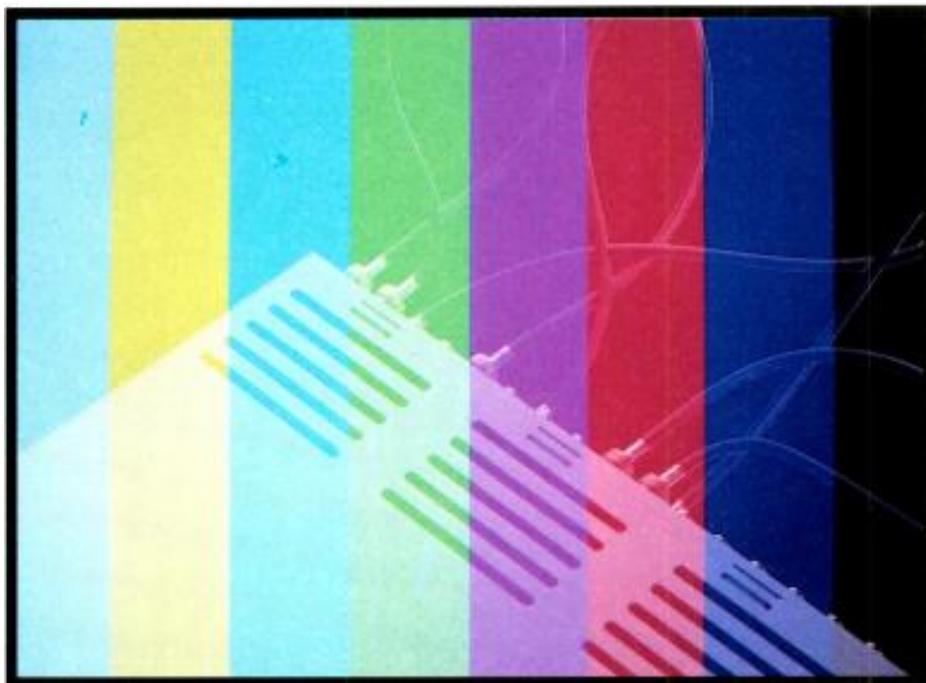
Celebrates Its
 25th Anniversary

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

SESCOM, INC.

Circle (89) 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.

Grass Valley Group

A TEKTRONIX COMPANY

NORTH AMERICA Grass Valley, CA (916) 478-3000 SOUTH AMERICA Miami, Florida (305) 477-5488

Europe Basingstoke, UK (0256) 817817 ASIA Hong Kong (852) 5987118 JAPAN Tokyo (03) 5992-0621

1992 The Grass Valley Group, Inc

Circle (90) on Reply Card

www.americanradiohistory.com

#824: inserts 24-color full-frame image over NTSC video; 256-step keyer, CMOS non-volatile memory; PAL version available.

#808: inserts 8-bit color full-frame images in video with 760x480-pixel resolution; 8-bit key signal; CMOS non-volatile memory; auto fade feature; #808P for PAL.

#9000 image manipulator, inserter: menu-driven system captures full NTSC frame for editing, resizing, linear keying; hard disk storage; imports PCX, IMG, TIFF, TARGA, BMP and other graphic formats.

Circle (891) on Reader Service Card

Quality Video Supply

13141

Product line: Kramer video processors, encoders, decoders; computer-to-video interfaces; switchers, DAs; TV standards converters.

Circle (892) on Reader Service Card

Quanta

18032

Product line: Video titlers.

Macintosh interface: enhancement for Delta tiler/image generator and Orion character generator.

Circle (893) on Reader Service Card

Quantel

17126

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.



If you look at this and see "ten," not "two," we've got the digital audio system for you.

The **DAD 486x Digital Audio Delivery System** lets you reap all the benefits of a powerful, CD quality digital audio system without having to hire computer wizards to operate it. With your **DAD** on the job, you can throw away your cart and floppy disk machines, the carts, the disks and all the problems and expenses they've caused you. But since **DAD's** basic operation *emulates* standard cart machines, you won't have to waste time learning unusual operating methods or incur brain damage trying to figure out complex computer screens. **DAD's** easy, intuitive touchscreen operation lets you put it right to work boosting your audio quality,

improving your audio operations and paying dividends on your investment quickly and efficiently.

But, underneath **DAD's** easy to operate touchscreen is a powerful, hard disk-based production and playback system. **DAD** can even be configured as a networked system with multiple users and locations for even greater versatility and economy. With virtually unlimited stereo audio storage capacity, *graphic* waveform editing capability and versatile automation, interface and operating features, your **DAD** system is far more than just a replacement for cart machines. It really is a *complete* Digital Audio Delivery System!



The DAD 486x

To receive more information or to find out how to put our DAD to work for you, call us at 1-800-ENCO SYS.

See us at NAB Booth #5222

ENCO SYSTEMS, INC. 1866 Craigshire Drive St. Louis, MO 63146
Phone: 1-800-362-6797 Fax: 314-453-0061

Circle (91) on Reply Card

Harriet upgrade: interface to Paintbox, Picturebox, shared disk storage via Picturynet; improved graphics preview, library picture search; timeline control.
Picturebox: stills preparation, storage, management, networking; dedicated still store using custom ASIC hardware; cut-paste graphic creation; Headline text for integrated captions; Innovative dual-bus architecture.
Paintbox Ver 8.0: zoom feature for graphics, pasteup, effects; radial, parallel lines; glue functions; extended translation of numeric data to graphics; Pictureport interface to Macintosh.

Circle (894) on Reader Service Card

Quicksat

13121

Product line: Camera tripods, fluid heads.
Computerized controls: for pan and tilt heads.
QPT-15: electromechanical pan/tilt system.

Circle (895) on Reader Service Card

R-R-R

R-Columbia Products

13145

Product line: Wireless intercom products, IFB/ENG headphones; pocket telephone.

RL-100: wireless talent cue hearing aid type headphone; no battery pack needed.

TR470: 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 70kgs; maximum speed of 60"/s.

SAS See and Select: cue computer facility; frame grab stores key frames at 1/16 full size; replay of shots is initiated by selecting required frames on the monitor.

Circle (897) on Reader Service Card

Radiation Systems Inc

20014

Product line: Earth station systems for fixed sites, transportables; tracking, remote control systems; microwave, broadcast antennas.

Model 240KVO: 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.

Linker: integrates commercial, music logs on paper or for transfer to automation system.

RCS Works! integrated programming, traffic, billing, continuity, news, sales, production package; Selector, Songtrack, Musicbase, RCS Traffic, Linker, Pro-Rate, Master Control, Prosonics, Tracker software.

Circle (899) on Reader Service Card

Radio Design Labs

5406

Product line: Utility audio products, Stick-on amplifiers, mixers, relays; noise monitor; digital audio router.

Rack-up series: RU-MX5 5-input mixer; RU-DA4D 1x4 stereo DA; RU-VDA4 1x4 video DA; RU-SM12 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, mix-minus.

RS Master Clock: analog system with drivers, slaves 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

FlexiBLOCK DA Style

- Over 1.5 million style choices
- Adjustable style parameters
- Some of the available DA styles
- View style changes before insert

VidCAD 3-D

- Full 3-D architectural tool set
- Auto cable length calculations
- Edit database from inside AutoCAD
- 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

VidCAD 2-D DIAGRAM

- Cable labels, runlists, bill-of-materials
- Draw system interconnects from dBase
- Front/rear jack panels from 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

• 749 Carver Road • Las Cruces, NM 88005 • (505) 524-8959 • Fax (505) 524-9669 • Sales (800) VidCAD-6 (US and Canada)

Circle (92) on Reply Card

www.americanradiohistory.com

mable for 8-character alphanumeric destination; separate talk, listen, I/FB, mix-minus conferencing.
Circle (903) on Reader Service Card

Ramsa Audio/Panasonic 18011

Product line: Audio mixers, monitors; R-DAT systems.
WRS4400: 4-bus mixers; 12-24 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 UHF wireless mics for ENG/EFP; synthesized receiver mounts on camera/recorder; 30mW RF output.
SV-3200: R-DAT recorder.
WS-T212, WST215: speaker systems.
Circle (904) on Reader Service Card

Rank Cintel 12441

Product line: Telecine systems, integrated video studio.
Jumpfree update: URSA telecine enhancement increases vertical stability helps real-time transfer with accurate matte; pan, zoom in live still frame mode.
Turbo 2 telecine: digital deflection for Turbo MkIII flying spot system; expands adjustment range in image rotation, zoom, positioning, aspect ratio changes, pan.
Pixdmlle: still image transmission by phone line; Windows interface allows multitasking.
Super 16mm gate: URSA enhancement; ideally suited to wide-screen TV.
4x4 4:4:4 option: URSA enhancement; digital output, extension to digital video channel; increases resolution with field-installed replacement electronics assembly for vector color controllers daVinci Renaissance 8:8:8, Pandora Pogle DCP; key signal.
MK III HD demo: 787.5-line, 60-field sequential scanning with flying spot system.
Low-speed option: URSA telecine enhancement extends operating speed to 5 frames per second; includes pre-sets of 1/2 and 1/4 normal frame rates.
Circle (905) on Reader Service Card

RE Electronics RDS Exhibit/Grand Lobby

Product line: Test, measurement equipment for audio, RDS data transmission products.
d620 digital video interface: 2-channel with serial I/O; CCIR 601 component converter, CCIR 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.
RE-533 Slim Profile: RDS coder; stores 16 data records; supports Program Service name, Program Type, Traffic Announcements, Radio Text and other service types; RE531 adds paging capability.
RE8720/8730: tie line audio codec for 15kHz stereo transmission by telco, twisted pairs; 1.2kbaud data channel for RDS system; error concealment, muting.
RE880 sound interface: encodes, decodes four 7.5kHz speech channels to 64kbit/s; 15kHz modules option.
d920 interface: serial digital reference generator; conforms with AES II synchronization for digital audio equipment in studio operations.
Circle (906) on Reader Service Card

Rees Associates 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 with 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, etc.; rotates voice elements, schedules voices.
Circle (908) on Reader Service Card

Research Technology Int'l/RTI 13746

Product line: Videotape evaluation, cleaner systems, Lipsner Smith film cleaners.

CF3000-MK V: ultrasonic film cleaner; submerged buffing for enhanced cleaning; to 200 feet per minute.
DXA-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, S-VHS, U-matic, MII formats.
TapeChek 490M: MII cleaner, evaluator, recycler.
TapeChek 6120: evaluates 1" video tape; Micro-Pulse detection checks for flaws before media is re-used.
TapeChek 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.
TapeChek XCL: 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; 18HGz, 23GHz.
D series portables: transmitters, receiver in 1.7-15.6GHz; 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 codecs 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, synthesized 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 S-VHS AG-1960; production control for Video Toaster; POD jog shuttle wheel; Logger.
Jow shuttle wheel console: operates with V-LAN inter-

This is no way to design a digital STL.



format interface; completes AB Roll system.
Circle (911) on Reader Service Card

Richardson Electronics 12806
Product line: Power transmitting tubes, 1kW UHF device, power tetrode to 960MHz.
Araperex 3-500Z: power triode for AM.
YL1057 tetrode: metal-ceramic with concentric electrode terminals; replaces Siemens device in TV visual or aural PA and translators; 2.3kW to 860MHz.
Circle (913) on Reader Service Card

Rohde & Schwarz 13829
Product line: Audio, video, RF test equipment; TV demodulators, RDS test equipment, encoders, decoders.
VNA video noise meter: for all TV standards, 1050-, 1125-, 1250-line HDTV, CCVS, analog component 525-/625-line systems, several non-broadcast standards.
SAF generator: multistandard video source for CCVS + component signals; PAL, NTSC 525-/625-line, analog component and digital component signals; SFF generator provides CCVS signals only.
Circle (914) on Reader Service Card

Roland Corporation 1213
Product line: Hard disk recorder, production systems; effects; digital noise eliminator.
AR-1000 digital announcement recorder: stores 500 separate announcements; RAM memory can be controlled by FG-1000 music timer to combine music and voice announcements; RS-232C port for PC control.
DM-80-S multitrack manager: Macintosh software; controls DM-80 multitrack hard disk recorder random access editing.
FG-1000 Music Timer: for music playback per programmed schedule; integrates program timer, digital sound source, music sequencer, song data.
FM 40 4-channel mixer: accepts mic, line level inputs; configure for PA system with AR-1000 announcement recorder, FG-1000 Music Timer.
SRC-2 sample rate converter: two inputs, one output on XLR, coax, optical conductors; select among multiple digital formats for bidirectional conversions; mix

two signals from different sampling rates at any selected rate.
TAP-10 Audio Producer: sound card, Audio Toolworks software; brings digital audio, MIDI production to PCs; Sound Canvas sounds, 16-bit CD stereo recording; full reverb, chorus effects.
DM-80-L resolver: for accurate frame edge lock to any source of nonsynchronous time code.
Circle (915) on Reader Service Card

Rorke Data 16064
Product line: Computer hard drive products.
Mass storage systems from major manufacturers.
Circle (916) on Reader Service Card

Rosco Laboratories 19466
Product line: Color filters for lighting modification; Cinegel light diffusion, reflecting, color balancing materials; floor tiles, pin connectors; video paints, color effects filters; fog machines.
E-Colour: European color filters; correction, effects, diffusion, reflective materials.
Circle (917) on Reader Service Card

Ross Video 16109
Product line: Video production switcher systems, 10-/16-input, 16-/24-input systems with multilevel effects.
RVS 630 production switcher: 30-input, two 4-bus multilevel effects systems, PGM/PST buses, 12 linear keyers, downstream multkeyer; integrated effects; storages, recall of complete setups.
Circle (918) on Reader Service Card

RRN Inc. 5410
Product line: Radio station promotion programs.
Circle (919) on Reader Service Card

RTS Systems 19414
Product line: Intercom, interface products, digital matrix systems; headsets; audio distribution products.
IKP950PCS: production control stations.
SAP612: source assignment panel.

Model 2550: quad galvanic-isolated buffer amps.
TIF 950 series: telephone interface.
V-100: lightweight professional headset.
SSA 324: system to system interface.
Circle (920) on Reader Service Card

Rules Service Company 4908
Product line: FCC rules, regulations publishers.
Circle (921) on Reader Service Card

The M S Russin Group, Ltd. 19883
Product line: Camrobotic systems, programmable, remote positioning equipment.
RF-2020RCF rack-mount card frame: processing unit for six camera/lens stations.
RF-1000P/T: low-profile programmable pan/tilt unit for camera, lens package to 18lb.
RF-2000DTC desktop controller: for programming of preset positions on six camera/lens stations.
Circle (922) on Reader Service Card

S-S-S
Sabine Musical Manufacturing 1403
Product line: Feedback control products.
FBX-90 feedback exterminator: digital notch device senses, eliminates feedback.
Circle (923) on Reader Service Card

Sachtler 13822
Product line: Camera support, pan/tilt, tripods; lighting equipment.
Vario Ped 1-90, 2-75: support systems for modern cameras; compact modular; maximum stability, low weight.
Video 18 Sensor, Video 20 Sensor: pan/tilt heads; LED display show correct balance, center of gravity, correct dynamic counterbalance; 90% tilt, illuminated leveling bubble with patented Sachtler fluid system.
Suspension system, studio planning: Gridclimbers, Barrel hoists, motorized grid telescopes, Scenert

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. • 100 Potrero Avenue, San Francisco, CA 94103-4813 • Telephone +1-558-0200 • Facsimile +1-586-1373 • Telex 34409
 346 Clapham Road, London SW9 9AP • Telephone 071-720-1111 • Facsimile 071-720-4118 • Telex 919109
 Dolby, DSTL, and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation ©1992 Dolby Laboratories Inc. 59259516

Circle (93) on Reply Card

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



Audio Processing Technology
6255 Sunset Boulevard Suite 1026
Los Angeles CA 90028 USA
Tel 213 463 2963 Fax 213 463 6568

apt-X and  are registered trademarks of Audio Processing Technology Ltd.

Circle (94) on Reply Card

hosts, Positioning controls.

Director series: Fresnel lights for EFP, Studio; Director 1200, 2500 for daylight; Director 3750H for tungsten switchable to three power levels.

Reporter 1000H: open-face wide-angle illumination.

Reporter 200D: portable HMI light; size of Reporter 125D, output equivalent to Reporter 270D.

Circle (924) on Reader Service Card

Samson Technologies

11541

Product line: Wireless mic systems, wireless receiver; mixing consoles.

UHF Synth series: multichannel wireless mics; multi-stage LED RF level display; dbx noise reduction; single or dual receiver True Diversity configurations; supports various handheld, lavalier and headset mics.

Behringer audio processing systems.

Samson mixing consoles: S6, S8 powered rack-mount mixers; MPL 2242, 1602, 1502 professional mixers.

Samson Audio amplifiers: Q5 headphone amp; Servo 240, 150 power amplifiers.

Circle (925) on Reader Service Card

San Francisco Satellite Center

13633

Product line: Satellite signal relay services.

Ku Truck: Ford E350 with National Coach custom body; 500W uplink to SatCom 2.4m prime dish; redundant RF electronics.

Circle (926) on Reader Service Card

Sandar Electronics

4403

Product line: Audio recorders for film.

Circle (927) on Reader Service Card

Sanken/Audio Interviewal Design

2002

Product line: Lavalier, handheld, other mic products.

CQ-1 prototype: 4-channel Shotgun Surround mic; left, right, center, surround channels for HDTV, film production; multicapsule design.

Circle (928) on Reader Service Card

SCA Data Systems

4402

Product line: Subcarrier transmission products.

Data system: operates at 9,600 bps.

Music 4 generator, receiver: 4-channel audio and data capability.

RIS generator: includes paging and GPS features.

Audio/data generator, receiver: demos to show 9,600 bps data, 10kHz audio transmitted simultaneously.

Circle (929) on Reader Service Card

Scala Electronic

15729

Product line: Broadband VHF, UHF TV panel antennas; MDS transmission antennas.

Circle (930) on Reader Service Card

Schafer World Communications

2326

Product line: CD automation system.

Circle (931) on Reader Service Card

ScheduALL by Vizual Inc.

12162

Product line: Software for facility, scheduling, management.

Personnel Manager: software for shift scheduling; tracks overtime, meals, breaks, holidays; issues warnings for union penalty situations; extensive reports features.

Ver 3.50: Library/Labeling, Bidding, Project Management, Accounts Receivable, Production Reports modules.

ScheduALL: schedules equipment, personnel, facilities; takes client requests from bidding through billing.

Circle (932) on Reader Service Card

Schmid Telecommunication

1612

Product line: Audio test, measurement systems, RESCO network monitoring; SIAT audio test systems.

Circle (933) on Reader Service Card

Schwalm/Power Technologies

16374

Information not available.

Circle (934) on Reader Service Card

Schwem/Tinsley Labs

16478

Product line: Camera lens systems including motion stabilization technology.

Circle (935) on Reader Service Card

Scientific Atlanta

13818

Product line: Satellite communications equipment, earth station antennas, controllers; video receivers.

2.4m antenna: on towable vehicle (SA244TMV); self-contained terminal; simultaneous T/R operation with voice, video, data from 19.2kb/s-8.448Mb/s.

Digital Ad Delivery: combines D9100 VQ encoder, D9110 integrated satellite digital receiver, VQ decoder; 386 PC controller; multiple 1Gbit hard disks; commercial insertion from compressed video.

Encore DSR-3000: digital satellite receiver; combines high performance, reliable receiver with SEDAT-compatible digital audio decoder.

Model 8136: 3.6m earth station for voice, data, video; meets C- or Ku-band standards; 3-piece aluminum reflector.

Model 8885: digital satellite modem; data rate range 9.6512kb/s in 1b/s increments; FFT-aided carrier acquisition algorithm synchronizes equipment in less than 20 seconds for all data rates.

Model 9708: integrated receiver, decoder; incorporates VQ vector quantization digital video compression; applicable for 525-/625-line, B-MAC.

Model 7555 video exciter: converts audio/video signals to RF for uplink to satellite; sound-in-sync puts digital signal in video sync intervals; for data, audio, multiplexed stereo transmission simultaneous with traditional audio subcarriers.

Circle (936) on Reader Service Card

Selco Products

4806

Product line: Equipment replacement components, VU meters, collet knobs.

Pointer Knobs: soft-touch knobs of thermoplastic; custom colors for body or pointer.

Custom Molded Parts: per specifications 1- or 2-shot molding process; choice of thermoplastics, colors.

Circle (937) on Reader Service Card

Sennheiser Electric

17976

Product line: Headphone, mic, wireless RF products.

MKH80P48: multi-pattern RF condenser mic.

HD 440 II: digitally compatible Supraural headphone.

EM 1046: UHF mic system, tunable frequencies.

Circle (938) on Reader Service Card

SESCOM

13601

Product line: Audio signal distribution products,

Field Pro devices: a series of 11 audio, video devices exclusively for field use; battery operated or passive; rugged, compact.

Circle (939) on Reader Service Card

Shereff Systems

19769

Product line: PC-based titlers.

Deputy CG enhancements: titler software for 386/486 PC; MOB (Movable Object Blocks) logos, text, brush picture images can be moved on/off screen independent of Deputy's page transitions; MOB priority control, selectable speed, direction, masking; now supports TGA, BMP and other picture file formats.

Pro Video CG II: real-time titler software for Amiga.

Circle (940) on Reader Service Card

Shima Seiki USA

15466

Product line: Video graphics equipment, systems.

