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Address _____
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CMX SYSTEMS TEST/Editing Fundamentals

Circle correct answer.

1. CMX systems make
 - a. editing systems.
 - b. master time code generators.
 - c. portable time code generators.
 - d. time code reader displays
2. CMX products make
 - a. dollars.
 - b. sense.
 - c. happy clients.
 - d. happy editors.
 - e. happy directors.
 - f. happy producers.
 - g. happy production managers.
 - h. happy program managers.
 - i. happy general managers.
3. CMX systems are (fill in the blank) computer assisted editing systems in the world.
 - a. the most widely used
 - b. used to produce more prime time video tape programming than any other
 - c. the most flexible
 - d. the most expandable
 - e. the most proven
 - f. the most powerful
 - g. the most efficient
 - h. the most cost effective
 - i. interfaced with more different VTRs, ATRs, and switchers than any other
 - j. the industry standard for
4. CMX equipment is used by
 - a. all United States networks.
 - b. all major United States post production facilities.
5. CMX equipment is in daily use in
 - a. the United States.
 - b. Canada.
 - c. Australia.
 - d. Japan.
 - e. Latin America.
 - f. Europe and the United Kingdom.
6. CMX systems is
 - a. editing.

Any further questions?

Then please complete the following section, tear out and mail your test to CMX Systems for grading at 3303 Scott Boulevard, Santa Clara CA 95050. Or call us (408) 988-2000 and tell us your score.

- I would like to
- a. order a CMX System. Please find my check enclosed.
 - b. have a CMX salesman call on me.
 - c. receive more information.

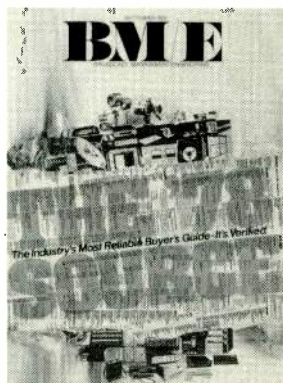
1)abcd 2) abcdefghi
3) abcdefghij 4) ab
5) abcdef 6) a



To the multiple choices of editing systems, the right answer is always CMX.

BM/E

BROADCAST MANAGEMENT/ENGINEERING



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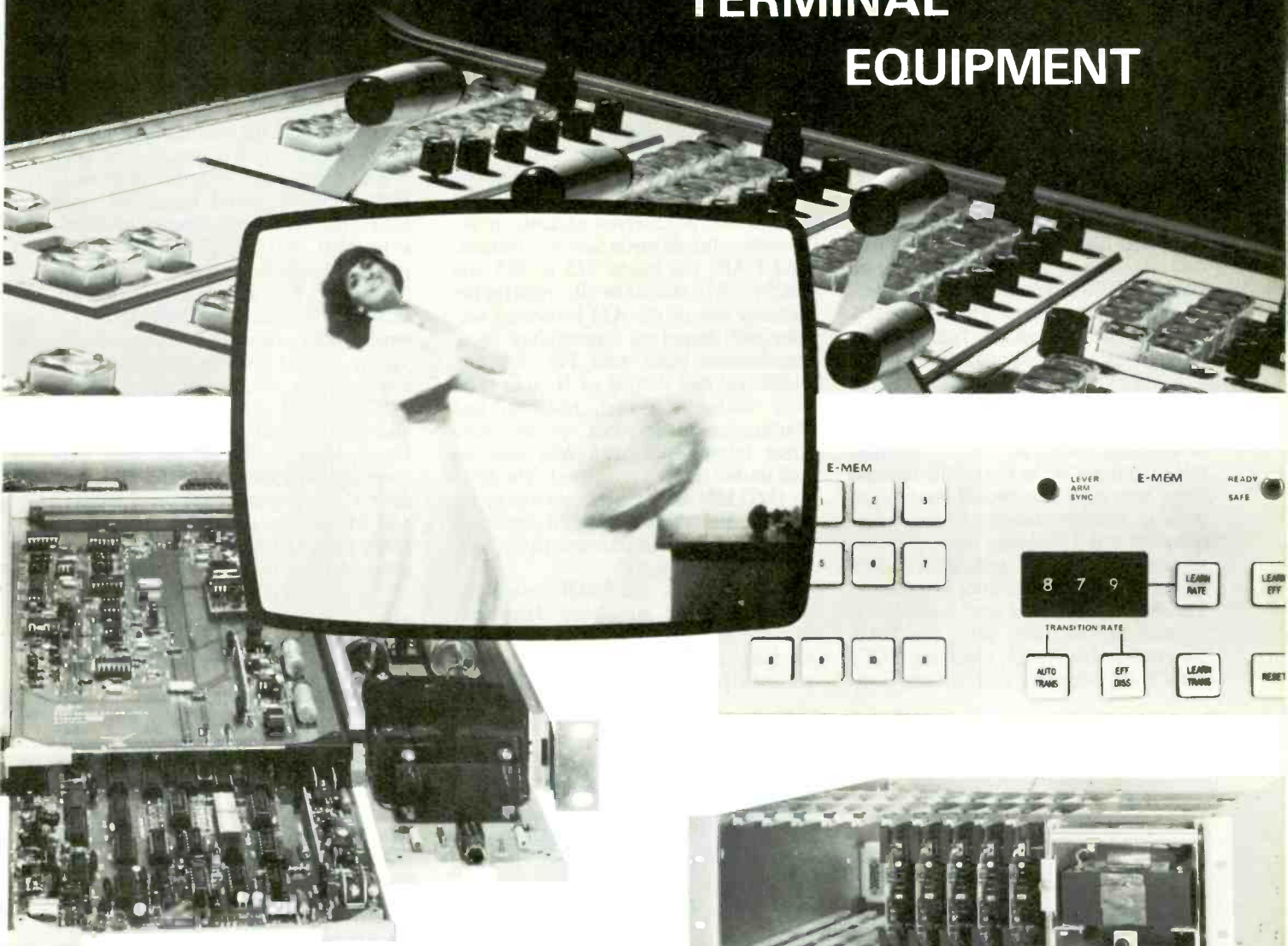
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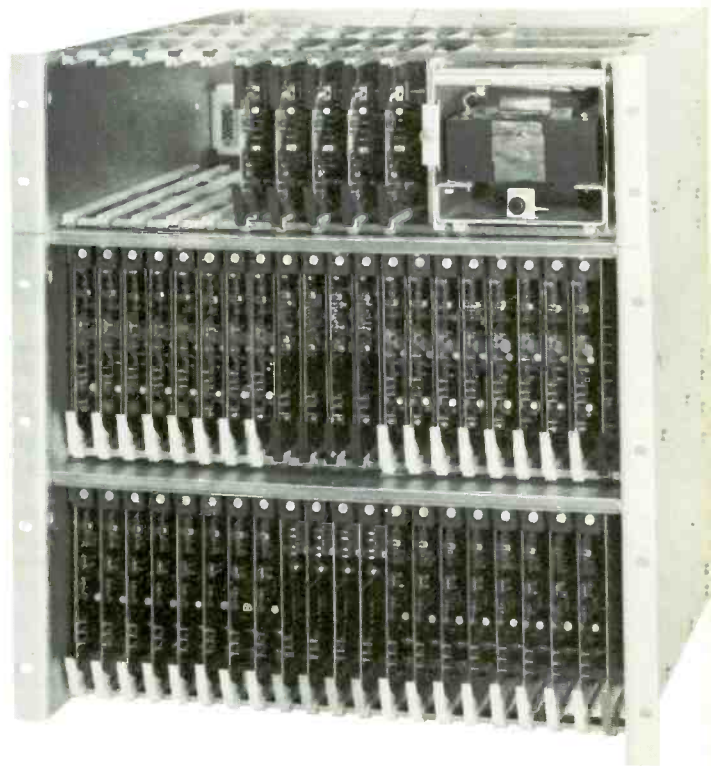
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BROADCAST INDUSTRY NEWS

NAB Submits Comments On WARC

The NAB has submitted its comments to the FCC regarding the position the FCC will take at the 1979 World Administrative Radio Conference (WARC-79). The international conference is to establish worldwide policy for the allocation of frequencies through the remainder of this century.

NAB's comments suggested that the Commission not consider a low-frequency Broadcast Service in the 115 to 190 kHz band. In NAB's opinion, this would not be in the public interest since new receivers would have to be built to receive stations in these frequencies and it could lead to request for super-power service with a myriad of technical and interference problems. The AM band should not be expanded beyond 525 to 1805 kHz, the NAB comments also stated, since the FCC, with NAB support, had already pro-

posed adequate expansion of the AM band to permit 21 additional 10 kHz channels. NAB also rejected the suggestion that the 530 and 1610 kHz frequencies be reserved exclusively for Travelers Information Service. Instead, said NAB, the bands 525 to 535 and 1605 to 1615 should be allocated for the primary use of the AM broadcast service and shared on a secondary, non-interference basis with TIS. Further, NAB said that sharing of 1616 to 1805 kHz with the Fixed, Mobile, and Radiolocation services would cause great interference with AM services and should not be considered. The 1805 to 1860 kHz assignments should be allocated and shared between such services on a non-interference basis, said the NAB comments.

In television, the NAB called for changes in the auxiliary Broadcast Service portion of the band to accommodate increased demand of broadcasters for ENG uses. NAB also

suggested that the full compliment of UHF television frequencies be preserved to accommodate future growth. Future growth could be stifled, said NAB, if Land Mobile sharing of television channels 14 to 20 and 70 to 83 is part of the U.S. proposal at WARC. NAB also commented that satellite operation in the 620 to 790 MHz UHF-TV band would undermine terrestrial television service and create catastrophic interference. NAB also opposed the FCC proposal to share the 470 to 608 and 614 to 890 MHz band between Fixed, Mobile, and Broadcasting Services within 200 miles of the U.S. border. This proposal may lead Canada and Mexico to believe that the U.S. plans to abandon these frequencies to other services in the future, said NAB.

Court Rules Arbitron Can Delist For Shaky Contests

Arbitron has been sustained by the Superior Court in Phoenix in throwing KUPD, Phoenix, out of the spring book due to questionable contest activity that could distort diary results. KUPD ran an "Uncontest," with call backs to contestants in earlier contests who had said KUPD was their favorite station, and rewarded them with cash prizes. The court said Arbitron had a right to protect the integrity of its ratings. The ruling means that Arbitron will likely be tougher with stations that try to hype listenership during diary periods.

Microwave Space: CARS v. BAS

More microwave space for Cable Television Relay Services (CARS), and uniform treatment of cable and broadcasting in microwave relay spectrum, were strongly recommended to the FCC by the National Cable Television Association in July.

The FCC is currently considering expansion of the current Band D CARS spectrum of 12.70 to 12.95 GHz, allowing it to reach 13.20 GHz, still in Band D. Engineering Vice President Robert A. Luff expressed NCTA's strong support for this enlargement of the CARS allotment. But he also asked that cable, like broadcasting, be allowed to use the lower-frequency

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KTXL-TV, Sacramento UHF Independent, Goes "On Air" With New Earth Station

The unveiling of a new earth station, the first such satellite receiving station to be owned and operated by a commercial television station in California, was announced in July by Jack Matranga, president and general manager of station KTXL-TV, the UHF independent TV station in Sacramento, Cal.

The new earth station, which is located next to the KTXL-TV studios, will receive signals from four active U.S. satellites and has the capacity to receive signals from all future satellites. At the present time, KTXL-TV's new earth station can receive any programming being beamed from Sat Comm I and II satellites and Westar I and II satellites.

The addition of the earth station to KTXL-TV's operations will greatly improve the programming possibilities via satellite originations according to Jack



Matranga. "We have already brought the people of Sacramento the Royal Ballet live from Convent Garden," said Matranga, "and we expect to be able to provide many additional varieties of programming via the satellite-earth station connection."

Mr. Matranga foresees increased news programming, sports, and many global specials being beamed to the Sacramento TV audiences via the new earth station. "It is," said Matranga, "another indication of KTXL-TV's efforts to bring the finest in TV programming into the homes of our Sacramento viewers."

KTXL-TV is the leading UHF independent TV station in the country based on recent ratings from Arbitron; and its 19 share of audience, across the board, ranks it as the number two independent of all independents in the country.

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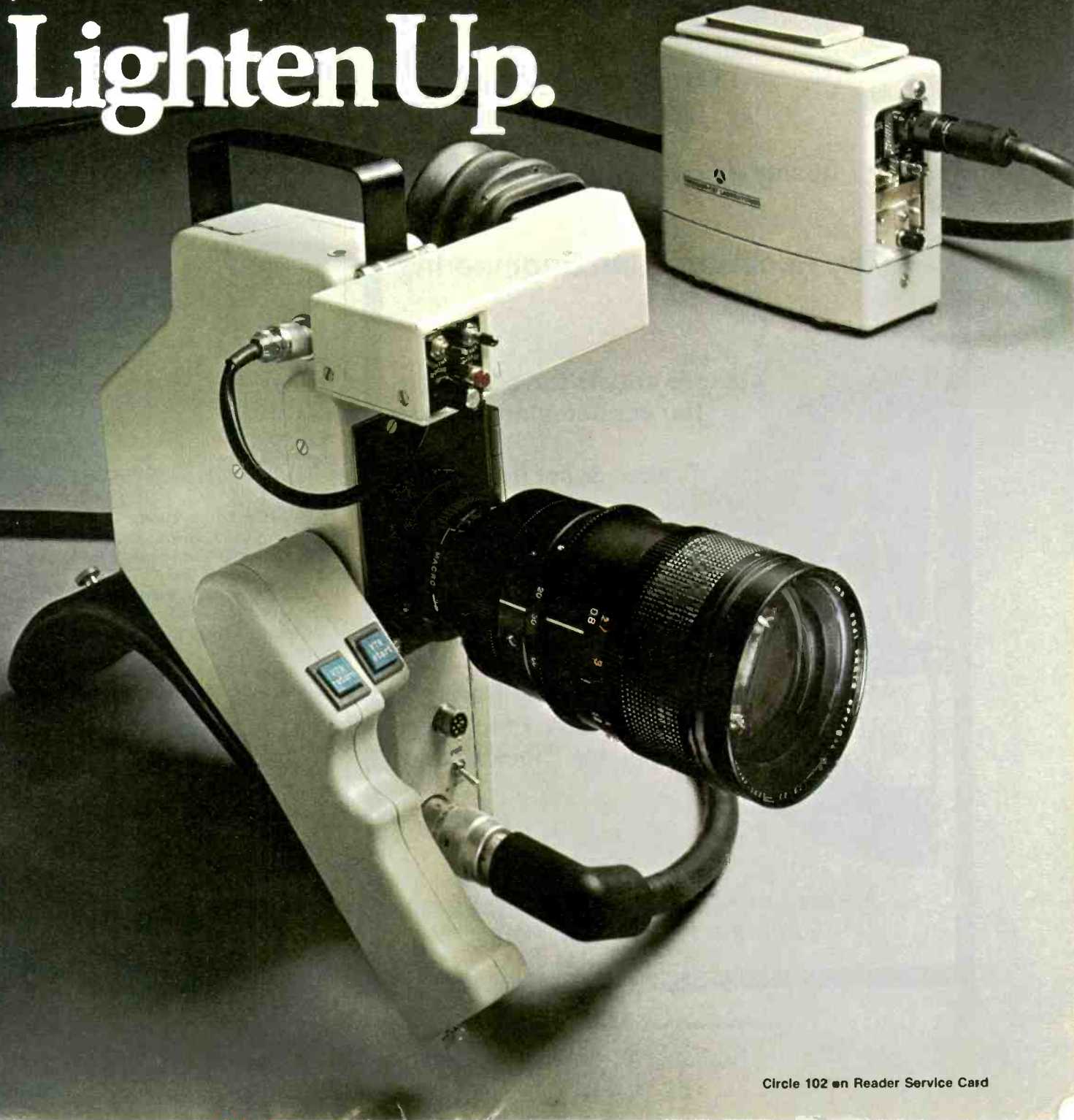
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Bands A and B for relay services. "The Commission should be moving in the direction of uniform spectrum policy and technical standards for both CARS and Broadcast Auxiliary Services (BAS), not perpetuating a completely artificial distinction between the two," he stated.

Broadcasters, on the other hand, strongly opposed the "uniform spectrum policy," charging that the use of BAS allocations by television stations

for ENG was far more vital to the public interest than further expansion of CARS. Represented by NAB, the broadcasters position asked the Commission if it really thought "that cable and broadcasting are the same?" Said NAB, 97 percent of the U.S. television programming is originated by television stations, while only three percent is provided by CATV.

License Fee Under Rewrite Angers Some Broadcasters

If the license fee formula as proposed in the Communications Act of 1978 is

passed, some VHF broadcasters could be paying annual fees in excess of \$7 million.

As comments on the act continue to pour out of industry associations, network headquarters, and individual broadcasters, attention is beginning to focus on the license fee structure which was spelled out in a memo from the House Communications Subcommittee staff. The formula for license fees could have VHF stations in New York City paying an annual \$7,746,083 while all but 11 UHF stations in the nation would pay zero. The license fee for AM and FM stations would be a flat fee based on class of station.

The fee structure is designed to realize \$266.9 million, based on 1976 figures, with VHF broadcasters paying \$249.9 million, UHF broadcasters paying \$9.8 million, AM broadcasters liable for \$5.4 million, and FM broadcasters to pay \$4.8 million.

The structure for the license fees is based upon what the committee thinks is a "fair share" related to the value of spectrum being used by any particular service and broadcaster. For VHF television the formula is based on a figure of \$25.3 times (The Number of Arbitron Prime-Time Households divided by the Number of Commercial Signals) minus (\$1.5 million, plus \$1.33 times the number of Arbitron Prime Time Households). This formula is applied individually to each market, and the UHF fee is based upon half the VHF fee for the market, minus \$1.8 million, meaning that only UHF stations in four markets, Cleveland, New York, Chicago, and Philadelphia, will wind up paying anything.

The flat fee structure for AM radio is Class I-A, \$40,800; I-B and II, \$10,700; II-daytime, \$700; III-fulltime, \$350; III-daytime, \$250; and IV, \$211. The FM structure is Class A, \$400; classes B and C, \$2,500.

The proposed license fee formula is another aspect of the Communications Act that is likely to cause tension between various parts of the industry. While the NRBA has expressed general backing for the Communications Act with some reservations concerning the license fee structure and the five-station ownership limitation, other groups have taken a less than enthusiastic position. NAB board chairman, Donald A. Thurston, urged broadcasters to resist all efforts to split the industry into "manageable pieces," large and small markets, radio, television, single and multi-station owners, newspaper or non-newspaper owners. Said Thurston, "We must not fall prey to the seductive portions of the rewrite . . . and then realize we have wiped out fifty years of law, precedent, and understanding, and lost our supposedly regained freedoms

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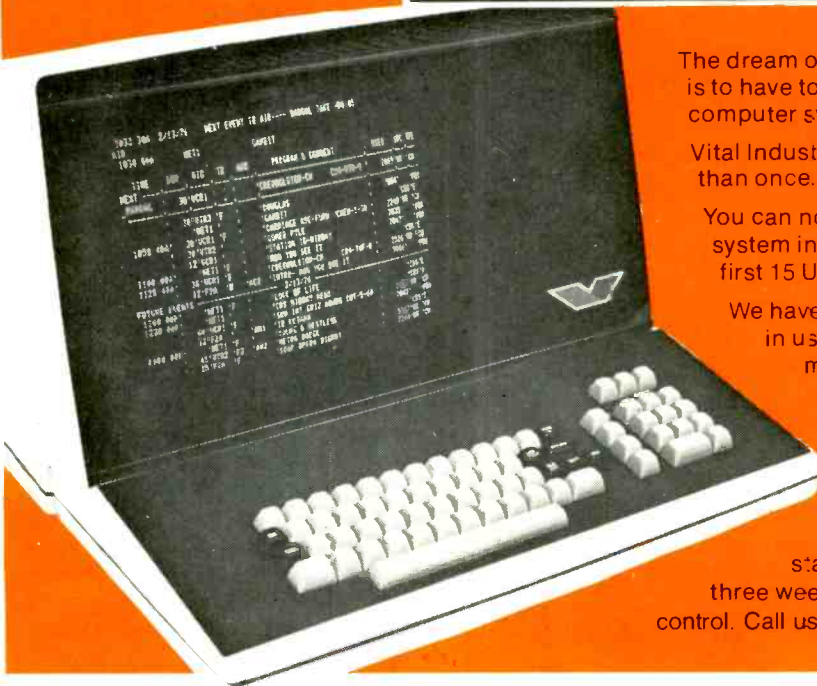
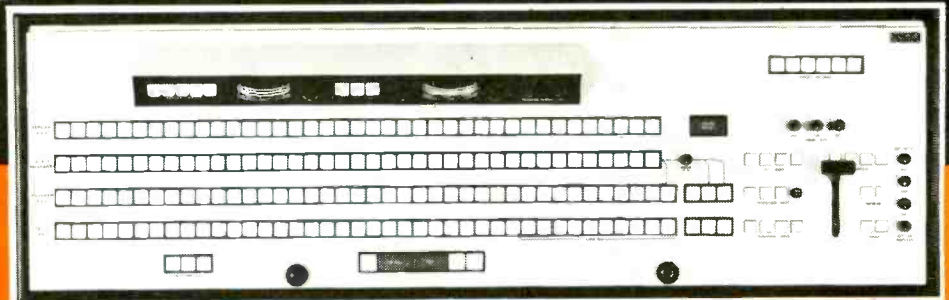
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News

through an undefined and unlimited spectrum tax proposal."

TV Blanking Rules Relaxed Pro Tem; Long-Term Enforcement Affirmed

Because so many TV programs are being aired from equipment not designed primarily for broadcast use, with consequent slippage from the TV blanking standards, the FCC has issued

a firm warning notice to the TV industry to preview all programming and reject or correct that not conforming to the standards. The rule calls for a horizontal interval of 11.44 microseconds and a vertical interval of 21 lines. The FCC said, however, that immediate strict enforcement would impose a severe hardship on many stations using substantial amounts of such non-standard programming. Therefore, until July 1, 1979, it would issue advisory notices only when it detected horizontal blanking above 11.44 microseconds up to 12 microseconds, or

vertical blanking up to 22 or 23 lines. Exceeding those limits would bring a notice of violations, and a steady pattern of violating the basic limits would bring more severe sanctions, said the FCC. Black or other colored borders or reinserted video to mask excessive blanking will be unacceptable. Excess blanking has proliferated from a number of sources, the FCC added, including non-standard tape recorders and tape recordings, portable (ENG) equipment of sub-broadcast quality, use of processing or special effects devices that do not preserve the blanking limits, and distortion in distribution networks.

No Limit on TV Syndication By Stations, Says FCC

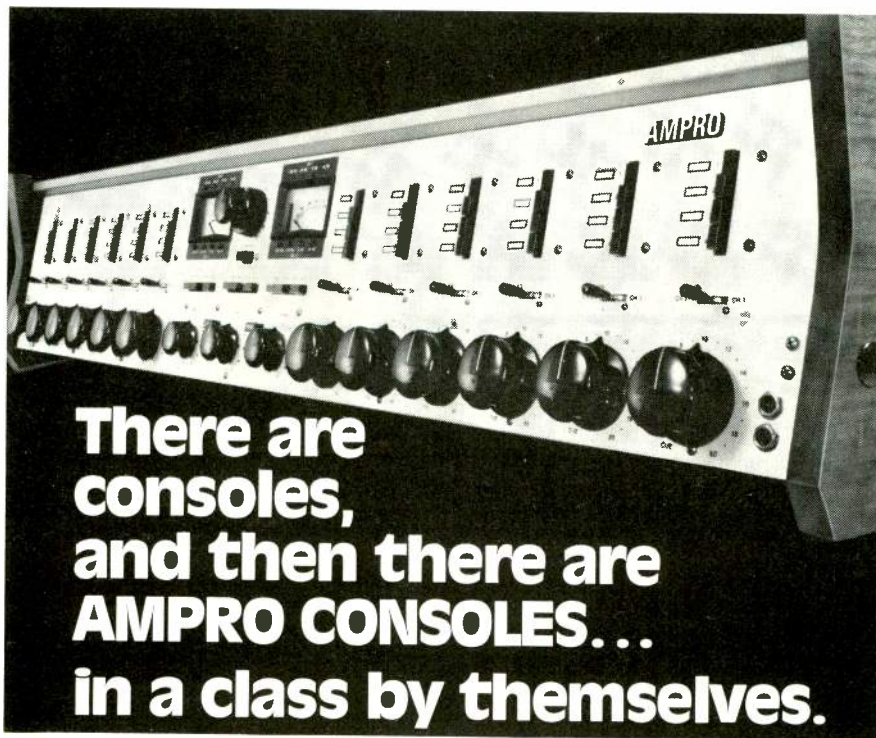
There will be no limitation on domestic syndication of TV programs by firms owning one or more TV stations or cable systems, the FCC has decided. The ruling was a denial of a petition from Worldvision Enterprises, Inc., program syndicator, who argued that the owners' potential for control over prime-time programming would be exercised by TV networks, now forbidden to syndicate domestic programs. However, the FCC pointed out that the two cases were entirely different. TV owner-syndicators did not come near the 95 percent domination of the prime time market that network syndicators once had; there was no evidence, the FCC added, that owner-syndication was reducing access to prime time for other program producers.

Marconi Takes Strong Exception To T.A.M.E. Comment In BM/E Report

Marconi Instruments reacted strongly to a comment in *BM/E's NAB Show-In-Print* issue, May 1978. In the test and measurement report of NAB activity, *BM/E* editors indicated that the Marconi T.A.M.E. (Television Automatic Monitoring Equipment) was best suited to V.I.T.S. insertion and analysis and to transmitter monitoring. The report went on to say that the T.A.M.E. system did not have the exacting accuracy required for the application of the system to analyzing the quality and performance of some studio equipment.

Marconi Instruments' vice president, Keith Elkins, has since presented a convincing argument that seems to indicate that our analysis was incorrect. The following letter from Elkins presents the essence of his argument:

"The introduction of digital measurement equipment into the field of television waveform analysis must be
continued on page 12



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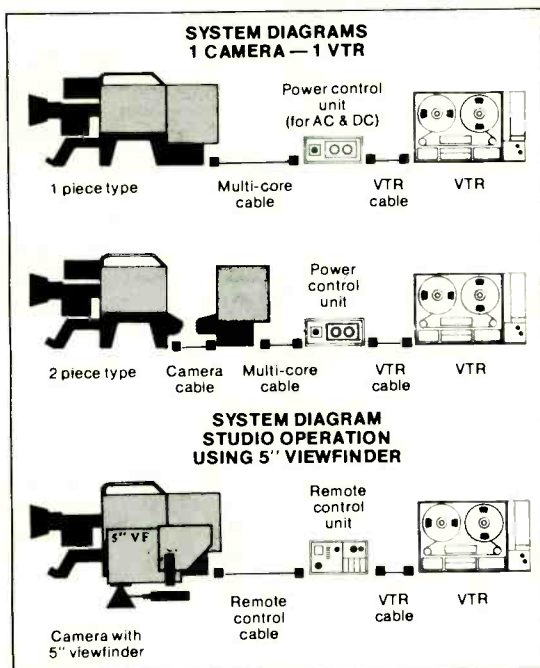
Perfectly balanced, lightweight and modular. Use as 1-piece or 2-piece. At home in studio or out on remote.

The Asaca ACC-2000 portable color TV camera was designed with its center-of-gravity conforming to human head, shoulder, arm and hand, enabling the camera to be positioned the right distance from shoulder to grip. The weight is ideally distributed. As a result, the cameraman experiences less fatigue and can still do his best after hours of work.

You'll like these features: ●New modular configuration—use as 1-piece or 2-piece. Head pack and process pack can be separated with the units linked by a cable. ●C, bayonet and Arriflex (replaceable adaptor) lens mounts—permit use of variety of lenses. Adapts to battery—30W with $\pm 7.2V$ Ni-Cd battery—more than 2 hours service at a stretch. Automatic white control, iris control and flare compensation. ●Built-in gen-lock permits operation of multiple cameras in sync with black burst signals from external source. ●Remote control—compensate for cable length with runs up to 1,000 ft. Iris, gen-lock, and master pedestal at the base station. ●Three 2/3-inch Plumbicon® tubes. ●Optional 5-inch viewfinder adapts for studio use. Write for a free demonstration.

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FOR BROADCAST AUDIO MEASUREMENTS, if you compare features . . .