Circle (941) on Reader Service Card

Shively Labs

1209

Product line: Panel, side-mount FM broadcast antennas; branched, balanced multistation combiners, rigid transmission line, pressurization equipment; omnidirectional, formal FCC directional pattern studies.

Circle (942) on Reader Service Card

Shook Electronics USA

Outside Exhibit

Product line: Network quality TV production trailers, EFP trucks, ENG/SNG, small market vehicles.

Model 32-40: network quality production truck; UD 3300 chassis; 32-ft production area; GVG 250 production switcher, BTS cameras; for sports, entertainment.

EFP/SNG trucks: high-density, small footprint designs for international market.

Model 48-63: 48-ft TV production trailer for network sports, entertainment; Ikegami HK-355 cameras, GVG300-3AN switcher; Sony 1-inch, Beta-SP VTRs.

Circle (943) on Reader Service Card

Shure Brothers

11901

Product line: Wired, wireless mics.

Beta87: electret condenser concert quality mic; wired or L2/Beta87 wireless versions; smooth tailored response with true supercardioid pattern for greater gain before feedback.

L2/87: wireless version of Shure SM87 condenser mic; handheld transmitter radiates supercardioid pattern; smooth frequency response for warm, rich vocal reproduction.

EC series wireless systems: frequency-synthesized; handheld units feature PowerGain antenna for fewer dropouts, less interference, 10dB more effective radiated power; EC4 diversity receiver; MARCAD circuitry combine two RF signals for optimum reception.

L5: portable wireless receiver for video production; mounts on the camera; compatible with L series transmitters; up to 6-system compatibility.

Circle (944) on Reader Service Card

Siemens Audio Inc.

2302

Product line: Neve audio mixers; Mitsubishi digital recorders; AMS mics, automated mixers, workstations; Siemens analog, digital routers.

What-if Machine: Logic 1 dynamically automated mixer with integral workstation, AudioFile SPECTRA, for complete digital post production.

55 Series: analog broadcast console; comprehensive integral monitoring, communications facilities; flexible designs to specific requirements.

Logic 2: large format, dynamically automated digital console; reconfigurable for numerous applications; familiar analog work surface; integrated AudioFile SPECTRA workstation.

Capricorn: compact digital console for music recording; full dynamic automation, assignable control surface operates large signal processing system.

Circle (945) on Reader Service Card

Sierra Video Systems

12438

Product line: Audio/video signal distribution products; BetaKey chroma keyer dem.

Model 88VS router: 8x8 matrix, video, stereo audio.

Sierra, Tahoe series: router families.

Model 1616D: serial digital video router.

Delta series: video transcoders.

Series 10: distribution amplifiers.

Circle (946) on Reader Service Card

Sigma Electronics

16260

Product line: Modular distribution products; TV sync, text generators.

ATM-2100, ATB-21: adjustable timing system.

#21168, 21616: small matrix routers; high performance, control flexibility, low cost.

VDA-21: stand-alone VDA.

Circle (947) on Reader Service Card

Signal Technology/Microsonics

17581

Product line: Digital signal filters.

Circle (948) on Reader Service Card

Sinar Bron

18273

Product line: Lighting products.

ProCyc: 5-foot radius curved set pieces hide floor-curtain interface; fiberglass construction.

Circle (950) on Reader Service Card

Sira Sistemi Radio s.r.l.

16075

Product line: FM, TV transmission antennas, panel antenna designs.

FM combining filters: high power systems.

3VTV-02, -04: VHF HP full-band panels.

Superturnstile: full-band UHF antenna.

FMC-03: CP FM full-band transmitting panel antenna.

Circle (951) on Reader Service Card

Skaggs Communications

19581

Product line: Satellite program relay services.

Circle (952) on Reader Service Card

Skotel

16663

Product line: Time code equipment, VITC/LTC translator; film-to-tape transfer equipment.

TCG-333FTK: VITC/LTC generator, reader, inserter.

TCG-313FTK: LTC generator, reader, inserter.

Circle (953) on Reader Service Card



Television Lighting Systems that:
**Dramatically Reduce Power
 and HVAC Costs**
Provide Artistic Control
Enhance Camera Performance

VIDESSENCE

Sustained RGB Light

(800) 697-7033

FAX (415) 697-7032

P.O. Box 1188

Burlingame, CA U.S.A. 94011

VIDESSENCE and Sustained RGB Light are trademarks of VIDESSENCE, Inc.
 VIDESSENCE products are manufactured under license to U.S. Patent #5,012,396

Circle (95) on Reply Card

Smarts Broadcast Systems 4020
Product line includes: Radio automation equipment.
 Circle (954) on Reader Service Card

SMPTE 12906
 Circle (956) on Reader Service Card

Snell & Wilcox 19772
Product line: Standards, format conversion systems; film-to-tape converters; encoders, decoders; HDTV converters; slow motion systems; synchronizers; digital switchers.

DVS1000: compact 4:2:2 switcher, single M/E; 10 wipe patterns include edge softness; integral serial digital router with 8x4 matrix.

HD2100 downconverter: produces 525-/625-line material with higher picture quality that is available from conventional cameras.

HD3100 crossconverter: converts between field, line rates, bidirectionally from 1125/60 or 1250/50 to 525/60 or 625/50.

Alchemist with Ph.C: standards converter with phase correlation motion estimation; 24-point linear aperture; removes judder, blur, loss of resolution.

HD5100 upconverter: accepts conventional video as inputs to include into HDTV productions; current HDTV standards supported as outputs.

KUDOS series: CVR45 standards converter; TBS24 synchronizer, CC10 color corrector; TPG20 multi-standard, multiformat test signal generator.

PRISM digital decoder: reference decoder; clean separation of luminance, chrominance; bridges between composite digital, component digital environments.

Gazelle slow motion system: real-time picture creation uses Ph.C phase correlation motion estimation for slow motion without special cameras, VTRs.

MDE1000 digital encoder: multi-standard system samples input components to 12 bits; delivers accurate, stable output in all six encoded standards.

Circle (957) on Reader Service Card

Softech Systems Inc 17576
Product line: Computerized newsroom systems.

NewsView: total PC-based integrated newsroom automation; machine interfaces for still-store, tiler, robotic cameras, captioning, pager; real-time lineups; wire capture, scripting, prompting, closed captions, election returns, electronic mail; under DOS, or Windows.

Circle (958) on Reader Service Card

Softimage 16675
Product line: Computer graphics software.

Digital Studio: 2-D/3-D environment for digital media producers; imagery, sound, video in one package; runs on general purpose workstation; digital editing, compositing, titling, image processing, manipulation; sound editing.

Circle (959) on Reader Service Card

Solid State Logic 15724

Product line: Audio production, post production equipment, digital and analog audio systems.

Scenaria digital soundtrack system: combines 38-channel mixer, 24-track audio recorder, editor, random access video storage in one package; compatible with ScreenSound, SoundNet.

SoundScreen enhancements: EDL Scan CMX file imports; Autoconform; VariTime compression, expansion; M-O drives; Disk Store expansion packs; interface for 3rd party additions.

SL 8000G: multiformat mixer; G-series automation computer control for TV, motion picture, music recording; capability of 3-D music production.

Circle (960) on Reader Service Card

Sonic Solutions 2300
Product line: CD recording equipment, mastering system; audio utility sound restoration system.

CD Printeric Station: desk-top CD recording system; 74-minute capacity; also for creating CD-ROMs.

SS-610 A/D-D/A converter: 1-bit stereo converter.

SS-611 optical converter: bridge between coaxial, optical versions of AES/IEC audio.

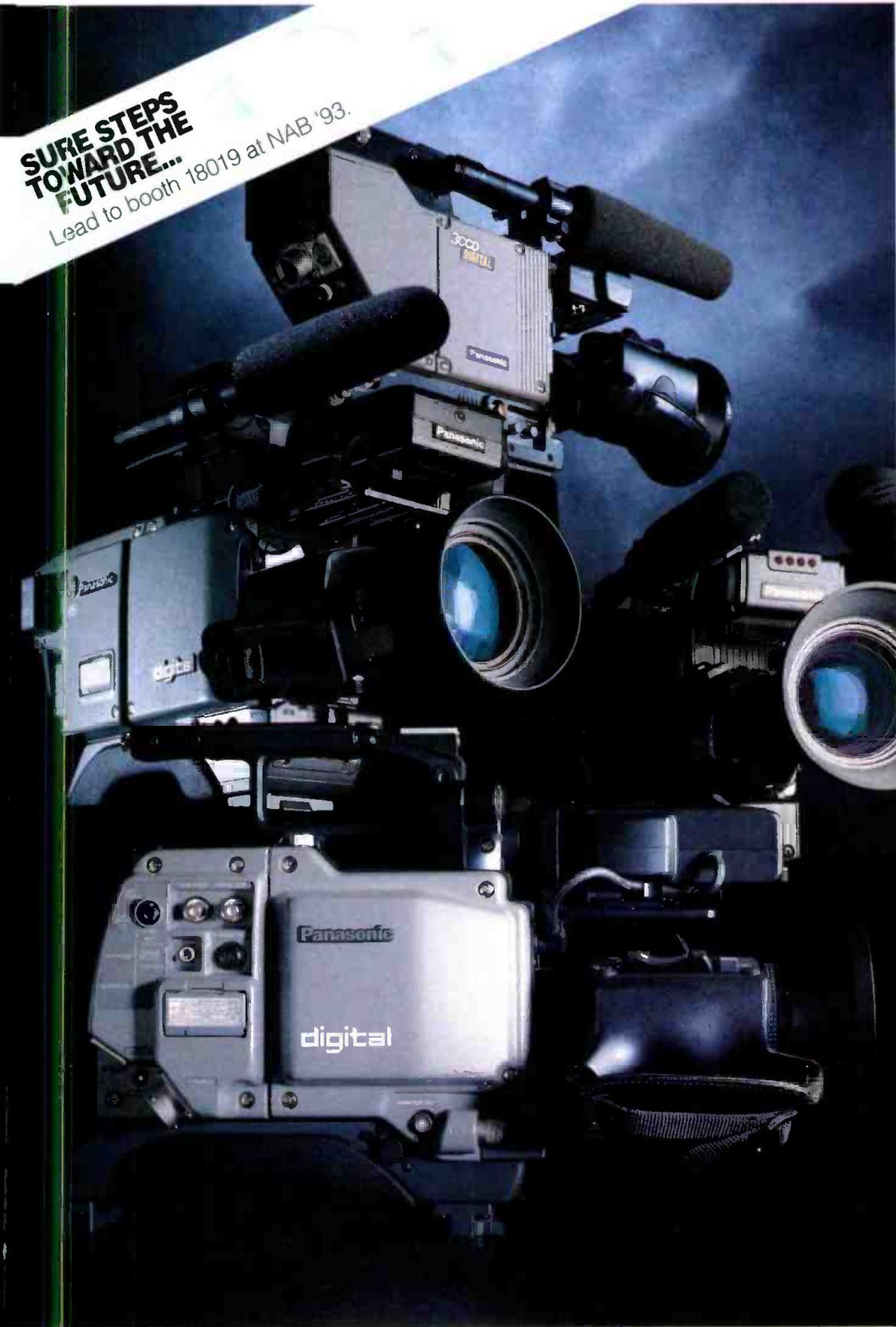
SSP-3: loads sound to hard disk in 16-bit resolution.

MasterMaker: CD mastering system.

Circle (961) on Reader Service Card

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 was awarded two 1992 EMAs for Outstanding Achievement in Technical Engineering Development for its Digital Signal Processing technology as implemented in its line of DSP cameras. Betacam is a trademark of Sony Corporation.

For more information call: 1-800-528-8601
(upon request enter code 07)
One Panasonic Way, Secaucus, NJ 07094

Panasonic
Broadcast & Television Systems Company

Sony Communications/Broadcast 11711

Product line: CCD cameras; digital, analog video recorders; digital peripherals; analog, digital audio products; video effects systems; LMS automation products; video monitors; turnkey integrated systems.
D-2 peripheral: brings benefits of Coefficient Recording, digital component recording to D-2 recorders.
Digital Betacam products: VTRs, players, multicassette machines; 1/2" component digital format uses Coefficient Recording; converts to widescreen 525/59.94 (625/50 PAL) format for advanced TV compatibility.
Digital Betacam products: widescreen compatible displays, production equipment.
Digital multitrack: audio console.
Digital radio: broadcast console.
Radio cart machine: uses Mini Disc technology.
D-1 peripheral: enhances D-1 equipment with Coefficient Recording; adds a 10-bit signal or key channel from a single D-1 VTR.

Circle (962) on Reader Service Card

Sony Recording Media 11711

Product line: Video recording tape, Betacam metal professional media; audio, video tape, data cartridges; optical media, batteries; floppy disks.
1" Dub Pack.

BCT-G: oxide formulation videocassettes for Beta.
BCT-MA series: Broadcast Master for Betacam SP.
D2 series: cassettes.
D1/2, D1/4 series: 1/4", 1/2" DASH digital audio tape.
Duplicator products: for VHS, Beta, 8mm cassettes, 1/2" pancake.
HMEIX, HMPX media: Hi-8 metal evaporation, metal particle cassettes.
KSP series: U-matic cassettes.
MDU series: digital audio U-matic material.
MQST series: professional S-VHS cassettes.
Pro DAT Plus: professional DAT series cassettes.
SBT series: cassettes for Betacam SP.
Type V1-KQ, V1-K: 1" video tape.
XBR, BRS series: U-matic cassettes.
BCT-D series: Digital Betacam cassettes; available in various lengths.

Circle (963) on Reader Service Card

Sound Ideas 12803

Product line: Production music, effects products.
General 600 series: 40 CDs with 50 hours of material.
 Circle (964) on Reader Service Card

Sound Source Recording Studios 15185

Information not available.
 Circle (965) on Reader Service Card

Sound Technology 4518

Product line: Audio test, measurement equipment.
 Circle (966) on Reader Service Card

Soundcraft 15713

Product line: Audio mixers, production, on-air with audio-for-video interface.
B-100: compact mixers; 8-, 16-input versions; 3-band EQ, two aux send, conductive plastic faders; monitoring for six stereo external sources.
VBE-100: audio-for-video mixer; 8 input modules.
Vienna enhancement: padless mic pre-amp; active panpots, differentially balanced bussing on reinforcement, house/monitor console.
Folio series: Spirit Folio - 6 mono, 2 stereo inputs in 10x2 format or 8 mono, 2 stereo in 12x2; 60mm linear fader; battery pack option.
Sapphire upgrade: mid-level recording console with patchbay for 20-52input capability; I/O modules include individual noise gates and 4-band EQ.
 Circle (967) on Reader Service Card

Soundforms Int'l 4900

Product line: Portable, lightweight enclosures for recording booths.
 Circle (968) on Reader Service Card

Special Event Video 13359

Information not available.
 Circle (969) on Reader Service Card

Specialized Communications 17048

Information not available.
 Circle (970) on Reader Service Card

Specialty Packaging 19979

Information not available.
 Circle (971) on Reader Service Card

Spectral Synthesis 4815

Information not available.
 Circle (972) on Reader Service Card

Sprague Magnetics 5112

Product line: Replacement audio heads; head services.
Media care kits: Geneva kits for videotape heads, CDs; head degaussers, tape erasers; various cleaning fluids.
Cable assemblies: Geneva audio, video cable kits.
 Circle (973) on Reader Service Card

Sprocket Video Technologies 19978

Product line: Digital utility devices, serializer, deserializers.
DST-4:2:2: single-channel unit for 4:2:2 signals; converts between parallel video and serial data.
DST-1000: single-channel, multistandard serializer, deserializer; converts parallel component, composite video to serial data; operates as component 4:2:2, composite 4FSC NTSC or 4FSC PAL.
 Circle (974) on Reader Service Card

ST Keltec Corp. 17581

Product line: Satellite communications systems; H60-350X, R60-300Ku, H40-50Ku, H40-50CU.
 Circle (975) on Reader Service Card

Stainless/SG Communications 16113

Product line: Tower products, services.
 Circle (976) on Reader Service Card

Standard Communication 13624

Product line: Satellite television receivers.
MT830IBR-PKG Agile Omni International: C-, Ku-band 950-1750MHz LNB input; CCIR 567/RS250C; 4 antenna inputs, 6 bandpass filters; CAM830 module for PAL, SECAM, NTSC; narrow-band audio demods, de-emphasis, sound-in-sync clamp.
MT830IBR-PKG Agile Omni receiver: C-, Ku-band 950-1450MHz input; video receiver with 4 antenna inputs; 6 bandpass filters; Omni Global View Control Access Module; front panel control of satellite transponder formats, remote control features.
MT900 International: new generation receiver design; full compliance with international requirements.
MT900IB-PKG: international C-, Ku-band receiver; 950-1750MHz LNB input; CCIR567, RS250C certified; PAL, SECAM, NTSC demods; 2 antenna inputs; 6 bandpass filters; 110/200Vac power supply.
MT620 Continental: international C-, Ku-band receiver; 950-1750MHz LNB input; PAL, SECAM, NTSC; one audio demod; 28MHz B/W; 110-200Vac.
 Circle (977) on Reader Service Card

Stanton Magnetics 2210

Product line: Phono pickups; headphones.
CD-22: dual CD player in console; 10-memory program play, 99 even direct access play.
 Circle (978) on Reader Service Card

Stanton-Video Services Unlimited 19478

Product line: Camera support products.
Follow Focus/Zoom System: for film, video lenses; 2-position memory; adjusts rate of focus, zoom.
 Circle (979) on Reader Service Card

Star Case 13407

Product line: Transport cases for equipment, components, rack-mount types.
Enhancements: to entire Star Case line.
Custom Reference Guide: revised with custom case designs; new literature, training aids for dealers and end users.
The Exhibitor: convertible shipping container, organizer, table set; efficient, expeditious for trade shows.
 Circle (980) on Reader Service Card

Steenbeck 18810

Product line: Video, film editing, transfer systems.
ST-701V editing table: 6-plate system with film-to-video transfer features; adds SMPTE time code, Keycode to videocassette transfers.
 Circle (981) on Reader Service Card

Stellar Communications 3700

Product line: satellite relay, production vehicles.
 Circle (982) on Reader Service Card

Stellavox/Digital Audio Tech. 5408

Product line: Pro portable, studio R-DAT systems.
Stellaword: pro CD recorder; Philips CD-R technology.
STELLAMODE: multistandard D/A converter; AES/EBU digital I/O, S/PDIF input; balanced analog outputs; digital domain absolute phase inversion.
 Circle (983) on Reader Service Card

Storcel 16642

Product line: Videotape storage systems.
Room Stretchers: compact storage for small formats.
Setup trucks: utility carts with maximum capacity to transfer tapes from storage to playback area.
Stor-Max systems: double-entry high-density premium quality steel tape storage for all formats; lengths 3-18 feet without raised flooring or motorization.
Railriders: lateral high-density tape storage for areas of less than 3-foot depth.
 Circle (984) on Reader Service Card

Strand Lighting 17622

Product line: Lighting fixtures, control products.
Color Call Scroller: scrolling color changer; 2-speed fan extends life of filter materials; DMX512, 0-10Vdc.
Lightboard M: mid-range lighting control desk; 768 dimmers on 96 or 144 control channels.
Mantrix LX: manual lighting board; 2-scene preset desk, wire-per-dimmer connections.
CD90 dimmer: intelligent control system; 16-bit dimmer fade processing, 2,000 fade steps; programmable dimmer response times; 32 backup cue memory.
Studio lighting units: Reporterlight kits, 125W, 200W 12V/20Vdc; Quattro Quasar single-ended QuartzColor 1200W, 2500W, 4000W lamps; Daylight Special, 12kW HMI system; Sirio Fresnel, 12kW; balasts.
Suspension Systems: self-climbing lighting hoist, motorized pantograph, pole operated pantograph.
mini Lightpalette 90: memory lighting control; 1024 dimmers on 576 control channels; 600 cues per show; programmed effects, channel grouping.
 Circle (985) on Reader Service Card

Strassner Editing Systems 13630

Product line: Video editing equipment, software.
Strassner C, D systems: single-source, 3/5-source systems; for PC with 2MByte RAM, 14-inch status monitor; 40MByte hard drive; intelligent VTR control network.
Strassner-PRO: 6-source edit controller; on-line features; programmed motion control, multi GPI triggers, split-screen EDL management, event TimeLine.
Strassner Ver 4: upgrade for CMAX, Strassner systems; replaces software for CASE-1 controllers; variable speed editing on variable tracking VTRs; Jog-Shuttle control; ESAM II mixer feature; tapestripping command from keyboard.
 Circle (986) on Reader Service Card

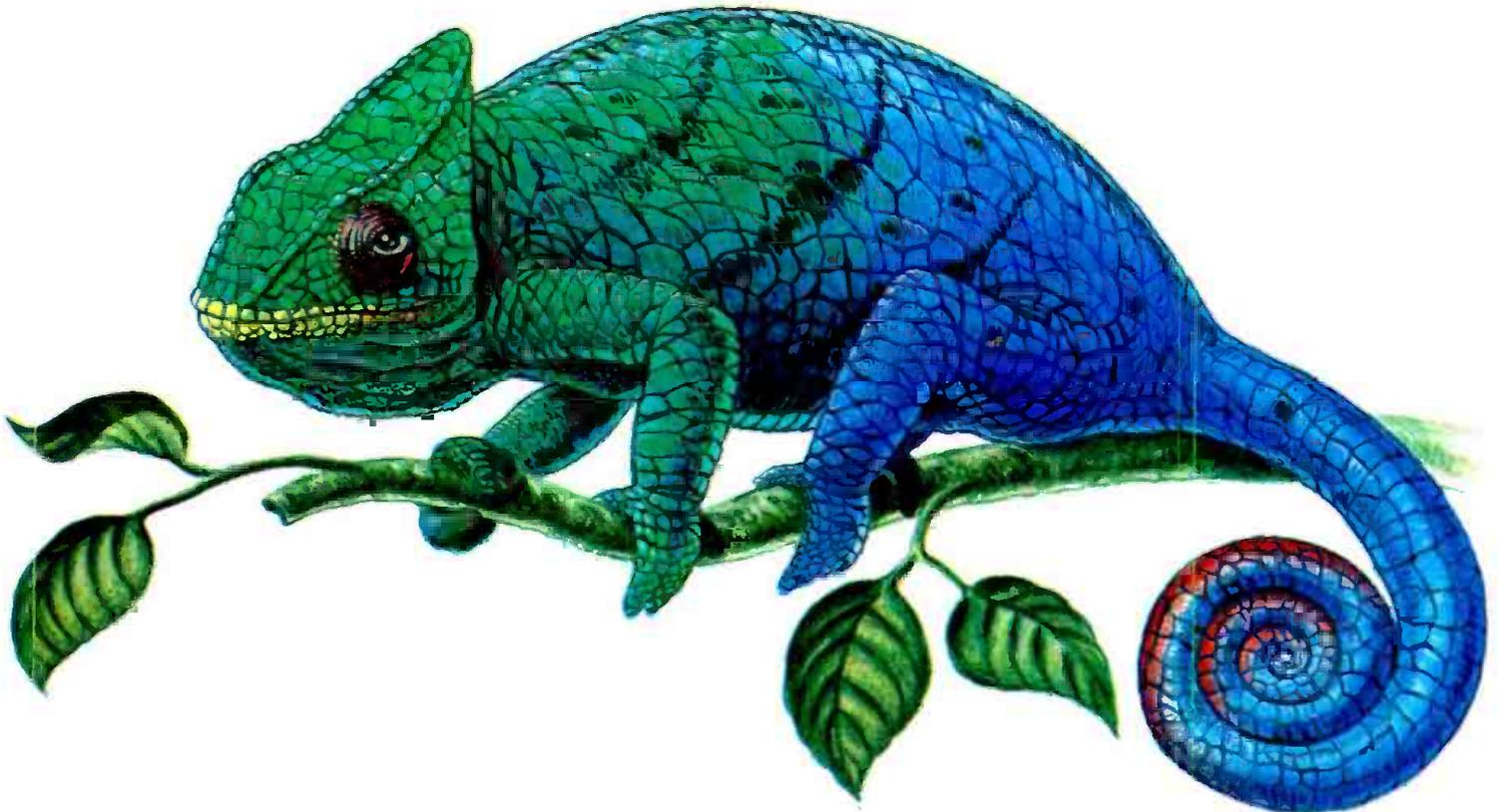
Studer Digitec 1218

Product line: Numisys digital cart systems, automated editing systems.
NUMISYS REGIS: automated editing with standard PC with RS-232 link to various audio sources; hard disk, R-DAT, CD, analog tape; creates multi-user network, resource sharing.
NUMISYS: digital cart replacement steps between two channels on the console; list editing, resequencing, commercial insertion; 48kHz, 16 bits.
 Circle (987) on Reader Service Card

Studer ReVox 1218

Product line: Audio mixers; CD players/recorders; audio tape recorders; telephone hybrids; R-DAT recorders; digital, analog routers, digital audio workstations; broadcast automation systems.
C730/C731: 3rd generation proCD players; integrates with D740 CD recorder, D 780 R-DAT.
D780 R-DAT: free-standing, integrated recorder; 64x oversampling; bit-stream conversion with 8x oversampling; Quick-Start for instantaneous start.
Dyaxis I: 2-channel stereo editor, production system integrates CD recorder, R-DAT, real-time EQ, level control for virtually every digital I/O format.
Dyaxis II workstation: 8-48 channel Plug-and-Play (MOD technology) and Autoconform; crossfade edit,

NTSC~HDTV



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.

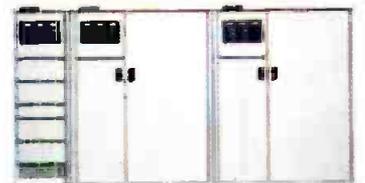
Designed from the ground up specifically for the HDTV transition, Sigma sums Harris' experience in broadcast transmission innovation, digital technology, solid state design and total systems integration.

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.



sigma
THE TRANSITION TRANSMITTER

Phone: 217-222-8200 Fax: 217-224-1439

 **HARRIS
ALLIED**

Circle (97) on Reply Card

www.americanradiohistory.com

record modes; digital mixing; signal processing; 5-band EQ, event-based automation; code synchronizer; Mac System 7 control software.

Dyaxis Lite: workstation for newsroom, call-in editing, short format programs; Mac Classic II computer, hardware controller similar to tape machines; upgrade.

ReVox MB16: professional mixer.

C221: professional CD player.

Circle (988) on Reader Service Card

Studio Film & Tape 17151

Product line: Evaluated video recording tape.

Evaluated tape: 1", Betacam, Betacam (SP), 3/4" KCA/KCS, D2 formats.

Circle (989) on Reader Service Card

Studio Spectrum Inc 11647

Information not available.

Circle (990) on Reader Service Card

Studio Technologies 13627

Product line: Mic preamp; audio processors, stereo 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 35 talent amplifier.

IFB Plus Model 2: controller for IFB with ENG, SNV, mobile production facilities.

Circle (991) on Reader Service Card

Studio Technology 16466

Circle (992) on Reader Service Card

Sundance Technology Group 13062

Product line: Video editing products with MAC software control, Q-CUT editing, Q-BASE scene logging database.

RADIO: random access digital I/O editing software.

FASTBREAK event management software: for Pioneer VDR-V1000 rewritable laserdisk recorder; build, play random access, non-linear sequences for broadcast, sports applications; supports stills, IDs, bumps, news stories, spots.

Circle (993) on Reader Service Card

Superior Electric 4526

Product line: STABILINE series power protection equipment; UPSY 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 16469

Product line: Ku, C-band transportable earth stations; mobile production facilities.

Gemini: 48-foot mobile unit; GVG 1680 switcher, Chyron 4200 titler, Abekas A-42, A-53; 5 Sony BVP 360, 3 Sony BVP 350 cameras; Yamaha PM-2000 mixer, Sony PM-2000 VTRs, BVW-75s with 3/4", 1/2" VCRs.

Discovery: 48-foot mobile unit; GVG 300 switcher, Chyron 4200 titler, Abekas A-42, A-53w/warp, 5 Ikegami 323, 3 Ikegami 323p cameras; Yamaha PM-3000 mixer, Sony 3100 VTRs, BVW-75s with 3/4", 1/2" VCRs.

Circle (995) on Reader Service Card

Swintek Enterprises 12805

Product line: Wireless mic, intercom products, Mark 200 intercom, Mark Q/ENG microphone.

Mark 90C: wireless transmitter, converts hand-held mic into a wireless unit.

Mark 90L: diversity receiver.

Mark 200D/ETS: wireless mic system with security scambing feature.

Circle (996) on Reader Service Card

Switchcraft 4909

Product line: Full range of audio components, accessories.

Video patching: expanded line of patch panels and cords.

Circle (997) on Reader Service Card

SWR Inc. 16043

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

Symbolics/Graphics Div 13351

Product line: Electronic graphic, animation software.

Release 6.2: upgrade unified paint, 2D, 2D graphics software; networking; direct SCSI to Solitaire recorder; RS232 control of Abekas A66; multimachine control.

HD XL animation: Unified Graphics with paint, 2D/3D animation tools.

S-MIDI: software for S graphics; interface audio-to-queue music, voice, sound effects with animation.

RenderServer 2.0: to off-load rendered images to SGI Indigo, Personal Iris workstations

Circle (999) on Reader Service Card

Symetrix 3920

Product line: Audio processors, single-ended noise reduction system.

Model 425: dual compressor, limiter, expander; stereo or dual-mono modes; downward expansion, compression with peak limiting; 112dB dynamic range; 0.04% distortion.

524E multimode crossover: four crossover bands, configure as mono 2-, 3- or 4-way or stereo 2-way; adjustable crossover points, filter slopes; individual processing per band with driver protection limiter, phase alignment compensation.

Circle (1000) on Reader Service Card

System Associates 13431

Product line: Used broadcast and equipment brokers.

Circle (1001) on Reader Service Card

Systems Wireless 18563

Product line: Wireless mics, intercoms, field production equipment from HME, Vega, Lectrosonics.

Lectrosonic UHF: wireless microphones.

Vega IFB-12: wireless IFB system.

HME 800 intercom: UHF wireless system.

Circle (1002) on Reader Service Card

T-T-T 12301

Product line: Recording media degaussers.

MAG7A telephone set: for communications over bidirectional 2-wire circuit, unidirectional 4-wire circuit.

#1500M degausser: for metal tape; controlled erasure for Mill, Beta-SP, VHS, U-matic, 1" reels.

#409/M: table-top eraser for metal media to 75-85dB below recorded signals.

TS2200A automatic hybrid: automatic system with micro-processor control.

Circle (1003) on Reader Service Card

Tally Display Corp. 17782

Product line: Specialized tally indicators to indicate status of equipment.

Tri-color interactive displays: system creates matrix-type characters to identify, indicate status of equipment with red, green, yellow colors; senses router configurations, etc.

Circle (1004) on Reader Service Card

TAO/Technical Aesthetics Operations 13606

Product line: Windows-based A/B roll editing system; MIDI Editor accessories.

Circle (1005) on Reader Service Card

Tapscan 4306

Product line: Marketing research software, QualiTAP, TargetONE.

Retail Spending Power: added feature to Tapscan software package.

Circle (1006) on Reader Service Card

TASCAM 16119

Product line: Audio recorders, center time code track models; CD players; audio mixers.

CD-401 MK II CD player: fader start, auto cue, digital out, pitch control, XLR, RCA outputs.

DA-88 digital recorder: 8-track system using Hi8 format; sampling at 44.1kHz and 48kHz; 6% variable pitch.

DA-60 Pro DAT recorder: uses four heads for off-tape "confidence" monitoring; RAM buffer for instant start.

RA-4000: random-access recorder, editing system;

two input channels, four analog outputs; 200Mbyte internal drive.

M700-MFA: automated recording console; 24-, 32-channel, eight group buses, four assignable effects return switches, six aux sends; dual signal path effectively doubles inputs during mixdowns.

Circle (1007) on Reader Service Card

Taurus Communications Inc. 13143

Product line: Full service telecommunications services.

VideoCipher II Plus encoders: Transportable units.

Circle (1008) on Reader Service Card

tc electronic A/S Unassigned

Product line: Audio processors, equalizers, digital audio equipment, analyzers.

#1128 digital equalizer: programmable; #6032 remote motorfader control, #PC99 computer software controls up to 99 #1128 EQ units.

M5000 digital audio mainframe: audio processor; variable configuration with digital, analog I/O.

Processing modules: 1280/1380 digital audio delays, 2290 dynamic digital delay and control processor, 1210 spatial expander, 1140/2240 parametric equalizer.

Model 8201: AES/EBU digital interface test generator; Windows 3.1 software.

Circle (1009) on Reader Service Card

TCS-Tripp Communications 17050

Product line: Videocassette, CD organizer cabinets fit room space limitations; Roll-Around trucks for videocassettes.

High density: CD cabinets for static, mobile storage.

Double-sided storage systems: for all videocassette tape formats.

Circle (1010) on Reader Service Card

TEAC Unassigned

Product line: Communications recorders; motion, still video recorders.

Circle (1011) on Reader Service Card

Teatronics International 17269

Product line: Lighting controllers, echelon, MD series modular dimmers.

TV studio package: lighting, distribution, dimmer and control system designed for 30'x40' facilities.

Circle (1012) on Reader Service Card

Tecom 19435

Information not available.

Circle (1013) on Reader Service Card

Techflex 17584

Product line: Wiring harness management sleeving, of braided monofilament material.

FLEXO series: FR flame retardant for cable management; black, white; HW heavy wall abrasion resistant black; PET Standard chemical, abrasion resistant material in assorted colors.

Circle (1014) on Reader Service Card

Techni-Tool 11548

Product line: Special purpose tools.

Circle (1015) on Reader Service Card

Technosystem SpA 19571

Product line: Microwave links 2-14GHz; modulators, converters, solid-state, tube translators, transmitters; transmission system accessories; turnkey station, network designs, construction; field maintenance service.

TXS200 transmitter: solid-state UHF transmitter; UL-10 modulator, ULS-200 200W amp; NTSC, PAL, SECAM.

Solid-state TV: transmitters, translators; excitors to 10W output; synthesized frequency control continuously tunable on Band III, IV, V; replaces tube versions of 30W to 1kW; combined carrier amplification.

Circle (1016) on Reader Service Card

Tecnologie Elettroniche Milano/TEM 1500

Product line: Radio/TV transmitters, translators.

Circle (1017) on Reader Service Card

TEKNO Balcar 18972

Product line: US distributor for Balcar (France) lighting products, Fluxdite.

Fluxdite 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

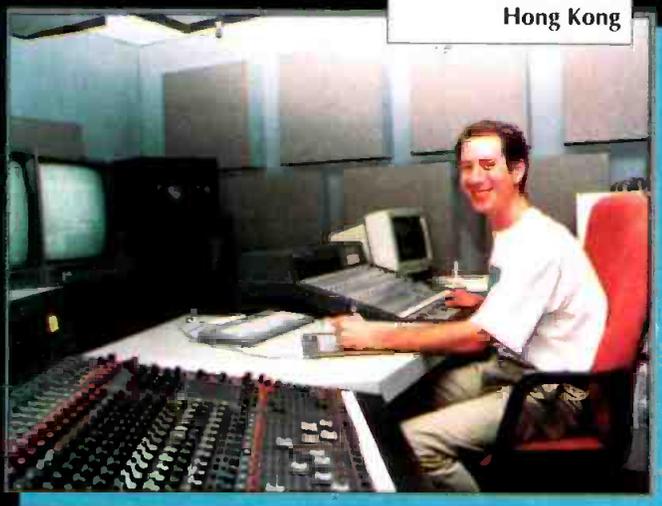
"We looked at other hard-disk editing systems, but felt that ScreenSound met our needs far better. After having used it operationally for six months or so, I can say that we made the right decision."

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

SSL DIGITAL

Circle (98) on Reply Card

Solid State Logic

International Headquarters: Begbroke, Oxford, OX5 1RU, England • Tel: (0865) 842300
Paris: (1) 34 60 46 66 • Milar: (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

ScreenSound
Digital Audio Editor
For Video & Film

SoundNet
Digital Audio Network

200W unit equivalent to 1kW-2kW halogen units; dims to 10% with minimal shift in color temperature.

Circle (1018) on Reader Service Card

Tekskil 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.

AVTIME package for VM700A: audio-to-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 10-bit test signals; -202 generates SMPTE bars, black burst; audio output; half-rack width by 1 rack unit high.

VS210 synchronizer: with four times the accuracy, resolution of 8-bit systems; analog, composite digital I/O for mixed format systems; NTSC.

WFM601 serial component monitor: direct digital input waveform monitor for adjusting serial digital component signals; 2 loop-through inputs; analog display of signal; EDH error alarm LED, RGB parade display.

play; Tek-standard operator interface in 1/2-rack width. Model 1765: combo waveform, vector monitor.

Circle (1021) on Reader Service Card

Telemetrics 18951

Product line: Camera support, control products, robotic pan/tilt systems, ENG camera triax adapters. TM-9255: coaxial camera remote control for lower end industrial cameras; RG-59/U cable links camera, base station with RG-11/U; for Beta, Hi8, MII, S-VHS cameras. TM66095: pan/tilt control, RS-232; operates four cameras with 16 presets.

TM-9250: triax/coax camera remote control; interface for Sony, Panasonic, Hitachi, Ikegami cameras.

Circle (1022) on Reader Service Card

Telapak San Diego 19107

Product line: Equipment transport products; convenience items, briefcases; full line of soft-sided cases. T-GE case: soft carry case for GE LCD15 projector.

Circle (1023) on Reader Service Card

Telescript 18811

Product line: Studio, portable monitor prompters; prompting software for compatible PCs.

Notebook System: computer prompter.

Newsroom System: computer prompter.

Circle (1024) on Reader Service Card

Television Engineering 13117

Product line: Mobile TV production, ENG vehicles; system design, construction; IFB controller.

IFB-19A: audio controller.

Circle (1025) on Reader Service Card

Television Equipment Associates 13411

Product line: Video filters; baseband video switched box delay lines; Brickwall filters for subcarrier removal; boxed filters for general noise elimination; Matthey Electronics EU95 HDTV filters, delays.

70MHz IF filters: for INTELSAT, EUTELSAT systems. Delay DAs: high performance, 0-6µ delay range.

Group delay equalizer networks: for pre-transmission signal correction.

11MHz delay lines: switched, box style; rack-mountable package or DIP style.

Circle (1026) on Reader Service Card

Telex Communications/Pro A-V 19414

Product line: Audio tape duplication units; wired, wireless mics, receivers; headsets.

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 3/8-λ antennas provided.

Audiocom intercom enhancements: 2-user 2-channel station; 4-channel expansion station; power supplies; powered speaker monitor.

Custom frequencies: 8 Radiocom wireless intercom systems operate within one 6MHz TV channel.

EGM: gooseneck Microneck 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 non-intelligent 4-wire devices; XY panel control; CSEdit intercom keypad setup editor; power fail recovery.

SSA324 system interface: converts 20kHz signals among RTS-Audiocom, RTS-RTS, RTS-4-wire, Audiocom-Audiocom intercoms.

V-series: lightweight professional headset.

ELM-33: unidirectional lapel Micro-mini mic.

Circle (1027) on Reader Service Card

Tell Telecomm RDS Exhibit/Grand Lobby

Product line: RDS system components. New product announcements will be made at the exhibition.

Circle (1133) on Reader Service Card

Telos Systems 1026

Product line: Telephone hybrid products, LINK telco-intercom interface.

ONE-plus-ONE: two digital hybrids in one enclosure; independent operation with mix-minus matrix, in multihybrid system.

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...

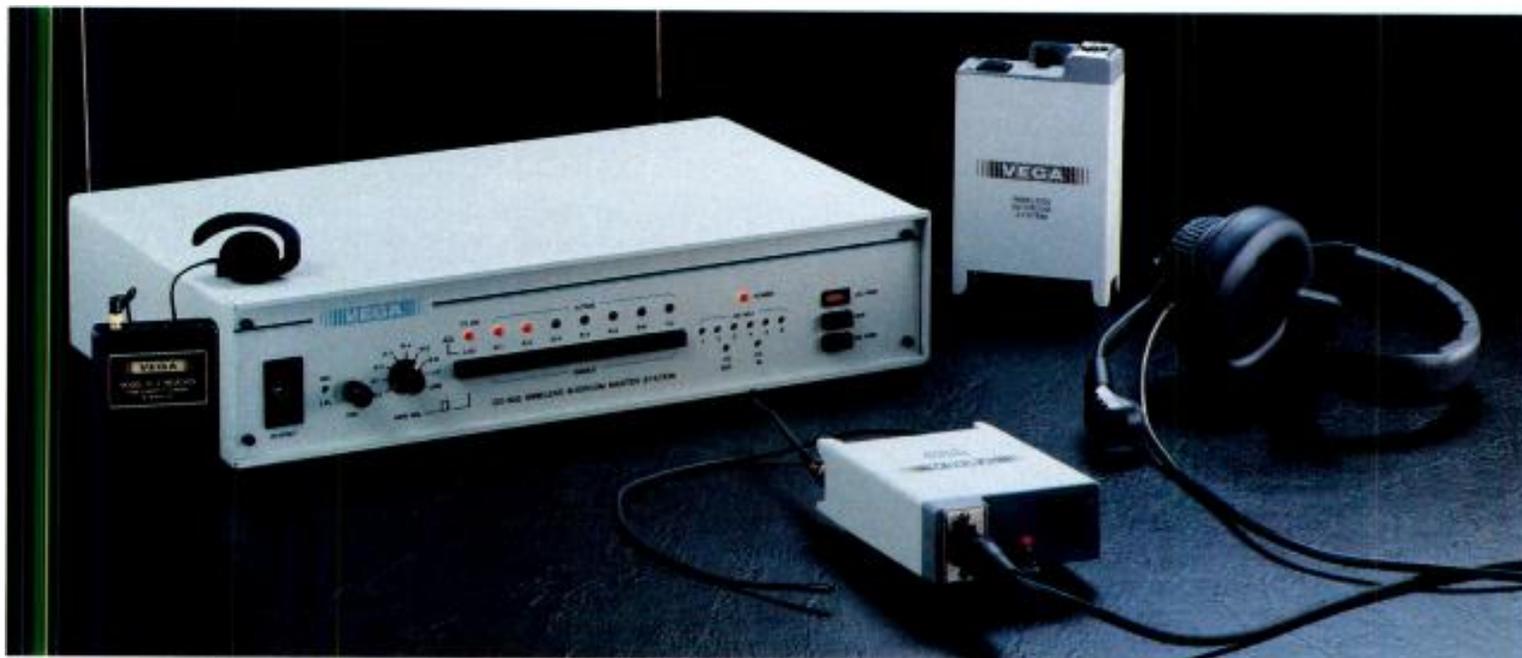
See us at NAB
Booth #16314-16414

 **Fiber Options**
... light years ahead

80 Orville Drive, Bohemia, New York 11716-2506
516-567-8320 • 1-800-342-3748 • FAX 516-567-8322

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 capa-

bilities 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 Cylolac (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.