	Hewlett Packard 339A	Sound Technology 1710A	Potomac Instruments AT-51
AUDIO GENERATOR	Combined With Analyzer	Combined With Analyzer	Separate Unit
Intermodulation test signal	No	Option	Yes
Wow & Flutter test signal	No	No	Yes
Simultaneous L&R Outputs	No	No	Yes
600 ohms and 150 ohms Source	No	Yes	Yes
Stereo Matrix Switch (L,R, L+R, L-R)	No	No	Yes
Switch to remove signal and terminate line for S+N/N	No	Yes	Yes
10 dB, 1.0 dB, 0.1 dB Step Attenuators	No	Yes	Yes
AUDIO ANALYZER	Combined with Generator	Combined with Generator	Separate Unit
Harmonic Distortion Mode	Yes	Yes	Yes
Automatic Nulling	Yes	Yes	Yes
Automatic Set Level	Yes*	Option*	Yes
Intermodulation Distortion Mode	No	Option	Yes
AC Voltmeter Mode	Yes	Yes	Yes
Stereo Phase Meter Mode	No	No	Yes
L/R Amplitude Ratio Mode	No	No	Yes
Wow & Flutter Meter Mode	No	No	Yes
PRICE	\$1,900.00	\$3,695.00 ¹	\$2,295.00 ²

* Limited to 10 dB capture range.

¹Price includes options listed.

²Total price for Generator and Analyzer including protective covers and 4 test cables.



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News

regarded as a significant step forward in measurement techniques, and is another creditable achievement from Tektronix. However, the comparison to existing equipment in your May article is very misleading and does not present the true picture of automatic quality control as it is now used throughout the world.

Your criticism of the accuracy of the Marconi Instruments' V.I.T.S. Analyzer System fails to appreciate the reality of measurement accuracy, resolution and traceability for a voltage waveform having as its only traceable standard that of the International Volt. The Marconi Instruments' accuracy claims are based not only on equipment tolerances but also on the total traceability chain, a fact often ignored by many manufacturers. Although perhaps not true of Tektronix specifications, some manufacturers also fail to differentiate adequately between resolution and accuracy since resolution inevitably appears superior to accuracy.

It is a direct result of such proven traceable accuracy that Marconi Instruments products in the field of television waveform measurements have already been chosen, in conjunction with their proven reliability and ease of operation, for use in over 250 locations throughout the world. The independent broadcasting authority in the United Kingdom alone has placed orders for over 70 instruments.

The USSR decision to use Marconi Instruments' V.I.T.S. Analyzers for quality control within the Olympic Studio Complex reinforces our claim as to its suitability for precision highly stable measurements in exacting studio systems, as well as its ability to provide a high standard of performance where noise levels in microwave links and satellite transmission are less than 30dB below the signal level.

Your reporter has quoted figures and techniques which, as yet, are unsupported in quantity production and which still have to be evaluated by recognized authorities in the market place; our own work on 10 bit digital systems would hardly support some of the statements which have been made.

Perhaps it is somewhat perfunctory to pass judgment on the most successful equipment at present available to all broadcasters for both studio and transmitter applications, which has already proved itself and been accepted in over 14 countries throughout the world, many of which involve highly exacting studio measurements.'

NAEB Will Have Video Fair, Theme Shows

The annual meeting of the National Association of Educational Broadcasters, October 29 to November 2, at the Sheraton-Park Hotel, Washington, D.C., will have a different look from earlier shows. A main feature will be a Video Fair with 50 viewing areas for showing programming available to educational TV stations. Meeting rooms will be devoted to different areas of interest, with the technical discussions and the hardware exhibits related to the particular theme concentrated on in that room. Companies whose products do not fall into any of the themes can take hospitality suites. "Our new style will bring interested parties together in a concentrated way," said Mary Lynn Moody, convention director, in the announcement. "Theme shows and demonstrations will create easy access for both buyer and seller."

SMPTE New York Conference May Be Largest Yet

The 120th Technical Conference and Equipment Exhibit of the SMPTE is set for the Americana Hotel in New York City, Oct. 29-Nov. 3, 1978. More than 6000 film and television engineers, executives, and production people are expected to attend.

The equipment exhibit will consist of approximately 100 manufacturers and their products in more than 200 booths. A wide range of products and services for the industry is expected to be displayed.

The technical sessions during the four day conference will cover subjects such as laboratory practices, satellite equipment and delivery systems, digital television, film production, film-to-tape and tape-to-film transfers, theatrical sound, video production, special effects, editing, and television sound. A full social program is also planned.

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The FCC is ringing down the curtain on the "relaxed" 10 watt FM operation that for nearly three decades has let schools and colleges get on the air for very little money and program as much or as little as they pleased. Citing recent tremendous increases in demand for space on the educational air waves, the FCC ruled in June that 10-watters must raise power to at least 100 watts or get off the educational band (FM channels 201 to 220). The approximately 475 10-watters have until January 1, 1980

continued on page 16

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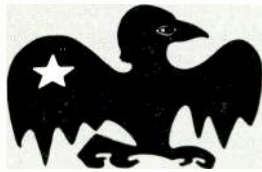
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Radio Programming

range a cooperative ad agreement with Kodak, based on mention of specific Kodak products in the ads. The scripts themselves are very low key; Kodak is mentioned only occasionally, and then in connection with some particular product being described to make a technical point. Kodak strongly encourages localizing the scripts in one way or another.

A station can also call in Kodak experts for answers to specific questions on photography. These specialists can operate through a telephone interview to answer questions from interviewers or listeners. If the length of the interview and its character seem to warrant it, one or two Kodak experts can appear on the show to answer questions in person.

To get the "Photo Tip of the Week," or to get the Kodak "answer men" for a telephone interview or studio appearance, write the Radio Program Service, Corporate Information Department, Eastman Kodak Company, Rochester, N.Y. 14650, or telephone 716-724-4727.

Personal appearances from the magazine world

Another free series with good information provided by low-key sponsorship comes from Radio Roundup Productions. The series consists of 3½-minute interviews — eight a month — with authors, editors and contributors from more than 100 leading magazines. Topics range from sex to education to political discussion to personalities, etc., each providing a brief personal account of material the interviewee has written about and knows authoritatively. The series is produced for Select Magazines, distributors of many leading magazines, and their interest is served if the listener's interest in, and respect for, the magazines is enhanced.

The series goes out monthly on one seven-inch reel, recorded at 7½ ips. The separate interviews can be used by the station as often as the program department wants, in any order. Bill Bertenshaw of Radio Roundup Productions told *BM/E* they hope to increase the number of monthly interviews to 16 in the near future. To get the series, write Radio Roundup Productions at 111 Maplewood Avenue, Maplewood, N.J. 07040.

Humor that also helps with sales

Genuinely humorous material is rare in radio, as it is in most cultural areas. In an earlier *BM/E* survey, a considerable number of station program departments said that good humor was harder to find than any other kind of programming.

This supply gap has been narrowed substantially by the Chicago Radio Syndicate (CRS), creators of several humor series that have won praise from many station managements. Altogether, one or more of their programs have been used at one time or another by some 2500 stations in the U.S., Canada, Australia, and overseas though the Armed Forces Radio system.

A good example is the "Tooth Fairy" series. These are episodes, 90 to 120 seconds long, in the mock-heroic career of Newton Snookers, who gets a job as a dental assistant but secretly devotes his life to leaving coins for those whose teeth fall out. He tries to order a tooth fairy costume from an old mail-order catalogue; he tries to cash a check made out to the Tooth Fairy, which gets him in trouble with the IRS; he is arrested for making an obscene phone call because he complains to the telephone company about the unlisting of his Tooth Line number. Newton Snooker's zany life history is the creation of Dick Orkin, who has a long list of humor productions for radio to his credit.

The series is produced in three packages: 65 episodes for 13 weeks, 130 episodes for 26 weeks, or 195 episodes for 39 weeks. The cost is negotiated depending on the station's ad rates and market size. The station can repeat each episode as often as desired. Sponsorship can be sold for the series as a whole or for individual episodes. CRS reports that some stations have done well with tie-in arrangements with local advertisers. The advertiser can give out Tooth Fairy emblems, or form a Tooth Fairy fan club, or otherwise capitalize on the popularity of the program. CRS helps with promotional ideas, jingles, and special announcements that give the Tooth Fairy a local character.

Another series, "News Cavalcade," consists of spoofs of news programs. It uses the talents of the Ace Trucking Company, an improvisational group. The programs' character can be gauged from this synopsis of News Cavalcade #35: "Famed Impersonator discovered as table in restaurant! Psychiatrist Dr. Richter deals with aggression today! Health expert Dr. Funny sealed in box to hide from germs!" This series, like the Tooth Fairy, is available in various lengths, with the cost based on station fees and market. CRS has several other series, with titles like "Chickenman" and "Minipeople." They are also getting into production of music for radio: one recent program is a 24-hour rock show, a weekend special.

For the full story, write Chicago Radio Syndicate, Two E. Oak St., Chicago, IL 60611, or telephone 312-944-7724. **BM/E**

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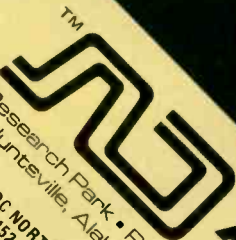
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Commercial Production: A Welcome Burden At WTAE

MOST STATIONS DO SOME KIND of commercial production. Some may do static voice over slides for local retailers who demand it, while others may do only PSAs and station promos. But over the past few years, more and more stations have entered the field of commercial production with a greater degree of commitment. And it does take commitment . . . commitment of capital, labor, and time. But when commercial production is done properly, it can pay off.

At WTAE, Pittsburgh, Penn., both the commitment and payoff have been substantial. In the past several years, the station has been modernizing its plant—installing new computerized lighting in its studios, upgrading its switchers, revamping the audio system (see *BM/E* Television Programming and Production for Profit, October, 1977) and shifting to ENG and EFP equipment. Though little of this equipment and modernization was undertaken strictly for the purpose of developing a commercial production capability, that idea was never too far in the background.

According to Ed Gordon, director of technical operations for WTAE, the station has purchased specifically for production are two RCA AE600 time code quad editor/recorders. Even these machines play other functions at the station, but it was their advantage to production that persuaded the station to make the purchase.

In fact, the physical plant at WTAE continues to expand, and it is the pressure of production that is helping it to grow. Within a few weeks, another Audio Designs custom audio console will be delivered. Currently, a second mobile unit is being outfitted and should be on the road as soon as the microwave equipment is delivered. The new van will be equipped with a Shintron 370 switcher, so that when it is used for commercial production it will have the extra capabilities that the station feels are required for the type of production values it tries to put into its commercial efforts. Carrie Richards, director of creative services for the station, feels that they will also move to one-inch videotape for their on-location

Jon Hoegstrom, director of commercial production (left) and tape engineer John Grimme. Time code editing a furniture commercial shot on location . . . and dubbed up to quad



"Sweetening" a commercial track by audio engineer Lou Snodgrass on Audio Designs' custom made audio console



work at some point. For the time being, though, the results they achieve on $\frac{3}{4}$ -inch are adequate.

Perhaps the biggest contemplated addition to the station's technical plant is a proposed changeover to time code editing, utilizing the RCA AE6000 computer-assisted editor (see "The Super Editors," *BM/E*, June 1978). Though this development is a year or more down the road, it is a question of keeping up with demand.

These are big ideas, and many managers would hesitate to even look down the road that far, but this is more than optimism. "It looks like we're getting

the response we need in order to be able to do all this," said Gordon. Carrie Richards estimates that the station currently handles the commercial production for about twenty clients. The most regular of these clients are Gimbels (Pittsburgh), Foodland (a regionally important supermarket chain), Hahn Furniture, and Hearst Publications, for which WTAE handles both national and local accounts. Added to this list are a number of clients who "fill in the holes," like savings and loan associations, shopping malls, and banks.

Richards estimates that between 50

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TV Programming

and 60 percent of studio time is now allocated to commercial production. According to Gordon, the increased commercial load has caused the station to go into overtime for about 30 to 40 hours a week. Richards says that commercial production in the past six months has grown about 20 percent. Said Gordon, "July and August used to be our slack periods. Now, things haven't let off. When we hit mid-August and September," when the back to school push begins, "I don't know where we will find the time."

To some extent, WTAE has achieved this level of growth in the area of commercial production "without really trying" — that is to say, without really selling itself as a commercial production operation. "We only do production for clients who use our air," says Richards. According to Richards, "We really don't consider ourselves to be in the business of commercial production. We do it. We do a good job of it, but we don't go out on the street and seek people to come to us."

This is, of course, true. What WTAE has done is seek a middle ground between going all out as a commercial production center and concentrating exclusively on its function as a local

television station. Some stations have gone heavily into commercial production, but many others have realized that commercial production is a demanding area that can drain a station's personnel and plant. It is costly, and when one compares the profit margin of commercial production to the profit that can be achieved selling only air time, there's no contest.

The problem is that there is only so much air time, and if a station wishes to expand, it must look beyond its fixed inventory of availabilities to other resources. Commercial production is one of those resources. The tools are already available in most stations. Moreover, commercial production can be helpful in developing new markets for the sale of availabilities. In the past few years television stations have begun cracking the retail market. The cost per thousand in print media has been steadily on the rise, while the cost per thousand in television, though increasing, has become more competitive. Advertisers have also begun to realize that television is the most effective medium they can use under many circumstances (i.e., a short term special offer) and can be a very effective support to campaigns in other media.

Probably every salesman in the business has made pitches to customers based on these general claims for the

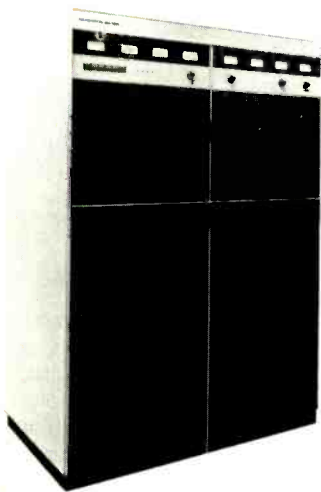
benefit of television advertising, but without a commercial production unit to back up the salesman's claim, his pitch can be fairly lame. Craig Marshall, who is responsible for local sales at WTAE, says, "Commercial production is certainly an asset to any local sales effort — it gives you an extra punch, the edge."

Equally important to Marshall is the quality of the production that WTAE can offer. There is probably no greater crisis for a salesman than to sell a client and then have that client dissatisfied with the product.

This concern for quality seems to be general at WTAE. Not only have they gone to the expense of buying sophisticated equipment, but they've also sought out talent. Jon Hoegstrom, director of commercial production for WTAE, has been with the station for a little over a year now. In the jargon of the sports world, he "was acquired" from WTVT, Tampa-St. Petersburg, a station that had earned itself an admirable reputation in the area of commercial production. WTVT had one of the most extensive production departments in television and regularly did national commercials for some of the nation's leading clients and ad agencies, in addition to handling network sports and news assignments. New management

continued on page 28

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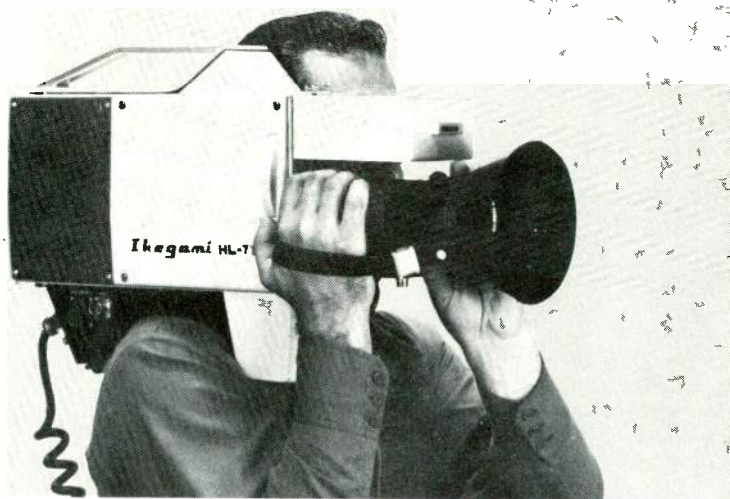
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TV Programming

at the station, however, deemphasized commercial production, and WTAE saw its opportunity to snag a producer/director with ten years of commercial production experience.

Hoegstrom came to WTAE and immediately began putting his skills to good use. One of the overlooked skills in a commercial director is his ability to work with clients. It is not an easily acquired talent. But Hoegstrom went to work with the WTAE sales staff and started making calls. He was able to show skeptical retailers that costs could be kept down while quality could complement a client's self image.

As Marshall pointed out, one of the opportunities for showing clients what a station's commercial production unit is capable of doing is the station's own promotion. Marshall said that on many occasions, clients have remarked on the quality of WTAE's promotions and have suggested that if they could get that kind of quality, they'd be eager to advertise.

Hoegstrom and the other four producer/directors crank out between 12 and 18 spots per week. Some spots are produced in the studio, some on location. Most are video, but a few are film. The degree of involvement in any commercial can range from following a storyboard provided by an agency to going the complete route of copywriting, storyboarding, and production using only the talent available at the station.

To meet this heavy commercial load requires personnel. In addition to Hoegstrom and the other four producer/directors, WTAE maintains a staff of four full-time artists in its art department. Engineering has added two additional people, and the general feeling is that more people yet will have to be added. Commercial production, said Jim Hurly, chief engineer, has led to an "increased workload, a drain on equipment, and it has required more at all phases of the operation." Though the equipment has been holding up well, according to Hurly, the attention it gets has been decreasing. "Any expansion we do in the future will require more staff," said Hurly.

It is also generally agreed upon at WTAE, that though commercial production has put pressure on the physical plant and the personnel, it has been the type of creative pressure that leads to new and better things. The station intends to retain its equilibrium and remain focused on its major function, broadcasting. Commercial production will be done frequently, and done well, but it will support itself and not become the tail that wags the dog. **BM/E**

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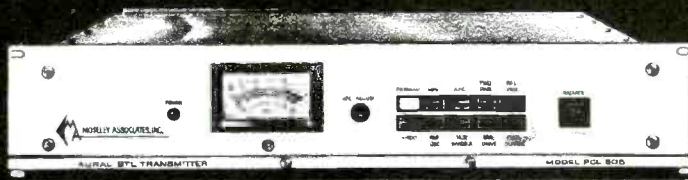
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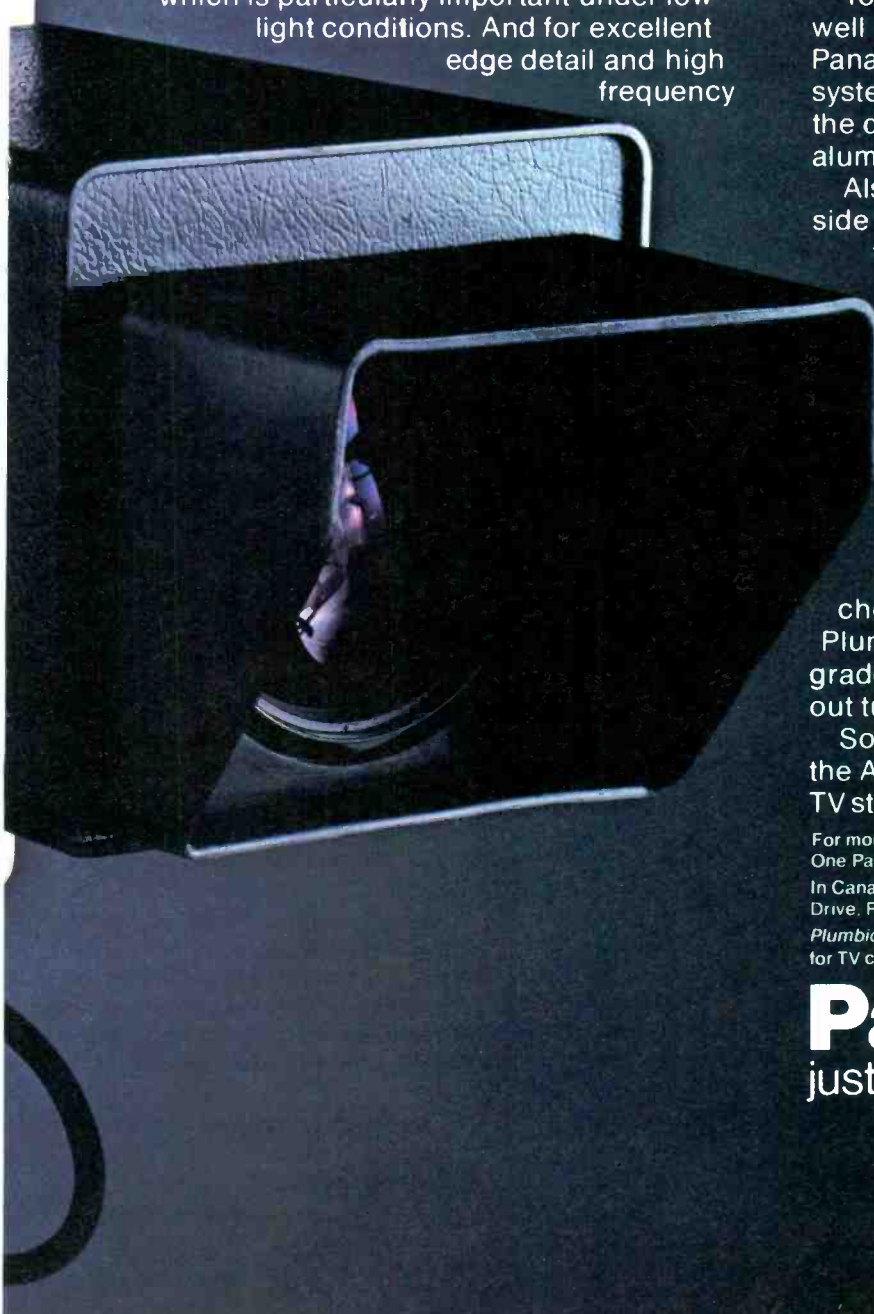
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Getting Spurious Tones Out Of An FM Stereo / SCA Operation

By Dean W. Sargent

When SCA transmission on 67 kHz is added to an FM stereo operation, the signal frequently develops steady spurious tones at nine or 10 kHz. This report tells how these "birdies" originate and how to get rid of them.

WITH MORE AND MORE FM STEREO STATIONS using SCA transmission on 67 kHz for "rental" programming or for telemetry, the old problem of steady spurious signals is coming up frequently. Usually these tones are at nine or 10 kHz, which explains why they are often known as "birdies." It has become the habit to blame the transmitter for these unwanted signals. To find out just where the blame actually lies, my organization undertook a careful investigation of a particular FM stereo station where the problem existed.

We chose this station, WWTR-FM in Bethany Beach, Delaware, because they have a dual transmitter and two monitors of different manufacture. We believed that the tests would have more value if checks could be made on equipment of different design and the results compared.

Because of time limits, the investigation was confined to the transmitter and monitor system. We included neither the STL nor the RF amplifier for monitor system number one (used for off-air monitoring at the studio) in any measurements. The monitors were all moved to the transmitter building and set up using the sample point (directional coupler, installed in the transmission line for monitoring purposes). The tests included no audio amplification or processing equipment, audio being directly from a high quality audio oscillator.

All monitoring equipment was set up at the transmitter site and all alignment and setup adjustments made to insure that the monitors were operating properly. The pilot frequency was checked and adjusted and the VSWR of the antenna system was checked. The load VSWR over a sufficient bandwidth must be low to prevent reflected power from returning to the PA and causing unwanted phase modulation, which would give us poor stereo separation. The illustrations show the transmitter and monitor system, and the test setup.

The transmitter at WWTR-FM is a three kilowatt unit with two different makes of exciters and stereo generators, and switching facilities that allow either to be used. Switching is instantly accomplished from the remote control

system or directly from the switching unit proper. We selected the number one exciter and stereo generator and checked the transmitter tuning, using an oscilloscope to watch separation as the transmitter was tuned.

The instruction books for the stereo generators were consulted for the proper methods for aligning the units, to make sure they were up to specs. We found some adjustments necessary, particularly to improve separation in the number one system generator.

Good IPA tuning for good separation

Tuning the transmitter for maximum efficiency seems to be all that is necessary, with the exception of the IPA input tuning and matching. We found it absolutely necessary to have an excellent match with virtually no power reflected back into the exciter, to avoid serious degradation of separation. As the circuit is tuned, the separation varies because of the narrowing of the bandwidth and unwanted phase modulation from the reflected power. If there is no suitable system in the transmitter to indicate VSWR at this point, a means of observing stereo separation should be used and the IPA input tuned for optimum separation, consistent with good drive to the IPA.

Observation of the stereo separation should not be made with monitors located at the studio, as poor bandwidth in the RF amplifier could impair separation at that point. The monitors should be taken to the transmitter (or a second set installed at the transmitter for maintenance purposes) and the IPA tuning done by observing separation on a scope. Using the incidental AM position provided on some monitors may or may not give the proper point for tuning this stage. If the transmitter has only incidental AM, it will work well, but if there is unwanted phase modulation the indication could show up as anything from minimum to maximum, depending on phase relationships. The primary objective is the best possible separation, so tune for that and forget the rest.

Using a Tektronix 7L12 spectrum analyzer, we measured the fundamental signal out of the transmitter as a reference for harmonic measurements. A high-pass filter

continued on page 34

Dean W. Sargent is president of D. W. Sargent Broadcast Service, Cherry Hill, N.J.

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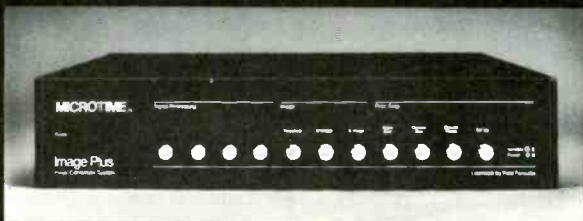


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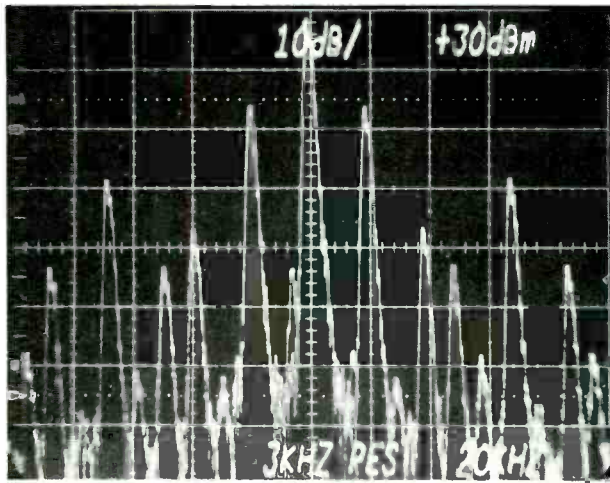
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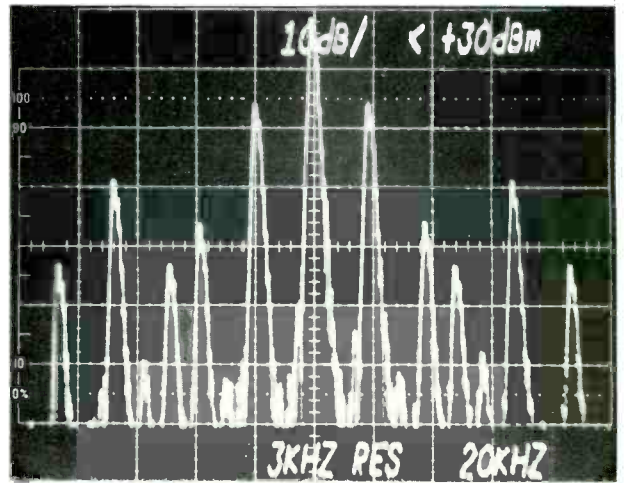
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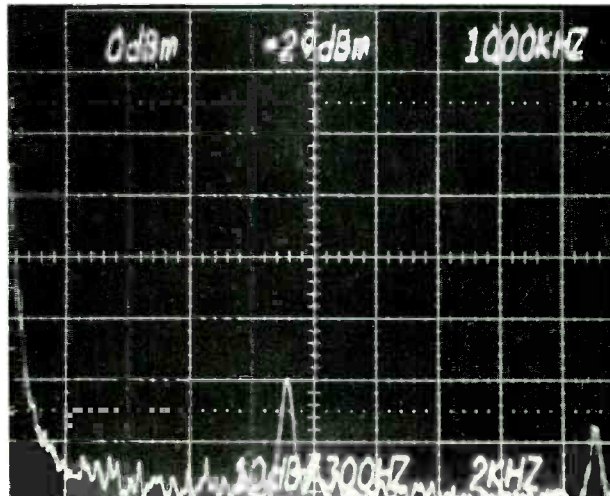
Spurious Tones



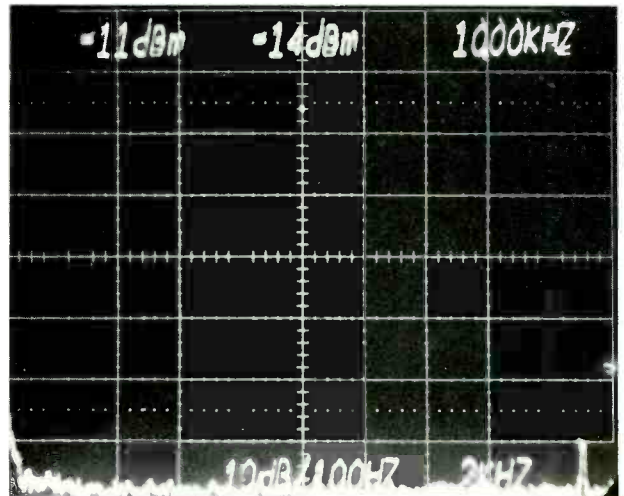
Transmitter output with exciter No. 1 is spread across 100 kHz on spectrum analyzer. There was no audio signal. Shown are the 19 kHz pilot, the second and third harmonics at 38 kHz and 57 kHz; and 96.3 kHz, from exciter crystal. Also: modulation sidebands at 29 kHz, 48 kHz and 86 kHz



Spectrum from transmitter using exciter No. 2 was the same as with exciter No. 1, except that the signal at 96.3, from the exciter crystal, is missing, since exciter No. 2 lacked this. In neither case was there a birdie



Output of stereo monitor driven by baseband monitor No. 1 shows a birdie at 9 kHz, produced by beating between the 67 kHz SCA subcarrier and harmonic of the 38 kHz pilot at 76 kHz. Birdie could be clearly heard.