a MARK IV company

9900 East Baldwin Place
El Monte, California 91731-2294
Telephone: (818) 442-0782
Toll-Free Telephone: 800-877-1771
Fax: (818) 444-1342
FaxBack: (818) 444-2017
Toll-Free FaxBack: 800-274-2017

Circle (100) on Reply Card

www.americanradiohistory.com

100 DELTA: digital telephone hybrid.
Circle (1028) on Reader Service Card

Tennaplex Systems 15729
Product line: Broadcast antenna products for FM, TV, HDTV offering omnidirectional, custom patterns.
UHF panel antenna: uses K72314 broadband panel.
Pattern design workstation: demo of possible panel combinations; omni, directional, beam tilt with and without null fill, power handling capability options.
CP FM panel antenna: broadband panel to design omni directional, custom pattern FM arrays for all power levels between 88-108MHz.
Circle (1029) on Reader Service Card

Tentel 13408
Product line: Video recorder repair, maintenance test instruments; Tentelometer dynamic tape tension meter; torque gauges; reference plane gauges; head protrusion, drum eccentricity gauges.
Tip projection gauge: electronic digital unit also measures drum eccentricity.
Betacam related: video training tape, repair/maintenance gauges.
Circle (1030) on Reader Service Card

Texscan MSI 19576
Information not available.
Circle (1019) on Reader Service Card

TFT Inc 1908
Product line: Aural STL system, booster/reciter for FM repeater applications.
9100S/9107: composite aural STL transmitter, receiver; combined FM stereo generator with audio processor in transmitter.
DMM-92: 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 curtains, 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 streamline 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 15746
Product line: Digital video processing products, Colorado color manipulation; 4:2:2 keyer for mixing, keying; TTV series CCD cameras, HDTV portable camera.
PXTORE: still store; 386 Windows-based; for 525/625, 4x3, 16x9 format pictures; Bellevue interface card; Ethernet LAN tie to ISDN; ISO/IPEG compression.
BELLEVUE: PC 16:9 display card for 386, 486 PCs; replaces VGA card; 24-bit color under Windows 3.1; JPEG data compression.
TTV 5651 SYNONYM: 4:2:2 component digital video production switcher.
TTV 5790, 5791, 5775: serial digital routing switchers.
TTV 7160: serial digital DA for D1, D2/D3 signals; auto EQ to 300m cables.
TTV 1625: TTV 1647S camera head, CA 25 multicore adaptor, CCU 1625 panel for multicore operation.
TTV 7656: serializer, deserializer; D1, D2/D3 NTSC/PAL.
TTV 7760 HD: Hi-Doubler image converter; 16:9 or 4:3 aspect ratios.
TTV 7810: bidirectional standards conversion among analog composite NTSC, PAL, SECAM, digital composite NTSC, PAL, analog components, 270Mbit/s 4:2:2.
TTV3821/3820: D1 recorders with dynamic tracking; optional slow-motion; serial digital I/O.
TTV7710, 7711: Double D1 splitter, combiner; splits analog HDTV signal into 4:2:2 signals for recording, processing with 4:2:2 equipment; recombines result to

component, RGB output with composite, tri-levelsync.
TTV 7400 DIGIPHASE: serial digital phasing device.
Circle (1034) on Reader Service Card

Thomson Digital Image/TDI 15746
Product line: Interactive 3-D animation, visualization for video, broadcast, corporate communications.
Metaballs Blob Modeler: for TDI Explore, TDI Image 3-D animation, visualization packages; Boolean operations generate smooth holes, cavities with soft edges; optimized number of polygons to create smooth curves; real-time 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; combine blending groups to create melting objects, moving molecules; view-dependent adaptive subdivision of blending groups for fast, smooth rendering.
Pixscan cartooning: reduces time to create cartoon series in multi-workstation environment; automatic coloring of a series of drawings; exposure sheet with 30 columns of images.
Circle (1035) on Reader Service Card

Thomson Tubes Electronics 11908
Product line: Power devices for terrestrial broadcast; HPA, TWT devices for satellite, microwave communications.
TH 10001 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 spectrum; >58% efficiency from 120W tube.
TH 343 tetrode: FM power tube to 30kW at 120MHz; 18dB gain; Pyroblock grids; in TH 18230G cavity.
TH-8467 projection CRT: 9" device for HDTV projectors; P53 green, P56 red, P11 blue phosphors.
Circle (1036) on Reader Service Card

Thomson-LGT 15746
Product line: Broadcast systems engineering of complete stations and networks world wide; wide range of solid-state and tube transmitters for TV from 1W to 40kW (2x20kW) in Bands 1 to 5, FM from 1W to 10kW.
Circle (1037) on Reader Service Card

3M Pro A/V Products 16605
Product line: Audio, video recording media, all formats.
Circle (1038) on Reader Service Card

360 Systems 4015
Product line: audio router systems; audio cart player replacement systems.
Circle (1039) on Reader Service Card

Tiffen 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.
Console Control Unit: keypad on AMS, Euphonix, Neve, Otari, SSL consoles operate TimeLine System Supervisor multitransport controllers.
MicroLynx: machine control; synchronizes audio, video transports and MIDI.
Lynx Gearbox Card: plug-in module for Lynx time code modules.
Circle (1041) on Reader Service Card

TM Century 1926
Product line: Radio station automation, Digital Commercial System with hard disk storage.
TM Century Television: creative, cost-effective TV production.
Ultimate Digital Studio: computer-controlled system manager on-air programming; runs CD players, digital hard disk systems for live, live-assist, autoamtion; all major music rotation, traffic software supported.
GoldDiscs: music libraries for radio; NoNoise discs.
Circle (1042) on Reader Service Card

TOA Electronics/Digital Mixing Systems 1306
Product line: Sound reinforcement, recording consoles.
Circle (1043) on Reader Service Card

Toko America 17243
Product line: Video filter for HDTV.
VAST-P: video, audio storage, transmission system.
TCD-1000: portable video codec for multimedia teleconferencing systems.
Circle (1044) on Reader Service Card

Torpey Controls & Engineering 16827
Product line: Utility timing products, analog/digital time displays, digital timers.
STW-5R: rack-mounted digital timer.
CLK-111: digital time display, operates from ESE, SMPTE, DQS-6 code.
VLCS-2: triple video alarm, switch.
CLK-22 combination: analog, digital time display, operates from ESE, SMPTE, DQS-6 code.
CLK-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 computers, FO transmission equipment; Hi8 cameras, camcorders; desktop video production equipment.
Digital interface: 10-bit serial digital TV signal system.
HDTV PKCOT: picture computer system.
PAL CCD ENG camera: with 430,000-pixel sensors.
SC-521, SC-831: studio, ENG/EFP cameras using 600,000 -pixel CCD chips.
FO transmission: digital optical fiber system for HDTV.
Video filing system: solid-state design.
SNG/LINK system: with digital exciter, receiver; uses digital video compression.
Circle (1047) on Reader Service Card

TouchVision Systems 15369
Product line: Videotape editing controllers, multimedia and professional systems.
D/Vision V2.1 enhancements: six 44.1kHz audio channels; Targa/PCX overlays; improved SuperRTV image quality, animation; 60-hour video capacity; files export as Microsoft "Video for Windows", Apple Quicktime, Intel Indeo and WAV audio files; digital video effects, source time code display; true non-linear editing.
Circle (1049) on Reader Service Card

TRF Production Music Libraries 19528
Product line: Production music libraries.
Pyramid Library: 11 CDs for broadcast, AV, film applications.
Production libraries: more than 50,000 selections.
Circle (1050) on Reader Service Card

Trident Audio 5106
Product line: Audio consoles for broadcast, tele/post production, Vector 432.
Series 90: 24-bus in-line console; three inputs per module each with EQ, 12 aux sends; VCA automation for main, monitor fader, optional moving faders on main; 40-, 56-input; machine control; 12 automated switches per module.
Vector enhancements: LCRS surround sound pan module; stereo mic/line input, 4-band EQ; 3-way effects return; routing to multitrack, aux, four stereo buses.
Circle (1051) 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 Graphics: combines with real-time video for multimedia applications.
Toughscreen Controller: with 19" 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.
Alborno Antenna Systems: video microwave antenna equipment; for origination or repeater function in live news events; Skypod III, NavTrack automatic helicopter tracking system.
Circle (1052) on Reader Service Card

Trumpeter Electronics 12801
Product line: BNC connectors; patching, distribution products.
J24WHF, J24WTHF: 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."

In any arena, basketball or business, you've got to know what your players can do for you.

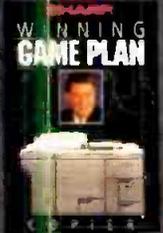
That's why Sharp has developed a Winning Game Plan for copiers. This booklet helps you find the right copier from Sharp's impressive line-up that's going to increase your productivity and reduce operating expenses, big time.

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.

CHUCK DALY
CHAMPIONSHIP COACH



SHARP
FROM SHARP MINDS
COME SHARP PRODUCTS™

BANKING SYSTEMS • CALCULATORS • CASH REGISTERS • COLOR SCANNERS • COMPUTERS • COPIERS • FACSIMILE • LASER PRINTERS • TYPEWRITERS • WIZARD® ORGANIZERS

© 1993 Sharp Electronics Corporation

www.americanradiohistory.com

tended bandwidth dc to 600MHz; self-terminating and normal-through types.
Circle (1053) on Reader Service Card

TrueVision 10759/MM
Product line: Electronic graphics cards, Targa+, NuVista+.

Bravado: multimedia engine; on-board VGA for ISA platform; full color video-in-a-window, audio pass-through; Windows 3.0 compatible; 8-bit entry level, 16-bit full-featured versions.

Circle (1054) on Reader Service Card

TSM/Total Spectrum Manufacturing 12451

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 system.

ACP-8000S: touch-screen control system with networking; operates SP-300/X-Y servo pedestal, HS-310P studio pan/tilt unit, MCB-3 local manual control.

Network LAN: provides 100% system redundancy with multistation control.

HP-105P with multicontroller: high-speed programmable, pan/tilt for ENG; 18 arc-second accuracy, 90°/s velocity.

Sony CCU 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

TTC/Television Technology 13806

Product line: Manufacturer of AM/FM, TV broadcast transmitters; XL series of UHF/UHF LP transmitters, translators.

10kW FM: solid-state transmitter.

IOT transmitter: restyled, high-performance system.

UHF transmitter/translator: 100W, low-cost system.

1kW UHF: solid-state transmitter with various power levels, ancillary equipment.

Circle (1057) on Reader Service Card

TV Answer/Consumer Mktg Div 16681

Product line: Audience response, interactive TV.

TV Answer: wireless, 2-way system allows viewer response to on-screen broadcast with hand-held remote control device.

Circle (1058) on Reader Service Card

27th Dimension Inc 4304

Product line: Production music.

Circle (1059) on Reader Service Card

TWR Lighting 1504

Product line: Tower lighting products.

Circle (1060) on Reader Service Card

U-U-U

Ultimate Corporation 12951

Product line: Video compositing systems, the Ultimate Systems; matte hading; memory head motion control.

Cinefusion software: uses Ultimate algorithms with SG workstation for a new method of "bluescreen compositing" in film; Ultimate Intelligence automatically adjust system parameters for novice or expert users.

Circle (1061) on Reader Service Card

Union Connector 16435

Product line: Power distribution equipment, Polybox company switches, CS connector strips.

DistroBox: portable power distribution boxes; four sizes from 2-circuit 100A to 3φ 48-breaker power center; carrying handles adapt with C-clamp for pipe mounting; shippable by UPS.

Circle (1062) on Reader Service Card

Unique Business Systems 16472

Product line: Productivity, business software; RentTrace rental equipment availability tracking.

Circle (1063) on Reader Service Card

UniSet Corporation 11701

Product line: Studio furnishings, sets.

Circle (1064) on Reader Service Card

United Ad Label 13044

Product line: Blank, custom printed tape format labels for laser, tractor-feed printers for most audio, video formats; mailing, shipping labels; PC, Macintosh labeling software with UAL formats built in; tape management, status labels; At-Tack label adhesive remover.

Circle (1065) on Reader Service Card

United Media 18054

Product line: Editing control systems, UMI multitasking, A/B roll controllers; animation products.

PC Edit Series: for desktop video; non-linear mode Scene Logger to select, store and access scenes randomly for final 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

UREI 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

Ushlo America 18666

Product line: Stage, studio lighting products, lamps.

Circle (1069) on Reader Service Card

Utah Scientific 18032

Product line: Signal distribution switchers, AVS analog A/V, DVS digital routers; PVS production, MC-500 series master control switchers.

Multichannel: automation systems.

MC-601: digital master control switcher.

Circle (1070) on Reader Service Card

Utility Tower 3924

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

V-V-V

Valentino Production Music 12203

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

Valmont Industries 1427

Product line: Tower structures, Monopoles to 250 feet, also free standing and guyed Lattice towers.

Circle (1073) on Reader Service Card

Vantage Lighting 17972

Product line: Replacement Ken-Rad, PAR64 lamps.

Ken-Rad FLE: 2dK halogen lamp; custom-made units.

Circle (1074) on Reader Service Card

Varian Canada Microwave Products 16101

Product line: Klystron tube amplifiers for satellite communications.

Jetsat: 24-hour emergency deliver, tube repair and maintenance, bonded storage.

Circle (1075) on Reader Service Card

Varian Microwave Equipment 16101

Product line: High power amplifiers for commercial satellite services Ku-band medium power subsystem; Ku-band single-drawer medium power amplifier.

C-band HPA: 3kW wideband, single and multicarrier commercial satellite service; microprocessor control

section; local, remote control panel, menu driven.

Circle (1076) on Reader Service Card

Varian Microwave Power Tubes 16101

Product line: MSDC klystrons for UHF TV transmission. **Klystron rebuild service.**

Circle (1077) on Reader Service Card

Varian Power Grid/X-ray Tube Div. 16101

Product line: Eimac power tubes for VHF, UHF TV and AM, FM, shortwave radio to be displayed.

Circle (1078) on Reader Service Card

Varian Traveling Wave Tube Div. 16101

Product line: TWT devices for satellite communications; 3kW C-band, 300W Ku-band and mmWave iridium TWTs.

Circle (1079) on Reader Service Card

VEAM/Litton 16364

Product line: Electrical connectors, multipin products; A/V FO products.

B-LOK VDS-134: sequential mating power distribution panel; connections to 500Vac, 3-phase, 600a service.

CIR-GRH: 60A, 100A 5-pole power.

FOMS: fiber optic mic snake; 52-channel analog and digital to analog over optical fiber link.

B-LOK: 400A 5-pole sequential power distribution.

Circle (1080) on Reader Service Card

Veetronix Inc./Reach Electronics 16628

Product line: Sealed reed-type switches in illuminated, non-illuminated types; panel switches t; extensive line of keycaps; paging products SCA tone, voice systems, high-/low-band tone, voice systems.

Panel Switch: 1/2" square; 100ma rated reed; incandescent, LED or non-illuminated.

Circle (1081) on Reader Service Card

Vega Wireless 15716

Product line: Wireless mics; wireless intercoms.

Q-600 intercom: split band UHF/VHF wireless system.

RMT-14 wireless IFB: 4-channel transmitter with PL-2 2-channel mini bodypack IFB receivers.

Sub-mini RSX-7: lavalier mic with choice of Lemo LM210 or mini XLR/Tini QC LM-210x 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-reflector antenna systems (1.8m to 32m) for C, Ku-, X-band frequencies, some L-band; site testing, maintenance services.

Circle (1083) on Reader Service Card

VG Electronics Grand Lobby

Product line: RDS system components, monitoring, dynamic data management systems.

VEE 1076 series: Slinline RDS coders; supporting AF, DI, MS PI, PS, PTY, TA, TP services; dynamic, static RDS messages.

VEE 1079: RDS receiver decoder; with PC software to control receiver functions, provide RDS data displays, including views of Tuned Service data, EON references, histograms, others.

VEE 1078M: RDS monitoring decoder.

Circle (1085) on Reader Service Card

VGW Incorporated 18013

Product line: Digital composite video production switchers.

DX60: 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.

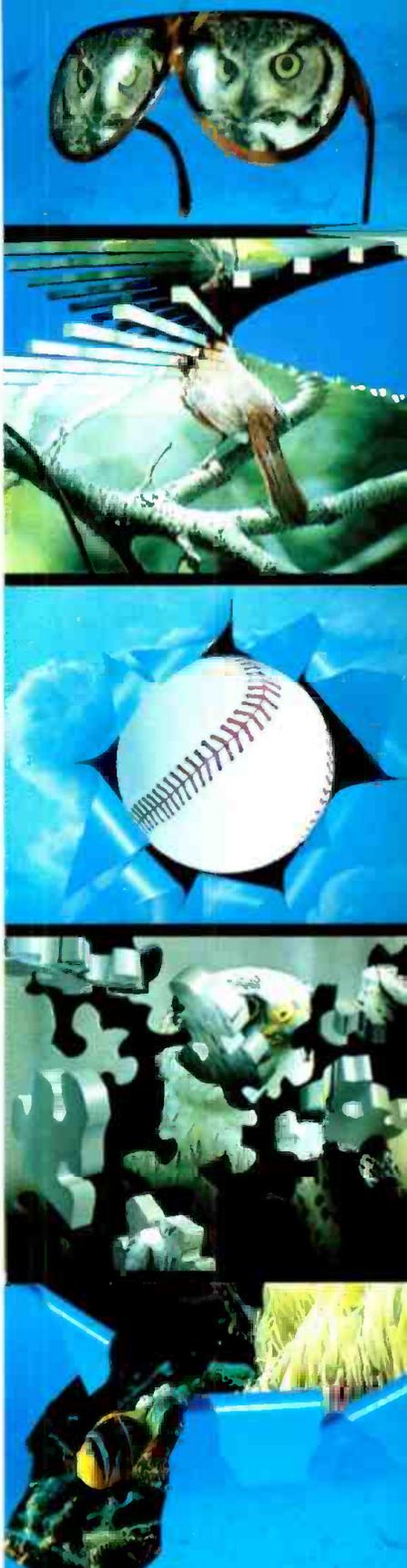
Circle (1086) on Reader Service Card

Vicon Industries 16473

Product line: Camera remote positioning products, desk-top or rack-mount controllers.

V6135PT pan/tilt: special designs accommodate small cameras; low profile indoor or outdoor; preset capabilities.

VCR424-1: 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

PINNACLE

www.americanradiohistory.com

continuous operation yields 2- or 6-hour operation.
Circle (1087) on Reader Service Card

Video Accessory 11127
Product line: Video distribution, synchronization, utility products; blackburst generator, S-video DA.
BBSG: genlockable black burst, sync generator.
VB/YCDA: video brick S-video DA.
VB/RM: video brick rack-mount system.
Circle (1088) on Reader Service Card

Video Associates Labs 13607
Product line: Video keying, capture devices; MicroKey/A with genlock, DigiView.
AudioPort: external digital audio adapter; plugs into parallel port of PC under DOS/Windows for recording, playback; software-selectable sampling rates.
Circle (1089) on Reader Service Card

Video Central 17350
Product line: Video product distributor; Optex mini image intensifier; camera surface splash bags.
DXC-537/PVV-I: Sony dockable CCD camera; professional Betacam VCR; PAL standard.
PVV-2800P: Sony 2000 professional PAL Betacam.
Circle (1090) on Reader Service Card

Video Communications S105
Product line: Computer software for broadcasting applications; STARS sales, traffic, accounts receivable system.
Programming System: software manages movie library, syndicated programs, specials.
The Report Generator: software generates reports from Programming System database.
Circle (1091) on Reader Service Card

Video Data Systems 17579
Product line: Character generators; laser-disk random-access, full-motion video promos.
Automated playback system: unlimited events per day per week; interface to VCRs, laser disk players,

routing; controls 10 devices on each of 8 channels.
System 2000: automated information display system; real-time events control and playback.
System 840 Color Billboard: menu-driven message system; stores 100 pages; battery backup; 16 colors for text, backgrounds; 50ns resolution with three fonts.
Circle (1092) on Reader Service Card

Video Design Pro 13941
Product line: Computer software, hardware for computer-aided design, VidCAD 386.
VidCAD Ver. 6: cable documentation, design software; for diagrams, 3-D rack drawings, floor plans; based on AutoCAD R12; customized dialog boxes to speed documentation, design; access to cable, equipment databases without leaving AutoCAD.
CableDOC BC (bar code): portable computer, bar code reader, printer; creates cable documentation for a system from bar code labels on cables and information regarding input and output connections.
CableDOC Manager: cable documentation software without CAD; menu, icon-driven requires no typing; creates single, multipair wiring data, jack, terminal block front panel drawings, router designs, cable labels, lists; DXF interface to CAD program.
VDPro F17 documentation workstation: 486/66MHz turnkey VidCAD system with 17" monitor; CD-ROM drive, multimedia sound board; 200MByte VESA local bus hard drive, cache; 1024x768x256 color TI34020 graphics processor; Windows 3.1, VidCad/AutoCAD.
Circle (1093) on Reader Service Card

Video International Development 16066
Product line: Video standards converts; announcements to be made at the exhibit.
DTC 4500 Motion Vector: standards converter; 4-field video, motion interpolation.
DTC 1004 standards converter: 4-field, 4-line converter, one-way conversion for satellite, cable industry; based on DTC 1504 converter.
Circle (1094) on Reader Service Card

Video Matic USA 13349
Information not available.
Circle (1095) on Reader Service Card

VideoFusion Ltd 15384
Product line: Post production software; JPEG.
Circle (1096) on Reader Service Card

VideoLab Para Technologies 19203
Product line: Time code processors, LTC, VITC generator, reader.
TCR-680: retrofit for Sony U-matic V06800.
Circle (1097) on Reader Service Card

Videomagnetics Inc. 18010
Product line: Refurbishing services for quad, Type C video/audio heads; tape degaussers, Model CDS-2500 belt-driven high-volume degausser.
Circle (1098) on Reader Service Card

Videomedia 16669
Product line: Frame-accurate transport control by PCs, workstations; V-LAN universal control network; machine control for multimedia, animation, video editing.
ALIX: V-LAN compatible module for animation, video editing with serial-only device, Macintosh, UNIX OS; works with major graphics, animation software that supports V-LAN; downloadable device drivers.