Output of stereo monitor driven by baseband monitor No. 2 did not show a birdie. Handling of 38 kHz pilot in this monitor resulted in very "clean" signal

that attenuates the fundamental by 70dB was installed in the input to the spectrum analyzer and the gain increased until the harmonics were observed and their amplitude measured. All harmonics were well below 80dB from carrier peak, some being more than 100dB below.

The transmitter was now considered to be in good shape and the monitors were set up to match. With the pilot injection and the SCA injection each set to 10 percent and no audio on either L or R channel or the SCA, we checked the transmitter output on the Tektronix 7L12. The scope photos show the results. The number one and number two setups had the same spectrum, with the exception of the signal at 96.3 kHz on number one. This is the crystal frequency used in the exciter and is a normal element.

The scope photographs show the 19 kHz pilot and the second and third order sideband at 38 kHz and 57 kHz. The 67 kHz SCA subcarrier is also shown, and it is being modulated by the 19 kHz pilot. We did not expect this. Both systems have identical modulation sidebands at 29, 48, and 86 kHz, and one at 105 kHz that is not shown in the

photograph of the analyzer, as the span is limited to 100 kHz.

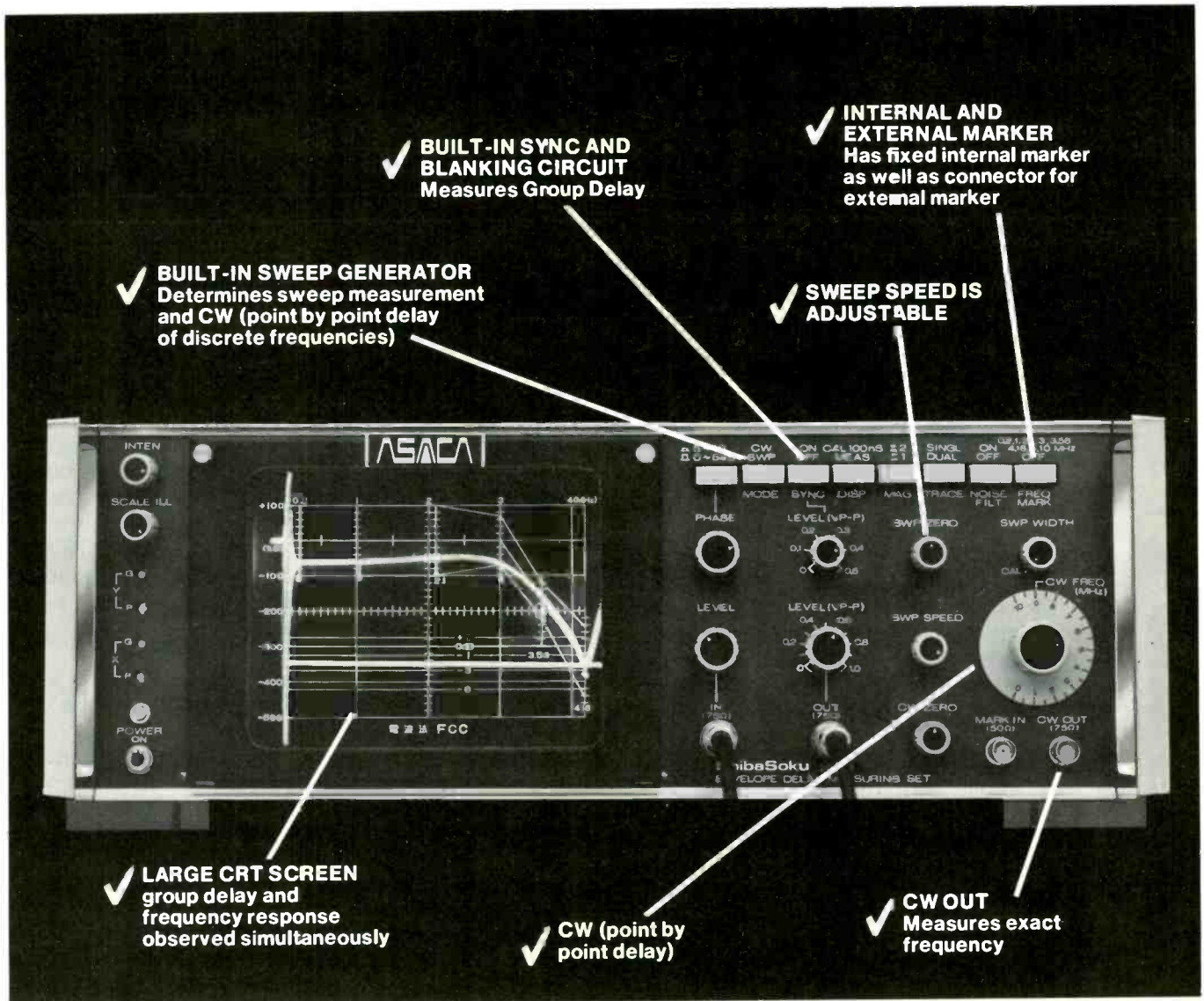
The modulation sidebands will disappear in baseband monitoring because of the phase difference between the lower and upper sidebands. The 38 kHz stereo subcarrier suppression cannot be checked at the transmitter output due to the second order sideband of the pilot frequency. This can be checked in the baseband monitor output, where sidebands will be gone.

Transmitter output: no birdies

No spurious signals were shown in the transmitter output. To further check this, we reduced the spectrum analyzer span to expand the audio portion. Photos show the output of the number one setup (the other was identical) from carrier to 20 kHz. Each horizontal centimeter is five kHz. The carrier is in the center, with the pilot at 19 kHz above and below the carrier.

Next, we examined the output of the baseband monitors

continued on page 36



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Spurious Tones

with a Tektronix 7L5 low frequency spectrum analyzer. Photos show the output of monitors one and two. The spectrum shown is from 0 to 100 kHz, and the vertical centimeter divisions are 10dB each. Both photographs show essentially the same signals, with the pilot, suppressed 38 kHz stereo subcarrier, 67 kHz SCA subcarrier, and a 76 kHz signal that is not shown on the transmitter output photographs. The modulation sidebands are now gone, so we can check the 38 kHz suppression, which is within FCC specifications of -40dB or better. Here it is down 43dB below the pilot and 62dB below 100 percent modulation, so it should not be troublesome. More on this later.

Next, we used the spectrum analyzer to observe the output of the stereo monitors when they were driven from their baseband monitors. As shown in the photos, monitor number one has a birdie at nine kHz, the result of the 67 kHz SCA subcarrier beating with 76 kHz. Monitor number two doesn't have this birdie, although both baseband monitor outputs are virtually the same. Listening to the audio output of monitor number one, one could hear the birdie very easily. The human ear has an extremely large dynamic range for coherent signals such as this. The transmitter was switched to exciter/stereo generator number two and the results were exactly the same. The photographs show the spectrum from 0 to 20 kHz and are of the deemphasized outputs.

As monitor system two did not show any birdies, we made a check on the number one monitor system by putting a 76 kHz notch filter in the output of the baseband monitor and watching the effect on the nine kHz birdie at the stereo monitor output. There was no observable reduction in the birdie, indicating that the offending 76 kHz was being

generated in the stereo monitor. Crisscrossing the baseband monitors into the stereo monitors did not affect the nine kHz in the number one stereo monitor, and did not cause one to appear in the number two stereo monitor.

We checked the intermodulation of the system by modulating transmitter number one with 15 kHz L+R, with pilot and SCA at 10 percent injection. Total modulation was 100 percent. Using the spectrum analyzer on the stereo monitor output (deemphasized), the intermodulation of 15 kHz and the 19 kHz pilot was checked. This intermodulation would limit the lowest percentage of distortion that could be measured, and would be about one percent in this case.

No measurements were made with an SCA monitor, as this investigation was confined to the stereo effects produced when using the SCA, whether it is being used for program or metering information. SCA operation as such was not being investigated. We believe, however, that if an SCA monitor with a wideband detection system were used, the 19 kHz would be in evidence, as shown by the sidebands in the output of the transmitter. Another investigation into this modulation of 67 kHz by the stereo pilot might be done at a later date. A special SCA monitor will have to be constructed before this is done.

How nine kHz was generated in one monitor

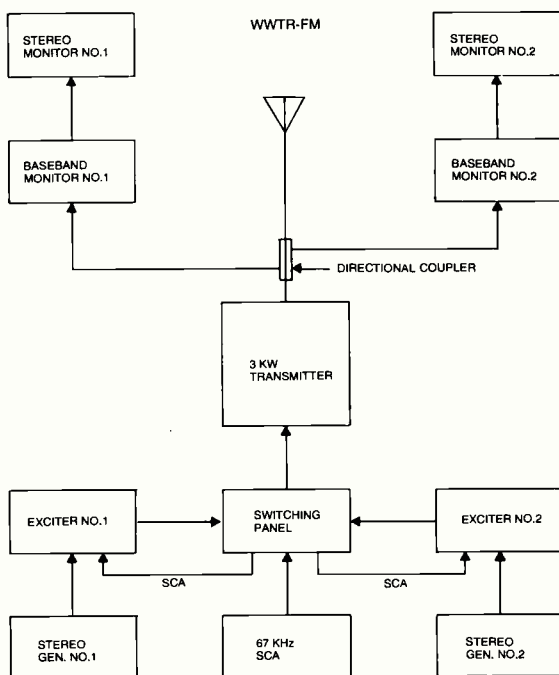
As not all monitors generate spurious signals, what causes one monitor to be all right and one to have a nine kHz birdie? In the offending number one monitor, the 19 kHz pilot is multiplied to 38 kHz and then made into a square wave. If the distortion in the 38 kHz sine wave is high enough, it will not be possible to get a good symmetrical waveform, and a "second harmonic" 76 kHz will be present. As this is fed to the stereo demodulator, the nine kHz birdie can be generated right there by 76 kHz beating with the 67 kHz subcarrier.

The number two stereo monitor uses the 19 kHz pilot to drive a phase-locked loop to get 1.9 MHz. The 1.9 MHz is then used to get a fast count when measuring the pilot frequency. The 1.9 MHz is divided down to 38 kHz, where it is made into a very symmetrical, two-phase square wave. This signal has virtually no 76 kHz (it has 114 kHz, but this is filtered out) to create a problem. The 38 kHz square wave is used to drive a chopper which acts as a bi-polar switch, completing the demodulation process.

A check on receivers

We fed the output of a Heathkit AJ-1510A digital tuner to the spectrum analyzer. The stereo output showed nothing at the usual intermod frequencies of nine kHz or 10 kHz, but did have a spur at 13 kHz. Further checking indicated that this spurious signal was present at all times regardless of whether a signal of any kind was present or not. The presence of this 13 kHz spurious signal does point up the fact that birdies can be generated at various frequencies in the receiver without help from the transmitter. As this tuner did not belong to the station or to us, we did not go inside and "look around."

We checked an older Scott tuner, after the transmitter measurements were made, for any data that would shed some light on the receiver situation. A local station transmitting stereo and SCA was tuned in and no birdies could be detected, audibly or on the spectrum analyzer connected to the stereo output. This tuner used the received pilot (after amplification) to synchronize a 38 kHz sine wave oscillator, which switches the composite to L and R channels in



Block diagram of transmitter and monitor systems used in test shows how different monitors could be switched into operation, allowing a comparison of the two different systems. The comparison helped pinpoint source of birdies in monitor design

the proper time. We checked the oscillator output — 76 kHz was present, but was 30 dB down from the 38 kHz. This amount of 76 kHz doesn't seem to be a problem, as no birdies resulted.

Getting the birdies out

Our study, therefore, indicates that the transmitter can lose stereo separation if it is not properly tuned, but that stereo/SCA "birdies and whistles" come from the monitors and the receivers. It would seem that 76 kHz generated as distortion of the 38 kHz pilot in the receivers or monitors is the problem in most cases. It also seems that whether the stereo demodulator process uses a sine wave or a square wave is less important (except from an efficiency and stability standpoint) than the distortion or symmetry of the 38 kHz waveform. If the 19 kHz pilot is multiplied to 38 kHz, more birdies seem to be generated than in systems that use the 19 kHz to synchronize the 38 kHz, or that use it to drive a phase-locked loop to a higher frequency and divide back down, generating a new 38 kHz signal of low distortion or a symmetrical (very) square wave.

Systems that multiply the 19 kHz pilot might also have a 10 kHz birdie from generation of the third harmonic, 57 kHz, which will generate the 10 kHz beat with 67 kHz.

There is one additional possible area of trouble, although I have never yet encountered it. Seventy-six kHz from the AFC system in one STL transmitter on the market could get into the STL oscillator and beat with the 67 kHz carrier. In this case, the nine kHz signal would be delivered to the exciter by the STL receiver along with the composite signal. The nine kHz would then be sent out by the

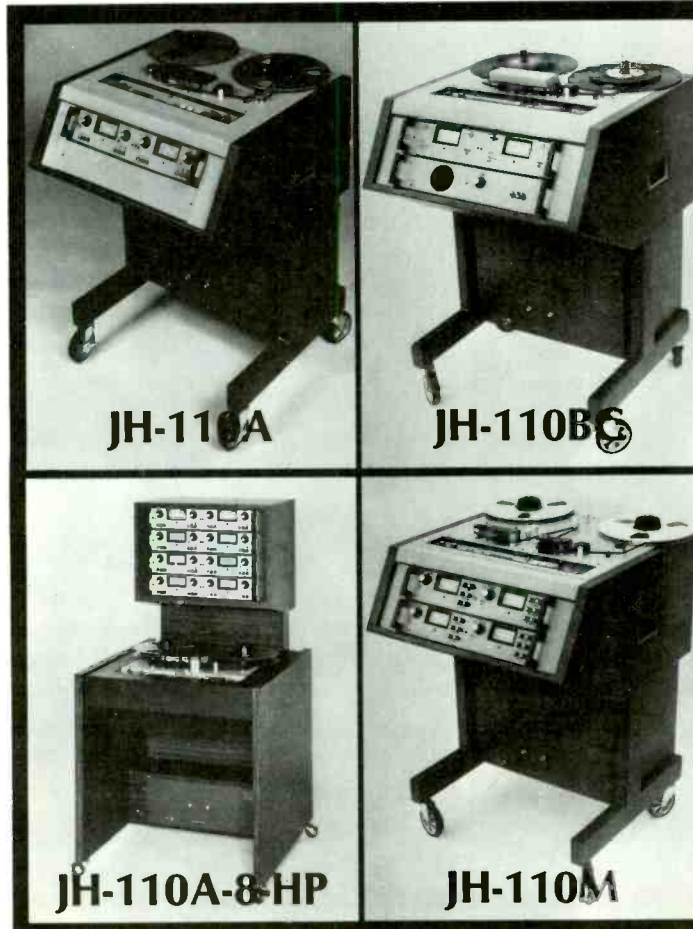
transmitter, although not originating in the transmitter. This condition could easily be checked by eliminating the STL and using the stereo generator at the transmitter instead of at the studio. If the nine kHz remains, the problem is not in the STL.

If you have a birdie and use your SCA for telemetry, turn it off when not taking meter readings. This will limit the birdies to those short times when readings are being taken. If the SCA is used for program material, one thing that will help is the use of enough audio processing to mask the birdie. The actual amount of processing will depend on how bad the receivers in your area are, but one dB is probably a maximum need. Alternatively, of course, the management can invest in a monitor that does not produce the problem.

During the checks it was found that monitor system one did not give good separation. Monitor system two indicated good separation, as did a scope attached to number one. Our conclusion was that monitor number one needed calibration — it had not been checked since installation. Any monitoring equipment used to maintain the transmitter should be calibrated at least once a year.

Routine calibration of the monitors, pilot phase, amplifier balance, frequency adjust, etc., should be made every week and before any transmitter checks. If a method of checking separation is not possible (at the transmitter) during transmitter tuning, it should be spot checked, even if this is done at the studio location and through the RF amplifier driving the baseband monitor. Remember, however, that poor bandwidth in the RF amplifier can reduce separation.

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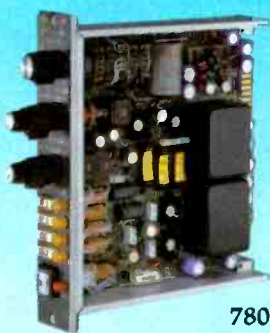
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ABC Launches New "Balloon" Technique At U.S. Open

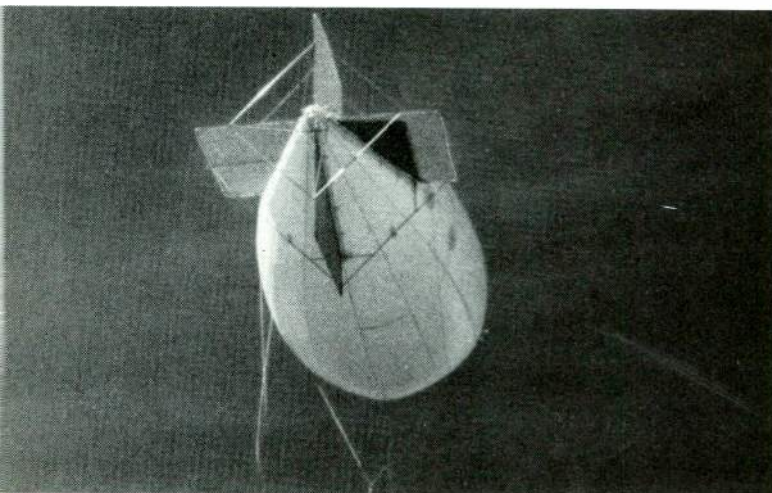
No golf tournament ever received more complete coverage than the 1978 U.S. Open at Denver, Colorado. ABC pulled out all the stops for this one, providing more than 20 cameras to cover all 18 holes. Three of the cameras were RF-controlled and linked to master control through microwave signals relayed from a high-flying aerostat.

TO COVER A GOLF TOURNAMENT the way ABC Wide World of Sports covered the U.S. Open in Denver this past June, you have to try some new things. Most golf courses are just too big to allow for complete 18-hole coverage. But then, if you have cameras with microwave links, things get a little easier—except that you have to build a temporary tower that might be as high as 150 feet and cost about \$15,000. Now, the tower has some distinct disadvantages besides its cost. First, it takes a lot of time to build it, with attendant safety hazards, and then you only get to use it once. Once you get it up, however, your only problem is that at that height, you still have blind spots so that your microwave-linked cameras are not going to be able to get a shot at your receiving antennas from a large number of locations around the course.

The obvious solution is to increase the altitude of your receiving antennas to about 400 feet. The only problem here is that the average tower construction crew is going to look at you as if you are crazy and tell you to go fly a kite. With just slight modification, that's pretty good advice. What ABC did was accept a proposal from Tayburn Electronics to equip a helium-filled aerostat balloon with a special platform to carry the



The van is the balloon's "anchor" and also houses the rear end of the microwave receivers. Power and signals are carried to the balloon via cables run with the tether



The ABC aerostat hovers 400 feet above the ground. Deflated, it occupies just two cubic feet of space

front ends of three 2 GHz microwave receivers, and three omnidirectional receiving antennas. ABC also asked Tayburn to mount three modified Ikegami 950 MHz transmitters with omnidirectional antennas to handle camera control signals and intercoms.

According to Steve Korn, supervisor of ABC's RF department, Tayburn presented the proposal back in April, during the NAB. A few days later, Korn was sent out to Tayburn's plant in Carlsbad, California to look over what he admittedly thought was a pretty hair-brained idea. Impressed with what he saw, Korn changed his mind and supported the idea with cautious optimism. The decision was reached to try out the system experimentally on the U.S. Open, but as testing and planning continued to confirm the viability of the system, ABC decided to take off the wraps and use it on its first time out as an integral part of their elaborate plans.

continued on page 42

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New "Balloon" Technique



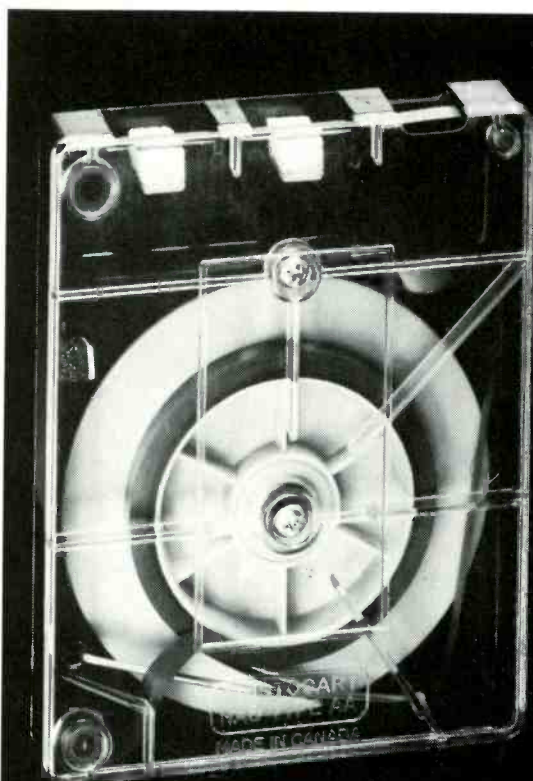
The platform which carries the antennas, m/w receiver front ends, and 950 MHz transmitters is made of a special lightweight material. ABC's Korn believes it could accommodate up to ten camera feeds

ABC Wide World of Sports intended to present complete coverage at each of the 18 holes. To accomplish this they used almost 20 LDK-5s with triax; they experimented with an HK-357 computerized set-up camera, which worked beautifully, according to Korn; and they rolled out three golf carts equipped with microwave transmitters. The golf carts carried 2 GHz Teracom microwave transmitters and antennas to handle the video and program audio on one subcarrier, using the other subcarrier for a talkback link to master control. Ikegami 950 MHz receivers were also mounted on the golf carts to carry intercom from master control and to handle remote control camera command signals. The cameras were two Ikegami HL-35s and one HL-77.

The usual procedure was to transport the cameras aboard the golf carts to the location for shooting. There, the cameras were off-loaded and set up on tripods for their particular assignment. The microwave antenna was pointed in the general direction of the balloon which was flying at the end of a 400-foot tether. According to Korn, a solid link was established within minutes. From an RF standpoint, said Korn, "Everything performed better than I had expected."

The balloon was delivered to the ABC crew on the Sunday preceding the beginning of the tournament. Three Tayburn representatives accompanied the balloon to help set it up and train the ABC people in its use. Originally, the balloon was lofted with three tethers, but high winds averaging about 30 knots tended to make the aerostat whip against its restraints. Korn removed two of the tethers and found that that the balloon now wafted gently in the stiff wind. "The only effect of this

continued on page 44



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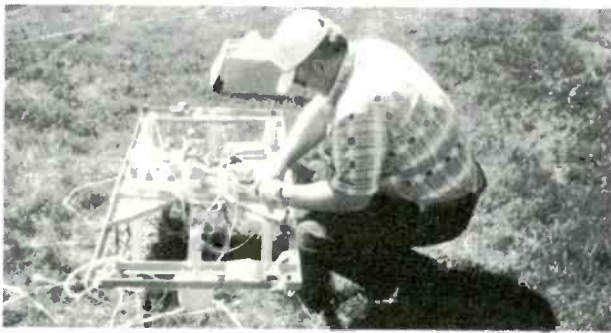
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New "Balloon" Technique



The upling (foreground) is mounted on a golf cart for mobility. A firm link through the balloon can be established in minutes.

wafting," said Korn, "was slight breathing in the color." On the last day of the tournament, winds got up to around 60 knots and there were a couple of RF hits as a result. "Neither of the hits aired," said Korn, "but we did lower the balloon to a more stable altitude for about the last hour of the program."

The balloon carries a frame made out of a special material that is both lightweight and strong. Mounted on the platform are the front ends of three Tayburn receivers with a low noise amplifier, band pass filters, mixer, and LO. The antennas are omnidirectional. The three cameras were providing video on channels one, three, and seven. The signals were carrier by cable down the tether to the rear end of the receivers located in a van. DC power was provided via cable from the ground.

Also mounted on the platform were three 950 MHz

transmitters and antennas which carried intercom and camera control signals for the electronic operation of the cameras. This information was also cabled up to the balloon from the camera control base in master control.

The balloon was attached to a winch by a nylon cord. The winch, mounted on a van, allowed the altitude of the balloon to be controlled. At night the balloon was winched down to about fifty feet, and in the morning it was lofted upward and checked out within an hour. The balloon was inflated to about three pounds of positive pressure and designed so that even a one-foot gash in its side would result only in a gentle drop to earth. If the tether should break, a most unlikely happenstance since the nylon line is rated at several thousand pounds of tensile strength, the balloon would rise to about 12,000 feet before a special blow valve would open and start to deflate the balloon slowly.

Korn believes that the balloon will be the answer to a number of remote location problems that have traditionally plagued telecasts. ABC plans to employ the balloon in covering auto races, track and field events, and possibly other situations where widely dispersed camera positions are needed. Korn believes that without too much additional difficulty, the balloon platform could handle up to ten cameras. For one thing, said Korn, "We've got another George Willig mountain climb coming up and I think the balloon will be a big help to us there." On the last Willig climb at Zion National Park in Utah, all the cameras were RFed, and much of the problems with set-up could be eliminated with the aid of the balloon. Korn estimates that by the third time out, the balloon will have paid for itself in saved tower costs alone.

BM/E

Split Second Time Machine

The Telex/Magnecord 1400 recorder. Split second timing with a grid of 524 lines passing a quartz crystal control reference each capstan revolution. This senses, and corrects the speed of the DC servo drive some 4000 times per second*. Speed stability is so accurate the National Weather and the Environmental Satellite Services selected Telex/Magnecord 1400's over all others to record meteorological display data.

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*At 7 1/2 ips, adjustable $\pm 1\%$ to compensate for tape thicknesses and mechanical wear.

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Model 9048
Video
Graphics
System

So much for so little

THE PANIC BUTTON: The Panic Button is an instruction file for system operation which will take the place of a conventional operator's manual. The program contains a complete set of operating instructions.

ZOOM FEATURE: The Zoom Feature permits a continuous increase or decrease in character size at a rate selected by the operator. Character size (17 lines lower case, 28 lines upper case) can be varied $\pm 50\%$ without loss of character resolution.

DIAGNOSTIC PROGRAM: This program is provided on a separate disc and is capable of detecting and isolating system faults to a particular memory address level.

FONT SELECTION: Three upper and lower case fonts are provided as standard. Styles are News Gothic Bold, Times Roman Bold and Helvetica Bold. Fonts can be intermixed on a page-by-page basis.

PREVIEW MONITOR: The Model 9048 is a two-piece unit consisting of a rack-mountable electronics package and a keyboard enclosure containing a 9-inch, black-and-white preview monitor.

EDIT FORMAT: Model 9048 reminds you in plain English what font, edge style, character and background color you were using for your program or any preview pages.

HIGHLIGHTS: Try automatic centering, roll, crawl, flash, and pause.

MEMORY: State-of-the-art floppy disc storage gives you a 128-page memory with the capability of expansion to over 500 pages if the zoom option is not selected. All this allows all memory to be retained after system shutdown – or power failure.

Meet the Model 9048 along with Dynasciences' other video products in October at Video Expo in New York.

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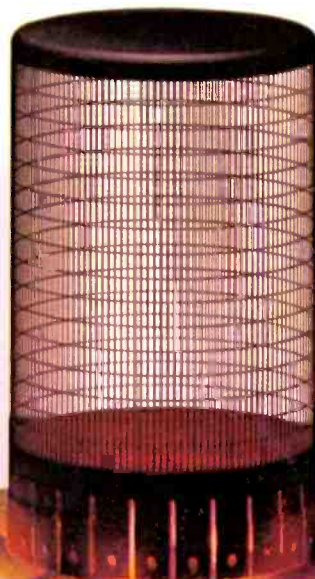
The pyrolytic graphite grid in EIMAC's newest tough tetrode, the 4CX40,000G, has triple the screen dissipation of earlier tetrodes. Which means:

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WCBV-TV's "Hippo": 13200 Lbs. Of Mobile Production Power

With the station's emphasis on quality field production, a mobile unit with studio quality had to be built. This latest OB unit can do almost anything—and do it well.

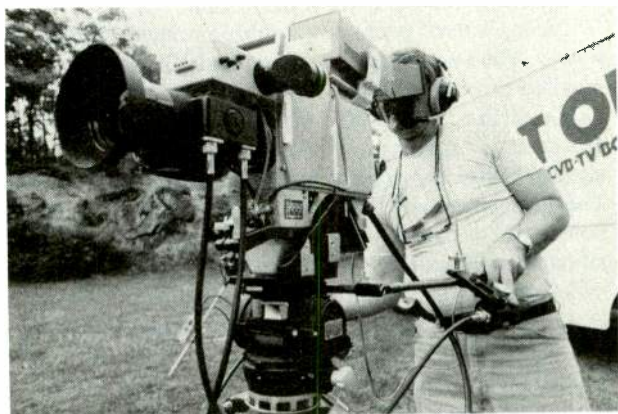
IT IS NOT ONLY THE SMALLEST three-camera remote production unit in New England, it is also one of the most powerful. Engineering supervisors Ira Goldstone and Dave Underhill have taken advantage of the latest television technology to pack more production power into a truck less than 20 feet in overall length than one would normally find in a rig twice that size.

The "Hippo" was conceived out of WCBV's commitment to high quality remote production. The Boston station, which boasts of doing more locally produced programming than any other station in the country, has always stressed the quality of its productions as heavily as the quantity. Fortunately, video technology has progressed sufficiently that technical quality does not have to be sacrificed for mobility. The programs that WCVB can now produce from the Hippo are probably as good technically as any produced inside a television studio.

Ira Goldstone, who along with Dave Underhill planned the creation of the Hippo, said, "Basically, we set goals [for the vehicle] by capabilities; that is, 'what ought the truck be able to do when we're all done?'" The station already owns and operates three other remote broadcast vehicles, the "Bumblebee," the "Zebra," and the



WCVB-TV's "Hippo" is the newest mobile production unit to join the station's menagerie of ENG/EFP vans



WCVB-TV engineer Jerry Milot mans the Ikegami HL-51 in its tripod-mounted configuration, employing the 4 and one-half inch viewfinder. The camera also has shoulder-carry capability with a smaller eyepiece viewfinder.

"Winne." Each of these three vehicles is basically a single-camera ENG type van (see *BM/E* story, April, 1978). One of them is equipped with a vertical interval single function switcher which enables the operator to cut between two RCA TK-76s. Though adequate for most news gathering tasks and some production tasks, these units simply do not have the degree of flexibility required for producing the kind of full scale remote productions that WCVB has in mind.

What was needed was a truck large enough to carry three cameras, recording equipment, monitoring equipment, switching equipment, audio equipment, lighting, microwave, and communications equipment. Yet all of this had to be in a truck small enough to maneuver through the tiny streets of old Boston and the many surrounding

continued on page 48

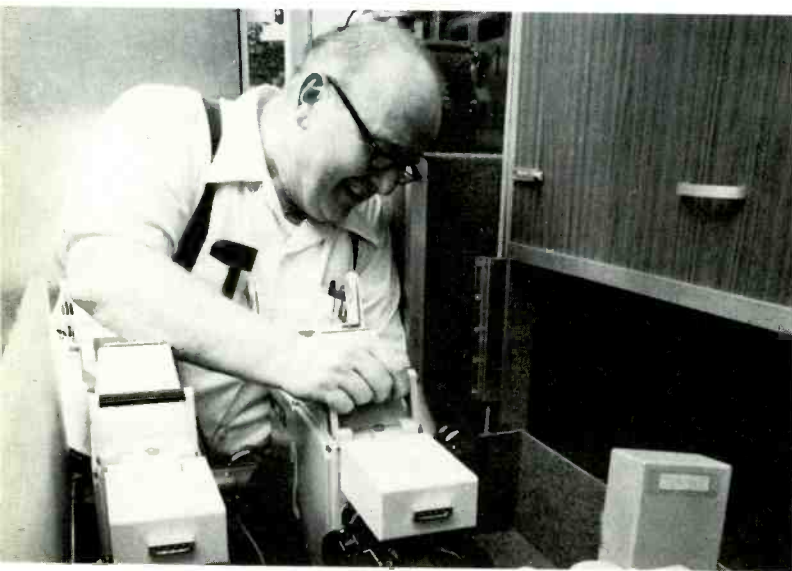
Hippo

New England towns that antedate the Revolutionary War.

The Hippo made its first appearance on the Boston scene this past July 4, when it was used to broadcast, live, the 50th anniversary of Arthur Fiedler and the Boston Pops as they performed on the banks of the Charles River for Boston's traditional Independence Day celebration. At the time of writing (just a few weeks after the Hippo's premier), the truck has already found its way into the daily routine of WCVB. It has been used to do regular segments of WCVB's 90-minute talk/variety show, "Good Day!"; it has been used by the news department to cover the impeachment hearings of Massachusetts' Chief Justice Bonin, and it has been used to produce WCVB's weekly



The Hippo carries three cameras: two Ikegami HL-51's, shown tripod-mounted, and an RCA TK-76, shown mounted on the roof



Engineer Ed Collins fits one of the Ikegami HL-51's into its special carrying cradle aboard the Hippo. Also pictured are the second HL-51 and the RCA TK-76

candlepin bowling program. The Hippo, said Goldstone, "is the station's truck." It will be used by any department requiring multi-camera remote capability for any purpose deemed appropriate by the management.

Goldstone expects that as the technicians gain familiarity with the Hippo and the newness wears off a bit, the unit will find further application in commercial production and rental to other stations and independent producers. Many requests have already been received by the station for use of the Hippo by outside organizations, but Goldstone feels such use is still a few months off.

The Hippo's capabilities

The Hippo is equipped with two Ikegami HL-51 field production cameras. Each camera consists of a separate head, hip pack, and back pack camera control unit. The third camera is an RCA TK-76. The HL-51s can operate at the end of 900 feet of 39 conductor cable, while the TK-76 cable run is limited to about 300 feet.

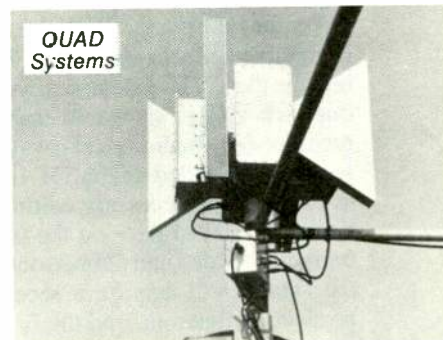
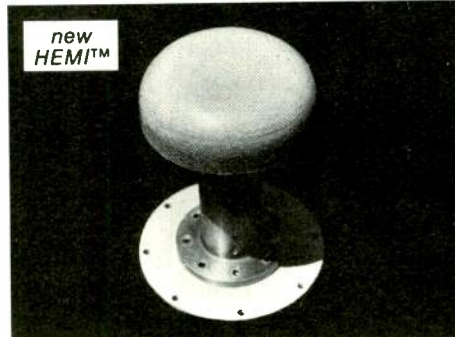
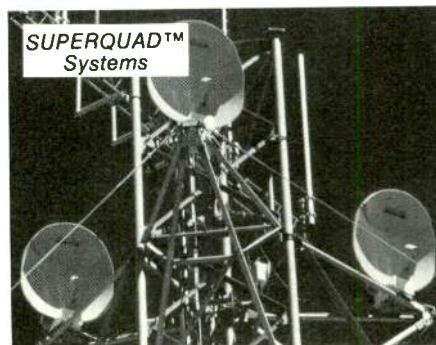
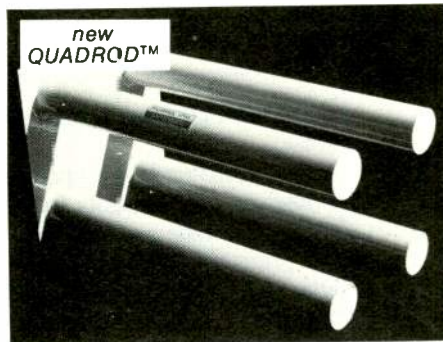
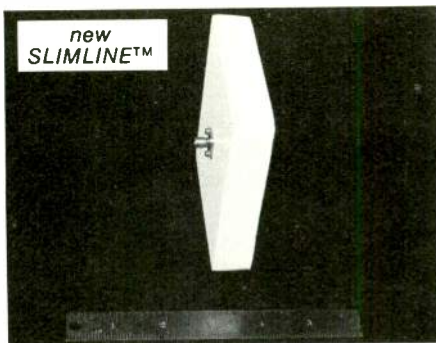
Normally, the three cameras will be tripod mounted. In this configuration the HL-51s are equipped with seven-inch monitor viewfinders, rather than the eyepiece viewfinders which are used when the cameras are operated as independent ENG cameras. The hip pack is mounted on a leg of the tripod and is essentially a cable equalizer for the 900 feet of cable. A short cable connects the camera head to the hip pack, and a 39 conductor cable runs from the hip pack to the back pack CCUs in the truck. The electronic character of the cameras can be controlled remotely or automatically.

The TK-76 was modified by Goldstone and Underhill so that it could be used on a 300-foot cable run using the Ikegami camera cables. To accommodate this, a hip pack similar to the ones used by the Ikegamis was built.

The cables are on electrically powered takeup reels, and since the cameras are equipped with microphone inputs and the cables carry audio integrally with the video cables, Goldstone maintains that once the cameras are set up, "we are 90 percent ready to go." Rarely do additional cables have to be run unless extraordinary circumstances require it. The hip pack for the TK-76, like the other hip packs, includes intercoms, genlock, and tally, as well as cable equalization. Because it does not require RGB and other cables required by the Ikegamis, additional coaxial cable and multi-pairs are used to provide video for a floor monitor and intercom for a floor man.

The truck itself packs an enviable amount of production power. The main video switching and effects operation is handled through a Grass Valley Group 1600-1A mobile unit switcher. The GVG 1600-1A is extremely compact and offers a program row and a preset row (with flip-flop taking or dissolving between them) and an effects bank. The effects include hard and soft wipe, hard and soft border, color background, pattern generator, joystick positioner for a spotlight feature, and color matte. Tied to the switcher is a CDL Audio-Follow-Video mixer which operates in three modes. It will operate manually, that is, as an independent mixer; it will operate in a strict AFV mode, and it will operate in a "mix-follow-mode," to permit audio on a tied fader to be brought up. There are seven inputs on the CDL AFV mixer, three of which are microphone inputs. The other inputs accommodate two audio recorders and a cart machine. The GVG switcher and CDL mixer are set up so that a single operator can

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"Hippo"

handle both, provided no more than three microphones are in use.

Also available to the operator at the main console are remote machine controls for the TH-100 RCA one-inch VTR. Goldstone said that WCVB decided to go to one-inch primarily for quality reasons. Whereas ¾-inch cassette video machines are adequate for news, field production work intended for regular programming demands a higher quality, Goldstone believes.

For the time being, WCVB is using a Sony BVU-100 as a portable unit on the truck. The plan, however, is to replace the BVU system next year with a TH-50 portable one-inch VTR. This would enable the truck to isolate one recorder for obtaining cut-aways and inserts. Currently, segments recorded on the TH-100 are brought back to the station for any necessary editing. The material is simultaneously played back on the truck's TH-100, time base corrected, edited and dubbed onto an AVR-1. Eventually, the station will acquire a second TH-100 for this post production function, and the first TH-100 will remain on the truck.

On board the truck, the TH-100 is equipped with heterodyne recovery boards for playback. The heterodyne recovery system is adequate for microwave transmission provided the feed at the station is run through the frame synchronizer. If a TBC is required aboard the truck, it currently must be requested, though a second TBC for truck use is scheduled to be purchased. The housing for the prospective TBC is already in place, but as outfitting of the truck neared completion, a few things had to be left

out until a new fiscal year.

Post production of outside broadcast segments done with the Hippo is expected to be simpler now. Not only will the three-camera setup allow many takes to be accomplished in production, but the shuttle speed stability of the helical one-inch format is expected to make editing decisions easier and more accurate. With the TBC, the TH-100 will provide stable video from still frame, to frame-by-frame jogging, to 40 times speed, though at that speed color accuracy is lost. The recorder will handle time code, and the station plans to make eventual use of time code for editing. Right now, the only editing capability aboard the truck is the pick-up edit capability of the TH-100.

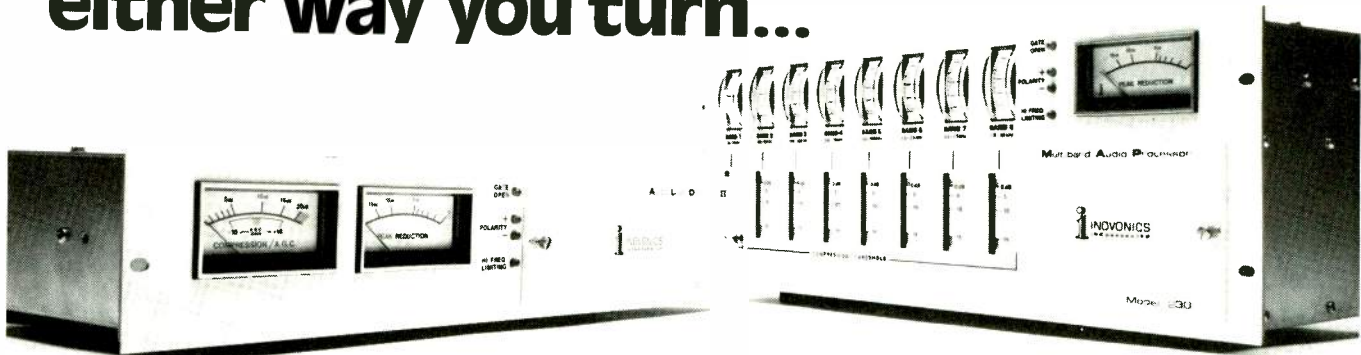
Monitoring aboard the truck consists of two 15-inch Barco color monitors and three black and white monitors for each of the camera feeds. Waveform and vectorscope monitors are also provided. The sync generator is from Tektronix.

Lighting equipment has been kept to a minimum at this stage. A couple of the locations where WCVB records regularly are already set up for lighting. Otherwise, the intention is to use the truck only for daytime shoots or at locations where adequate lighting is available. Though there is enough storage space for a lighting kit, Goldstone prefers to transport additional lighting or other ancillary equipment, if needed, in a utility van or station wagon. Goldstone does not want to see some extra piece of gear go flying through the face of one of his monitors should the truck have to make an emergency stop.

This generally seems to be good practice. The truck can accommodate four persons with highway approved seats.

continued on page 52

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"Hippo"

These are the driver's seat, a passenger seat, plus the director's and TD's seats which swivel 180 degrees from the operating position to the travelling position. Normally, this is adequate seating since most shoots will not require more than three or four personnel. If a shoot is large enough to require additional gear, it'll probably also require additional staff which would make the use of another vehicle essential anyway.

Communications and microwave

The Hippo is equipped with a Microwave Associates 2EP seven frequency microwave system. The choice of a seven frequency system was made when Goldstone and Underhill decided it would be an added advantage to be able to hit any of WCVB's relay points or, for that matter, anyone else's relay point. The fact that the system is seven frequency and two GHz increases the potential of renting the Hippo to other stations.

The communication system in the Hippo is quite extensive. In addition to a Bell system radio/telephone for two way communication between the truck and the base station, WCVB also operates a 75 watt RTS system that will carry studio mix-minus, air, or studio output with director interrupt. The system broadcasts from the station on 455 MHz. The RTS system can also be operated from the truck, independent of the station. This means that the director can direct talent from the station or the truck as desired. There is also a hardwired IFB with four channels of communication. In addition the Hippo is equipped with

a transceiver for the news assignment channel and engineering two-way alignment channel. As Goldstone put it, "It's awfully hard to loose the truck."

Air conditioning and power

The Hippo is adequately equipped with two 13500 BTU air conditioners. Goldstone says that if the external temperature does not go above 70 degrees, one of the two air conditioners is enough. Six fans are mounted in the equipment racks to help circulate cold air around the equipment. Heating, for colder seasons, is handled by the truck's own heating system.

Power for the Hippo comes from two 6.5 kW Onan generators. The wiring is done so that house is on one generator while technical operations is on the other.

Goldstone says that, in theory, both house and technical could run off the same generator, but he prefers to keep the two services separate. Wherever possible, Goldstone prefers that the Hippo operate with on-shore AC. Two 50 amp, 110 V circuits would be adequate to meet the Hippo's power requirements.

The Hippo will not do the World Series, says Goldstone, but then it isn't meant to do epics. It is intended to handle just about any assignment you can think of that needs three cameras and three microphones. At a cost of approximately \$375,000, the Hippo is expected to go out and earn its keep. With just one month's experience thus far, WCVB personnel believe it can do just that. Goldstone says that the equipment being used has not given him a moment's trouble. There have been a few automotive problems, but from a television engineering standpoint the Hippo has behaved perfectly. **BM/E**

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On a recent visit to the U.S., Sadayuki Ikeda (right), Supervisor of NEC's Video Development Dept., Broadcast Equipment Division, and Cinema Products' Chief Engineer Robert Auguste exchange views on ENG/EFP practices and equipment requirements.

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At the recent NAB Conference, Ed DiGiulio (right), President of Cinema Products Corp., and R. Dennis Fraser, Vice President and General Manager, Broadcast Equipment Division, NEC America, Inc., display the Oscar and Emmy awards won by their companies for their respective "state of the art" contributions to the motion picture and television industries.

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INNOVATIVE LEADER IN WORLD TELEVISION

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THE SOURCE 1978

Welcome to the Source 1978. This year's guide, compiled by BM/E, provides you, the broadcaster, with the most extensive list of manufacturers and independent reps/distributors serving the broadcast industry. The Source is designed to be a useful, everyday guide to the most important products and services the broadcaster needs to stay on the air.

Everything has been done to assure the reader that the companies listed herein are reliable sources of products and services offered. Most of the firms are designated as Verified Sources (VS). This VS designation means that the company has supplied BM/E with information indicating that its products are in production, and are regularly available to you. This supporting information supplied by the manufacturer is on file with BM/E.

The Source is divided into three sections: The Instant Source Locator (page 62), an alphabetical listing of manufacturers (page 75), and a listing of independent reps/distributors organized by state (page 149). The Instant Source Locator is designed to help you find manufacturers of particular products. Eleven major product categories

Instant Source Locator

- I. Audio Equipment
- II. Video Equipment
- III. Film Equipment
- IV. Lighting/Studio Equipment/Set Design
- V. RF/Transmitting/Receiving Equipment
- VI. Antennas/Towers/Transmission Lines
- VII. Measuring/Monitoring/Timing/Logging Equipment
- VIII. Services
- IX. Cable TV Equipment
- X. Components/Hardware
- XI. Systems

AUDIO EQUIPMENT

Audio Amplifiers

1. distribution
2. line
3. pre-amps
4. op-amp modules
5. monitor
6. power
7. public address
8. amplifier power supplies

AKG 1,2,5-7▼; Altec Lansing 6,7▼; American Data 1,2,5▼; Ampro 1-3,5▼; Ashly 3▼; Audio Designs 1-4▼; Audio & Design Recording 1,3▼; Audio Dev. Int'l 5,6▼; Audionics 1,3-6▼; Audiotechniques 5-7; Auditronics 2▼; Audix 1-7▼; Autogram 2-6,8▼; Automated Processes 1-6,8▼; Bayly 1-3,5,6▼; Bell P/A 7; Bonneville 1,2▼; Bozak 3,5-7▼; Broadcast Electronics 5▼; Cetec 3▼; Channelmatic 1▼; Clear-Com 1,2▼; Crown Int'l 3,6; Datatek 1▼; Delta (Long) 1-3,5▼; DiTech 1,5▼; Dracon 7; Dunlap Clarke 6; Dyma 1-3,5-8▼; Dynair 1,3,5▼; Edcor 6,7▼; Elcom 3▼; Frequency Devices 8; Gotham Audio 4▼; Hammond 6▼; Holland 2-6▼; Industrial Sciences 1,5▼; International Nuclear 1,3,5,6; JBL 2,3,5-7▼; Johnson Electronics 1,3,6,7▼; JRF 6; Lauderdale 1,3▼; Lear Siegler 1-3,5-8; Logitek 3,5▼; Long 4; LPB 1,3▼; Marti 2,6▼; McCurdy 1-3,5,6,8▼; McGraw-Edison 2; McMartin 1-3,5-7▼; Micro-Trak 1,3,5,6▼; Modular Audio 1-6,8; Moore 1-5; Nakamichi 3,6▼; Nat'l Electrolab 5; Neve 1▼; Nikko 3,6▼; Opamp 1-6,8▼; Orange County 1-6; Pacific Recorders 1-3▼; Panasonic 1,3,6▼; Quad-Eight 2-6,8; QRK 3; Ramko 1-3,5,6▼; RCA 1,3,5,8▼; Richmond Sound 1-3▼; Robins 1-3,5-8▼; ROH 1-3,5-8▼; RTS 2▼; Russco

3,5,6▼; SAE 6,7▼; Sansui 3,6; Scientific Radio 6; Scientific Systems 1▼; Scott 3,6▼; Scharp 6; Sescom 2-4,6,8▼; Shintron 1▼; Shure 2,3,5-8▼; Sontec 2-4▼; Spectra Sonics 1-3,5-8▼; Sphere 1,3,4▼; Stanton 3▼; Studer Revox 6,8▼; Tapco 5-7▼; Tapeathon 7; TA Track Audio 3▼; Telectro 7; Telemet 1,5▼; Telex 3,6▼; Thompson CSF 1▼; TM 1,6; Ultra-Audio 2,3,5-8▼; Uni-Sync 6▼; United Research 4; UREI 2,3,8▼; US Pioneer 3,5,6▼; Varian 3,6▼; Video Aids 1▼; VIF Int'l 4▼; Ward-Beck 1,5,6,8▼; Wilkinson 1-3; Yamaha Int'l 6▼

Audio Controls

1. rotary attenuators
2. slide attenuators
3. switchers

Altec Lansing 2▼; Audio Designs 2▼; Audiotechniques 4,5▼; Automated Processes 2▼; Cetec 1,2▼; Custom Audio 2▼; Duncan 2; Dyma 3; Dynair 3▼; Gotham Audio 1,2▼; Industrial Sciences 3▼; Kay Elemetrics 1,2; McCurdy 2,3▼; MCI 2▼; Oak 3; Opamp 2▼; Pacific Recorders 3▼; Quad-Eight 1,2▼; Ramko 3▼; Richmond Sound 3▼; Robins 2,3▼; ROH 3▼; Sansui 7; Sescom 2▼; Shallco 1; Spectra-Sonics 2▼; Switchcraft 3▼; Tech Labs 1,2▼; Telemation 3▼; Telectro 3▼; Trompeter 3; Utah Scientific 3▼; Ward-Beck 3▼; Waters 1-2▼

Audio Processing Equipment

1. ALC and AGC amplifiers
2. compressors/limiters, AM
3. compressor/limiters/filters, FM
4. equalizers and filters—passive
5. equalizers and filters—active
6. special effects
7. reverb units
8. delay lines
9. stereo phase enhancer
10. low frequency extender

AKG 7▼; Allison Research 2,3; Altec Lansing 4,5▼; Ampro 1-3,9▼; AP Circuits 5; Ashly 2,3,5▼; Audio Designs 5▼; Audio & Design Recording 2,3,5-7▼; Audio Dev. Int'l 5▼; Audiotechniques 8; Audix 5▼; Automated Processes 4-6,10▼; Bayly 4▼; BEI 5▼; Bozak 4,8▼; Broadcast Electronics 1-3▼; Caringella 2▼; CCA 1-3▼; Cetec 1-3▼; Comex 6,8; Comrex 10▼; Crown Int'l 5; Custom Audio 5▼; Dorrugh 2,3; Dyma 1,5-7▼; Edco 9▼; Elcom 1,2▼; ESC 4,8▼; Eventide 2,3,6-8▼; Frequency Devices 5; Gotham Audio 2,3,5,7,8; Hammond 5-8▼; Harris 1-10▼; Harrison 5; Holland 5; Industrial Sciences 4,5▼; Inovonics 1-3▼; International Electro-Mag 4▼; Kahn 4; Kappa Networks 4,5,8; Lauderdale 1-5,7▼; Lear Siegler 1-5; Lexicon 8▼; Logitek 5,7▼; LPB 2,3▼; Marconi 2▼; Marti 2,3▼; McCurdy 1,2-5,7▼; MCI 9▼; McMartin 1-3▼; MICMIX 6,7▼; Micro-Trak 4,5; Modular Audio 5; Moseley 1-3▼; MXR 2,5,8; Neutrik 8; Nikko 4▼; Opamp 1,2,4,5▼; Orange County 1-6; Orban 2,3,5,7▼; Pacific Recorders 2,3▼; Panasonic 4,5,8▼; Pultec 4▼; Quad-Eight 2,4,5; Quantum Audio 6▼; QEI 2,3▼; Ramko 2,3,5▼; RCA 1-3,5▼; Richmond 5; RMS 4; Robins 1-4▼; ROH 1-3,5▼; SAE 4▼; Sansui 3; Sescom 1,5▼; Shure 1-3,5▼; Sontec 2,3,5▼; Spectra Sonics 2,5▼; Sphere 1,5▼; Tapco 5,7▼; TA Track Audio 1-3,5▼; Telemation 8▼; Thomson CSF 1-3,5▼; Transist-O-Sound 1; UREI 2,3,5,8▼; VIF Int'l 2,3,5,7▼; Ward Beck 1,2,5,6▼; White 4,5▼; Wilkinson 1-3

have been noted. Each of the eleven major categories has been further subdivided into classes of products and then broken down into specific types of products. For instance, Category One, Audio Equipment, has as its first subcategory, Audio Amplifiers. Audio Amplifiers are further divided into eight specific types of amplifiers.

Here's how to use The Source: First, identify the product you seek, and its general category. For example, you are looking for a wireless microphone. You would look to Category One, Audio Equipment. Locate the subcategory, Microphones, and then note the number assigned to the specific type of microphone you are looking for. In this case, you would find that "wireless microphones" is listed as number four. Then, look to the companies to which the number four is attributed. For information on how to contact these firms, look up their listings in the alphabetical section. There you will also find information on other products manufactured by those firms. If the manufacturer is an advertiser in this issue, you will also find a reference to the page on which their ad appears. Refer to the ad for further information. Also, you may find a listing of the

company's field offices, or a referral to the rep/distributor section. If so, you will be able to go to the rep/distributor section and locate the local representative in your state for a nearby supplier of the product. For your convenience, local reps/distributors for the manufacturers advertising in this issue carry the name of that manufacturer in their listing. This should aid in quickly locating the local business carrying the product you want.

An added feature of this year's Source is the Direct Access Guide (between pages 74 and 75). Here you will find a pull-out guide to the manufacturers advertising in this issue. This mini-directory lists company name, phone number, and WATS, TELEX, and TWX numbers where applicable. It will provide you with easy access to those companies advertising in The Source.