VLX: rack-mount modules for animation, video editing control of serial, parallel devices; control of major graphics, animation software that supports V-LAN network from any computer platform.

Animax: V-LAN compatible animation controller card for IBM, Amiga PCs.

Auto-PICT QT: animation software records, captures PICS, PICT files, QuickTime movies to/from videotape/disk; allows previews of pictures, movies.

V-LAN-CX: compatible module supports "prosumer" videotape recorders, camcorders for desktop video application.

OZ: video editing software for Microsoft Windows and Macintosh; uses V-LAN network for frame-accurate

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
Faraday for Filters



Booth 16378/9



Booth 435

CROFT ROAD INDUSTRIAL ESTATE NEWCASTLE
STAFFORDSHIRE S15 0QZ ENGLAND
TEL 0782 661501 FAX 0782 630101

Circle (102) on Reply Card

Cole Wire & Cable

Now we can supply any cable built to your specs or tell us your requirements and our staff will design it for you.

Call today with your requirement!

Come see us at NAB Booth #19785-86

CWC
1-800-323-1403

Circle (103) on Reply Card

France VELIZY-
VILLACOUBLAY
Tel (33-1) 30703500
Fax (33-1) 30703535

Asia SINGAPORE
Tel (65) 2278320
Fax (65) 2278096

ELECTRON TUBES FOR TV AND RADIO BROADCAST.



**Extending
your broadcast performance.** We make broadcast performance go

further with a complete selection of tubes and circuit assemblies for TV, FM and radio. OEMs and broadcasters choose Thomson time and again for reliability, power and ongoing optimization of tube lifetime.



Our TH 563, featuring 30 kW UHF in common amplification, opens new horizons in tetrode performance, and joins our full range of VHF and UHF tubes for TV.

Our FM tubes, from 10 to 100 kW, are economical, easy to use and available in industry standard designs.

For the latest radio transmitters, our outstanding new 500 kW TH 576 offers a higher level of efficiency, resulting in lower operating costs.

Whichever tube you need, Thomson delivers the service, quality and innovation that's ready to take your performance to new heights.

Brasil SÃO-PAULO
Tel. (55-11) 5424722
Fax (55-11) 2403303

Deutschland MUNCHEN
Tel (49-89) 7879-0
Fax (49-89) 7879-145

España MADRID
Tel (34-1) 5640272
Fax (34-1) 5641940

India NEW DEHLI
Tel (91-11) 6447883
Fax (91-11) 6453357

Italia ROMA
Tel (39-6) 6390248
Fax (39-6) 6390207

Japan TOKYO
Tel (81-3) 32646346
Fax (81-3) 32646696

Sverige TYRESO
Tel (46-8) 7420210
Fax (46-8) 7428020

United Kingdom
BASINGSTOKE
Tel (44-2561) 843323
Fax (44-2561) 842971

USA TOTOWA, NJ
Tel (1-201) 812-9000
Fax (1-201) 812-9050

For other countries,
call France

 **THOMSON TUBES ELECTRONIQUES**

Circle (104) on Reply Card

www.americanradiohistory.com

A/B roll editing on the desktop.

PACE: professional animation control engine; rack-mount module controls serial, parallel video devices from any computer; one V-LAN transmitter, one receiver; software downloadable device drivers, for major graphics, animation software supporting V-LAN. **MICRON, SuperMICRON, VLC-32:** A/B/+ roll editing systems; V-LAN network for frame accurate control of multiple VTRs, videodisks, switchers.

Circle (1099) on Reader Service Card

Videoqup Research 1607

Product line: Signal routers, distribution products.

BG-2 generator.

SD-2 silence detector: for two independent channel.

DAVE-2000: digital audio voice editor.

VP-2 VU/PPM meter: 2-channel unit; separate extended range displays cover -40 to +22 VU or PPM.

VU, PPM meter.

MP-2 mic preamp: 2-channel, 2 outputs per channel with independent gain adjustments.

Circle (1100) on Reader Service Card

Videotek 16253

Product line: Combined waveform/vector monitors; production, post production switchers; frame stores, synchronizers; sync, timing, test signal generators; distribution products, routers; audio program monitors; demodulators.

Omniframe: versatile rack-mount frame to accommodate 10 modules including video, audio, pulse DAs, sync or test signal generators; eight outputs per DA. **SAM-I:** System Auto-Measure system; performs automatic test of RS-170A, FCC (broadcast transmission), FCC (CATV distribution), NTC-7, RS-250C, common NTSC measurements; PC interface; measurements may be output to printer.

TVM-675: combination waveform, vector monitor for composite, component analog video; stereo audio phase, level measurements.

APM-800: high fidelity 8-input audio program monitor; can monitor four stereo signals in single RU panel; two bargraph meters with switchable peak program or average response ballistics.

Circle (1101) on Reader Service Card

VIDESSENCE Unassigned

Product line: Sustained RGB lighting systems for TV, film production.

Sustained RGB lighting: models from 15W to 1.6kW replace incandescents; dimming, control equipment; reduced power consumption, cooler operation for greater talent comfort, enhanced camera operation.

Circle (1102) on Reader Service Card

Vinten

Vinten Broadcast 19746

Product line: Microswift robotic systems, pedestals, tripods, pan/tilt heads, cranes, accessories.

Osprey: single, 2-stage steering, portable pedestals.

Classic pedestals: Fulmar, Tern, Hawk, Teal.

Pan/Tilt heads: Mark 5, Petrel Mark II, Swan.

Vision ENG/EFP: pan/tilt heads, tripods with Torque Safe leg locks in AL, carbon fiber.

Vision SD12, SD 22: serial drag heads.

Mark 7B fluid cam pan/tilt head for studio pedestals.

Microswift Robotics control system enhancements.

Circle (1103) on Reader Service Card

Vision 1250 Unassigned

Information not available.

Circle (1104) on Reader Service Card

Vistek Electronics 18478

Product line: Video encoders, decoders, transcoders, V4130 Varicomb series; V2100 Array routers; video processors; GM7500 series color monitors.

D 8001: digital production switcher; 4:2:2 serial I/O, 8 prime inputs; automatic timing; two key layers with priority exchange, chroma key with upsampled processing; two aux buses with Alpha Trak for key, video interfacing to digital video effects systems.

V4301 framestore: 525-line version of V4301 PAL product; digital system with analog component interfaces;

additional coder, VARICOMB decoder can be added to any I/O configuration for NTSC, analog component, Y/C, serial or parallel digital component I/O; configures for many applications.

Autotran automation control: uses PC with Windows and RS-422 serial interface to control 32 devices through Vistek 3400 machine controller; multiple PCs can be networks for additional device control.

V4229 decoder: digital system for analog or digital composite to analog component format as RGB or YPRPB with NTSC, PAL, PAL-M inputs.

V2000 Array series: routers for analog video V2200, audio V2300, digital video V2100; mix, match modules; multiple controller interface for GVG Kaleidoscope.

V1200 series: serializer, deserializer products; 3RU package for peripheral signal conversion; bi-directional use for D-1, D-2 interfaces with TRS insertion, A/D, D/A 601 serial and parallel converter.

Circle (1106) on Reader Service Card

Vortex Communications 12506

Product line: Clocks, timers, time/date clock displays; utility video products; signal distribution equipment.

CK-100: linear component, multichannel keyer.

SCG-120: sync generator, encoder; NTSC/PAL.

P-Timer: production timer; countdown with timecode comparator.

Logo 3: logo/identification generator; keyed output; low-cost, high resolution.

482-XR: master clock system.

Q-Channel: quad-split unit for broadcast video.

Circle (1107) on Reader Service Card

VTE Unassigned

Information not available.

Circle (1108) on Reader Service Card

VYVX National Video Network 18884

Product line: Switched fiber-optic TV transmission services.

Circle (1109) on Reader Service Card

W-W-W

Wadsworth Inc 17046

Information not available.

Circle (1110) on Reader Service Card

Walter Brewer Corporation 16106

Product line: Design, engineering, installation of studio lighting, power distribution systems; grids, grid hardware; fixtures, dimmers, controls; curtains, track assemblies; grip, gaffer equipment.

Lighting Systems Integrated: pre-engineering lighting equipment packages.

Circle (1111) on Reader Service Card

Ward-Beck Systems 12501

Product line: Audio mixers, DAs; MicroCOM II intercoms with enhanced software.

RENAISSANCE series: modular audio consoles; solid-state switching, VCA control, automation-ready; integrates with desktop environment; Mark I 8-input, Mark II 16-input, Mark III 24-input.

Distribution amplifiers: remote sensitivity DA; stereo DA; full compatibility with existing line and may be fitted in combination with them in MF-82 rack frames.

Circle (1112) on Reader Service Card

Wavefront Technologies 19830

Product line: Videographics software packages.

Rotomotion: software for real-time rotoscoping.

COMPOSER, Visualizer Paint: enhancements to 2-D products.

Dynamation: 3-D animation tool to interactively create realistic images from microdynamic events.

Kinematic: 3-D animation software.

Circle (1113) on Reader Service Card

Wegener Communications 5414

Product line: Satellite transmission products, Series 2900 descramblers; Series 1900 DBS FM² subcarrier receivers.

Model 2002: digital SCPC receiver; L-band input; MPEG audio algorithm decompression.

Series 1980: digital audio storage; playbacks high quality audio in compressed digital form for business

broadcast systems.

Series 1834: digital audio demodulator for Subcarrier/FM² applications; uses ISO-HEC MPEG compression.

Series 1990: single-channel satellite audio receiver; addressable device for C/Ku-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 J Westcott Company 15481

Product line: Light modification products, reflectors, reflective umbrellas; backgrounds.

Halo, Apollo: light modifiers; silver, gold metalized reflective interiors.

Silks, Solids: self-framed material; one- or 2-stop silk or black solid; collapsible; three sizes.

Reflectors: square, rectangular; collapsible, portable units; silver, gold, sunlight, white diffusor, gobo 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.

Rack-mount signal processors.

Wheatstone: digital audio hard disk recorder.

A-6000 master air console: mixer for radio, TV.

Smart Select: computer-controlled audio switcher.

Circle (1117) on Reader Service Card

Whirlwind/US Audio 11627

Product line: Audio mixers; audio, video cabling, distribution products; transformers.

Preampower: 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.

Stiletto: mechanical telescoping mast.

Night Scan: remote-controlled, elevated lighting system; bolts to vehicle to elevate lights to 15 feet; 125lb, 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 telescoping 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: multisource meters, routers, monitors.

AES/EBU digital input: for AMP-1A, AMP-2 monitor speakers for direct acoustical monitoring of digital audio sources.

MAM-1A powered desktop audio monitor: low-profile speakers for multimedia, desktop video systems.

MSM-2 series: visual audio indicators; to 20 channels of level metering in 2RU package.

Circle (1122) on Reader Service Card

Wolf Coach 11933

Product line: Mobile production vehicles.

Model 450Bx: for SNV provides more truck in smaller package.

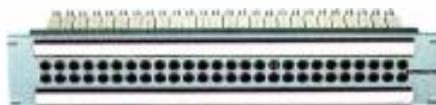
Circle (1123) on Reader Service Card



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



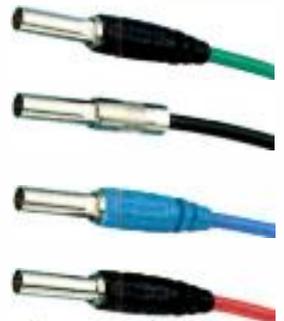
video insulated patch panels, you'll find our eye for detail is second to none. Each one can accommodate

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
A Raytheon Company

Switchcraft, Inc.
5555 N. Elston Avenue
Chicago, IL 60630
(312) 792-2700
(312) 792-2129 (FAX)

Circle (105) on Reply Card

Circle (107) on Reply Card

VIIICHI

Copyright 1993 Vinten Broadcast Inc

See us at NAB Booth #19746

• *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 re-

ferred 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 So-

ny'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-



LINEAR KEYERS



OPAQUE TO TRANSPARENT INSERTS AT YOUR FINGERTIPS

FIVE MODELS WITH FEATURES AND CONTROL SYSTEMS FOR EVERY APPLICATION

- Downstream or stand alone
- Frame accurate mix to key, fade to black
- Serial remote control • GPI interface
- Key source input switcher • Key set memory
- Preview output • Processed black
- Key area masking

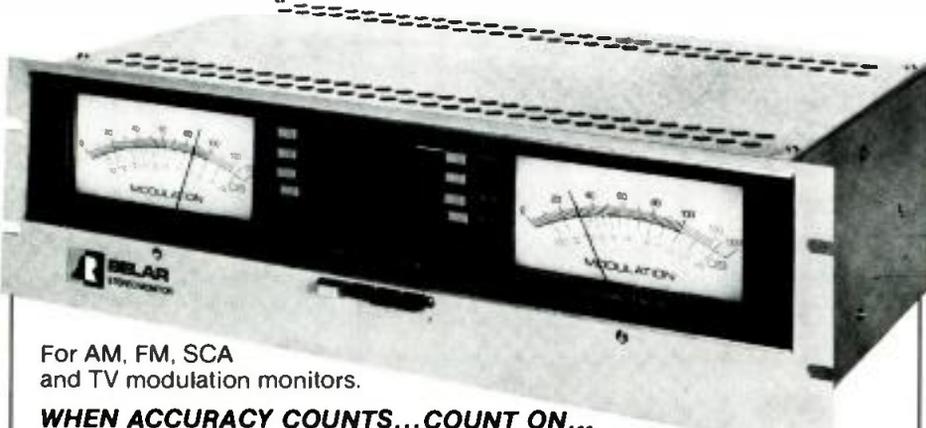


MASTERKEY 4
CONTROL PANEL

broadcast video systems Ltd.

40 West Wilmot St., Richmond Hill, Ontario L4B 1H8
Telephone: (416) 764-1584 Fax: (416) 764-7438

Circle (110) on Reply Card



For AM, FM, SCA and TV modulation monitors.

WHEN ACCURACY COUNTS...COUNT ON...

Call (215) 687-5550 or write for more information on Belar AM, FM, Stereo, SCA and TV monitors.



BELAR
ELECTRONICS LABORATORY, INC.
LANCASTER AVE. AT DORSET, DEVON, PA 19333

Circle (73) on Reply Card

You could cash in up to \$5,000 at NAB



See page 67 for complete details.

• *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.

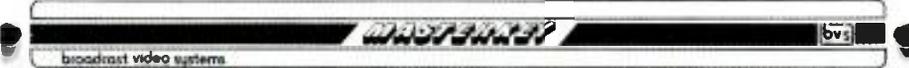
• *Standard bit rates.* One of the I/Os provided by Digital Betacam is the SMPTE 259M serial digital interface. This interface supports up to 10-bit resolution 4:2:2 digital component signals, commonly re-

ferred 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 So-

ny'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-

OPAQUE TO TRANSPARENT INSERTS AT YOUR FINGERTIPS

FIVE MODELS WITH FEATURES AND CONTROL SYSTEMS FOR EVERY APPLICATION

- Downstream or stand alone
- Frame accurate mix to key, fade to black
- Serial remote control • GPI interface
- Key source input switcher • Key set memory
- Preview output • Processed black
- Key area masking



broadcast video systems ltd.

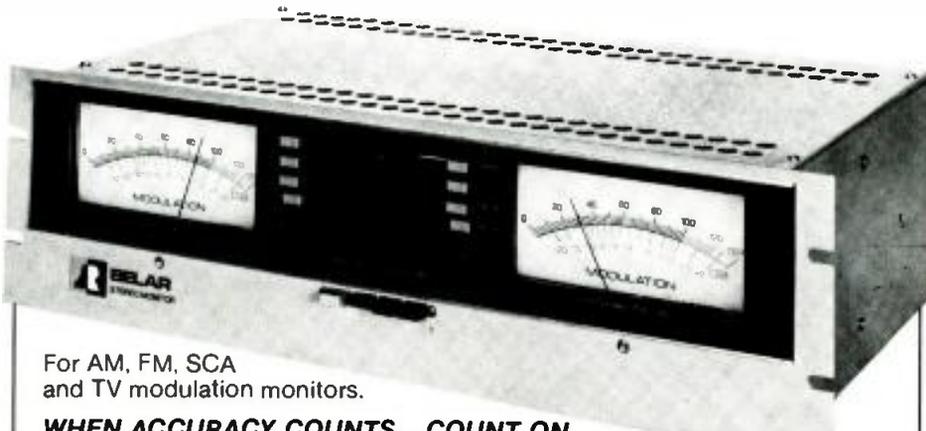
40 West Wilmot St., Richmond Hill, Ontario L4B 1H8
Telephone: (416) 764-1584 Fax: (416) 764-7438

Circle (110) on Reply Card

**You
could
cash
in
up to
\$5,000
at
NAB**



See page 67 for complete details.



For AM, FM, SCA and TV modulation monitors.

WHEN ACCURACY COUNTS...COUNT ON...

Call (215) 687-5550 or write for more information on Belar AM, FM, Stereo, SCA and TV monitors.



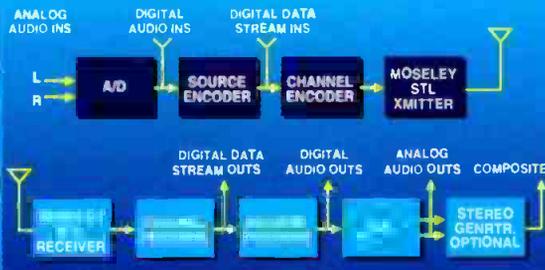
BELAR
ELECTRONICS LABORATORY, INC.
LANCASTER AVE. AT DORSET DEVON, PA 19333

Circle (73) on Reply Card

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



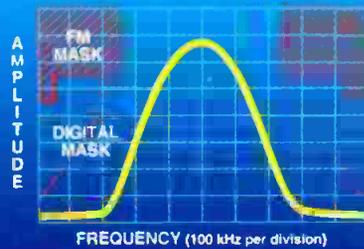
Open and optimal partition of source and channel coder. AES/EBU allows for end-to-end digital connectivity.

25 dB higher system gain translates into significant savings on antenna and transmission line costs.

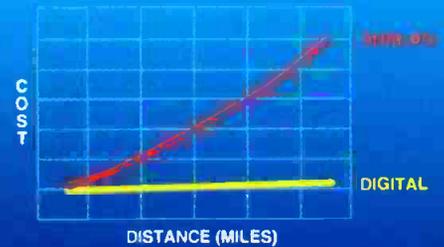
A new transmission technology that has the power to deliver CD-quality audio and solve your STL problems.

The DSP 6000 can operate in existing FCC channel allocations from 100 kHz to 500 kHz with existing analog radios.

FCC Spectrum Compliant



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

Moseley
Associates
Incorporated

111 Castilian Drive
Santa Barbara, CA
93117-3093

Phone 805-968-9621
Fax 805-685-9638
Telex 658448

a
GRC International
Company

Circle (108) on Reply Card

www.americanradiohistory.com

Applied Technology

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 complex-

ity 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.

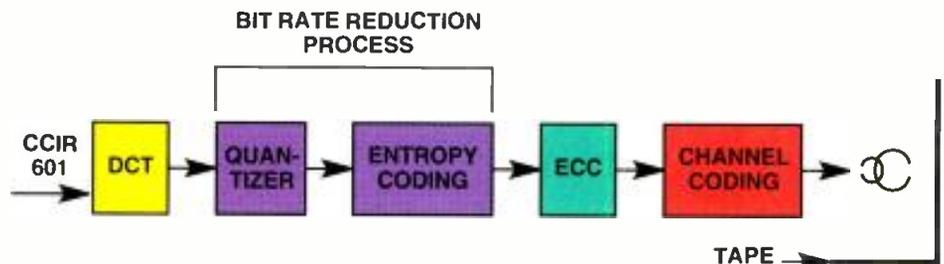


Figure 1. Coefficient recording is an intrafield scheme in which all the compression algorithm's calculations are completed within each specific field. The major signal processing steps are shown.

Morishita is Betacam product manager, Sony Business and Professional Group, Montvale, N.J.

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 *break-away and recovery*.



Built-in leveling bubble with a timed, touch-activated head-light

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 $+140^{\circ}\text{F}$. 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 33071 (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

Circle (107) on Reply Card

Vinten

Worldwide Industries 18965
Product line: Studio furnishings.
Circle (1124) on Reader Service Card

WSI 13343
Product line: Weather data services, displays, workstation.

WEATHERspectrum 9000 1.1: enhanced weather workstation; animation; advanced forecast, analysis.
Polar Orbiter Satellite Imagery: from POES satellites; 14 orbits every 24 hours.