Remember, the VS in the alphabetical listing, or the ▼ in the Instant Source Locator, designates the firm as a Verified Source. This is our way of assuring you that the company so designated has supplied us with information that indicates that products attributed to them are in production and regularly available.

Automation Equipment

1. sequencers, relay
2. sequencers, time insertion
3. controllers, computer/microprocessors
4. memory units
5. reel decks
6. multi-cart machines
7. read out/display
8. data input devices
9. auto loggers
10. tone generators
11. auto time/weather announcers
12. complete systems

Aitken 2,12▼; Alpha Electronics 10; Amer. Microtechniques 10; Ampro 1,2,6,9,11▼; Audiotechniques 1; Autogram 1,3,12; Automated Broadcast Controls 3,4,6,9-12; Automated Processes 4,10,11; Broadcast Electronics 1-4,6-8,10-12▼; Broadcast Sound 5,12; Caringella 11; Central Dynamics 3,12; Cetec 1-12▼; Consolidated Electronics 3,5,6,11,12▼; Datametrics 1,2▼; Dyma 1,10▼; Dynatech 11; Dytek 12▼; Edcor 3,4▼; Eventide 3▼; Frequency Devices 10; Hallikainen 9,11▼; Harrison 3; IGM 2-4,10-12▼; Int'l Tapetronics 5,6▼; Ionic Industries 2; McCurdy 2-10▼; Microprobe 1,12▼; Microtime 3,5,10,12▼; Micro-Trak 12▼; Monroe 10▼; Moseley 3▼; Nationwide 1-4,9,12; NES 1-4,7-9,11,12; Neve 3,12▼; Nurad 3▼; Otari 5▼; PWH 3,7,8,10,12; Quad-Eight 3; R-Columbia 1-3▼; Regmo Data 2; Rivers 10▼; Robins 10; Schafer 6,9▼; Scully 5,9▼; Eric Small 3,12▼; Sono-Mag 1-6,9-12▼; Spectra Sonics 10▼; Stancil-Hoffman 9▼; Tape-Athon 5,11,12; Telex 5▼; UMC 1,3,6,11,12▼; VIF Int'l 1,5,10,12▼; Ward-Beck 12▼

Consoles

1. mixers
2. mono
3. stereo
4. quad
5. audio for TV
6. portable
7. programmers
8. automated
9. remote control

Allison Research 7; Altec Lansing 1▼; Ampro 1-3,5▼; Ashly 1,6; Audio Designs 1-3,5,6▼; Audiotechniques 1,3-6; Audiotronics 1-6▼; Audix 1-6▼; Autogram 2-3,5▼; Automated Processes 1-5,6,7▼; Bayly 6▼; Boston Sound & Power 1; Broadcast Electronics 1-3,5,6▼; Broadcast Sound 1,3,4,6; CCA 1-3,5▼; Central Dynamics 1▼; Cetec 1-6▼; Coherent Communications 1,5; Commercial Telecom 2,3▼; Crossroads 1; Custom Audio 1▼; DAK 1; Delta (Long) 1-6▼; Dyma 1-7▼; Alan Gordon 8▼; Hallikainen 5▼; Hammond 6▼; Harris 1-3▼; Harrison 1-4; Holland 5; Image Devices 1; Industrial Sciences 1,2,5▼; Int'l Nuclear 1; Johnson 1; Kapco 1▼; Lear-Siegler 1; Listec 1,3-6▼; Logitek 2,3,5▼; Long 1; LPB 1-3,5▼; Marconi 1,5,6▼; McCurdy 1-6▼; MCI 2-4▼; McMartin 1-3,5,6▼; Micro-Trak 1-3,5,6; Modular Audio 2-5; Moore 1-3,5; Moseley 6▼; Neve 1-6; Nikko 2-4▼; Opamp 1-8; Pacific Recorders 1-3,5▼; AKG-Philips 1-6▼; Quad Eight 1-8; Quantum Audio 1,3,6▼; QRK 1-3,5,6▼; Ramko 1-6,9▼; RCA 1-6▼; Richmond Sound 1-6,8▼; Robins 1-6▼; ROH 5▼; RTS▼; Russco 1-3,6▼; Shinttron 6; Shure 1-3,5,6▼; Sontec 1-3,6▼; Spectra Sonics 1-5▼; Sphere 1-6▼; Studer Revox 1-3,6▼; Tapco 1-4,6▼; TA Track Audio 1▼; TEAC 1,3,4▼; Theatre Tech 1,6; Transist-O-Sound 5,6▼; 2005 AD 2,3; Ultra-Audio 1,2,5,6; UMC 1-5▼; Uni Sync 1-3▼; UREI 2-4▼; VIF Int'l 1,3; Ward-Beck 1-3,5,6▼; Wilkinson 2,3▼; Yamaha 1,3,5

Music Synthesizers

Arp Instruments; Electronic Music; Ionic Industries▼; Moog

Disc Playing Equipment

1. turntables
2. pickup arms
3. pickups, stereo
4. pickups, quad
5. turntable pre-amps and controls
6. complete disc consoles

Acoustic Research 1▼; AKG 3▼; Ampro 5▼; Audio & Design Recording 5▼; Audiotronics 1▼; Audio-Technica 2-4▼; Audiotronics 3▼; Broadcast Electronics 1-3,5▼; Broadcast Sound 1-6; Cetec 1-6▼; Elcom 5; Elpa 1▼; Gotham Audio 1,3,6▼; Harris 1-5▼; Lauderdale 5▼; Logitek 5▼; LPB 1-3,5▼; McCurdy 1-3,5,6▼; McMartin 5▼; Micro-Trak 1-2,5,6; Modular Audio 5; Nakamichi 3▼; Nikko 1▼; Panasonic 1▼; Quad Eight 5; QRK 1-3,5▼; Ramko 5▼; RCA 1,2▼; Robins 5; Russco 1,5▼; Sansui 1; Scott 1▼; Sharp 1; Shure 2-4▼; Stanton 1,3▼; TA Track Audio 5▼; TEAC 1,2▼; Tech Labs 5▼; UREI 5▼; Wilkinson 5▼

Headphones

AKG▼; Audiosears▼; Audio-Technica▼; Audiotronics▼; Beyer▼; Broadcast Sound; Cetec▼; David Clark▼; Hammond; Holland▼; Image Devices; Koss; Marconi▼; McCurdy▼; Nakamichi▼; Panasonic▼; RCA▼; R-Columbia▼; Sansui; Sennheiser▼; Sharp▼; Sony▼; Stanton▼; Superscope▼; TEA▼; Telephonics; Telex▼; Thomson CSF▼; US Pioneer▼

Intercom Systems

Audio Designs▼; Automated Processes▼; Bayly▼; Cetec▼; David Clark▼; Clear Com▼; Crosspoint▼; Custom Audio▼; Fisher Berkeley▼; Heath▼; Holland▼; Image Devices; Industrial Sciences▼; Lear-Siegler; Long; Marconi▼; McBee; McCurdy▼; McMartin▼; Nova▼; Panasonic▼; RCA▼; R-Columbia▼; Rivers▼; ROH▼; RTS▼; Shinttron; TEA▼; Telex▼; Theatre Tech; Video Aids▼; Ward-Beck▼; World Video▼

Microphones

1. dynamic
2. condenser
3. ribbon
4. wireless
5. shotgun
6. lavalier
7. booms and dollies
8. accessories

Accurate Sound 7▼; AKG 1,2,4-6,8▼; Alan Gordon 4,7,8▼; Altec Lansing 1,2,7,8▼; Atlas Sound 7,8▼; Audiosears 1▼; Audio-Technica 1,2▼; Audiotechniques 7; Audiotronics 1,2,6▼; Beyer 1-3,5-8▼; B&K Instruments 2▼; Broadcast Sound 1,2; Cetec 1-8▼; Coherent Communications 6; Comrex 4▼; Dyma 1▼; Electro Voice 1,2,4,7,8▼; Gotham Audio 2▼; Hammond 1▼; HM 4▼; Image Devices 2,6; LPB 7,8▼; McCurdy 1,2,8▼; Nagra 6; Nakamichi 1,2,7,8▼; Panasonic 1,2▼; RCA 1,3,7▼; R-Columbia 1,2▼; Redding 8▼; Sescom 9; Sennheiser 1,2,4-8▼; Shure 1-3,6,8▼; Sony 1,2,5,7,8▼; Studer Revox 2▼; Superscope 2▼; TEA 1,4▼; TEAC 2▼; Thomson CSF 4▼; TV Products 7▼; Vega-Cetec 4▼; VIF Int'l 1,2▼; US JVC 1,2,5,7,8▼; US Pioneer 1,2▼

Noise Reduction Systems

Audio Designs▼; Audio & Design Recording▼; Cetec▼; DBX▼; Dolby Labs▼; Electronic Music; Frequency Devices; Gotham Audio▼; In-ovonics▼; Ionic; Microtime▼; MXR; Orange County

SOURCE LOCATOR - I continued

Quad Matrix Equipment Amer Microsignal 1,2; Audionics 2▼; CBS 1,2▼; Sansui 1▼

1. encoder
2. decoder

Speakers

Acoustic; Advent▼; AKG▼; ALC▼; Altec Lansing▼; Atlas Sound▼; Audionics; Audiotechniques; Audiotronics▼; Auratone▼; Bozak▼; Broadcast Sound; Cetec Audio▼; Crossroad; Electro & Optical▼; Electro Voice▼; Gotham Audio▼; Hammond; Heath; HH Scott; JBL▼; Koss; Lear Siegler; McCurdy▼; Nakamichi▼; Orange County; Panasonic▼; QRK▼; RCA▼; Russco▼; Shure▼; Sony▼; Spectra Sonics▼; Superscope; Tandberg▼; Telectro; UREI▼; US Pioneer▼; VIF Int'l▼; Westlake; Yamaha Int'l▼

Studios

1. cabinets and furniture
 2. acoustic materials and treatment
 3. complete studio construction
- Ampro 1,3▼; Audiotechniques 1-3; Broadcast Electronics 1▼; Broadcast Sound 1,3; Cetec 1,2▼; Delta (Long) 3▼; Dyma 1-3▼; Grinnan 1,3▼; Lauderdale 1▼; LPB 1▼; McCurdy 1,3▼; Micro-trak 1; Orange County 3; Pacific 1,3▼; Plastic Reel 1; QRK 1▼; RCA 1▼; Spectra Sonics 1,3▼; Sphere 3; Stantron 1; Ultra-Audio 3; UMC 3▼; Westlake 1-3▼; Whirlwind 3

Synchronizing Equipment

1. SMPTE time code systems
 2. pulse signal systems
- Ampex 1,2▼; Audiotronics 2▼; Automated Processes 1,2▼; BTX 1▼; EECO 1▼; Electro & Optical 1▼; ESE 1▼; Gray Engineering 1; Image Devices 2; MCI 1▼; Nagra Mag 2; RCA 1,2▼; Studer Revox 1,2▼

Tape, Magnetic

1. open-reel tape
 2. cartridges
 3. cassettes
 4. test tapes
- Ampex 1-4▼; Ampro 2,3▼; Aristocart 2,4▼; BASF 1-4▼; Broadcast Cartridge 2▼; Broadcast Sound 1,3; Capitol Magnetics 1-2▼; Cetec 1,2,4▼; Consolidated Electronics 1,2▼; DAK 1,3; Fidelipac 2,4▼; Fuji 1-3▼; International Audio 3▼; Lauderdale 2-4▼; 3M 1-3▼; Magnetic Reference 4▼; Maxell 1-3▼; McCurdy 2,4▼; Memorex 1-3▼; Nagra Mag 1,4; Nakamichi 3▼; Nortronics 4; Panasonic 1,3▼; Pentagon 3▼; Recording Supply 1,3▼; Redding 1,3▼; Sony 1,3▼; Standard Tape 4▼; Superscope 1,3▼; Tapex 2-4▼; Tapeaster 2; TDK 1-4▼; Telectro 1,3; United Research 1,4

▼ Means Verified Source

Tape Accessories and Services

1. empty reels, carts cassettes
 2. auto loaders
 3. leader tape
 4. tape timers
 5. tape cleaners
 6. tape cleaning and evaluating service
 7. tension gauges
 8. alignment gauges
 9. head cleaner
 10. reloaded carts
 11. rebuilt carts
 12. replacement electronics
- Ampro 4,5,7,8▼; Aristocart 1,8▼; Audio Ltd 2; Beta Tech 4; Beyer 5▼; Broadcast Cartridge 1,11; Broadcast Electronics 4-6▼; DAK 1,3; Electro Sound 2; ESE 4▼; Fidelipac 1▼; Gotham Audio 4▼; Hammond 3,5; Innovative TV 8▼; Inovonics 12▼; Int'l Audio 8▼; Int'l Tapetronics 8▼; Lauderdale 3,4,7,8▼; 3M 1,3▼; Marathon Products 1,5▼; Maxell 1▼; Miller Stephenson 9; Monroe 4▼; Nagra 1,4; Neumade 1,6; Nortronics 5,6; Nova 5▼; Pacific Recorders 4▼; Pentagon 5▼; Plastic Reel 1▼; QRK 4▼; Ramko 2▼; Recording Supply 1,6▼; Recortec 1,2; Regmo Data 9; Replay Video 10▼; Robins 5; Sony 1▼; Standard Electric Time 4; Tapeaster 4; Tapex 1,3,7,8▼; TDK 5; TEA 5,6▼; TEAC 5▼; Telex 1▼; Tentel 7▼; TRI 5; Ultra Audio 5; United Research 5-7; US Pioneer 1▼; VIF Int'l 7▼

Tape, Cartridge Player/Recorders

1. single
 2. dual
 3. multiple
 4. time delay
- Amilon 1▼; Ampro 1-4▼; Audicord 1-4▼; Automation Electronics 1-3; Broadcast Electronics 1,3▼; Cetec 1-4▼; Consolidated Electronics 1-3▼; Continental Electronics 1▼; Edco 1,2,3▼; Harris 1-3▼; IGM 3▼; International Electro-Mag 1-3▼; International Tapetronics 1-4▼; Mackenzie Labs 1-3; McCurdy 1-4▼; RCA 1▼; HH Scott 1▼; Sharp 1; Sono-Mag 1-3▼; Superscope 1,2▼; Telectro 1,2; Telex 1▼; UMC 1-4▼; VIF Int'l 3▼

Tape, Cassette Player/Recorders

Accurate Sound▼; Amilon▼; Ampro▼; Audiotronics▼; Broadcast Sound; Edco; Alan Gordon▼; Image Devices; K&H; Lexicon; Nakamichi▼; Panasonic▼; Sansui; HH Scott▼; Sharp; Sony▼; Superscope▼; Tandberg▼; TEAC▼; Telex▼; US Pioneer▼

Tape, Open-Reel Player/Recorders

1. portable
2. studio systems
3. time delay
4. logging recorder

Accurate Sound 2▼; Ampex 1,2▼; Audiotechniques 2; Automation Electronics 1,2,5; Cetec 1-4▼; Consolidated Electronics 2▼; Dyma 4▼; Electro Sound 1; Gotham 2▼; International Electro-Mag 2▼; International Tapetronics 2; Magnasync 2,4▼; Magnatech 2; McCurdy 1-4▼; MCI 2,3▼; Nagra 1; Otari 1,2▼; Panasonic 2; Pierce-Phelps 1,2,4; QSI 4▼; RCA 2▼; Scully 1,2,4▼; Sony 1,2▼; Sound Dynamics 2▼; Soundscriber 4; Stancil-Hoffman 4▼; Studer Revox 2▼; Superscope 1▼; Tandberg 2; Tape-Athon 1; TEAC 2▼; Telex 2,4▼; United Research 2; US Pioneer 1,2▼; VIF Int'l 2,4▼

Tape Heads

1. replacement
 2. rebuilt
- Accurate Sound 1,2▼; Computer Magnetics 2▼; Forgiolo 1▼; Grandy 1; International Electro-Mag 1,2▼; Michigan Mag 1▼; Minneapolis Mag 1,2▼; Nortronics 1,2; Saki 1,2; Scully 1▼; Taber 1,2▼; Tapex 1; UMC 1▼; VIF Int'l 1,2▼; Vikron 1▼

Tape, Duplicators

Accurate Sound▼; Ampex▼; Audio; Audio/Tek; Cetec Audio▼; Electro Sound; Garner; Gotham; Grandy; Int'l Audio; Microtime▼; Otari▼; Pentagon▼; Recortec; L.J. Scully; Telex▼

Tape Editing Equipment & Accessories

1. manual
 2. electronic open reel
 3. electronic cassette
- Central Dynamics 2,3; EDCO 3▼; EECO 2▼; Electro Sound 1; Elpa 1▼; Fidelipac 1▼; Naga 1▼; QSI 1▼; Redding 1▼; Westlake 1

Tape and Head Erasers

1. head degaussers
 2. bulk erasers
 3. conveyor erasers
- Annis 1▼; Broadcast Electronics 1,2▼; Cetec 2▼; Fidelipac 2▼; Garner 3▼; Int'l Tapetronics 2▼; Lauderdale 1,2▼; Marathon Products 1▼; Microtran 1,2; Nagra Mag 1; Nakamichi 1▼; Nortronics 1,2; Pentagon 1,2▼; RCA 2▼; Robins 2▼; Taber 2▼; Tapex 1,2; TEAC 1,2▼; UMC 2▼; VIF Int'l 2▼; Wide Range 1,2▼

Tape Storage

1. open-reel
 2. cartridge
 3. cassette
- Aristocart 3▼; Cetec 1-3▼; Dyma 1,2▼; Fidelipac 2▼; Grinnan 1,2▼; Lauderdale 2,3▼; Marathon Products 2▼; MicroTrak 2,3; Neumade 1-3▼; Plastic Reel 1-3; QRK 2▼; Research Technology 1-3; Simpax 1,2; Storeel 1-3▼; Tapex 1-3▼; TDK 3; Winsted 1-3▼

Telephone Coupling Equipment

Automated Processes; Broadcast Electronics▼; Cetec▼; Kahn; Lauderdale▼; McCurdy▼; Nationwide; NES; North Hills▼; Orange County; Redding▼; RTS▼; Shure▼

Audio Level Indicators

1. VU
 2. PPM
- Amber 1; Audio Designs 1,2▼; Audio & Design Recording 1,2▼; Audio Technology 2; Automated Processes 1; Electro & Optical 2▼; Gotham 1; Harrison 1; International Instruments 1,2▼; Listec 2▼; LPB 2▼; McCurdy 1,2▼; McMartin 2▼; MICMIX 1,2▼; NES 1; Ramko 1,2▼; RCA 1▼; Eric Small 2▼; Sontec 1,2▼; 2005 AD 1; Triplett 1; UREI 1▼; Weston 1

Other Audio Accessories

1. connectors
 2. magnetometers
 3. mic distribution amps
 4. mic pre amps
 5. remote power control
 6. fixed pads
 7. record care
- ADC Products 1; Annis 2▼; Bayly 1▼; Broadcast Sound 7; Daburn 1; Gotham 1; ITT 1; Lauderdale 7▼; Ramko 3-5▼; Robins 1▼; Switchcraft 1; Tech Labs 6▼; Trompeter 1▼; Whirlwind 1

Patch Panels

ADC Products; Audio Accessories; Audio Designs▼; Automated Processes; Bayly▼; Dyma▼; Industrial Sciences▼; McCurdy▼; Potomac▼; Switchcraft▼; Theatre Tech; Trompeter▼; Ward Beck▼

VIDEO EQUIPMENT

Cameras, Studio/Field Convertible Color

Asaca▼; Bosch-Fernseh▼; CEI▼; Comquip; GBC; Hitachi▼; Ikegami▼; IVC▼; Marconi▼; NEC▼; Panasonic▼; Philips▼; RCA▼; Sigma▼; Sony▼; US JVC▼

FUJI WHO?

Just a few short years ago, few people in the industry even knew our name. Let alone, what we stood for.

Then we introduced H701E—the low noise, high-band broadcast videotape that gave the industry a whole new set of performance standards. And Beridox. A videocassette tape formulation combining



the best features of chromium and ferric oxide. Now available in one-inch, as well.

Now, it seems a lot of people are standing in line for our products. Because they know—and like—what we stand for.

Fuji. Count on us to improve your image. For more information, write or call.

FUJI

Magnetic Tape Division of Fuji Photo Film U.S.A., Inc.
350 Fifth Avenue, New York 10001 (212) 736-3335
West-Coast: 710 N. Seward Street, Hollywood, CA. 90038
Midwest: 610 Bonnie Lane, Elk Grove Village, IL. 60007

We gave the TCR-100A “cart” programmable random play and instant cartridge identification. To give you more video freedom.

The TCR-100 and TCR-100A cartridge recorders have made programming easier for more than 200 TV stations—and now the “cart” from RCA is better than ever.

As you may have seen at NAB '78, we've added a microprocessor-automated programmable random play option. Now, the “cart” can deliver automated station breaks with even greater ease.

Microprocessors and bar code labeling give you hands-off station breaks with improved accuracy and simplicity.

The TCR-100A holds up to 22 cartridges, each containing up to 3 minutes' worth of spot or program material. With the automation option, the carts are bar code labeled for instant identification. They may be placed in the TCR-100A at random, wherever there is an opening. Microprocessors, communicating with your station's central computer, select and program cartridges in their correct sequence, automatically. If last-minute changes are needed, they can easily be made. And the TCR-100A may be manually operated as well.

The “cart” is really a workhorse.

The basic TCR-100A fills many programming needs. Material is dubbed onto cartridges just once, regardless of the number of airings. There's no daily spot reel to assemble and break down. So, the “cart” frees a reel-to-reel VTR and its operator for profitable production duties.

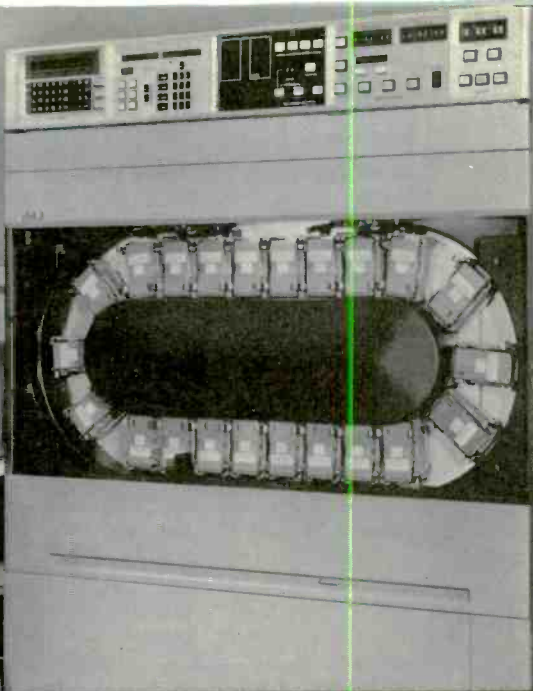
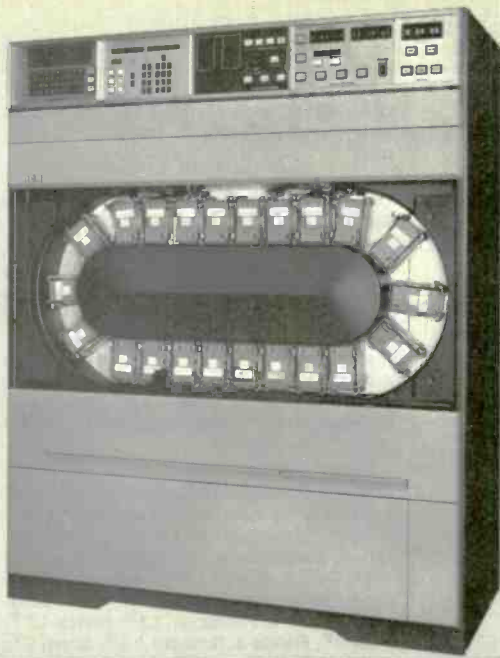
Since the TCR-100A is an operator-oriented machine, cartridges can be made with the press of a button. Film spots and reel-to-reel material can be dubbed onto cartridges quickly and easily.

More video freedom equipment. Only from RCA.

The automated “cart” is just one of many new video freedom products from RCA. Now, you can have new compactness, versatility and stability in cameras, reel-to-reel VTRs, mobile vans, antennas, transmitters—in everything you need for quality television.

For full details, see your RCA Representative, or contact RCA Broadcast Systems, Building 2-2, Front & Cooper Sts., Camden, NJ 08102.

RCA



**The automatic TCR-100A.
Part of the new video freedom.**

SOURCE LOCATOR - II continued

Cameras, TV, Color Studio
 1. over \$50,000
 2. \$25-50,000
 3. below \$25,000

Ampex 1▼; Asaca 2▼; Bosch-Fernseh 1,2▼; CEI 3▼; Cohu 3▼; Comquip 3; Columbia Video 3; GBC 2,3; Harris 1-3▼; Hitachi 1-3▼; Ikegami 1-3▼; IVC 1▼; Magnavox Video 3; Marconi 1▼; NEC 3▼; Panasonic 2,3▼; Philips 1-3▼; RCA 1,2▼; Sanyo 3; Sharp 3▼; Sony 2,3▼; Thomson-CSF 1▼

Cameras, TV, Portable ENG/EFP
 1. integral head/electronics
 2. separate head/electronics

Akai 2▼; Ampex 1▼; Asaca 1,2▼; Bosch-Fernseh 1▼; CEI 2▼; Cinema Products 1▼; Comquip 2; Concord 1; ENG Mfg. 1; GBC 1▼; Hitachi 1▼; Ikegami 1,2▼; IVC 2▼; Marconi 2▼; NEC 1▼; Panasonic 1▼; Philips 1,2▼; RCA 1,2▼; Sigma 2▼; Sony 1,2▼; Thomson-CSF 2▼; US JVC 1▼; Video Aids 1▼

Cameras, TV Mono

Akai; Asaca▼; Cohu▼; Colorado Video▼; Comquip; Dage-MTI▼; Electro & Optical▼; GBC; General Electrodynamics; Hitachi▼; Ikegami▼; Marconi▼; NEC▼; Panasonic▼; RCA▼; Sanyo; Sigma; Sony▼; Telemation▼; US JVC▼; Video Optics

Camera Lenses and Accessories

AIC Photo; Angenieux▼; Asaca▼; AVA; Bausch & Lomb; Beaulieu; Birns-Sawyer; Bosch-Fernseh▼; Canon USA▼; CEI▼; Comquip; Cosmicar▼; Dynasciences▼; F&B Ceco; Frezzolini▼; Fujinon▼; GBC; Hitachi▼; Ikegami▼; Javelin; Lenzar; Panasonic▼; Philips▼; Rank Optics▼; Rank Precision▼; RCA▼; Schneider▼; Warren Smith; Telecine; US JVC▼; Vicon; Visual Methods; Zoomar▼

Camera Heads, Mounts, Dollies, Etc.
 1. heads
 2. tripods
 3. pedestals
 4. stabilizing systems
 5. ENG camera braces
 6. cranes
 7. dollies
 8. snaplocks
 9. pan & tilt drivers

AIC Photo 2; Bach-Auricon 1,7; Birns-Sawyer 1,2,7; Cine 60 5,8▼; Cinema Products 2,4,5▼; Cohu 1-3▼; Comquip 1,2,5; DAK 7; ENG Mfg. 5-7▼; F&B Ceco 1-3, 5,6; GBC 1,2; Alan Gordon 2,7▼; Gruber 5,7▼; Image Devices 2,5; Innovative TV 1-3,7▼; Kandtt 5,7; K&H 5,7; Listec 1-3,6,7▼; O'Connor 1,2; Panasonic 2,3,5▼; Polites 6,7▼; Power Optics 4▼; Quick-Set 1,2,5,7; RCA 1-3,7▼; TV Products 3▼; US JVC 1▼; Vicon 9

Remote Control Mounts

Electro & Optical▼; ENG Mfg▼; Innovative TV▼; IVC▼; Pierce-Phelps; Power Optics▼; Quick-Set; Telecine; Vicon

Character/Graphics Systems
 1. character/graphics
 2. alphanumeric generators

Ann Arbor 2▼; Beston 2▼; BJA 1; Chrono-Log 2; Chyron 1,2▼; Datatron 1,2▼; Dynasciences 1▼; EECO 1,2▼; Electro & Optical 2▼; Kaitronics 2; Kallman 2; Kapco 1▼; Knox 1▼; Laird 1,2▼; Lexicon 1,2; 3M 1,2▼; MPB 1,2▼; MSI 1▼; Panasonic 1,2▼; PWH 2; Shintron 2▼; Systems Concepts 1,2▼; Telemation 1▼; Teletest 1▼; Thalner 2▼; Thomson-CSF 1,2▼; Vicon 2; Video Data 1▼; Video Electronics 2

Chroma Keyers
 1. RGB
 2. encoded
 3. luminance

American Data 1▼; Broadcast Video 1-3▼; Central Dynamics 1-3; Crosspoint 2▼; Dynair 1,2▼; Dynasciences 2▼; Dytek 1▼; Grass Valley 1,2▼; Industrial Sciences 1,2▼; International Nuclear 2; 3M 1▼; Marconi 1,2▼; Panasonic 1▼; RCA 1▼; Richmond Hill 1; Shintron 2,3▼; Telemet 1▼; Thomson-CSF 2▼; Video Electronics 2,3

Image Enhancers

Asaca▼; Cohu▼; Consolidated Video▼; Digital Video▼; Dynasciences▼; Hitachi▼; Ikegami▼; Kalart Victor▼; 3M▼; Micro Consultants▼; Microtime▼; Rank Precision▼; Telemation▼; Telemet▼; Thomson-CSF▼

Digital Noise Reducers/Filters

Consolidated Video▼; Digital Video▼; Electro & Optical▼; Kappa Networks; Micro Consultants▼; Microtime▼; Telemation▼; Thomson-CSF▼

Color Correctors

Cohu▼; Computer Magnetics; Datatek▼; Electro & Optical▼; 3M▼; Microtime▼; NEC▼; Rank Precision▼; RCA▼; Tektronix▼; Telemation▼; Thomson-CSF▼

Color Encoders

Broadcast Video▼; Cohu▼; Crosspoint▼; Lenco▼; 3M▼; Marconi▼; MPB▼; Philips T&M; Rank Precision▼; RCA▼; Telemation▼; Telemet▼

Dropout Compensators

Digital Video▼; 3M▼; Microtime▼; RCA▼; Video Aids▼

Film Telecine Equipment
 1. 16mm projectors
 2. slide projectors
 3. multiplexer
 4. complete systems
 5. film cart player

Bell & Howell 1-4▼; Buhl 2,3▼; Central Dynamics 4; Cohu 3,4▼; Comquip 1-4; Electro & Optical 1▼; GBC 1,4; Heindl MM 2; IVC 3,4; Kalart Victor 1,3; Kodak 1,3▼; Laird 1-3▼; Magna-Tech 1▼; Marconi 1-4▼; Multitrak Mag 4; Panasonic 2▼; Philips 4▼; Pierce-Phelps 1-4; Rank Precision 2,4▼; RCA 1-5▼; Telecine 3; Telemation 3,4▼; Thomson-CSF 4▼; Video Aids 4▼; Zei-Mark 3▼

Monitors Picture
 1. b&w
 2. color
 3. DC portable

Amtron 2▼; Asaca 1-3▼; Audiotronics 1,2▼; Ball 1,2; Bosch-Fernseh 1,2▼; Broadcast Video 2▼; Cohu 1▼; Comquip 1,2; Conrac 1,2▼; Dage-MTI 1; Electrohome 1,2▼; Electro & Optical 1-3▼; GBC 1; Hitachi 1,2▼; Ikegami 1,2▼; Images Devices 2,3; Javelin 1; Lenco 1▼; Magnavox Video 1; Panasonic 1,2▼; Philips 1,2▼; RCA 2▼; Rohde & Schwarz 1,2▼; Sharp 2▼; Sony 1,2▼; Tektronix 2▼; Tri-Tronics 2; Unimedia 2; Video Aids 1,2▼; Videotek 2,3▼; World Video 2,3▼

Monitor Calibrator

Philips T&M▼; Power Optics▼; TEA▼; Tektronix▼; Visual Information▼

Processing Amplifiers

Central Dynamics▼; Dynasciences▼; Grass Valley▼; Industrial Sciences▼; International Nuclear; Leitch Video▼; Lenco▼; 3M▼; Richmond Hill; Siegel▼; Sigma▼; Tektronix▼; Telemet▼; Thomson-CSF▼; Versa-Count; Vital▼

Pulse & Distribution Amplifiers
 1. pulse
 2. distribution
 3. subcarrier
 4. delay

American Data 1-3▼; Applied Video 1,2; AVA 2; Avantek 1,2; Blonder-Tongue 2; C-COR 1,2; Central Dynamics 1,2▼; Channelmatic 2▼; Coastcom 3▼; Cohu 1-3▼; Dage-MTI 2▼; Datatek 1-3▼; Di-Tech 1▼; Dynair 1-3▼; Dynasciences 1-3▼; Electro & Optical 1,2▼; Farinon 2,3▼; GBC 1,2; Grass Valley 1,2▼; Industrial Sciences 1-3▼; International Nuclear 1,2; Kapco 1-3▼; Leitch 2▼; Lenco 1-4▼; 3M 1-3▼; Marconi 1-3▼; Moore 1,2; Panasonic 1,2▼; RCA 1,2▼; Recortec 3; RHG 1; Richmond Hill 1,2; Shintron 1,3▼; Sigma 1-3▼; Tektronix 1-4▼; Telemation 1-3▼; Telemet 1,2▼; Thalner 1,2▼; Thomson-CSF 1,2▼; Vamco 2▼; Varian 1; Vicon 2; Video Aids 2▼; Video Electronics 1-3; Viscount 1,2▼; Vital 1-4▼

Production Switcher
 1. large
 2. small
 3. automated

American Data 1,2▼; Ampex 1-3▼; Broadcast Video 2▼; Central Dynamics 1-3▼; Centro 2▼; Crosspoint 2▼; Duca-Richardson 1,2▼; Dyma 2▼; Dynasciences 2▼; Dytek 1-3▼; Electro & Optical 2▼; Grass Valley 1-3▼; Industrial Sciences 1-3▼; International Nuclear 1,2▼; J&D Electronics 1,2; Kapco 1,2▼; Lines Audio-Video 2; Listec 2▼; 3M 2▼; Marconi 1▼; Panasonic 1,2▼; Philips 2▼; QSI 2▼; Richmond Hill 1-3; Ross Video 1,2▼; Shintron 1,2; Sony 2▼; Telemet 2▼; TRI 2; Video Electronics 1; Viscount 1,2▼; Vital 1-3▼

▼ Means Verified Source

Master Control Switcher

American Data▼; Ampex▼; Duca-Richardson▼; Grass Valley▼; Industrial Sciences▼; Ross Video▼

Automated Master Control Systems

American Data▼; Central Dynamics; Duca-Richardson▼; Grass Valley▼; Recortec; Torpey Controls; Videomedia; Video Specialties; Vital▼

TLX - to transmit from your studio

PLX - to transmit from remote locations (battery operated)



RLX - a receive end at your studio . . . or each station in your network

2F - a studio unit which can be operated in either the transmit or receive mode

The Sports-Minded Low Frequency Extenders From Comrex

We introduced our full LX line in Las Vegas . . . to a very enthusiastic audience. More than once we heard: "If I hadn't dialed it myself, I wouldn't have believed it!"

One of the nicest reactions to the LX comes from Norm Woodruff, News Planning Consultant, in his radio newsletter "Keeping Current":

"To me, the *still* newest and best gadget going is a frequency expander for use on dial-up telephone lines. It was introduced a few months ago, and now has been placed in

some new configurations that make it even more attractive. . . . It can be used on two-way systems to improve quality. I mentioned this item when it was first out, and mention it again because it is still the newest piece of equipment that can do miraculous things to help out remote quality. As the networks start bringing full-fidelity broadcasts to your studio from the other side of the country, the audience is going to find it unpleasant to hear a local news event or ball game with the poor quality we have been allowing. This gadget solves the problem."

COMREX

60 Union Avenue, P.O. Box 269, Sudbury, Massachusetts 01776
617-443-5077

Circle 135 on Reader Service Card

SOURCE LOCATOR - II continued

Routing Switchers American Data▼; Central Dynamics▼; Channelmatic▼; Cohu▼; Datalogic; Datatek▼; Di-Tech▼; Duca-Richardson▼; Dynair▼; Dynasciences▼; Dytek▼; Electro & Optical▼; Grass Valley▼; Industrial Sciences▼; International Nuclear; J&D Electronics; Kapco▼; Leitch▼; Lenco▼; 3M▼; Marconi▼; NEC▼; QSI; Recortec; Richmond Hill; Telemation▼; Telemet▼; Trompeter; Utah Scientific▼; Vamco▼; Vicon; Viscount▼; Vital▼

Special Effects Generators American Data▼; BJA; Broadcast Video▼; Central Dynamics▼; Chyron▼; Colorado Video; Comtec; Crosspoint▼; Digital Video▼; Dynair▼; Dynasciences▼; Dytek▼; Electro & Optical▼; GBC; Grass Valley▼; Ikegami▼; Industrial Sciences▼; J&D Electronics; Kapco▼; Listec▼; 3M▼; Marconi▼; Micro Consultants▼; MPB▼; Panasonic▼; Philips▼; Pierce-Phelps; Richmond Hill; Shintron▼; Sony▼; Video Electronics; Viscount▼; Vital▼

Signal Equalizing Systems Di-Tech; Grass Valley▼; Industrial Sciences▼; Leitch▼; Lenco▼; Telemet▼

Sync Generator Systems
 1. sync
 2. color bar
 3. black burst
 4. stairstep/ramp
 5. multiburst
 6. digital sync decoder
 7. multi-rate

Asaca 1,2▼; Beta Tech 1; Central Dynamics 1,6▼; Cohu 1,2▼; Colorado Video 1▼; Crosspoint 1-3▼; Dage-MTI 1▼; Digital Video 1-4,6▼; Dynair 1-3▼; Dynasciences 1,2▼; GBC 1; Grass Valley 1,3,6▼; Ikegami 1▼; Industrial Sciences 1▼; Kapco 1,3▼; Leitch 1-6▼; Lenco 1-7▼; 3M 1,2▼; Marconi 1-5▼; Panasonic 1-3▼; Philips 1▼; Recortec 3; Richmond Hill 1; Rohde & Schwarz 4,5▼; Sharp 1,2▼; Shintron 1-3▼; Sigma 1,3▼; Spectra-Vision 1-3; Tektronix 1-5▼; Telemation 1,3▼; Telemet 2,4,5▼; Thomson-CSF 1-5▼; Ultra Audio 1-3▼; Video Aids 1▼; Video Electronics 1-4; Viscount 1▼; Visual Information 1,2,4,5,7▼; Vital 1,3,6▼

Standards Converters Marconi▼; Micro Consultants▼

Synchronizers
 1. frame
 2. field

ADDA 1▼; Arvin-Echo 1,2▼; Consolidated Video 1,2▼; Digital Video 1,2▼; Electro & Optical 1,2▼; Grass Valley 1▼; Micro Consultants 1,2▼; NEC 1,2▼; RCA 1▼; Recortec 1; Thomson-CSF 1▼; Vital 1▼

Time Base Correctors
 1. helical capstan servo
 2. helical non-servo capstan
 3. quad

Ampex 1,3▼; Asaca 3; Consolidated Video 1-3▼; Digital Video 1-3▼; Electro & Optical 1-3▼; Marconi 1▼; Merlin 1,3▼; Micro Consultants 1,2▼; Microtime 1,2▼; NEC 1-3▼; RCA 1-3▼; Sony 1▼; TRI 1,2

Videotape
 1. new tape
 2. tape cleaning & evaluating
 3. reprocessed tape

Ampex 1▼; Calico 1; Chyron 2▼; DAK 1; Dupont 1▼; Fuji 1▼; K-Tronic 1; 3M 1▼; Maxell 1▼; Memorex 1▼; Nova 2▼; Panasonic 1▼; Recortec 1; Research Technology 2; Sony 1,2▼; Studio Film & Tape 1-3▼; TDK 1▼; TEA 2▼; Video Aids 1▼; Video Tape Co 1,2▼

Videotape Accessories
 1. tape cleaners
 2. VTR head cleaners
 3. reels
 4. tape evaluators
 5. storage
 6. tape tension gauge
 7. rewinder
 8. bulk erasers
 9. replacement heads

Fidelipac 8▼; Garner 8▼; Grinnan 5; Kaitronics 4▼; 3M 2,3▼; Microtime 8▼; Neumade 5,7▼; Nortronics 2; Nova 1▼; Optek 8▼; Panasonic 3▼; Pierce-Phelps 4; Plastic Reel 3,5; RCA 8▼; Recording Supply 3; Recortec 1,4,6,7; Research Technology 1,5; Sony 2,3▼; Storeel 5▼; Studio Film & Tape 4▼; Taber 8,9▼; TDK 1; TEA 1,4,7▼; Tentel 6▼; Ultra Audio 1; Videomax 9▼; Winsted 5▼

Videotape Recorder/Players
 1. quad
 2. helical
 3. segmented-helical
 4. helical cassette
 5. automated systems

AF Assoc 1; Akai 2; Ampex 1,2,4▼; Arvin-Echo 3▼; Asaca 1▼; Avtel 5; Bosch-Fernseh 3,5▼; Channelmatic 5▼; Comquip 1,2,4; GBC 2; Hitachi 2,4▼; Ikegami 2▼; IVC 2,3▼; Javelin 2; Marconi 2▼; Media Concepts 5▼; Microtime 5▼; NEC 2-5▼; Panasonic 2,4▼; Phasecom 5▼; Philips 2,3▼; Pierce-Phelps 2-5; Programmable Systems 5; QSI 5; RCA 1-5▼; Recortec 2; Sanyo 2,4; Sawyer Camera 2; Sony 2,4▼; Tech Electronics 5; US JVC 4▼

VTR Head and Machine Rebuilding
 1. head refurbishing
 2. machine rebuilding

AF Assoc 2; Arvin-Echo 1▼; Computer Magnetics 1; Electro & Optical 2▼; IVC 1▼; Merlin 2▼; RCA 1,2▼; Recortec 1,2; Saki 1; Spin Physics 1▼; Taber 1▼; Videomax 1▼

Quad Cartridge/Cassette Equipment
 1. players/recorders
 2. automation controllers
 3. complete auto systems
 4. reloaded carts

Ampex 1,2▼; Channelmatic 2,3; Comquip 1; GBC 1; Marathon Products 4▼; Panasonic 1▼; Phasecom 3,4▼; Programmable Systems 2,3; QSI 1,3,4; RCA 1,2,4▼; Replay Video 4; Sony 1▼; Vital 4▼

Videotape Editing
 1. two VTR editor-controller
 2. computer-assisted editor
 3. time code gens/readers
 4. audio/video recorder synchronizer

Ampex 1,3▼; Artists Engr 1; Avonix 1▼; Beta Tech 1,3; Bosch-Fernseh 1,2▼; BTX 3,4▼; Central Dynamics 2,3▼; Chrono-Log 3; CMX 1-3▼; Consolidated Video 1-4▼; Convergence 1-3▼; Datametrics 3▼; Dataatn 3,4; Dytek 2▼; EECO 1-4▼; Electro & Optical 1,3▼; ESE 3▼; Kaitronics 1,3▼; Listec 3▼; Magna Tech 3; Marconi 1▼; Media Concepts 3▼; Microtime 4▼; Microvision 1; Optek 2▼; Panasonic 1,3▼; RCA 1-3▼; Recortec 1; Shintron 3▼; Skotel 3▼; Sony 1▼; Spectra-Vision 1-3▼; Systron-Donner 3; Tech Electronics 1; TRI 1,3; US JVC 1; Video Aids 1▼; Video Electronics 1,3; Videomedia 1; Vital 1▼

Video Identification Systems

Ampex▼; Di-Tech▼; Dynasciences▼; GBC; Leitch▼; QSI▼; RCA▼; Tektronix▼; Thalner▼; Vicon; Video Data▼; Visual Methods

Video Delays, Filters
 1. delay lines
 2. filters

Anderson & Assoc 1; Broadcast Video 1▼; Coastcom 2▼; Corning 1; ESC 1,2; Industrial Sciences 1; Kappa Networks 1,2; Leitch 1▼; Lenco 1▼; Listec 1▼; Microtime 1,2▼; NEC 1▼; TEA 1,2▼

▼ Means Verified Source

Post Production Switchers

Ampex▼; Broadcast Video▼; Electro & Optical▼; Grass Valley▼; Industrial Sciences▼; J&D Electronics; Listec▼; 3M▼; Vital▼

Electronic Still Stores

ADDA▼; Ampex▼; Arvin Echo▼; Colorado Video▼; Oktel▼

Video Effects Devices

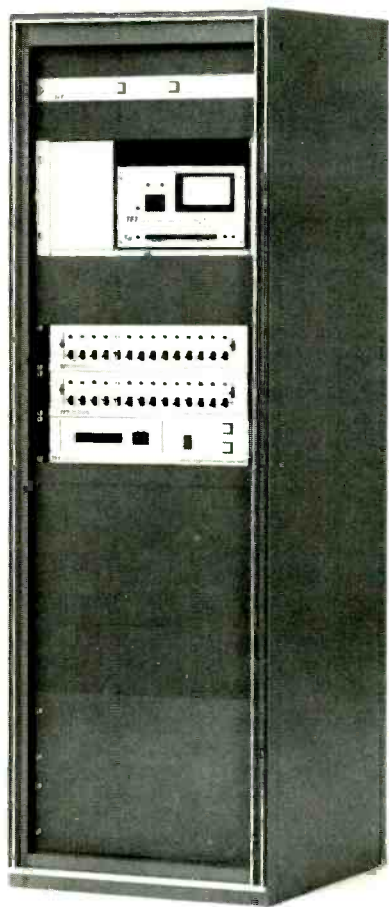
Berkey 2,3; Beta Tech 2; BJA 2,3,6▼; Bosch-Fernseh 1▼; Channelmatic 1▼; Colorado Video 1,2▼; Comquip 6; Crosspoint 2; Daburn 6; Digital Video 1,4,5▼; Eigen 6▼; Electro & Optical 1,4,5▼; Grass Valley 1,2▼; Industrial Sciences 2▼; International Nuclear 5▼; Leitch 5▼; 3M 1,2▼; Micro Consultants 1,4,5▼; MPB 1,6▼; MXR 1; NEC 1,4,5▼; Pierce-Phelps 1,6; Power Optics 6▼; RCA 1,5▼; Telestrator 1,6▼; Tektronix 6▼; Thomson-CSF 2▼; TSC 1,2,6; Video Aids 1▼

Video Equipment, Misc.

Advent 11▼; AF Assoc 15; Alexander 9▼; Arvin-Echo 3,5▼; Asaca 5▼; AVA 13; Boston 1▼; Broadcast Video 3▼; Christie 9▼; Cine 60 9▼; Cohu 1,4▼; Computer Image 6; Computer Labs 5▼; Computer Magnetics 4▼; Conrac East 11▼; D&S Corley 14▼; Datatek 4▼; Digital Video 3,5▼; Di-Tech 4,6▼; Dynair 4▼; Electrohme 11▼; Electro & Optical 5▼; Frezzolini 9▼; GE Video Display 11▼; Grass Valley 4▼; Hitachi 9▼; Image Magnification 11▼; Industrial Sciences 1▼; Kalart Victor 11,13▼; Laird 1▼; Lenco 3,4,6▼; Listec 7▼; 3M 3▼; Micro Consultants 5▼; Microtime 10▼; MXR 4; Panasonic 9,11▼; Philips T&M 8,14; Pierce-Phelps 9-11,14; Porta-Pattern 8,14▼; Projection Systems 11▼; Q-TV 7; Sony 9▼; TEA 4,15▼; Tech Labs 13▼; Tektronix 8,13▼; Tele-Measurement 14▼; Thomson-CSF 2▼; TV Products 9▼; Visual Information 8▼

15. line selector

TFT MODEL 7614 PIONEERS...



THE NEW ERA

IN HIGHLY FLEXIBLE DIGITAL REMOTE CONTROL

VTRs, ENG antennas, satellite receivers, translators, ON-AIR switches — you name it and the TFT Model 7614 System will let you remotely control it. Sophisticated in design, but simple to operate, this fully digital fingertip system provides instantaneous, fail-safe control and status verification of 14 channels via voice grade link.

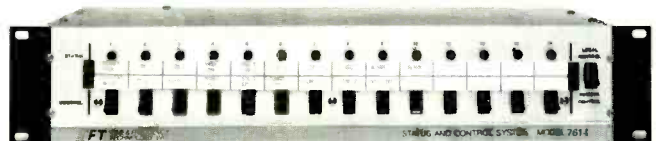
THE MODEL 7614 SYSTEM is equipped with 14 front panel toggle switches for ON/OFF control functions, at both control and remote sites and displays command status at-a-glance via LEDs for each channel. Verification of command execution is almost instantaneous. A special digital technique of "double-scan/compare" logic virtually eliminates the possibility of error.

THE MODEL 714 MULTIPLEXER FILTER is a special option that allows operation of the 7614 over the same telephone line with many existing analog type

remote control systems, saving on both telephone bills and extra installation costs.

PRODUCT ADAPTATIONS including the Model X-14A Antenna Controller make the TFT Model 7614 as diverse as the modern requirements of broadcast control.

See for yourself how digital remote control has come of age. Call or write TFT, and we'll be glad to send additional data or arrange a free demonstration at your convenience.



TFT TIME AND FREQUENCY TECHNOLOGY, INC.

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Circle 136 on Reader Service Card

SOURCE LOCATOR - II continued

Video Action Recorders	Arvin-Echo 1-3▼; Bosch-Fernseh 1▼; Datapoint 1; Eigen 1-3▼; Marconi 1▼; Odetics 3; Oktel 1-3▼; Panasonic 3▼; QSI 3▼; TSC 3
1. slow motion	
2. variable speed	
3. time lapse	

▼ Means Verified Source

FILM EQUIPMENT

Cameras, Cine	AIC Photo; Arriflex; Bach-Auricon; Beaulieu; Canon Scoopic; Canon USA▼; Cinema Products▼; Comquip; F&B Ceco▼; Frezzolini▼; General Camera; Alan Gordon▼; Kodak▼; Teledyne; Telemation▼
Camera Lenses	AIC Photo; Angenieux▼; Arriflex; Bach-Auricon; Beaulieu▼; Birns & Sawyer; Canon Scoopic; Canon USA▼; Century Precision; Cinema Products▼; Comquip; F&B Ceco; Frezzolini▼; Fujinon▼; Alan Gordon▼; Heindl; Lenzar; Rank Optics; Rank Precision▼; Schneider▼; Video Components; Zei-Mark▼
Camera Tripods & Accessories	AIC Photo; Bach-Auricon; Birns & Sawyer; Canon USA▼; Cinema Products▼; Comquip; F&B Ceco; Frezzolini▼; General Camera; Alan Gordon▼; Image Devices; Innovative TV▼; Listec▼; Pierce-Phelps; Quick-Set; Research Technology
Carrying Cases	Anvil Cases▼; Birns & Sawyer; Cinema Products▼; F&B Ceco; Frezzolini▼; Alan Gordon▼; Image Devices; K&H; Neumade; Plastic Reel; Research Technology; Thermodyne; Video Components
Film	Agfa-Gevaert; Fuji; Kodak▼; Studio Film & Tape▼
Film Cases	Anvil Cases▼; F&B Ceco; Harwald; Neumade; Plastic Reel; Research Technology
Film Processors	AIC Photo; Comquip; Houston; Jamieson; Kodak▼; Magnasync/Moviola▼; Pako; Treise
Film Projectors	Arriflex 1; Beaulieu 1▼; Bell & Howell 1,2▼; Comquip 1,2; F&B Ceco 1; Alan Gordon 1▼; Heindl 2; Hollogon 1,3▼; Kalart Victor 1; Laird 1,2▼; L-W International 1,3▼; MacKenzie Labs 1,2; Magna Tech 1,3; Multi-Trak 1,3; Palmer 1; RCA 1,2▼; Singer Education 1; Spindler & Sautpe 2; Video Components 1; Zei-Mark 1,2▼
Magnetic Film	Agfa-Gevaert 1,2; F&B Ceco 1; 3M 1▼; Magnasync 1▼; RCA 1▼; Standard Tape 2▼; Studio Film & Tape 1,2▼
1. recording	
2. test	
Magnetic Recording Equipment & Accessories	Cinema Products▼; Coherent; General Camera; Image Devices; International Electro-Mag▼; Magnasync; Magna-Tech▼; Multi-Trak; Nagra; Orange County; RCA▼; Transist-O-Sound; Wide-Range▼
Film, Misc.	CPAC 1; Harwald 4; Heindl 2; Multi-Trak 3; Neumade 4▼; Raven 5▼; Research Technology 4,6; Storeel 6▼; Winsted 6▼
1. pollution control, silver recovery	
2. slide masks & mounts	
3. multi-lock, video and magnetic film	
4. film inspection equipment	
5. screens	
6. storage	

Film Cleaners	F&B Ceco; Harwald; Lipsner-Smith; Neumade▼; Research Technology
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Film Editing Equipment	Beta Tech; Birns & Sawyer; Comquip; F&B Ceco; Harwald; Kalart Victor▼; Magnasync/Moviola▼; Neumade▼; Plastic Reel; Research Technology
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LIGHTING/STUDIO EQUIPMENT/SET DESIGN

Lamps	Barbizon; Belden; Berkey▼; Birns-Sawyer; GAM▼; GE▼; GTE Lighting; Kliegl▼; Lowell▼; Olesen; Packaged Lighting▼; Rosco; Teledyne Big Beam; Varian▼; Yardney▼
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Lighting Hardware & Accessories	Arriflex 1; Barbizon 3; Bardwell & McAlister 1,2; Belden 1-3; Berkey 1,3▼; Birns-Sawyer 1; Cinema Products 1▼; Cine 60 1▼; Electro Controls 1; F&B Ceco 1-3; Frezzolini 1▼; GAM 1▼; GTE Lighting 1-3; Janson 1▼; Kliegl 1-3▼; Lowell 1-3▼; Lumitrol▼; Mole-Richardson 1-3▼; Olesen 1-3▼; Packaged Lighting 1▼; Pierce-Phelps 1-3; Polites 1▼; Rosco 1-3; Smith-Victor 1-3▼; Strand Century 1-3▼
1. heads, stands and fixtures	
2. diffusion material	
3. gels and filters	

Light Control Systems	Berkey 1-3▼; Custom Audio 1; Electro Controls 1-3; Electro & Optical 2▼; Great American Market 1,2▼; Industrial Sciences 2; Janson 1,3▼; Kliegl 1-3▼; Lumitrol 1,3▼; MacKenzie Labs 2,3; Mole-Richardson 3▼; Olesen 3; Packaged Lighting 1,3▼; Pierce-Phelps 1,2; Skirpan 1-3▼; Strand Century 1-3▼; Theatre Tech 1,2; Waters 1; Zei-Mark 2
1. manual	
2. automated	
3. dimmer packs	