PRECIP: precipitation estimations for levels of rainfall at any location east of the Rockies.

LIGHTNINGplus: lightning information data, imagery; real-time plot summaries.

NOWrad Plus: high definition radar composites.

NEXRAD Imagery: service provides NWS Next Gener-

ation Weather Radar imagery.
Circle (1125) on Reader Service Card

Wybron 18073
Product line: Stage, studio lighting equipment.
The Coloram, Scroller: color changers.
Circle (1126) on Reader Service Card



Yale Electronics 4019
Product line: Racks; panel, cable connectors.
Circle (1127) on Reader Service Card

Yamaha Music 13840
Product line: Audio mixers; digital recording consoles; compact disc recorder.

PM4000: mixer; 32-48 inputs (24-input special order); EQ, HP filter; eight primary mix buses, stereo bus.
Circle (1128) on Reader Service Card

Yamashita Engineering Mgr/YEM 17743
Product line: Video processors, scan converters; digital EDTV decoder, sync generators; DAs; CG switchers.

RS-1701C: master sync generator; stable gen-lock system from composite video, SC signals.

SG-3000B: gen-lock sync generator; 16 test signals.

ENC-3000: gen-lock color encoder; per EIA, EBU.

SW-950: compact, low-crosstalk switcher; accepts 4 EWS outputs.

DA-950AT: super wide-band video DA for high resolution CG or HDTV video, sync.

RB-1701C: rubidium clock dual sync generator.

CVS-980 series: scan converters; -980H high-resolution auto scan; -980 with range from 15-80kHz, including HDTV format; -980 B/W monochrome.

VSG-2000A: 10-bit digital TV test signal generator.

EDEC-2000: digital EDTV decoder; flickerless picture with motion-adaptive line scan interpolation.

CVS-910: synchronizes computer signals with scan rates from 15-40kHz.

Circle (1129) on Reader Service Card



Zaxcom 19537

Product line: TBC remote controls; TBC adjustment, timing system; D1 Toolbox processor.

DMX-1000: digital audio post production mixer; integral RAM recorder; timeline operation.

Circle (1130) on Reader Service Card

Zero Stantron 13115

Product line: Modular equipment consoles, cabinets
Duplicator racks: holds 16-24 Panasonic AG6840, AG6850 recorders.

Enclosure options: modular, wood trim, all-steel cabinets; 22 colors; pre-assembled.

Preassembled: racks, consoles.

Circle (1131) on Reader Service Card

Zonal 18511

Product line: Audio recording tape and film.

Circle (1132) on Reader Service Card

RUGGED CASES
For Broadcast Equipment

- 220 off-the-shelf roto-molded sizes for fast delivery.
- Expert custom cushioning engineered for your most delicate equipment.
- Call us for a free color catalog.

HARDIGG CASES™
 393 North Main Street, So. Deerfield, MA 01373
 Tel: (413) 665-2163, Fax: (413) 665-8061

See us at NAB
Booth #18565

Circle (143) on Reply Card

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

ALSO AVAILABLE FROM INTERTEC PUBLISHING
THE INFORMATION AGE CATALOG
INCLUDES MORE THAN 300 BOOKS, VIDEO & AUDIOTAPES

CALL 800-543-7771 or FAX 800-633-6219

Drop by Exhibit 15181,
 April 19-21

renew your subscriptions;
 visit with the editors of

**Broadcast Engineering
 and Video Systems;**

2:00-3:00pm - Brad Dick
 3:00-4:00pm - Ned Soseman

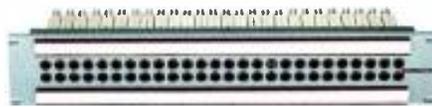
Booth numbers shown are based on information from NAB and the manufacturers as of Feb. 1, 1993. It is possible that some numbers will have changed by show time. We have no control over such changes and regret any inconvenience it may cause.



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



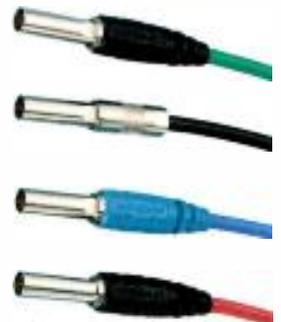
video insulated patch panels, you'll find our eye for detail is second to none.

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
A Raytheon Company

Switchcraft, Inc.
5555 N. Elston Avenue
Chicago, IL 60630
(312) 792-2700
(312) 792-2129 (FAX)

Circle (105) on Reply Card

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 triaxial 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

COOPER

Belden

Quality from Cooper Industries

tained throughout multiple generations of coefficient recording and playback, as long as picture content in each field remains unchanged (non-process mode dubbing). Simple cuts-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.



The Digital Betacam digital videocassette recorder.

Digital Betacam recorders have four independently editable channels of 20-bit digital PCM (non-compressed) audio. Digital jog sound is a standard feature. Serial digital embedded audio, AES/EBU digital, and analog interfaces are included for future system requirements and maximum flexibility.

Many of these features represent new ideas, such as a 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.

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

10 Stereo In - 1 Stereo Out

P.O. Box 1342 Bellingham, WA 98227
1-800-645-1061 FAX (206) 676-4822

Conex Electro-Systems, Inc.

Circle (109) on Reply Card

Free Catalog & Audio/Video Applications

Routing Switchers (S-T-A-V) (24, 16, 12, 8, 4, 2 stations)

Mic, EQ, Line, Tape, Phono, Osc, Trans, Video, ACN, Pwr. Supp.

Press Boxes
1-in/16-out
Video/Audio
2-in/24-out Audio

Video & Audio Dist. Amps.
RGB-Sync Dist. Amps.

OPAMP LABS INC (213) 934-3566
1033 N Sycamore Av LOS ANGELES CA, 90038

Circle (132) on Reply Card

Use
BROADCAST ENGINEERING
Classifieds



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.

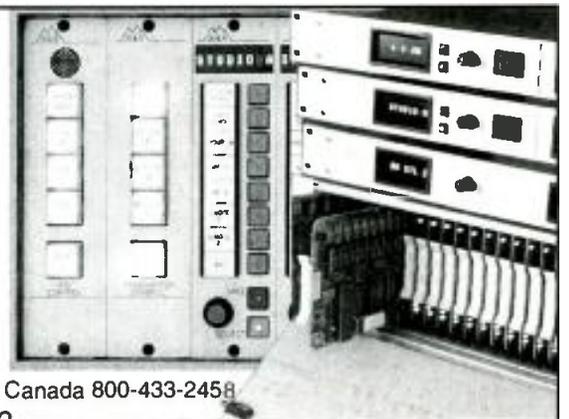
- ◆ Advanced multi-processor architecture for unsurpassed reliability.
- ◆ Full summing for mix-minus, IFB, mixer emulation & more.
- ◆ DAS9600 allows remote digital precision adjustment of levels.
- ◆ Complete control via RS-232, terminal, local panels and modem.
- ◆ Rack and/or Console mounted 8-character 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: 708-382-8818 In Canada 800-433-2458

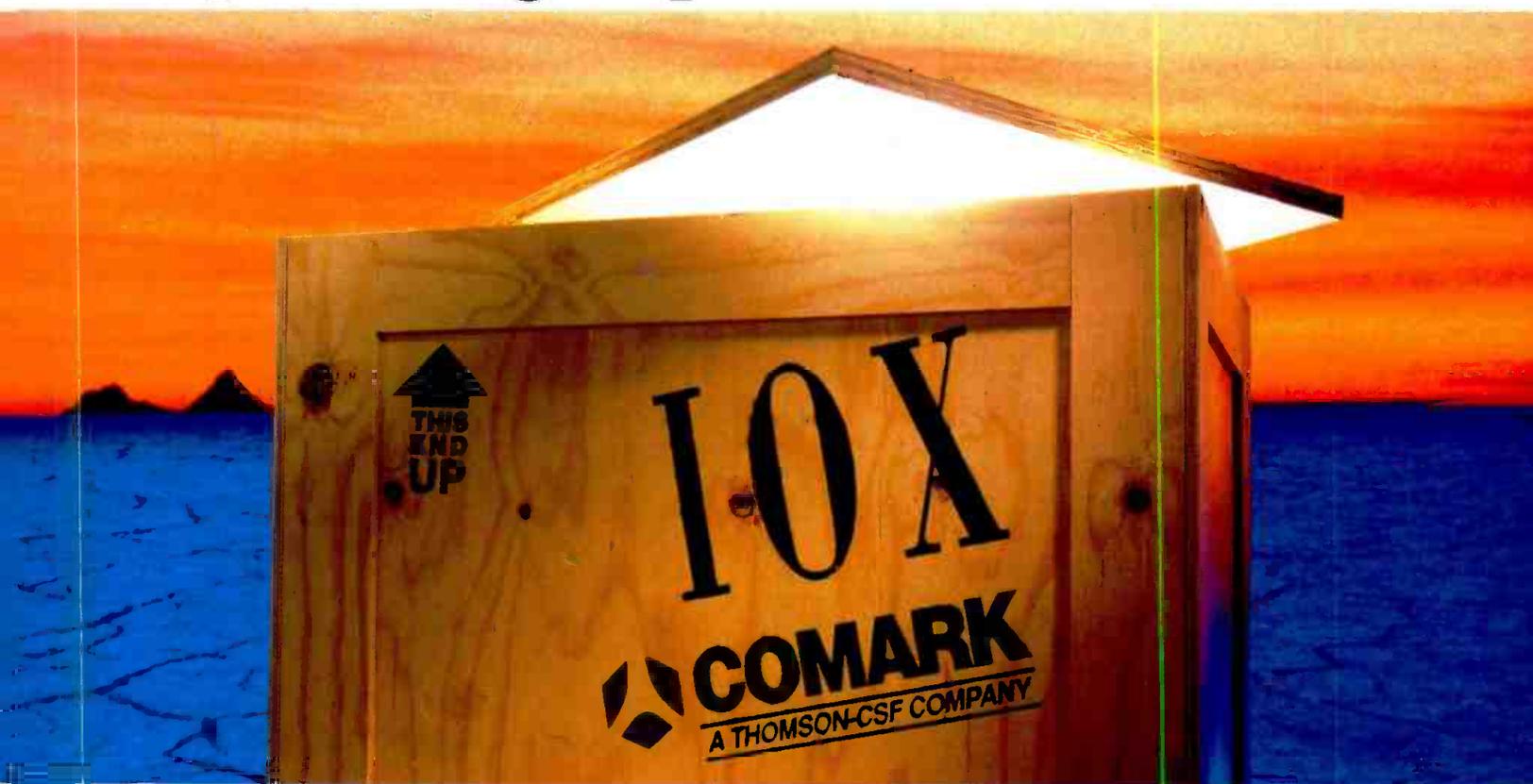


See us at NAB Booth #4002
Circle (111) on Reply Card

SEE THE IOX™
AT NAB COMARK
BOOTH 15746

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.



Route 309 & Advance Lane • Colmar, PA 18915
TEL: (800) 688-3669 • FAX: (215) 822-9129

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 absorption 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

NC curve	SOUND PRESSURE LEVEL (dB)							
	63Hz	125Hz	250Hz	500Hz	1,000Hz	2,000Hz	4,000Hz	8,000Hz
NC-50	71	64	59	54	51	49	48	47
NC-45	67	60	54	49	46	44	43	42
NC-40	64	57	51	45	41	39	38	37
NC-35	60	53	46	40	36	34	33	32
NC-30	57	48	41	35	31	29	28	27
NC-25	54	45	38	31	27	24	22	21
NC-20	51	41	33	26	22	19	17	16
NC-15	47	36	29	22	17	14	12	11

Table 1. The NC curve is a method of specifying the noise level requirements in a room.

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 con-

structed 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.

BASED "WHITE" LIGHT LEDs

- TRI COLOR RED/GREEN/WHITE
- MULTICHIP AND CLUSTERED
- AVAILABLE IN ALL T1¾ AND T3¾ BASES



- 10 YEAR LIFE
- 2V TO 120VAC
- LOW POWER/SHOCK PROOF

LEDTRONICS, INC.

4009 PACIFIC COAST HWY. • TORRANCE, CA 90505
TEL.: (310) 534-1505 • FAX: (310) 534-1424

Circle (114) on Reply Card



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 NABS (Booth 1709).

Audio Limited USA,
21-36 33rd Road,
Long Island City,
NY 11106.
Tel: (718) 728 2654



WIRELESS
MICROPHONE SYSTEMS

Sound Designed

Circle (115) on Reply Card

Serial Digital Made Clear.



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!

Circle (116) on Reply Card

Tektronix



Control room IV at Record Plant, with tracking room IV visible through the window.

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 lacing. 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 ad-

ditional 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.

Trust the Power



You Can Rely on Varian Tubes.

When the name on your transmitter tube is Varian, you're getting something no other tube can offer — Varian reliability. Varian's klystrons and Eimac® tubes keep your signal strong and on-the-air for years of worry-free dependability.

Varian reliability is beyond the ordinary because we understand the demands you place on broadcast tubes. Before a Varian tube is shipped to a customer, it undergoes stringent tests to insure maximum performance when you powerup.

Since we invented the klystron and designed the first Eimac tube over 50 years ago, we have been delivering reliable power for broadcasters worldwide. And with our commitment to continuous improvement, we have increased tube life, power levels, and efficiency to meet your evolving requirements.

Call us today and see for yourself why Varian tubes are the ones broadcasters trust. In the U.S. call 1-800-544-4636. From other countries, call 415-424-4819.

varian

Circle (117) on Reply Card

www.americanradiohistory.com



sign replaced the older system of using discarded tires, wood palates 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.

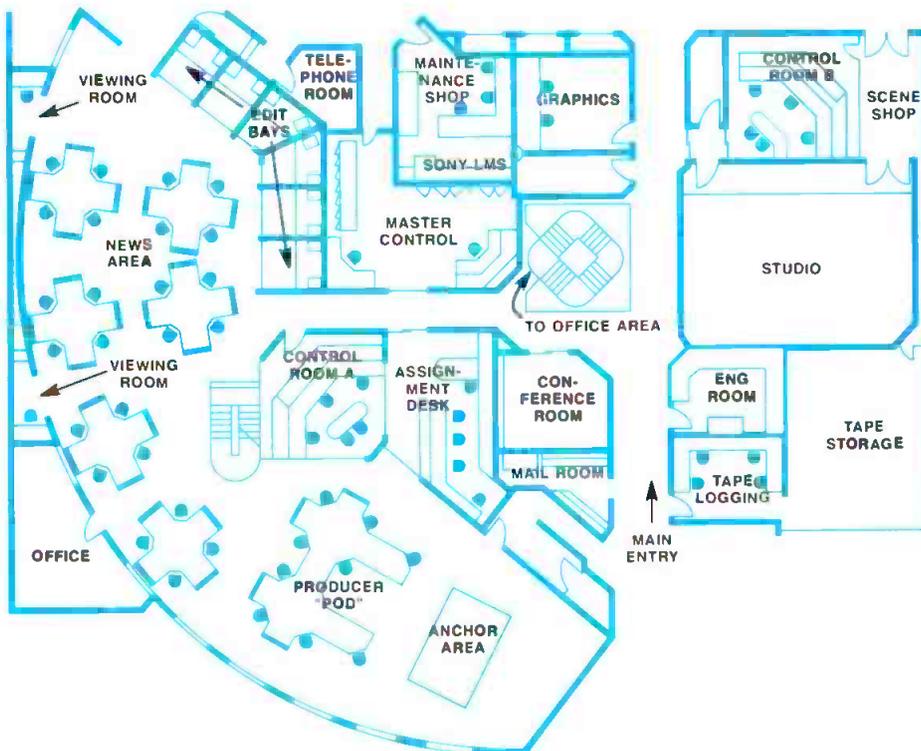
On the air

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.

IKEGAMI AND ANTON BAUER

THE PROFESSIONAL CHOICE

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.

antonbauer 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 Automatique are trademarks of Anton Bauer

See Us at NAB Booth #12427

Circle (118) on Reply Card

Industry Briefs

BUSINESS SCENE

Panasonic, Secaucus, NJ, has installed a complement of AJ-D350 D-3 studio VTRs at New Inspirational Network, Charlotte, NC. 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 3/4-inch sequencing system to a Panasonic M.A.R.C.-100 Mill 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-workstation DAD486x systems to WJBK-TV, Detroit, and KLPW radio, Washington, MO. The Travel Channel, Atlanta, also has purchased a DAD486x networked system. In addition, KTLF radio, Colorado Springs, CO, has ordered a multiple-workstation DAD486x network.

AKG Acoustics, San Leandro, CA, has delivered a pair of BSS FCS-926 digitally controlled parametric equalizers to Southern California-based Universal Amphitheater.

Scientific Atlanta, Atlanta, has taken an order from Cablevision Systems Corporation for \$6.5 million in addressable interdiction equipment to launch a broad-

cast 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.

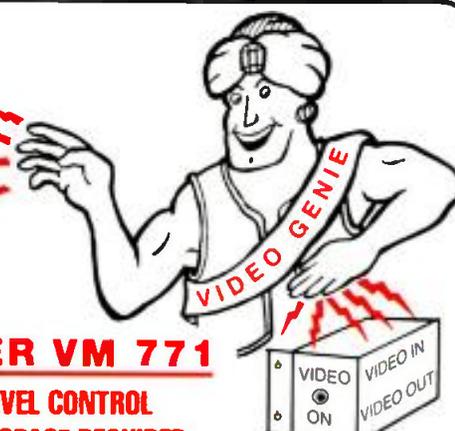
Solid State Logic (SSL), Oxford, England, has sold an SL 4048 G series console to NOB Audio, Hilversum, Holland. Also, SSL has installed a ScreenSound digital audio editor at the Johannesburg-based South African Broadcasting Corporation. Furthermore, Norwegian Broadcasting, the national broadcast organization 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 4480 North Shallowford Road, Suite 102, Dunwoody, GA 30338-6410; telephone 404-396-1971; fax 404-396-0595.

Grass Valley Group (GVG), Grass Valley, CA, and Ultimatte Corporation have signed an agreement that will enable GVG to incorporate image compositing technology developed by Ultimatte 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.



0.5 - 2.0 Vp-p Input
TV Audio Sync Buzz
AD Insert Video Level Change
60Hz Ground Loops
Unclamped Video
Video Overmodulation
Video Undermodulation
Lost Color Brightness
Videocipher Level Change
Scrambler Outage
Local Origination

VIDEO MASTER VM 771

AUTOMATIC VIDEO LEVEL CONTROL
NO FRONT PANEL RACK SPACE REQUIRED
FULLY AUTOMATIC - NO ADJUSTMENTS, EVER!

SIZE:
H = 3"
W = 2"
D = 6"

Video Output = 1 Vp-p
Sync Output = 40 IRE Units
White Output = 100 IRE Units, Max
Color Burst = 40 IRE Units
Up to 2 Vpp 60Hz, Clamped Out.
H.F. Video Loss, Compensated.

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

1-800-235-6960
1-714-979-3355

FAX 1-714-979-0913
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 Vistacon, Saticon and Vidicon camera tubes since their introduction. And our power tubes are the industry standard for VHF TV.



BURLE supplies a wide variety of camera and power tubes for the broadcast industry.

It takes a domestic source like BURLE to maintain a half century commitment to producing and supplying a full line of broadcast electron tubes. From camera to transmitter, BURLE provides the tubes that keep the broadcasting industry on the air. Count on us to keep you supplied with the full range of broadcast camera and power tubes you need. Today and tomorrow. Contact your local BURLE broadcast tube distributor, or call us at **1-800-827-8823.**

Experience counts.

BURLE Electron
Tubes

Circle (120) on Reply Card

www.americanradiohistory.com

New Products

MII Digital Output option

By Panasonic Broadcast & TV Systems

- **AU-MK26 Digital Output option:** provides a 4:2:2 component digital output from an EnHanced MII studio VTR through a CCIR-601 connector; component digital output can be routed to the AJ-IA3P digital rate and format converter for direct input as a composite digital signal to a D-3 1/2-inch digital composite VTR; allows the VTR to output component digital and analog signals without requiring a separate dedicated machine.

Circle (250) on Reply Card

Digital component studio VTR

By Panasonic Broadcast & TV Systems

- **AJ-DX10:** 1/2-inch digital component studio 300 VTR with video performance superior to that of D-1 technology without compression; post-production operational features similar to D-3; DX-10 provides recording and playback of digital audio and digital video in full 10-bit form with selectable digital sample rates of 13.5MHz or 18MHz, and optional playback of D-3 composite digital recording in the component domain.

Circle (251) on Reply Card

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.

Circle (252) on Reply Card

Personnel scheduling software

By VisuAll

- **Scheduall:** 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.

Circle (253) on Reply Card

Event management software

By Sundance Technology Group

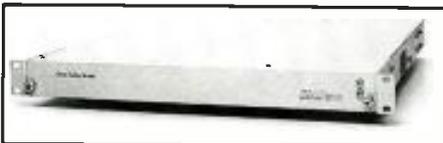
- **FASTBREAK:** provides easy user-interface and control over the Pioneer VDR-V1000 rewriteable laserdisc recorder; build and play random-access, non-linear sequences for broadcast and sports applications; supports still-store, bumpers, news stories and spot playback functions.

Circle (254) on Reply Card

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.



Circle (259) on Reply Card

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-fidelity program 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.

Circle (255) on Reply Card

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.

Circle (256) on Reply Card

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.

Circle (257) on Reply Card

Video distribution amp

By ESE

- **ES-201:** 1x4 video distribution ampli-

fier; 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.

Circle (278) on Reply Card

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.