Patch Terminals	Berkey▼; Electro Controls; F&B Ceco; Kliegl▼; Lumitrol▼; Olesen; Packaged Lighting▼; Pierce-Phelps; Rex Rheostat; Skirpan▼; Strand Century▼; Theatre Tech; Trompeter; Union; Whirlwind
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Plugs & Connectors	Berkey▼; F&B Ceco; Kliegl▼; Mole-Richardson▼; Olesen▼; Pierce-Phelps; Rex Rheostat; SGL; Strand Century▼; Trompeter; Union; Whirlwind
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Prompters, Titling	Listec▼; Q TV/Telesync; Telescript▼; Ultra Audio
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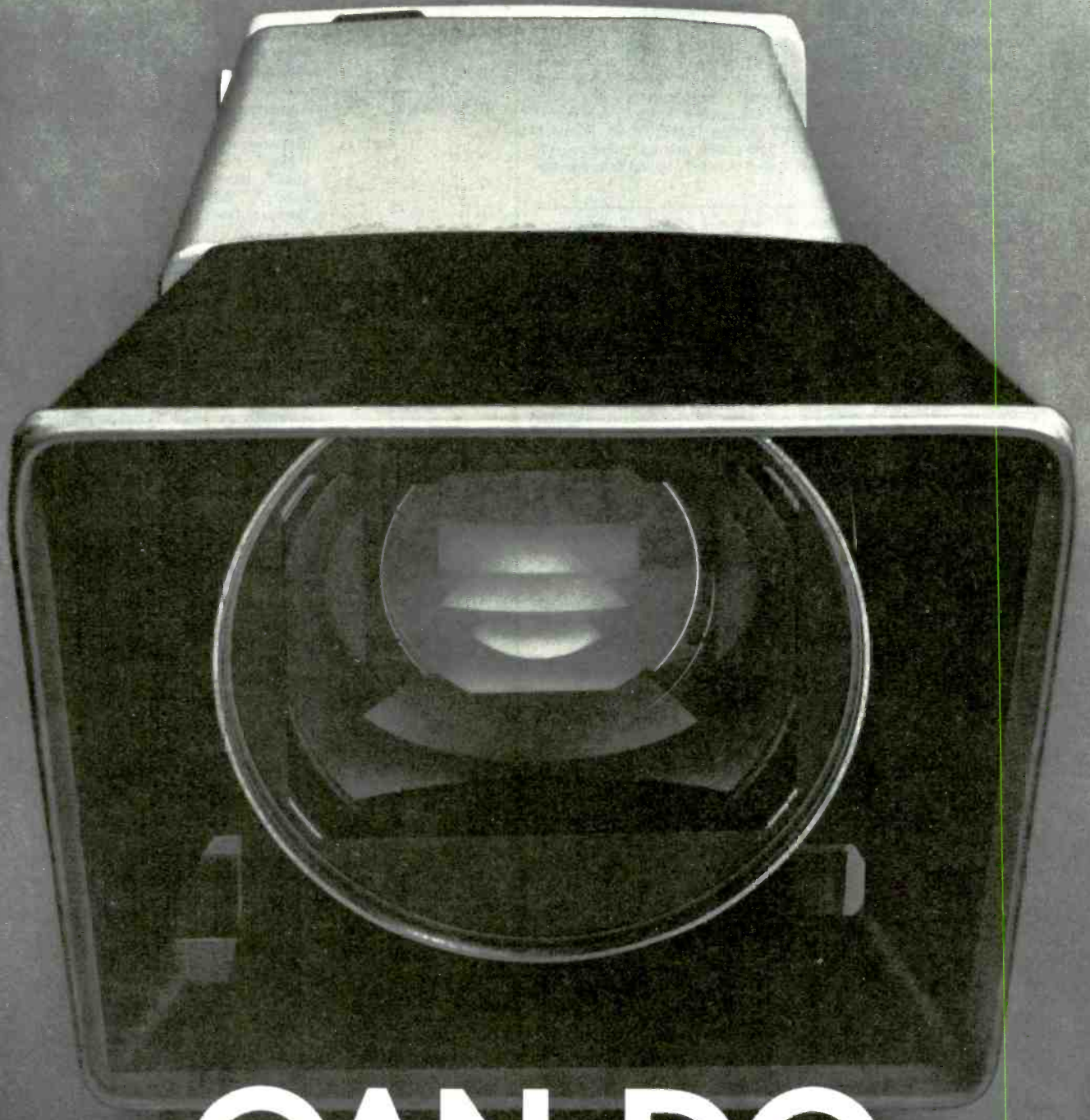
Set Design	Imero Fiorentino; Olesen; Q TV/Telesync; Rosco; TV Productions
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RF/TRANSMITTING/RECEIVING EQUIPMENT

Demodulators	Blonder-Tongue; Catel▼; Cetec▼; Coastcom▼; Comark▼; Commercial Telecom; Dynair▼; Electro & Optical▼; Fung; Jerrold; Marconi▼; McMartin▼; Microwave Assoc▼; Moseley▼; Optek▼; Phascom▼; Philips T&M▼; RCA▼; Rohde & Schwarz▼; Scientific-Atlanta▼; Tektronix▼; Telemet▼; Townsend
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Diplexers	AEL; Alford; CCA▼; Cetec▼; Coastcom▼; Comark▼; Commercial Telecom▼; Continental Electronics▼; CSP; Dielectric; Harris▼; Marconi▼; McMartin▼; Micro Communications▼; Mu-Del▼; Multronics▼; RCA▼; Townsend; Varian▼; Vitek
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Exciters	Acrodyne; American Electronics; Bayly▼; CCA▼; Cetec▼; Commercial Telecom▼; Harris▼; Kahn; Marconi▼; McMartin▼; Philips▼; QEI▼; RHG; Sintronic▼; Solid Electronics▼; Townsend▼; Varian▼; Varian Beverly▼; Versa Count; Wilkinson
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Canon Amsterdam N.V., Industrial Products Division De Boelelaan 8, Amsterdam, The Netherlands

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SOURCE LOCATOR - V continued

Modulators Bayly▼; Blonder-Tongue; Broadcast Video▼; Catel▼; CCA▼; Cetec▼; Coastcom▼; Communications Techniques; Dynair▼; Electro & Optical▼; Fung▼; Harris▼; Jerrold; Marconi▼; McMartin▼; Microwave Assoc▼; Moseley▼; Phasecom▼; Philips T&M▼; RCA▼; Rohde & Schwarz▼; Scientific Atlanta▼; Tektronix▼; Telemet▼; UHF Assoc▼; Varian▼; Varian Beverly▼

STLs
 1. microwave Andrew 1,3▼; Avantek 1; Bayly 2▼; Cablewave 3; Cetec 1,2▼; Commercial Telecom 1▼; Dielectric 3▼; Farinon 1▼; GTE-Lenkurt 1; Hewlett-Packard 3; International Microwave 1▼; Marti 1,2▼; Micro Communications 3▼; Micro Control 1▼; Microwave Assoc 1▼; Moseley 1▼; NEC 1▼; Prodelin 3; Raytheon 1,3; RHG 1; Tayburn 1; TerraCom 1▼; Texscan 3; Time & Frequency 1▼

Microwave Equipment
 1. intercity Andrew 1▼; Antenna Products 4; Bayly 1▼; Catel 3; Coastcom 2▼; Commercial Telecom 1▼; Comrex 3; ENG Mfg. 3,4▼; Farinon 4▼; GTE Lenkurt 1; Hughes 1▼; Innovative TV 4▼; International Microwave 1,2,3▼; Magnum Towers 4; Marti 1-3▼; McMartin 3▼; Micro Communications 3,4▼; Microwave Assoc 1-3▼; Microwave Power 5; Moseley 1-3▼; NEC 1-4▼; Nurad 1-4▼; Quick-Set 4; Raytheon 1; Systron-Donner 2; Tayburn 1-3; TerraCom 1-3▼; Thomson-CSF 3▼; Varian▼

Remote Pickup Equipment Alden▼; Cetec▼; Comrex▼; McMartin▼; Moseley▼; Nationwide; Nurad▼; Tayburn▼

Remote Control Systems/ATS Automation Electronics; Bayly▼; CCA▼; Cetec▼; Comark; CSP; Datalogic; Delta▼; Dielectric; Dyma▼; Dynair▼; GTE Lenkurt; Hallikainen▼; Logitek; Marti▼; McMartin▼; Micro Communications▼; Micro Control; Monroe▼; Moseley▼; National Electr; Nurad▼; Power Optics▼; PWH; RCA▼; Eric Small▼; Tektronix▼; Time & Frequency▼; Widget Works

Receivers, Comm & Monitor Advent▼; Bayly▼; Caringella; Cetec▼; Coaxial Dynamics▼; Comrex▼; Elcom; Electra; Fixture▼; Gorman Redlich▼; Johnson; Lampkin▼; Lear-Siegler; Marti▼; McKay Dymek; McMartin▼; Nat'l Electrolab; QEI▼; Rivers; Rohde & Schwarz▼; Scientific Radio; Sequerra; Tandberg

RF Amplifiers Acrodyne; Ailtech▼; Alden; American Electronics▼; Arvin CATV; AVA; Avantek; Bald Mountain▼; Barker & Williamson; Bayly▼; Belar▼; Blonder-Tongue▼; Cetec▼; Electronics M&C; Harris▼; Howe-Yin▼; Jerrold; Marti▼; McMartin▼; Microwave Assoc▼; Microwave Power; Moseley▼; Mu-Del▼; Nat'l Electrolab; North Hills; Nurad▼; QEI▼; RHG; Scientific-Atlanta▼; Solid Electronics; Tayburn; Tektronix▼; Townsend▼; TV Technology▼; Varian▼; Wide Band▼; Wilkinson

▼ Means Verified Source

RF Attenuators Ailtech▼; AVA; Avantek; Bayly▼; Bird▼; Blonder-Tongue▼; Cetec▼; Dielectric; Electro Impulse▼; Microwave Assoc▼; Mu-Del▼; Tech Labs▼; Tektronix▼; Telonic; Texscan; Trompeter; Varian▼; Waters

RF Converters Bayly▼; Cetec▼; Fung▼; Microwave Assoc▼; Mu-Del▼; TV Technology▼

RF Filters AVA; Bald Mountain; Bayly▼; Bird▼; Blonder-Tongue▼; Boston Sound & Power; Catel; Cetec▼; Coaxial Dynamics▼; Comark; CSP; Dielectric; Fung; Jampro-Cetec▼; Micro Communications▼; Microwave Assoc▼; Mu-Del; Multronics; North Hills▼; Phelps-Dodge▼; Shively; Tayburn; Tektronix▼; Telonic; Texscan; TT Electronics; TV Technology▼; Varian

RF Loads Alford; Bayly▼; Bird▼; Blonder-Tongue▼; Cetec▼; Coaxial Dynamics; Continental Electronics▼; CSP; Dielectric▼; Electro Impulse▼; Micro Communications▼; Microwave Assoc▼; Shively; Telonic; Varian▼; Wilkinson

RF Switchers Alford; Arvin CATV; Bayly▼; Blonder-Tongue▼; CCA▼; Cetec▼; Coaxial Dynamics▼; Comark; Commercial Telecom▼; CSP; Dielectric▼; Dynair▼; Fung; ITT▼; Magnacraft Marconi▼; Marti▼; Micro Communications▼; Microwave Assoc▼; Multronics▼; Solid Electronics; Texscan; Trompeter

Satellite Earth Stations
 1. transmit/receive Alden 2▼; American Electronics 1,2▼; Antennas For Comm 1,2; Coastcom 2▼; Commercial Telecom 1,2▼; Farinon 2▼; Gardner 1,2▼; Harris 1▼; Hughes 2▼; McMartin 2▼; Microlink 2; Microwave Assoc 2▼; RCA 1,2▼; RHG 2; Scientific-Atlanta 1,2▼; Tayburn 1,2; Telemet 1,2▼; TerraCom 2▼; Varian▼

SCA Equipment American Electronics▼; Coastcom▼; Commercial Telecom▼; CSI▼; Farinon▼; Fixtune▼; Harris▼; Johnson; McMartin▼; Micro Control; Moseley▼; Nationwide; Permadyne; QEI▼; RCA▼; Rivers; Solid Electronics▼; Time & Frequency▼; Wilkinson

Translators
 1. FM Acrodyne 2; Belar 1▼; Electronics M&C 1,2; Ikegami 1,2▼; Johnson Electronics 1▼; Kitchen Productions 1,2; McMartin 1,2▼; NES 1,2; Rodelco 1,2; Rohde & Schwarz 2▼; Tepco 2; TV Technology 1,2▼; Versa Count 1,2

Transmitters, AM American Electronics▼; Bayly▼; CCA▼; Cetec▼; Commercial Telecom▼; Continental Electronics▼; CSI▼; Harris▼; Ikegami▼; LPB▼; Marconi▼; Marti▼; McMartin▼; NEC▼; RCA▼; Singer Products; Sintronic▼; UHF; Varian▼; Wilkinson

Transmitters, FM American Electronics▼; Bayly▼; CCA▼; Cetec▼; Commercial Telecom▼; CSI▼; Ikegami▼; LPB▼; Marconi▼; McMartin▼; Microwave Power▼; NEC▼; RCA▼; Scientific Radio; Singer Products; Sintronic▼; Solid Electronics; Varian▼; Versa Count; Wilkinson

Transmitters, TV
 1. VHF Acrodyne 1,2; American Laser; Bayly 2▼; CCA 1,2▼; Electronics M&C 1; Harris 1,2▼; Howe-Yin 1▼; Ikegami; Marconi 1,2▼; Microwave Assoc 1,2; NEC 1,2▼; Philips 1,2▼; RCA 1,2▼; Townsend 1,2▼; Varian 2▼

Misc. RF Equipment
 1. program subcarrier AEL 1,9; Alden 4▼; AVA 5,6,8; Belden 6; B&K 2; Cablewave 6,8; Catel 1,7,9▼; CCA 1,3,5-8▼; Coastcom 1▼; Coaxial Dynamics 10; Comark 3,5; Commercial Telecom 3▼; Comrex 10▼; CSP; Delta 12; Dielectric 3,5,6,8; GTE Lenkurt 1; Jampro-Cetec 3,5▼; LPB 2▼; LRC 8▼; Magnecraft 10; Magnum Towers 6; Marti 1▼; McMartin 1,2,4▼; Micro Communications 5; Microwave Assoc 1,8▼; Moseley 1,7▼; Mu-Del 5▼; Multronics 3▼; NES 9; Nurad 6,8▼; Orban 7▼; RCA 5▼; RHG 9; Rivers 1▼; Solid Electronics; Tayburn 1,3; Telautograph 4; Times Wire & Cable 6; Trompeter 6,8; TV Tech 5,9; Varian 10▼; Whirlwind 6

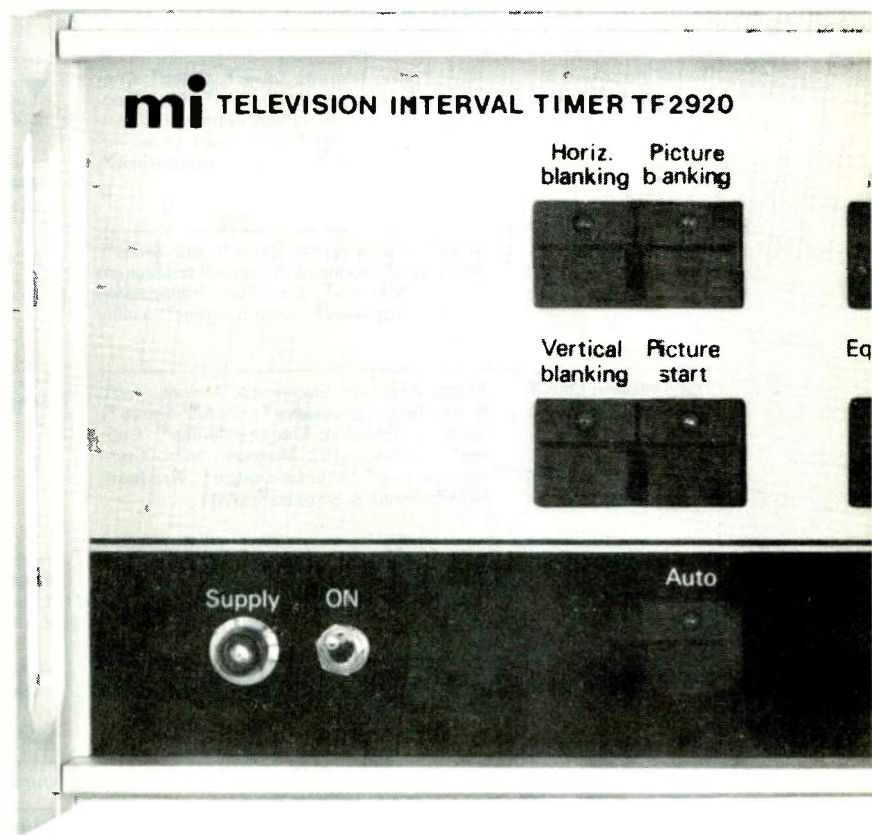
VI ANTENNAS/TOWERS/ TRANSMISSION LINES

Antennas, AM Alford; Andrews Tower▼; Antenna Products; Bayly▼; Belar▼; CCA▼; Cetec▼; Continental Electronics▼; Dielectric; Harris▼; Magnum Tower; Marconi▼; McKay; RCA▼; Rex Rheostat; Rohde & Schwarz▼; Stainless▼; Utility Tower

Antennas, FM Alford; Bayly▼; Belar▼; Blonder-Tongue▼; CCA▼; Cetec▼; Comark; Commercial Telecom▼; Dielectric; Harris▼; Jampro-Cetec▼; Marconi▼; Micro Communications▼; Phelps-Dodge▼; RCA▼; Rex Rheostat; Rohde & Schwarz▼; Utility Tower; Winegard

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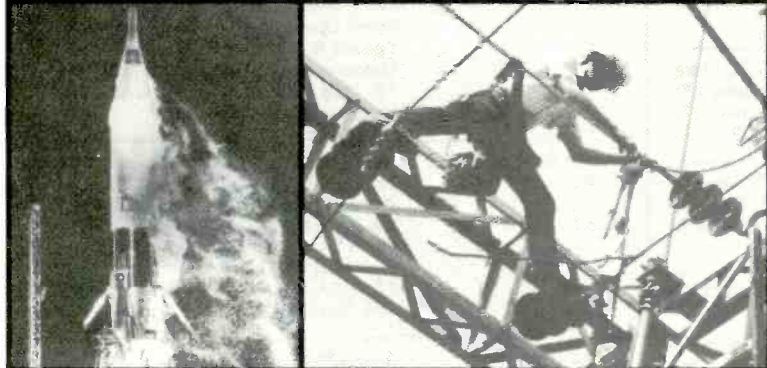
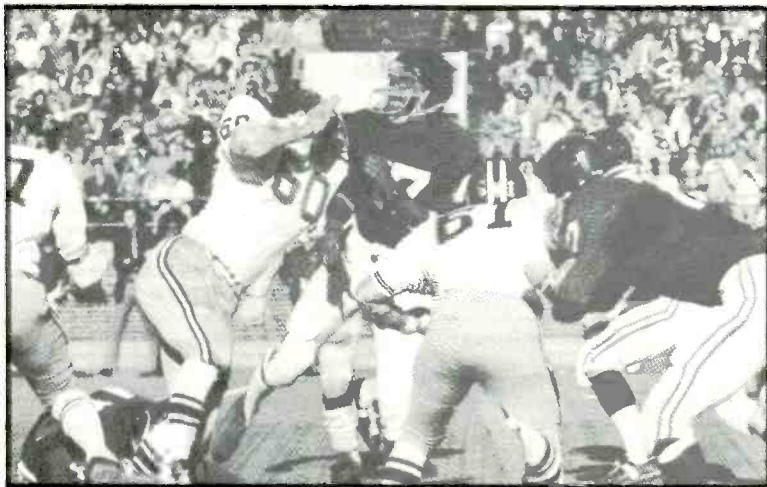
SOURCE LOCATOR - VI continued

Antennas, Microwave	Alford; American Electronics; Andrew; Antenna Products; Antennas for Communications; Bogner; Cablewave; Dielectric; Gabriel; Magnum Towers; Marti; Nurad; Prodelin; RF Systems; Rohde & Schwarz; Scientific Atlanta; Tayburn; TerraCom; Utility Tower
Antennas, TV 1. HP 2. CP	Blonder-Tongue 1; Bogner 1,2; CCA 1,2; Cetec 1,2; Dielectric; Electronic M&C; Harris 1,2; Jampro-Cetec 1,2; Lindsay; Magnum Towers; Marconi; Micro Communications; Multronics; RCA 1,2; Rohde & Schwarz 1,2; SWR 1,2; Tayburn; Winegard
Towers	Allied Tower; Andrews Tower; Cetec; E-Z Way; Fort Worth; Gabriel; Grasis; Kline; Marconi; Magnum Towers; Microlect; Multronics; RCA; RF Systems; Stainless; Unarco-Rohn; Utility Tower
Tower Hardware & Construction Equip.	Allied Tower; Andrews Tower; Cetec; Copperweld; Decca Austin; Gabriel; Kline; Magnum; Marconi; Microlect; Norton; Philadelphia Resins; Polites; Preformed Lines; RF Systems; Stainless; Tayburn; Unarco-Rohn; Utility Tower
Tower Lighting	Cetec; Decca Austin; Elcom; Eric Small; Flash Tech; Hughey & Phillips; Kline; Magnum Towers; Marconi; Microlect; Philadelphia Resins; Stainless; Unarco-Rohn; Utility Tower
Transmission Line & Connectors	Alford; American Electronics; Andrew; AVA; Brand Rex; Cablewave; CCA; Cetec; Comark; Dielectric; Electro Impulse; Gabriel; Lindsay; LRC; Magnum; Micro Communications; Phelps-Dodge; Prodelin; RCA; Rohde & Schwarz; SWR
Antenna Tuning Unit	CCA; Cetec; Continental Electronics; CSP; Dielectric; Jampro-Cetec; Magnum Tower; Multronics; NES; RCA; SWR; Wilkinson
DA Equipment	CCA; Cetec; CSP; Dielectric; Jampro-Cetec; Magnum Tower; Multronics; NES
VII MEASURING/MONITORING/TIMING/LOGGING EQUIPMENT	
Antenna Monitors	B&K; Delta; Electro Impulse; Gorman-Redlich; Potomac; Eric Small; United Systems
Clocks, Time Systems 1. digital clocks 2. master clocks 3. slave clocks 4. timers 5. time distribution sys.	Alpha Electronic 1; Artists Engineering 1,4; Boston Sound & Power 1; Broadcast Sound 1-5; BSC 1; Bulava Watch 2,3; Caringella 1,2,4; Cetec 1-5; Channelmatic 1,2,4; Chrono-Log 1-5; Datametrics 1-3; Digital Concepts 1,4; Efratom 1,2; Electroneering 4; ESE 1-5; Heath 1; Lauderdale 1,4; Leitch Video 1-3,5; Logitek 1,4; Micro-Trak 1,4; NES 1-5; Pacific Recorders 1; PWH 1,2; QRK 1,4; QSI 1-3; Ramko 1,4; Rohde & Schwarz 1; Spectra Sonics 1; Stancil-Hoffman 1; Standard Electric Time 1-5; Systron-Donner 1; Tape-Athon 4; TA Track Audio 4; Thalner 1,4; Time & Frequency 2,3; Torpey Controls 1-3; True Time 1-3,5; United Systems 1,4; Vamco 1,4; Video Components 4

Chart Recorders	Alden; B&K Instruments; Cetec; Datalogic; Heath; Hewlett-Packard; London; NES; Neutrik; Philips T&M; Rohde & Schwarz; Tektronix; Telemet; URE
Demodulators	Electro & Optical; Optek; Philips T&M; Rohde & Schwarz; Scientific Atlanta; Tektronix; Telemet; Video Aids
Field Intensity Meters 1. AM 2. FM 3. TV	Arvin CATV 1-3; B&K 1; Blonder-Tongue 3; Fung 3; Heath 1,2; Hewlett Packard 1-3; Mid State 1-3; NES 1-3; Potomac 1-3; PTS 3; Rohde & Schwarz 1-3; Sadelco 3; Sencore 1-3; Sequerra 2; Texscan 2,3
Frequency Monitors and Counters	Ailtech; Ballantine; Belar; Commercial Telecom; Data Precision; Digitron; Dranetz; ELP; Edison; Elcom; Fluke; Harris; Heath; Hewlett Packard; Hickok; Lectrotech; Leader; McMartin; Mid State; Nationwide; NES; Philips T&M; RCA; Sencore; Systron-Donner; Tektronix; Time & Frequency; True Time; United Systems; Wilkinson

▼ Means Verified Source

Generators, Audio	Amber; Ashly; Bald Mountain; B&K Instruments; Dyma; Fluke; Frequency Devices; GAW; Hammond; Heath; Hewlett Packard; Hickok; Ivie; Lampkin; Leader; Lectrotech; London Co; Marconi; McGraw-Edison; Philips T&M; Potomac; Rockland; Rohde & Schwarz; Sencore; Sound Tech; Systron Donner; Tektronix; Telonic; Texscan; United Research
Generators, RF	B&K Instruments; Boonton; Communications Techniques; Delta; Fluke; Heath; Hewlett Packard; Hickok; Kay Elemetrics; Leader; Lectrotech; London Co; Marconi; McGraw-Edison; Mid State; Philips T&M; Potomac; Rohde & Schwarz; Sencore; Sound Tech; Tektronix; Telonics; Texscan
Generators, Video 1. multiple output 2. cross pulse only	Datatek 1; Leader 1; Leitch 1; Lenco 1; Listec 1; NTI 1; Panasonic 1; Tektronix 1,2; Texscan 1; Ultra Audio Pixtec 2; Video Aids 1,2; Video Concepts 2
Impedance Bridges	Alford; B&K Instruments; Boonton; Delta (Long); Delta; Dranetz; Heath; Hickok; Leader; Marconi; Texscan; Wide Band
Burst Phase Meters	Video Aids
Voltmeters, Multimeters, Etc. 1. voltmeters 2. multimeters 3. dB meters	Amber 3; Ballantine 1-3; Bayly 1,3; B&K Instruments 1,3; Boonton 1,3; Data Precision 1,2; Dranetz 1,2; Fluke 1-3; GAW 1; Gralex 1; Heath 2; Hewlett Packard 2; Hickok 1,2; International Instruments 1,3; ITT 1; Ivie 1; Leader 2; Midstate 1; Nationwide 1,2; Philips T&M 2; Potomac 1-3; Sencore 1,2; Simpson 1,2; Systron-Donner 2; Tektronix 2,3; TM Systems 3; United Systems 1; Weston 1-3
Harmonic Distortion Meters	Amber; Asaca; Bald Mountain; B&K Instruments; Dix Hills; GAW; Heath; Leader; London Co; Marconi; Potomac; Sound Tech
Intermodulation Meters	Amber; Barker & Williamson; B&K Instruments; Crown; Dix Hills; Heath; Hewlett Packard; Marconi; NES; Potomac; Sound Tech; TT Electronics
Phase Meters	B&K Instruments; Dranetz; Gorman-Redlich; Hewlett Packard; Microprobe; Nationwide; NES; Potomac; Video Aids; Wavetek



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Three 2/3" Saticon tubes combine with a smaller-size high index beam splitting prism to deliver better than 500-line horizontal resolution and better than 51dB signal-to-noise ratio.

And, of course, there are all the additional features that assure sharp, crisp pictures and true colors: built-in 2H contour enhancer with comb filter...standard I & Q encoder...switchable color bar generator...automatic white balance... automatic iris... and a built-in Genlock circuit using black burst to lock your SK-90 to other cameras.

Options include a built-in linear matrix masking amplifier for high fidelity color rendition and a complete remote operating unit which lets the camera range up to 1000 feet away on standard camera cable. For an even greater working range of over 3000 feet, a Digital Command Unit/Tri-axial Cable System is also available.

Remarkably, the Hitachi SK-90 may be the first affordable, self-contained portable that doesn't compromise. Contact your Hitachi dealer for more details.



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Executive Office: 58-25 Brooklyn-Queens Expressway, Woodside, N.Y. 11377 (212) 898-1261. Offices in: Chicago (312) 344-4720; Los Angeles (213) 328-2110; Dallas (214) 233-7623; Atlanta (404) 451-9453; Denver (303) 344-3156; Seattle (206) 298-1680.