Circle (277) on Reply Card

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.

Circle (267) on Reply Card

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 1/8-inch size, with 50Ω or 75Ω impedance.



Circle (266) on Reply Card

Production switcher

By Grass Valley Group

- **Model 1000:** compact, one M/E component digital production switcher features 10-bit signal processing, switchable 525/625 line operation, and serial or parallel I/O; includes "key-follow-video" architecture, available with Z-Key depth processing option.

- **Model 4000:** component digital production switcher incorporates "key-follow-video" architecture, Lamina image layer-

Realize up to 50% Energy Savings

With AYDIN's High Efficiency

Klystron Based Transmitter.

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.



AYDIN CORPORATION (WEST)

30/32 Great Oaks Blvd.
San Jose, CA 95119-1371

Tel: (408) 629-0100

Fax: (408) 224-4625

Circle (122) on Reply Card

HOW LOCAL TV STATION SAVES UP TO 50% ON ENERGY COST!

Station Manager Reports:
"\$11,000.00 a Month Saved After Installation of AYDIN Transmitter Upgrade!"

Sutro Tower of San Francisco is the Latest Example of The Trend to Utilize The New High Efficiency Tube That Promotes Energy Conservation Efforts.

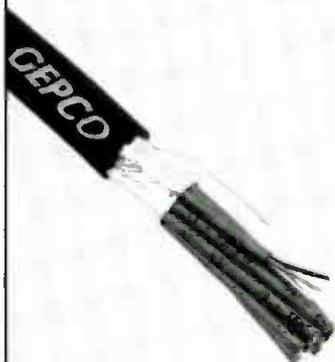
There is welcome news for all of us concerned with both the environment and the rising cost of electricity. AYDIN's new high voltage power supply and custom installation service provides long awaited relief from skyrocketing electricity bills. You can upgrade your present transmitter with a new high efficiency UHF Power Klystron that has output power levels ranging from 30 to 60 kW. The power supply is designed to fit in the existing tank assembly, reusing the same core steel and rectifiers, or it can be repackaged in a new tank smaller in size than the original.

Continued Back Page

CUSTOMER SERVICE:
NYSE Listed Firm
Offers Unprecedented
Level Of Service.

San Jose, California.
AYDIN Corporation (WEST), a company with 26 years of experience in the design of transmitter power supplies, has improved their customer service.

COMING THROUGH LOUD & CLEAR™ WITH QUALITY CABLE PRODUCTS FOR AUDIO & VIDEO APPLICATIONS



CABLE PRODUCTS DESIGNED,
DEVELOPED, AND PROVEN FOR
PROFESSIONAL USE.

SEE US AT NAB '93
LAS VEGAS, NV
Booth 20055

A DECADE OF INNOVATION

- 1982 • GA618 Series — 22 gauge multi-pair cables. Individually shielded and jacketed pairs, Alpha Numeric pair identity.
- 1983 • Introduced 75ohm video precision coaxial cables.
- 1984 • Triaxial cables with all-weather jackets 59/U and 11/U types.
- 1985 • GA803 series — 26 gauge multi-pair cables. Individually shielded and jacketed pairs, Alpha Numeric pair identity.
- 1987 • National Electrical Code compliance — full line of both audio and video cables.
 - Low-loss miniature video precision coaxial cable.VPM2000.
 - Flexible RGB and S/C cables.
 - Flexible Super VHS cable usable with BNC connectors.
- 1988 • 32 Channel breakout boxes. Built of tough extruded aircraft aluminum.
 - GA724 series — 24 gauge multi-pair cables, in both National Electrical Code compliance master jackets and ultra flexible matte finish master jackets,individually shielded and jacketed pairs, Alpha Numeric pair identity.
- 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.
 - Extra flexible stranded center conductor 59/U triax.
 - Established a custom assembly division specializing in products synergistic to the audio and video industry.
- 1992 • Digital audio cable, National Electrical Code compliance, compatible with AES—EBU standards.
 - Ultra Flex all temperature cable jackets.
- 1993 • Low triboelectric noise instrument cable.
 - Custom Rack mountable chassis.
 - New triaxial connector group.

Circle (137) on Reply Card

ing and "effects send;" available in two models: the 2 M/E, 16-input 4000-2B and the 2-1 M/E, 24-input 4000-2A.

Circle (258) on Reply Card

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.



Circle (282) 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; unit 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 break-away 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.

Circle (261) on Reply Card



GEPCCO INTERNATIONAL INC.

2225 West Hubbard St., Chicago, IL 60612

Tel: (312) 733-9555 (800) 966-0069 Fax (312) 733-6416



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 ...

See us at Booth #11701-11704.



Model 5870

Combined vector-waveform monitor with A and B overlay, digital SCH 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.

Call toll-free
1 800 645-5104
 In NY State
 516 231-6900

LEADER
 FOR PROFESSIONALS WHO KNOW
 THE DIFFERENCE

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

RF protective clothing

By Doty-Moore Tower Services

- **RF protective suit:** lightweight Nap-tex 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, SEC-AM, 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 2 μ s each) can be housed in one 1-rack unit frame.

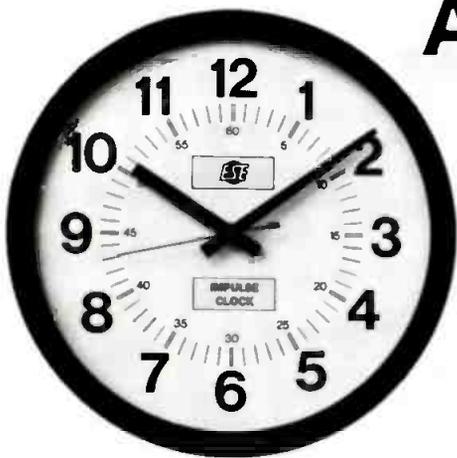
Circle (294) on Reply Card

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.

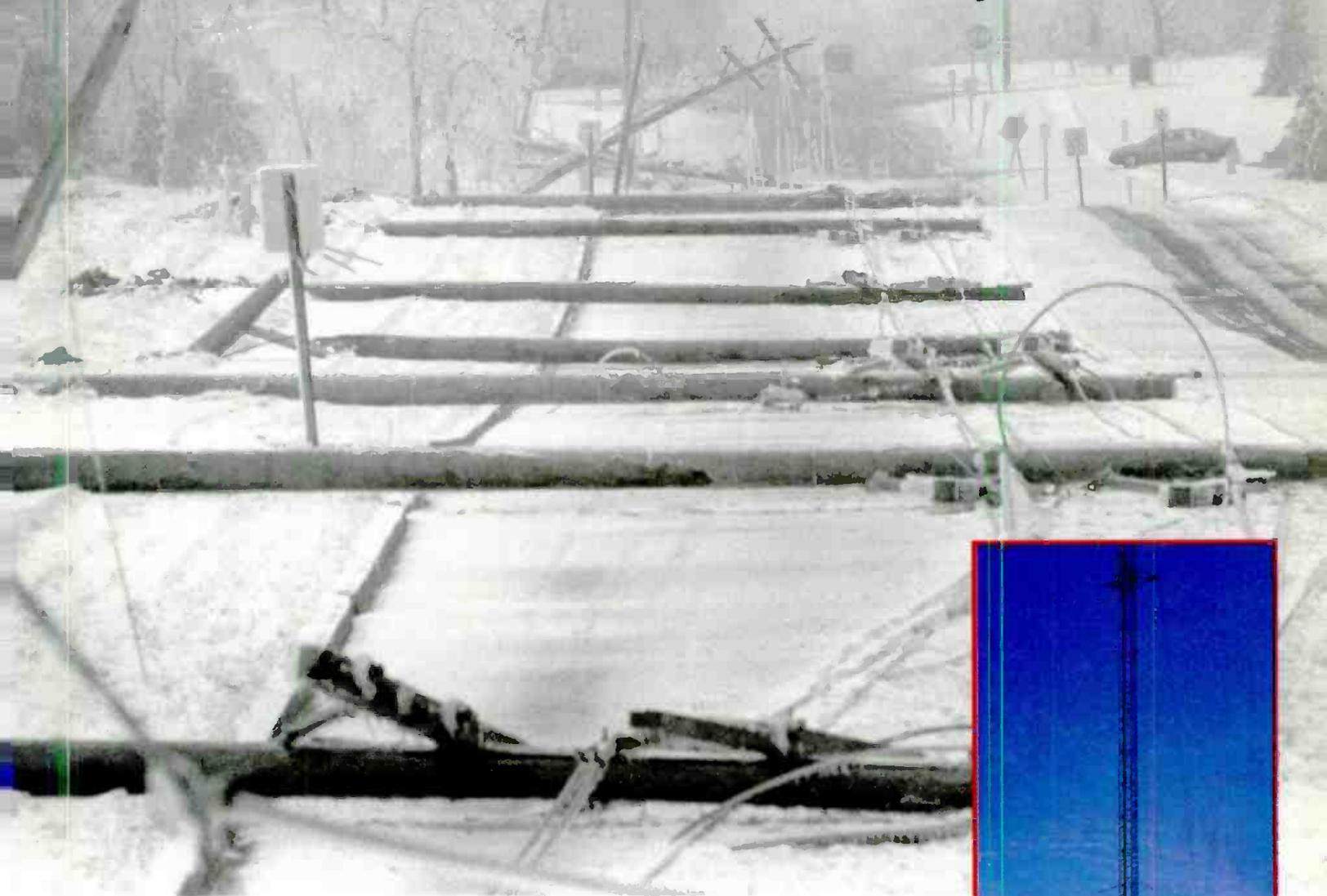


CLOCKS AS ACCURATE AS TIME PERMITS!

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.



Dave Turner
WMCC TV, Channel 23
Indianapolis, Indiana

"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



***Solid rod, free-standing or
guyed towers custom designed
to your specifications.***

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 Complex[®] 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-S5 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.

NAB 93
Visit us in
booth #13356



Concept W Systems, Inc.
3302 West 6th Ave.
Emporia, KS 66801
Phone 316-342-7743
Fax 316-342-7405

Circle (119) on Reply Card

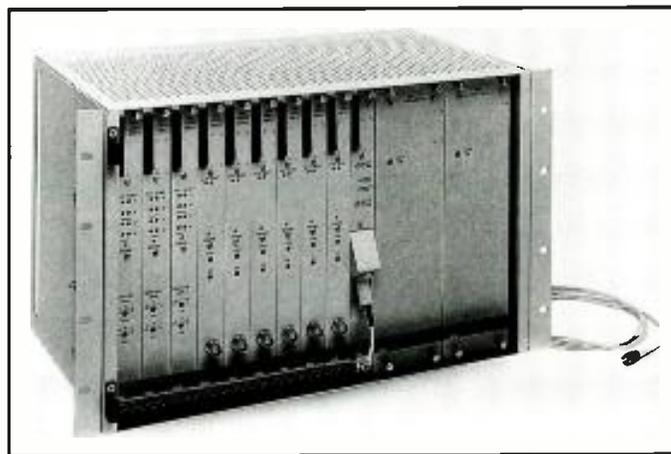
ity correction; offered in all common UHF power levels from 15kW to 240kW in U.S. and international TV standards; fully HDTV compatible; meets requirement for dual use service.

Circle (271) on Reply Card

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, backhaul 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.



Circle (262) on Reply Card

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 composite 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 analog monitor output and visible time-code window capability; analog component A/Ds and D/As available as options.

Circle (281) on Reply Card

Graphics production tool

By Grass Valley Group

• **Halo series:** a powerful integrated graphics production tool in a single platform; offers post-production facilities and broadcasters character generation, broadcast paint, still-store archiving, 3-D modeling capabilities and animation.

Circle (264) on Reply Card

Software

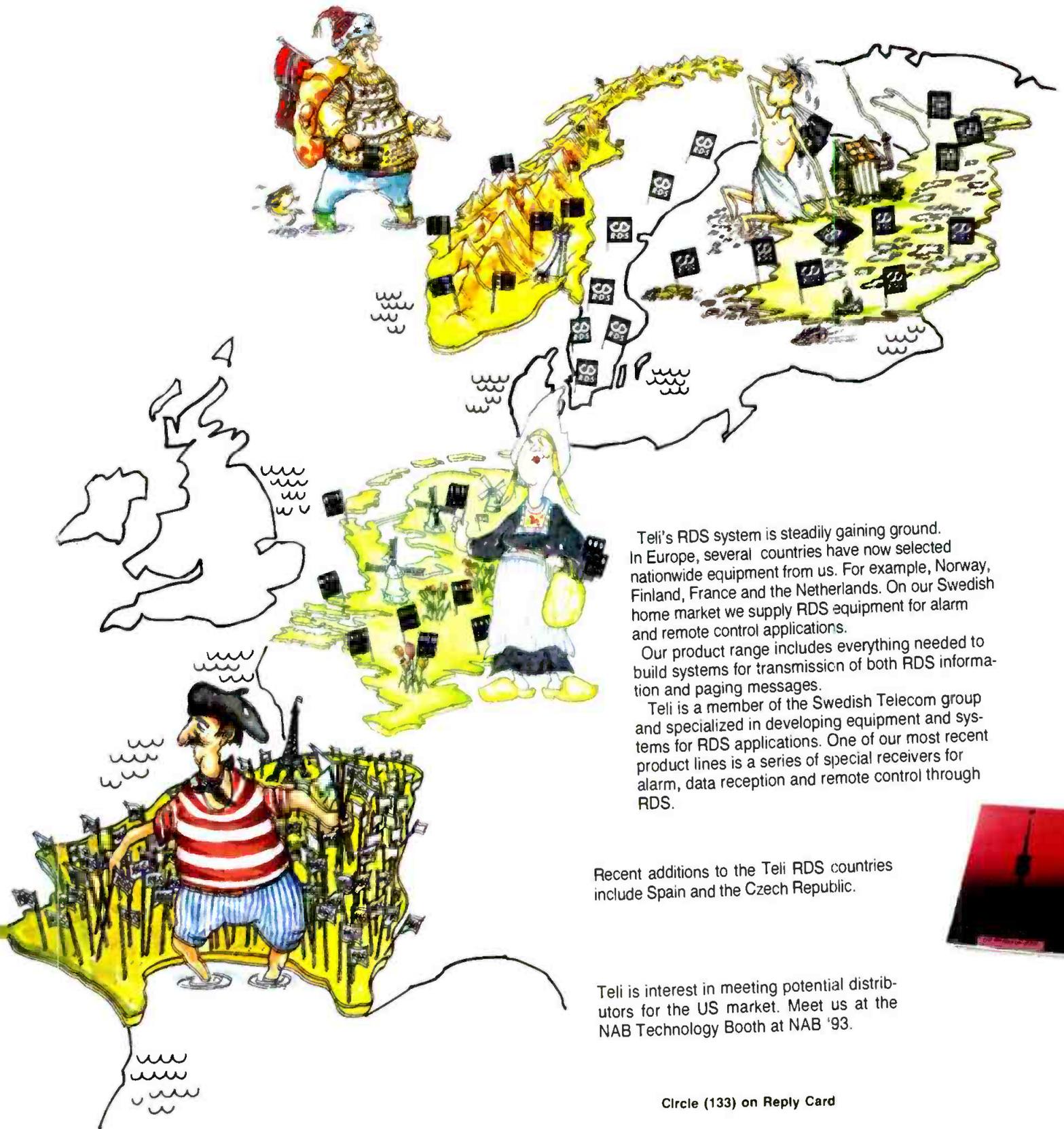
By Grass Valley Group

• **SuperEdit Version 7:** for use on the VPE series edit systems; offers improved accuracy and control of variable VTR motion; includes expanded slave capabilities and new or improved device drivers; able to save an EDL with a single keystroke; features revised system setup menus.

Circle (265) on Reply Card

Continued on page 184

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 interest in meeting potential distributors for the US market. Meet us at the NAB Technology Booth at NAB '93.



Circle (133) on Reply Card

Teli

Teli AB, Box 93, S-125 22 Älvsjö, Sweden
Telephone: +468 749 66 00. Telefax: +468 749 68 15. Telex: 13447 TELEV S

www.americanradiohistory.com



THE BIGGEST PENNY PINCHER IN RADIO SINCE JACK BENNY.

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 L/R 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.

TASCAM®



© 1990 TEAC America, Inc., 7733 Telegraph Road
Montebello, CA 90640 213/726-0303
*Manufacturer's Suggested Retail Price.

Circle (121) on Reply Card

Preview

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 multistation 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.

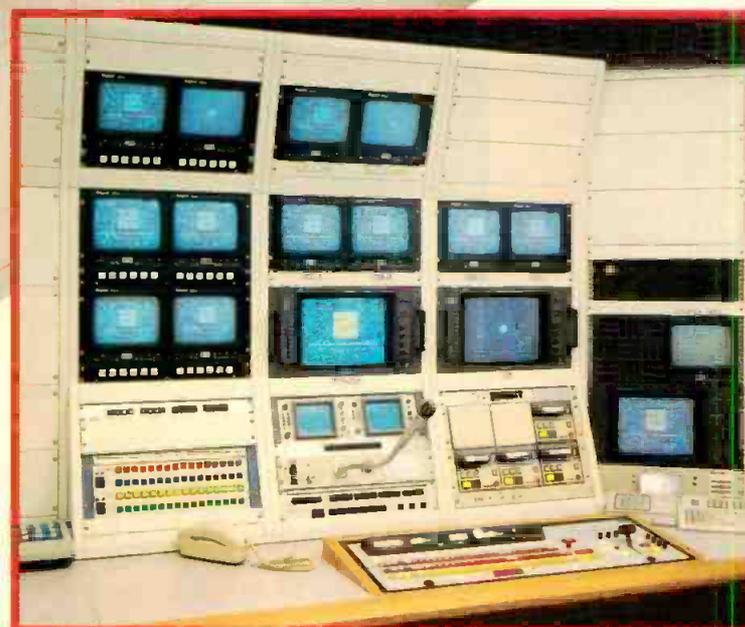
Your broadcasting equipment belongs in a high quality Emcors enclosure. A functional modular design gives you unlimited flexibility in meeting your enclosure and console needs. Frame style choices include vertical, slope front, low silhouette, and more. A wide variety of accessories includes sliding shelves, tapped mounting angles, power strips, and writing tops to fit any console configuration.

Broadcasters know that appearance is important. Emcors 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, Emcors offers quick solutions. Instant Emcors 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, Emcors's complete design engineering and manufacturing services will provide you with enclosures exactly to your specifications.



*Emcors enclosures
at KTCA, Public
Television for
Minneapolis - Saint Paul.*



See us at the
NAB Show,
Booth #16069



Crenlo, Inc.

1600 - 4th Avenue N.W.
Rochester, MN 55901
Phone 507-289-3371
FAX # 507-287-3405

EMCOR[®]

Circle (134) on Reply Card



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 straight-forward 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.

**Odetics
Broadcast**



© NATAS

1515 South Manchester Avenue, Anaheim, California 92802-2907 (800) 243-2001 or (714) 774-2200

Director of Sales
Bill Keegan
(714) 774-2200

Northeast
Ray Ballock
(201) 305-0549

Southeast
Emerson Ray
(813) 960-0853

West
Chuck Martin
(818) 999-9796

North Central
Bill Boyd
(612) 894-2121

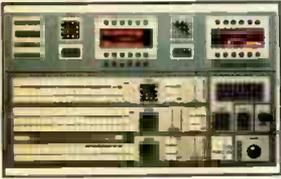
South Central
David Scally
(404) 917-9506

Circle (139) on Reply Card

www.americanradiohistory.com

Product Showcase

The Abekas A83 Component Digital Switcher

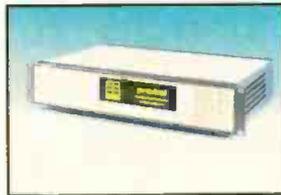


Companion product to the Emmy Award winning A84 compositing switcher, the A83 features three Mix Effects modules and exceptional keying quality. Designed for post production and broadcast applications, the A83 offers user-definable inputs, signal system networking, ASPIK™ (Adaptive Sub-Pixel Intelligent 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



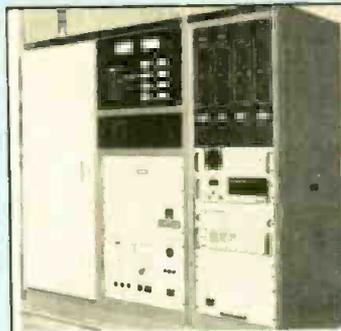
The 6610 Digital Video Analyzer uses advanced techniques to assess the integrity of signals in the digital video domain. The 6610 accommodates all component and composite digital video formats in both 8 and 10 bit standards. The operator interface is menu driven with a multi-function vacuum florescent 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. Shallowford Road Ste. 102
Dunwoody, Ga 30338-6410
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



WE MAKE IT VERY, VERY HARD TO BLAME IT ON THE TAPE.

New 3M D-3 digital videocassettes offer exceptional performance and reliability in all D-3 recording applications. See the new line in 3M's NAB booth in Las Vegas.

3M

3M Professional Audio/Video Products Div.
3M Center
St. Paul, MN 55144
Phone: 818-342-3127

Circle (149) 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...

- Consultation
- Engineering & Design
- Installations
- Training

Serving...

- Cable Systems
- Corporate Facilities
- Broadcast Facilities
- Teleproduction Facilities

52 Ralph Street, Belleville, NJ 07109 (201) 751-5655

Classified

EQUIPMENT WANTED

WANTED: USED VIDEO EQUIPMENT. Systems or components. **PRO VIDEO & FILM EQUIPMENT GROUP:** the largest USED equipment dealer in the U.S.A. (214)869-0011.

TRAINING

FCC GENERAL CLASS LICENSE. Cassette recorded lessons with seminars in Washington, Newark, Philadelphia. Bob Johnson Telecommunications. Phone (213) 379-4461.

FOR SALE

NIKON S13X9 B1: Brand New ENG Lenses with 2x extender. Focal length 9-117mm, 18-234mm with Extender. W/ Warranty, Originally \$5,290 selling at \$3,300. Sony/Ikegami Mounts Available. Demo stock also available. Call 908-935-0175.

COMPLETE INTRAPLEX TDM-153 T-1 SYSTEM with Kentrox CSUs, 2-15kHz, 3-7.5kHz and 3 four-wire 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 Russ, KBLA, 213-665-1580.

WARD-BECK Custom 32x8x2 T.V. Audio console with external 24 row patchbay, excellent condition, on air until 6/91--\$7,500.00 or B.O. Buyer Ships Audio Consulting and Engineering (415) 512-7391.

ADVANCED SCA DEMOD CARDS -- Built on demand by an experienced SCA engineer. Seven frequencies available. \$19.95. Volume discounts available. SCS Radio Technology -- 417-881-8401.

19 TEKTRONIX 528 WAVEFORM MONITORS, like new \$275.00 each. 11 Bird TS 118 A/AP 1 Kilowatt Wattmeters like new \$275.00 each. 415-388-0838.

Classified

FOR SALE

TAPE ERASERS



garner

WHEN COST IS
IMPORTANT AND
QUALITY IS CRITICAL

1-800-228-0275

Erases all formats in
quantities of 1 to 1,000,000



4200 North 48th Street • Lincoln, NE 68504

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



SONEX

Source

58 Nonotuck St., Northampton, MA 01060

"Your Source for Sonex Acoustical Foam"
Best Prices--Nationwide Delivery

800-484-1003 Ext. 0032

413-584-7944

to order

Credit Cards Accepted

tax or info

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

midwest

AUDIO/VIDEO EXCHANGE, INC.

1131 Central Ave. Wilmette, Illinois 60091

International Brokers and Appraisers Serving the Audio / Video Industry

Circle (144) on Reply Card

CALL US

For New and Rebuilt
Radio Broadcast Equipment

HE HALL
Electronics

(804) 974-6466

1305-F Seminole Trail • Charlottesville, Va. 22901

REQUEST YOUR FREE CATALOG OF OVER 300 AUDIO ACCESSORIES FOR THE PRO AND SEMI-PRO USER

(800) 634-3457 FAX (702) 565-4828

SESCOM, INC. "the audio source"

2100 WARD DR. HENDERSON, NV 89015 USA

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.



L.A. New York London
Free Catalogue!!

BCS LA: 818-551-5858 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:

XQ1410, XQ1415, XQ1427, XQ2427, XQ3427,
XQ2070, XQ2075, XQ1070, XQ1430, XQ1435, etc.,
sets and singles.

We also supply new and demo: Broadcast/video equipment, stage & studio lamps, CCTV, test equipment, microwave, video tape, duplicators, audio equipment, electronic parts, transmitting tubes, vacuum caps., cable, etc.

Fusion Elec. Inc., 15 Main St. E. Rockaway, NY 11518
(800)645-2300 • (516)887-4660 • FAX: (516)599-6495

Get Ready for NAB

SONY BVC-10 Betacart w/ 4 BVW-
95 Beta-SP Players \$125,000
SONY BVH-3100 1" VTR \$26,000
SONY BVH-2500 1" VTR \$17,500

MAKE OFFER

BTS FGS-4000, IKE 312 3 camera pkg., IKE SK-
96 3 camera pkg., Sony BVE-5000 & BVE-500
editors, ITC Delta carts, Marconi GM-4002, &
BTS TCE-2000 Encoders, Tek 1440 AVC, Sony
VDX-1200 Videotexes, Datatek Router.

MICOR VIDEO EQUIPMENT
CHICAGO 312 334 4300

NEW! MET-ERASER ME-II



ERASES BETA SP -85dB
M II TAPES down
TABER MFG. ENGR. CO. **\$2,495**

2417 EMBARCADERO RD.
PALO ALTO, CA 94303 415-493-3811

Sony Interface for your VPR-2 or NEC-7000

- Convert Sony serial to parallel control.
- Complete editing capability.
- RS-422 Interface for editors and automation.
- Controls ATR's and VCR's.



Phantom II VTR Emulator

For Information:

Call 1-800-331-9066



cipher digital 5350 PARTNERS COURT • PO BOX 170
FREDERICK, MARYLAND 21701

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

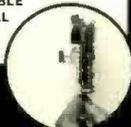
For a brochure, call 1-800-845-0408

**SUPER
CIRCUITS**

TINY 4 OZ. VIDEOCAM!

WORLD'S SMALLEST ALL-IN-ONE COLOR
VIDEOCAM. ONLY \$549.95, INCLUDING LENS!
CREATE AN AFFORDABLE SPORTS ACTION
OR HIDDEN "BODYCAM" SYSTEM WITH OUR
MICROVIDEO TRANSMITTERS OR NEW SUPER
MICRO B DECKS! UNBEATABLE
PRICE/PERFORMANCE! CALL
US TODAY FOR CATALOG
AND SPECIFICATIONS!

13015 DeBarr Drive
Austin, Texas 78729
512-335-9777



For Classified Advertising or Professional Services information

Call Renée Hambleton at (913)967-1732.

Classified

FOR SALE

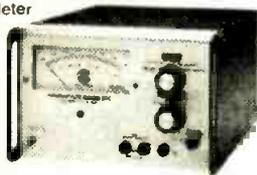
The Best Audio Test Meter Made!

Advantage Model 310

Precision Audio Signal
And Noise Level Meter

Professional
Price!

\$399



- Low THD/Hi RF Reject With Valley Audio's Trans-Amp™
- Lo-Noise Wideband Circuitry
- Large Dual Scale Meter
- Super-Accurate Filters
- Average, RMS Or Peak Det
- -100 dB to +30 dB Range
- Scope and Preamp Monitoring Outputs



Valley People
Meriam, Kansas

Call For The Nearest Dealer:

1-800-800-4345

HELP WANTED

ELECTRONICS FIELD/SHOP ENGINEER. Swiderski Electronics, Inc. located in the Chicagoland area, is looking for an Electronics Field/Shop Service Engineer with a min. of 2 years exp. Individual to work with Broadcast/Industrial 1/2", 3/4" & 1" VTR's 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 resume 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, Ampex 1", RCA cameras, etc., and have excellent systems planning knowledge. VHF transmitter and SNV 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 Engineer, P.O. Box 367, Columbia, SC 29202. 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

- 4 GPI's, 24 Devices
- Solid State Relays
- Opto-Isolated
- One Rack Unit High
- Lighted Switches
- Easy to Gang

OEI ELECTRONIC SYSTEMS INC. • 908-735-0543
RR2 Box 365, Pinestown, NJ 08867

Circle (145) on Reply Card

HELP WANTED

EQUAL OPPORTUNITY EMPLOYER. AN INTERNATIONAL TRADING COMPANY is seeking a MANAGER OF EUROPEAN OPERATIONS. Excellent knowledge of French language, fluent in English with working knowledge of Spanish 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, including 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 others that may come available, to maintain current business and to develop new businesses in Eastern Europe. This expansion will come through advertising and marketing ourselves and our services. The position will be responsible for establishing a new market, developing business contacts into sales, quoting materials, arranging initial financing and ensuring customer satisfaction. To apply, send letter of application and current resume to Order # 892492, Attn.: Peggy Dostal, Dept. for Employment Services, 600 West Cedar Street, Louisville, KY 40202-2396.

**Fax your ad to 913-967-1901
Attn: Renée Hambleton
It's that EASY!**

SERVICES



Freeland Products, Inc.

Serving the world with quality rebuilt tubes since 1940.

**CALL TODAY FOR A FREE INFORMATION PACKET
1-800-624-7626**

75412 Highway 25 • Covington, LA 70433
800-624-7626 • 504-893-1243
Fax 504-892-7323

80+ of my sales come from BE Classifieds. Because of my ad in BE, I sell over one hundred of my cards per month with no complaints or returns.

David Jackway
SCS Radio Technology

MASTER CONTROL OPERATOR needed. Must have minimum two years "ON-AIR" switching, videotape, editing and ability to maintain proper audio and video levels to transmitter. Successful candidate will have a technical background, HS diploma or equivalent, be willing to work 10 HR shifts (4 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 interested 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. Location, climate and benefits are a big plus. Send resume to John Augustine, WIS Chief Engineer, P.O. Box 367, Columbia, SC 29202. 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 Translator experience a plus. Person will be based out of Western North Carolina to service transmitter and seven translator locations. Must be able to work independently and self-directed. Send resume to: **WHNS-TV, Attn: Jerry Garvin, 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 ♦♦♦♦♦

**Renée Hambleton, Broadcast Engineering
Fax: 913-967-1901 or Call: 913-967-1732.**

Your name _____ Date _____
Company (if applicable) _____ Phone _____
Address _____
City _____ State _____ Zip _____
AD COPY Headline: (i.e., For Sale, Misc., Help Wanted, Service)
Ad Copy _____

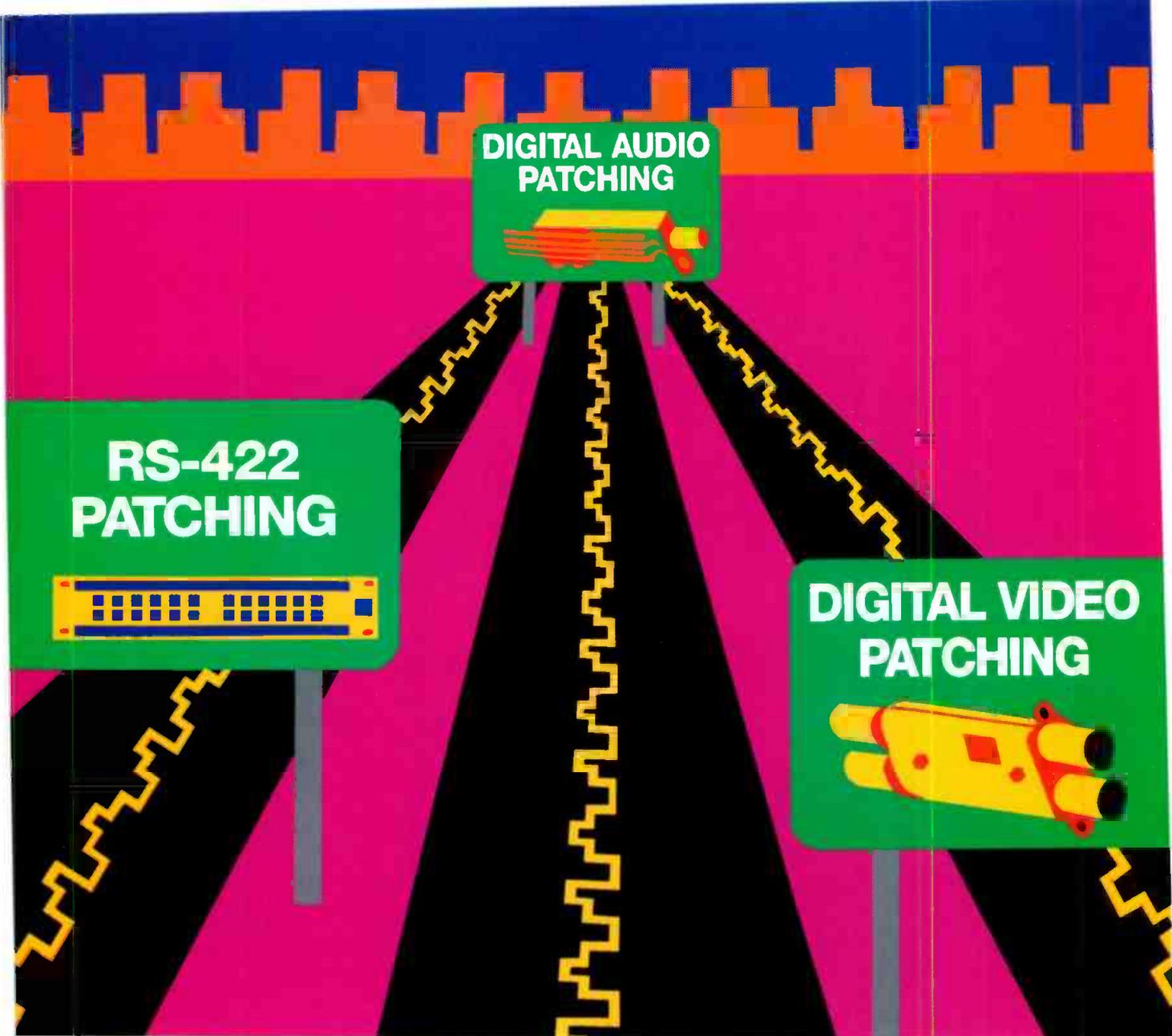


- Please run my ad in (designate month or months preferred)
- Call me about questions regarding my ad. Signature _____

Ad Index

	Page Number	Reader Service Number	Advertiser Hotline		Page Number	Reader Service Number	Advertiser Hotline
Abekas Video Systems	19*,191	13,146	415-369-5111	Maxell Corp. of America	53	30	800-533-2836
Accu-Weather, Inc.	106	72	814-234-9601	Midwest Audio/Video Exchange	192	144	708-251-0001
Acrodyne Industries, Inc.	73,191	45,148	800-523-2596	Milestek	127	82	817-455-7444
ADC Telecommunications	IBC	2	800-726-4266	Miller Fluid Heads	111	74	201-473-9592
AEQ	185	136		Moseley Associates, Inc.	161	108	805-968-9621
A.F. Associates, Inc.	49,187	29,141	201-767-1200	Nady Systems, Inc.	69	42	510-652-2411
AKG Acoustics, Inc.	118	130	510-297-2720	National Transcommunications	86	53	
Ampex Systems Corp.	41,43,45	22,25,27	415-367-3809	Nautel Electronics	126	81	902-823-2233
Ampex Systems Corp.	46-47	28	415-367-2011	Newton Instrument Co., Inc.	134	88	919-575-6426
Antex Electronics	102	59	213-532-3092	Nikon Electronic Imaging	5	6	800-NIKON-US
Anrho Co.	26		503-241-7113	Odetics, Inc.	190	139	800-243-2001
Anton/Bauer	171	118	203-929-1100	OEI Electronic Systems, Inc.	193	145	908-735-0543
Aphex Systems Ltd.	84	128	818-767-2929	OMB Sistemas Electronicos	19*	14	347-627-4537
ASACA/SHIBASOKU Corp.	189	142	213-827-7144	Omicron Video	125	80	818-700-0742
Audio Limited	166	115		Opamp Labs, Inc.	164	132	213-934-3566
Audio Precision	13	10	800-231-7350	Orban, Div. of AKG Acoustics	7	7	510-351-3500
Audio Processing Tech., Ltd.	140	94		Allen Osborn Associates	42	23	805-495-8420
Auditronics, Inc.	17	12	901-362-1350	Otari Corp.	15	11	415-341-5900
Avitel Electronics Ltd.	188	145		Panasonic Broadcast & TV	57,143		800-524-0864
Aydin West	175	122	408-629-0100	Penny & Giles, Inc.	58	34	
BAF Communications Corp.	110	64		Pesa Switching Systems	IFC	1	205-880-0795
BASYS	91	135	914-376-4800	Pinnacle Systems, Inc.	153	101	408-970-9787
BEC Technologies	Map		407-855-8181	Pioneer RVR Division	71	43	201-327-6400
Belar Electronics Laboratory	162	73	215-687-5550	Pirot, Inc.	179	125	219-936-4221
Belden Wire & Cable	163	112	800-BELDEN4	Pro-bel, Inc.	Map,3,191	5,147	404-396-1971
Broadcast Video Systems Ltd.	162	110	416-764-1584	Quantel	27	18	203-656-3100
BTS Broadcast TV Systems	60-61	36	800-962-4BTS	Radiation Systems	130	84	708-298-9420
Burle Industries	173	120	717-295-6123	Ramsa/Panasonic	31		714-373-7478
Canare Cable, Inc.	108	61	818-365-2446	Research Technology Intl.	76	48	708-677-3000
Christie Electric Corp.	121	77	213-715-1402	Sachtler AG	88-89	66	
Circuit Research Labs, Inc.	83	129	602-438-0888	Sachtler Corp. of America	34	126	516-867-4900
Clark Wire & Cable	56	33	708-272-9889	SCA Data Systems, Inc.	120	76	213-576-0655
Clear-Com Intercom Systems	77	49	510-527-6666	Schmid Telecommunication	121,123, 125,127,129	83	800-955-9570
Cole Wire & Cable Co.	154	103	708-673-2210	Sennheiser Electronics Corp.	63	37	203-434-9190
Comark Communications, Inc.	165	113	215-822-0777	Sescom, Inc.	134	89	702-565-3400
Concept W Systems	180	119	316-342-7743	Sharp Copier Division	151		
Conex Electro Systems	164	109	206-734-4323	Shure Brothers, Inc.	132-133	87	800-25-SHURE
Control Concepts	80	51	607-724-2484	Sierra Automated Systems	164	111	818-840-6749
Datatek, Inc.	39	21	800-882-9100	Solid State Logic Ltd.	147	98	800-343-0101
DPS	Map,75	47	606-371-5533	Sony Business & Professional Group	Map, Outsert, 50A-D		800-635-SONY
Dolby Labs, Inc.	138-139	93	415-558-0200	Sony Recording Media	22-23		201-930-7081
Drake Electronics	124	79		Spectral Synthesis	9	8	206-487-2931
EEV, Inc.	115	54	800-DIAL-EEV	Storeel	56	32	404-458-3280
Electro-Voice	104	70	616-695-6831	Sundance Technology Group	64	39	214-869-1002
Emcor Products	183	134	507-289-3371	Switchcraft, Inc./Div Raytheon	157	105	312-792-2700
Enco Systems, Inc.	136	91	800-ENCO-SYS	Synergistic Technologies	44	26	800-659-7715
ESE	178	140	310-322-2136	Tascam	182	121	213-726-0303
Faraday Technology	154	102		Tektronix, Inc.	167	116	800-TEK-WIDE
Fiber Options	148	106	800-342-3748	Telemetrics, Inc.	87	65	201-423-0347
Flash Technology Corp.	95	67	615-377-0600	Telex Communications, Inc.	54-55	31	612-887-5530
Flex-Tech, Inc.	110	63	612-546-6660	Teli Telecom	181	133	468-749-6686
FM Systems	172	138	714-979-3355	The Austin Company	59	35	216-831-0110
Fujinon, Inc.	107	96	800-553-6611	Thomson Broadcast	79	50	800-882-1824
Gentner Communications	105	71	801-975-7200	Thomson Tubes Electroniques	155	104	201-812-9000
Gepco	176	137	312-733-9555	Toshiba Corporation	109	62	
Graham-Patten Systems, Inc.	131	86	800-422-6662	Total Spectrum Mfg., Inc.	21	15	914-268-0100
Grass Valley Group	25,135	16,90	800-343-1300	Trompeter Electronics	130	85	818-707-2020
Hardigg Industries	158	143	413-665-2163	Television Technology Corp.	100	58	303-665-8000
Harris Allied	1,145	4,97	800-622-0022	United Ad Label Co., Inc.	123	78	800-423-4643
Hewlett Packard	68	41	415-857-2060	Varian Associates, Inc.	169	117	
HM Electronics, Inc.	92	55	619-535-6000	Vega, A Mark IV Company	149	100	818-442-0782
Ikegami Electronics, Inc.	28-29	19	201-368-9171	Video Design Pro	137	92	800-VIDCAD-6
Illbruck	33	127	800-662-0032	Videotape Products, Inc.	74	46	800-422-2444
ImMIX	Map		916-272-0800	Videotek, Inc.	93	56	800-800-5719
Itame	81	52		Videssence	142	95	
Jampro Antennas, Inc.	11,30	9,20	916-383-1177	Vinten Broadcast, Inc.	159	107	201-263-4000
Lakeside Associates	103	69	714-770-6601	Vizu All	72	44	
Leader Instruments Corp.	177	123-124	800-645-5104	The Winsted Corporation	64	38	800-447-2257
Lectrosonics	112	75	800-821-1121	Zero Stantron Enclosures	96	68	800-821-0019
Ledtronics, Inc.	166	114	310-534-1505	3M Pro Audio/Video Products	65,191	40,149	612-733-1959
Leitch	BC	3	800-231-9673	360 Systems	117	131	818-342-3127
Link Electronics	42	24	314-334-4433				
LNR Communications, Inc.	99	57	516-273-7111				
Logitek	Map		713-782-4592				

*Denotes Demographic Coverage



**DIGITAL AUDIO
PATCHING**

**RS-422
PATCHING**

**DIGITAL VIDEO
PATCHING**

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.

 **ADC Telecommunications**

Circle (2) on Reply Card

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
4 Monitoring Video Outputs of PAL/NTSC
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) 548-2300 Fax: (804) 548-4088
 Leitch Video International Inc., 220 Duncan Mill Rd. #301, Don Mills, ON, Canada M3B 3J5 Tel: (800) 387-0233 or (416) 445-9640 Fax: (416) 445-0595
 Leitch Europe Limited, 24 Campbell Ct., Bramley, Basingstoke, Hants., U.K. RG26 5EG Tel: ++(0) 256 880088 Fax: ++(0) 256 880428

Circle (3) on Reply Card