SOURCE LOCATOR - VII continued

RF Wattmeters	Barker & Williamson; Bayly▼; Boonton▼; Coaxial Dynamics▼; Dielectric▼; Electro Impulse▼; Hewlett Packard; Hickok▼; Leader; McGraw-Edison; NES; Rohde & Schwarz▼; Systron-Donner
Multitest Systems	Amber▼; Audio Dev. Int'l▼; B&K; Data Precision; Hammond; Lechrotech; Lenco▼; NES; Rohde & Schwarz▼; Tektronix▼
▼ Means Verified Source	
Oscilloscopes	Ballantine▼; B&K Instruments▼; Heath; Hewlett-Packard▼; Hickok▼; Hitachi▼; Leader; Lectrotech; Lenco▼; Philips T&M▼; Rohde & Schwarz▼; Sencore; Simpson; Tektronix▼; Telonic; Texscan; Wavetek
Loggers and Logger Equipment 1. tape loggers 2. log printers	Automated Electronics 1,2; Cetec 1-2▼; Fluke 2▼; Hewlett Packard 2; IGM 1▼; Moseley 2▼; NES 1,2; QSI 1▼; Scully 1▼; Eric Small 2▼; Stancil-Hoffman 1▼; United System 1,2
Modulation Monitors	Audio Dev. Int'l▼; Belar▼; Boonton▼; Cetec▼; Delfa; Dix Hills; London; Marconi▼; McGraw Edison; McMartin▼; QEI▼; Sequerra; Time & Frequency▼; Wilkinson
Sideband Analyzers	Marconi▼; Rockland▼; Rohde & Schwarz; Tektronix▼; Telemet▼
Spectrum Analyzers	AI tech▼; Amber▼; A.P. Circuit; Audio Dev. Int'l▼; Bausch & Lomb; B&K Instruments▼; Hewlett Packard▼; Inovonics▼; Intech Labs; Ivie; Kay Elemetrics; Marconi▼; Mid State▼; Rockland; Rohde & Schwarz▼; Sequerra; Systron-Donner; Tektronix▼; Telemet▼; Texscan; White▼
Status & Alarm Indicators	Belar▼; Bird▼; CSI▼; Digitron▼; Fidelipac▼; GTE; Marti▼; Moseley▼; Nationwide; NES; PWH▼; QSI; Rivers; Eric Small▼; Time & Frequency▼; United Systems▼
Automatic TV Monitors	Marconi▼; Rohde & Schwarz▼; Sencore; TEA▼; Tektronix▼; Video Aids▼; Videotek▼
Vectorscopes	Broadcast Video▼; Electro & Optical▼; Heath; Hickok; Lectrotech; Listec▼; Rohde & Schwarz▼; Sencore; Sequerra; Tektronix▼; Ultra Audio▼; Video Aids▼
Video Noise Meters	Asaca▼; Lenco▼; Marconi▼; NES; Tektronix▼
Video Test Generators	Colorado Video; D&S Corley▼; Hickok▼; Leader; Leitch▼; Lenco▼; Marconi▼; Philips T&M▼; Rohde & Schwarz▼; TEA▼; Tektronix▼; Telemet▼; Ultra Audio▼
VITS, VIR, Systems and Equipment	Industrial Sciences▼; Lenco▼; Marconi▼; Rohde & Schwarz▼; TEA▼; Tektronix▼; Telemet▼; Video Aids▼
Waveform Monitors and Analyzers	Amber▼; B&K Instruments▼; Broadcast Video▼; Colorado Video▼; Electro & Optical▼; Hammond; Hewlett Packard; Harris▼; Lectrotech; Lenco▼; Listec▼; Marconi▼; NES; Rohde & Schwarz▼; Sharp▼; Systron-Donner; Tektronix▼; Ultra Audio▼
Wow & Flutter Meter	B&K Instruments▼; Fidelipac▼; Hammond; Leader; London Co▼; NES; Philips T&M▼; Potomac▼
Diff Phase — Gain Measurement	Amber▼; Asaca▼; B&K Instruments▼; Color Temperature Meters; Computer Magnetics; Dranetz▼; Exposure Meters; Kollmorgen▼; Lenco▼; Marconi▼; Minolta; NES; Philips T&M▼; Potomac▼; Power Optics; Rohde & Schwarz▼; Tektronix▼; Telemet; Weston

VIII SERVICES

Computer Business Services

1. broadcasting, radio
2. broadcasting, TV
3. cable TV

Automated Bus. Concepts 1,2▼; Automation Electronics 1; Cabledata 3▼; Cable Facts 3; Columbine 1,2▼; Cox Data 2,3▼; Coyne 3; Data Communications 1,2▼; Downe Computer 3; Jefferson Data 1,2▼; Kaman Sciences 1,2▼; Paperwork Systems 1,2,3▼; Station Business 1,2▼; Townsend 2▼; Unidyne 1,2

Equipment Rental Services

1. production equipment
2. post production services

All Mobile 1,2; Accurate Sound 1▼; AF Assoc 1; Angenieux 1▼; Asaca 1▼; Audio Dev. Int'l 1▼; Avonix 1,2▼; Birns-Sawyer 1; Camera Mart 1▼; Columbia Video 2▼; Conrac East 1,2▼; F&B Ceko 1▼; General TV 1,2▼; Image Devices 1; KVC 1,2; Landy 1▼; Listec 1▼; Media Concepts 1,2▼; Micro Consultants 1▼; MPCS 1,2▼; Olsen 1; Orange County 1▼; Peirce-Phelps 1,2▼; Power Optics 1▼; RCA 2▼; Scharff 1▼; Soll 1,2; Spectra Sonics 1,2▼; Technisphere 1,2; Tele-Measurements 1▼; Telestrator 1,2▼; Tritronics 1,2; Ultra Audio Pixtec 2; Video Aids 2▼; Video Production 1,2▼; Vidtronics 2

Studio Design

1. radio
2. TV
3. lighting

Applied Video 1,2; Avonix 2▼; Broadcast Auto. Assoc. Inc. 1; Cat 1,2; Centro 1,2▼; Delta 1,2▼; Dyma 1,2▼; Electro & Optical 2▼; Imero Fiorentino 2,3▼; Image Devices 2; Kliegl 3▼; Lauderdale 1▼; Long 1,2; Masterton 1; MPCS 2▼; Multitak Mag 1,2; Orange County 2; Pierce-Phelps 2▼; RCA 1▼; Soll 1,2; Strand Century 2▼; Tele-Measurements 2; Tri Tronics 1,2

Video Tape/Film Recording Transfer

Amplex▼; Columbia; Hollogen; Image Transform; Interface Video; Media Concepts▼; MPCS▼; Multitak Mag; Palmer; Teledyne; Tri Tronics; Vidtronics; Warren Smith; Zei-Mark

IX CABLE TV EQUIPMENT

Batteries

Alexander▼; Birns-Sawyer; Cine 60▼; Christie▼; F&B Ceko; Globe Union; Gould Inc; Alan Gordan▼; Multiplier; Panasonic▼; Sony▼; Teledyne Big Beam; TV Products▼; Topaz; Versa Count; Video Components▼; Yardney▼

Battery Chargers

Christie▼; Cine 60▼; Globe Union; Gould Inc; Image Devices; North Wind Power▼; TV Products▼; Video Components▼; Yardney▼

Cabinets, Enclosures, Shipping Cases

1. racks
2. cabinets
3. shipping cases
4. utility carts

Anvil Cases 1-3▼; Avonix 2; Bayly 1,2▼; BSC Inc 2; Cases Inc 1,3▼; Dracon 1; Dyma 1,2▼; Enclosure Corp 1,3▼; Grinnan 1,2▼; Gruber 4▼; Hammond 1▼; Harwald 1,3; Image Devices 3; K&H 3; Lee Ray 4▼; Micro Trak 1-3; Neumade 1-3▼; Optima 1,2▼; Quad Eight 1,2; Scientific Atlanta 1,2▼; SGL Waber 4; Stanton 1,2; Toner Cable 1; Video Components 3; Whirlwind 2; Winsted 1-3▼

Connectors (also see Cable TV Connectors)

ADC Products; Andrew; AVA; Bayly; Blonder-Tongue; Boston Wire▼; Cablewave; Gilbert; ITT; Kings; Lindsay; LRC; Mohawk; Neutrik; RMS; SGL Waber; Trompeter; Union Connector; Whirlwind

Hum Bucking Coils

ADC Products; Audio-Video Eng.▼; North Hills▼

RF Tubes

Amperex▼; Bayly▼; Calvert; Ceko; EEV▼; Eimac▼; Int'l Rectifier; Levit Electronics▼; RCA Electro-Optics▼; Thomson CSF▼; Thor; Varian▼; Westinghouse▼

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THE ONLY VIDEOTAPE EDITOR FOR ALL APPLICATIONS

If you're editing ENG, EFP, or Commercial Post Production – the new Convergence ECS-100 Superstick system will do your job faster, easier and better than ever before possible. With its modularity of design, the ECS-100 lets you start with a basic low cost system and expand to meet your needs for increased capability. All of this is made possible through the use of a field-proven Microprocessor and the famous Convergence human engineering.

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Today's skilled ENG operator insists that an editor must be fast, reliable, accurate and simple to operate. The ECS-100 Superstick is that – and more. Our exclusive new low cost CUT/LAP™ Transition Programmer will put you head and shoulders above your competition. Now you can program fades and simulated dissolves from a single playback VCR without adding a switcher or TBC. The Superstick is the ENG editor of the future.

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Single camera film style producers require the flexibility and expandability that only state-of-the-art microprocessor technology provides. The Superstick's microprocessor lets you grow to command up to four VTRs with one simple control. CUT/LAP™ plus our other exclusive super features like Liplock™ Audio Pitch Control, Automatic Return to Edit, Auto Tag, and ADR (Automatic Dialogue Replacement), provide an unbeatable EFP editing combination.

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(714) 549-3146 TWX: 910-595-2573

For information Circle 262
For demonstration Circle 263

SOURCE LOCATOR - IX continued

Vacuum Tubes	Amperex▼; Bayly▼; Calvert; EEV▼; Eimac; Electronic Devices; Levit Electronics▼; RCA Electro-Optics▼; Thomson CSF▼; Varian▼; Westinghouse▼
Camera Pick-Up Tubes	Amperex▼; Bayly▼; Calvert; Ceco▼; EEV▼; General Electrodynamics; Levit Electronics; Panasonic▼; RCA Electro-Optics▼; Thomson CSF▼; Thor; Video Components
Rectifiers	Amperex▼; Bayly▼; Calvert; EEV▼; Electronic Devices▼; Int'l Rectifier; Levit Electronics▼; Thor; Varian▼; Westinghouse▼
Surge Protectors	Bayly▼; Boston Sound & Power; C-Cor; CM Levit; Com Sonics▼; Dielectric; Dyma▼; EEV▼; Int'l Rectifier; Lightning Elimination; MCG; Multiplier▼; Toner Cable; Topaz; Transtector▼
Wire and Cable	Bayly; Belden; Boston Wire▼; Brand Rex; Cerro; CommScope; Copperweld▼; Daburn; Essex; Ideal; General Cable; Hammond; Phelps-Dodge▼; RMS; Trompeter; Whirlwind
RF Inductors	CSP; Delta; Dyma▼; Multronics▼; North Hills▼; Surcom; TT Electronics
Transformers	ADC Products; Delta; Gotham▼; Hammond; Ikegami▼; Lear-Siegler; Long; Multronics▼; North Hills▼; Sescor; Shure▼
Vacuum Capacitor	Amperex▼; Comet Sales; EEV▼; ITT▼; Surcom▼

X COMPONENTS/HARDWARE

Amplifiers 1. trunk 2. distribution 3. line extenders	AVA 2; Blonder-Tongue 1,2; C-COR 1-3▼; Delta-Benco 1,2; Dynair 2; Finney 2,3▼; GTE CATV 1-3; Jerrold 1-3; Lindsay 1-3; Magnavox CATV 1,2; MCE 1-3; Merrill 1-3; North Hills 2▼; RCA 1-3▼; Scientific-Atlanta 1,2▼; Texscan 1-3; Tocom 1,2; Toner Cable 1-3; Winegard 2
Antennas, Receiving	Andrew; Blonder-Tongue; Farinon; Finney▼; GTE CATV; Jerrold; Johnson Electronics▼; Lindsay; Nurad; RF Systems; Scientific-Atlanta▼; Toner Cable; Winegard
Cable 1. distribution 2. drop	Belden 1,2; Brand-Rex 1,2; Cerro 1,2; Comm Scope 1,2▼; Copperweld▼; Essex 2; Finney▼; General Cable 1,2▼; GTE CATV 1,2; Industrial Sciences 2▼; ITT Suprenant 2; Mohawk 1,2; Systems Wire & Cable 1,2; Times Wire & Cable 1,2; Toner Cable 1,2; Winegard 1,2
Connectors	AEL▼; AVA; Cerro; Finney▼; Gilbert; ITT Cannon; Jerrold; LRC▼; Magnavox CATV; Mohawk; Tocom; Trompeter
Converters/Descramblers 1. standard 2. pay TV (descrambler) 3. filter trap	AEL 1▼; Blonder-Tongue 1-3; Electrohome 2▼; Finney 1,3▼; GTE CATV 1-3; Lindsay 1,3; Magnavox 1,2; MCE 3; Oak 1,2▼; RCA 2▼; Toner Cable 1-3; Vitek 3▼
Distribution Accessories 1. passive 2. addressable taps 3. other_____	AEL 1▼; AVA 1; Blonder-Tongue 1▼; C-COR 1; Cerro 1; Finney 1▼; Gamco 1; GTE CATV 1,2; Jerrold 1; Lindsay 1; LRC 1▼; Magnavox 1; MCE 1,2; Multi-Products 1▼; Texscan 1,2; Tocom 1; Toner Cable 2
Head End Processors	Blonder-Tongue▼; Catel▼; C-COR; Jerrold; MCE; Moseley▼; Oak▼; Phasecom▼; RCA▼; Scientific-Atlanta▼; Texscan; Tocom; Toner Cable

Information Systems, News, etc. 1. character gen. 2. programmers 3. cassette players 4. news service 5. weather/time	Beston 1▼; Channelmatic 2▼; EECO 1▼; Laird 1,5▼; Listec 1▼; MCE 4; Microtime 3▼; MPB 1▼; MSI 1,4,5; Peirce-Phelps 1-3; Phasecom 3▼; Programmable Systems 3; QSI 1,2; Reuters 4,5; Sharp 3; Shintron 1; System Concepts 1; UPI 4▼; Video Components 1; Video Data 1▼
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Microwave Equipment	Andrew; Catel▼; Communications Techniques; EIP; Farinon▼; GTE▼; Hewlett-Packard▼; Hughes▼; Ikegami▼; International Microwave; Marti▼; Microwave; Moxon; Nurad▼; Telonic; TerraCom▼; Texscan; Theta-Com; Varian▼
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Power Supplies	Boston Sound & Power; C-COR; Finney▼; GTE CATV; Hewlett-Packard▼; Ikegami▼; Lindsay; Magnavox CATV▼; NES; RCA▼; Rivers; Sawyer▼; Sencore; SGL; Sola; Toner Cable; Topaz; Winegard
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Test Equipment CATV	AEL▼; Alford; Avanteq; Bald Mountain; Biddle; Bird▼; C-COR; ComSonics▼; Dynascan; Heath; Hewlett-Packard; Kay Electronics; Lenco▼; Lindsay; MCE; Philips T&M▼; PTS; Sadelco; Sencore; Tektronix▼; Telonic; Texscan; Toner Cable; Vitek; Wavetek; Wide Band▼
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Services 1. maintenance 2. finance 3. turnkey installation	AEL 3▼; Applied Video 1; C-COR 1; ComSonics 1▼; Delta 1,3▼; Grinnan 2,3▼; Jerrold 3; Long 1; MCE 1; Microwave Assoc 1; Oak 1; PTS 1; QSI 1; RCA 3▼; RF Systems 3; Toner Cable 1
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Construction Accessories Underground & Pole 1. aerials lifts 2. trenchers 3. cable installation tools 4. enclosures & pedestals 5. strands 6. pole hardware 7. safety equip	C-COR 1-6; Davis Mfg 2▼; Ditch-Witch 2; Durrell 1; Forth Worth 1; General Cable 1,6▼; General Machine 3,6▼; GTE CATV 6; Jerrold 1-6; Multiplier 7▼; Preformed Line 6; Ripley 3▼; Roll-A-Reel 3▼; Toner Cable 3,4; Van Ladder 1▼; Utility Product 4,6; Vermeer 2
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XI SYSTEMS

Emergency Power Equipment	Advance Conversion▼; Alexander▼; Bayly; CAT; C-COR; Christie; Gould Inc; GTE CATV; High-Lite▼; J&D Electronics; North American Turbine▼; Onan; Precise Power; Sawyer▼; Soll; Spectro-Lab; Tech Labs▼; Teledyne Big Beam; Versa Count
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Mobile Van Construction	AF Assoc; Applied Video; Atlantic Research▼; Audiotechniques; CAT; Centro▼; Dyma▼; Electro & Optical▼; Eng Mfg▼; Grinnan▼; High-Lite▼; Holland; Marconi▼; Merlin▼; Moxon; QRK▼; RCA▼; Soll; Spectra-Vision▼; Tri Tronics; Ultra Audio; Whirlwind; Wolf Coach
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Facility Turnkey Installation	Accurate Sound▼; AF Assoc; Applied Video; Atlantic Research▼; Audiotechniques; B'cast Auto. Assoc. Inc.; CAT; Comark; Commercial Telecom▼; Delta▼; Dyma▼; Elcom▼; Electronics M&C; Electro & Optical▼; Fisher-Burke; Gabriel▼; Grinnan▼; GTE▼; Imero Fiorentino; Janson▼; Lebow Labs▼; Long; McCurdy▼; McMartin▼; Merlin▼; Microwave Associates▼; Milam; N.E. Broadcast; Nurad▼; Pacific Recorders & Engr▼; QSI; RCA▼; Soll; Spectra Sonics▼; Tri Tronics
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Weather Radar Systems	Alden▼; Arvin CATV; Arvin-Echo▼; CAT; Enterprise Elect▼; TSC
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EBS Two-Tone Systems	Bald Mountain▼; Elcom▼; ESE▼; Fixtune; GAW; Gorman-Redlich▼; International Nuclear; Logitek▼; McMartin▼; Neff; Rivers▼; Time & Frequency▼
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BM/E DIRECT ACCESS GUIDE

Below is a list of major suppliers to the broadcast industry, advertising in the 1978 Source. Only the most essential information is provided to give you instant access to these important manufacturers. Tear out and post prominently.

ADDA CORP.
408-379-1500

ACCURATE SOUND CORP.
415-365-2843
TELEX: 34-8327

ADVANCE INDUSTRIES
712-252-4101
800-831-0974
TELEX: 48-0121

ALEXANDER MFG. CO.
515-423-8963

AMERICAN DATA CORP.
205-837-5180
TWX: 810-726-2125

AMPEREX ELECTRONIC CORP.
401-762-3800
TELEX: 92-7584
TWX: 710-382-6332

AMPEX
415-367-2011
TELEX: 34-8464
TWX: 910-378-5920

AMPRO BROADCASTING INC.
215-322-5100

AMTRON CORP.
408-688-4445
TWX: 910-598-8420

ANGENIEUX
516-567-1800
TELEX: 92-0842

ARISTOCART
604-687-2844
TELEX: 04-54639

ASACA CORP. OF AMERICA
312-298-4380
TELEX: 72-6351

**AUDIO & DESIGN
RECORDING LTD.(U.K.)**
(0734)53411
TELEX: 847-605

AUDIO DESIGNS & MFG. INC.
313-778-8400
TELEX: 23-1114

AUDIOMARKETING
203-359-2315
TELEX: 99-6519

AUDIO-TECHNICA U.S. INC.
216-836-0246
TELEX: 98-6411

AUTOMATED B'CAST CONTROLS
301-762-0558

BELAR ELECTRONICS LAB INC.
215-687-5550

BONNEVILLE PRODUCTIONS
801-237-2400
TWX: 910-925-5266

BOONTON ELECTRONICS CORP.
201-887-5110
TWX: 710-986-8241

BROADCAST ELECTRONICS INC.
217-227-9600
TELEX: 25-0142

BROADCAST VIDEO SYSTEMS LTD.
416-497-1020
TELEX: 065-25329

BTX CORP.
617-891-1239

CAMERA MART
212-757-6977
TELEX: 1-2078

CANON USA
516-488-6700
TELEX: 96-1333

CAA ELECTRONICS CORP.
609-424-1500
800-257-7181
TELEX: 84-5200

CENTRAL DYNAMICS LTD.
312-991-4720
TWX: 910-693-4805

CETEC BROADCAST GROUP
805-684-7686

CINE 60
212-586-8782

CINEMA PRODUCTS CORP.
213-478-0711
TELEX: 69-1669

CLEAR-COM INTERCOM SYSTEMS
415-989-1130

CMX SYSTEMS
408-988-2000
TWX: 910-338-0554

COHU INC.
714-277-6700
TWX: 910-335-1244

COLLINS BROADCAST PRODUCTS
214-996-5424
TELEX: 73-307
TWX: 910-867-4709

COMMERCIAL ELECTRONICS INC.
415-969-1910
TELEX: 34-8436

**COMPUTER IMAGE VIDEO
CONTROLLERS**
903-935-8514

COMREX
617-443-5077

CONRAC CORP.
201-575-8000
TELEX: 13-8452
TWX: 710-734-4356

CONSOLIDATED VIDEO SYSTEMS
408-737-2100
TELEX: 35-2028

CONTINENTAL ELECTRONIC
905-822-1421
TELEX: 51-5046

CONVERGENCE CORP.
714-549-3146
TWX: 910-595-2573

COSMICAR
In U.S.A.: Pentax Corp.
516-487-9800

CSI
305-737-5626
TELEX: 513-458

DATATEK
201-964-3656

DATAMETRICS INC.
617-658-5410
TWX: 710-347-7672

DUCA-RICHARDSON CORP.
303-423-1300

DYNAIR ELECTRONICS INC.
714-263-7711
TWX: 910-335-2040

DYNASCENCES
215-643-0250
TELEX: 85-6458

ECONCO BROADCAST SERVICE INC.
916-662-4495

EEV INC.
914-592-6050
TWX: 710-567-1215

EIGEN VIDEO
916-273-1341

EIMAC
415-592-1221
TWX: 910-376-4893

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201-741-0404
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416-291-4492
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FIDELIPAC
609-235-3511

JOHN FLUKE MFG. CO.
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TELEX: 32-0013
TWX: 910-449-2850

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201-427-1160

FUJINON OPTICAL INC.
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TELEX: 13-1642

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TWX: 710-541-0498

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GORMAN-REDLICH MFG. CO.
614-593-3150

GRASS VALLEY GROUP INC.
916-273-8421
TWX: 910-530-8280

GREAT AMERICAN MARKET
213-883-8182

GRUBER PRODUCTS CO.
419-476-7200

HITACHI DENSHI AMERICA LTD.
212-898-1261
TELEX: 42-4304
TWX: 710-582-2495

HITACHI (AMERICA) LTD.
312-298-0840
TELEX: 72-6335

HM ELECTRONICS INC.
714-280-6050

IGM DIV. NTI
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TWX: 910-595-2573

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516-487-9800

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TWX: 910-335-2040

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TWX: 910-321-4526

GORMAN-REDLICH MFG. CO.
614-593-3150

GRASS VALLEY GROUP INC.
916-273-8421
TWX: 910-530-8280

GREAT AMERICAN MARKET
213-883-8182

GRUBER PRODUCTS CO.
419-476-7200

HITACHI DENSHI AMERICA LTD.
212-898-1261
TELEX: 42-4304
TWX: 710-582-2495

HITACHI (AMERICA) LTD.
312-298-0840
TELEX: 72-6335

HM ELECTRONICS INC.
714-280-6050

IGM DIV. NTI
206-733-4567

ELECTRO-VOICE INC.
616-695-6831

ESE
213-674-3021

**FERNSEH GROUP
ROBT. BOSCH CORP.**
201-797-7400
TELEX: 13-2453

FIDELIPAC
609-235-3511

JOHN FLUKE MFG. CO.
206-774-2211
TELEX: 32-0013
TWX: 910-449-2850

FREZZOLINI
201-427-1160

FUJINON OPTICAL INC.
914-472-9800
TELEX: 13-1642

**GENERAL ELECTRIC CO. VIDEO
DISPLAY DIV.**
315-456-2562
TWX: 710-541-0498

ALAN GORDON ENTERPRISES INC.
213-466-3561
TWX: 910-321-4526

GORMAN-REDLICH MFG. CO.
614-593-3150

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916-273-8421
TWX: 910-530-8280

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714-280-6050

IGM DIV. NTI
206-733-4567

INNOVATIVE TELEVISION EQUIP.
213-888-9421
TELEX: 18-1028

INOVONICS INC.
408-374-8300

INTERNATIONAL TAPETRONICS CORP.
309-828-1381
1-800-447-0414

KNOX LTD.
301-840-1930
TELEX: 89-8484

LAIRD TELEMEDIA INC.
801-487-6251

JAMES B. LANSING SOUND INC.
213-893-8411
TELEX: 69-1473

LEITCH VIDEO LTD.
416-438-5060
TELEX: 065-25420

LENCO INC. ELECTRONICS DIV.
314-243-3147

LISTEC TELEVISION EQUIP CO.
516-694-8963
TELEX: 64-0470

LPB INC.
215-644-1123

L-W INTERNATIONAL
213-348-8614
TELEX: 910-495-1714

3M/MAGNETIC AUDIO/VIDEO PRODS.
612-733-1662
TELEX: 286

3M/MINCOM DIV.
612-733-7603
TELEX: 306
TELEX: 810-726-2105

MARCONI ELECTRONICS INC.
201-767-7250
TELEX: 710-991-9752

MARCONI INSTRUMENTS
201-767-7250
TELEX: 710-991-9752

MARTI ELECTRONICS INC.
817-645-9163

McCURDY RADIO INDUSTRIES
312-640-7077
TELEX: 910-222-0436

MC I
305-566-2853
TELEX: 51-4362

McMARTIN INDUSTRIES INC.
402-331-2000
TELEX: 48-4485

MICRO CONSULTANTS INC.
415-321-0832
TELEX: 33-4420

MICROPROBE ELECTRONICS INC.
312-440-3111

MICROTIME INC.
203-242-0761
TELEX: 710-425-2390

MICROWAYE ASSOCIATES
617-272-3000
TELEX: 710-332-1716

MONROE ELECTRONICS INC.
716-765-2254
TELEX: 91-9188

MOSELEY ASSOC. INC.
305-968-9621
TELEX: 65-8448

NEC AMERICA INC. BROADCAST EQUIP. DIV.
312-640-3792
TELEX: 25-4379

NURAD INC.
301-461-1700
TELEX: 710-234-1071

O'CONNOR
714-979-3993
TELEX: 68-5641

ORBAN ASSOCIATES INC.
415-957-1067

OTARI CORP.
415-593-1648
TELEX: 910-376-4890

OTARI ELECTRIC
415-593-1648
TELEX: 910-376-4890

PANASONIC CO.
201-348-7000
TELEX: 12-7856
TELEX: 710-992-8920

PACIFIC RECORDERS & ENG. CORP.
714-453-3255
TELEX: 69-5008

PHILIPS BROADCAST EQUIP. CO.
201-529-3800
TELEX: 64-2351
TELEX: 710-988-5348

PHILIPS VIDEO PRODUCTS
201-529-3800
TELEX: 64-2351
TELEX: 710-988-5348

POTOMAC INSTRUMENTS INC.
301-589-2662

QEI CORP.
609-767-8052

QRK ELECTRONIC PRODUCTS INC.
209-251-4213
800-344-2181

RAMKO RESEARCH INC.
916-635-3600

RCA BROADCAST SYSTEMS
609-338-3000
TELEX: 83-4357
TELEX: 710-892-0905

ROH CORP.
404-449-0873

ROHDE & SCHWARZ SALES CO.
201-575-0750
TELEX: 13-3310

ROSS VIDEO LTD.
613-652-4889
TELEX: 05-811579

RTS SYSTEMS INC.
213-980-0511

RUSSCO ELECTRONICS MFG. CO.
209-291-5591

KEN SCHAFFER GROUP INC.
212-371-2335

SCIENTIFIC-ATLANTA INC.
404-449-2000
TELEX: 054-2898
TELEX: 810-766-4912

SCULLY RECORDING INSTRUMENTS
415-968-8389
TELEX: 34-5524

SHURE BROS. INC.
312-866-2200
72-4381

SINTRONIC CORP.
215-363-0444

SKOTEL
514-676-1813

SONY VIDEO PRODUCTS CO.
212-371-5800
TELEX: 14-7212

SOUND TECHNOLOGY
408-378-6540

SPECTRA SONICS
801-392-7531

SPIN PHYSICS INC.
714-453-5410
TELEX: 910-322-1737

STAINLESS
215-699-4871
TELEX: 510-661-8097

STANTON MAGNETICS INC.
516-681-0200
TELEX: 510-221-1845

STRAND CENTURY INC.
201-791-7000
TELEX: 13-0322

STUDER REVOX
615-329-9576
TELEX: 55-4453

SYSTEM CONCEPTS INC.
801-486-3833
TELEX: 910-925-5684

SYSTEMS ASSOC.
213-344-3552

TABER MFG. & ENG. CO.
415-635-3831
TELEX: 33-7714

TECH LABORATORIES INC.
201-944-2221

TEKTRONIX INC.
503-644-0161
1-800-547-1512
TELEX: 910-467-8708

TELEMET
516-842-2300
TELEX: 510-227-9850

TELEVISION EQUIPMENT ASSOC.
914-763-8893
TELEX: 710-575-2600

TELEVISION PRODUCTS CO. INC.
213-776-3276

TELEX COMMUNICATIONS INC.
612-884-4051
TELEX: 29-7053

TENTEL CORP.
408-377-6588

TERRACOM
714-278-4100
TELEX: 910-335-1202

THOMSON-CSF LABORATORIES
203-327-7700
TELEX: 710-474-3346

TIME & FREQUENCY TECHNOLOGY INC.
408-246-6365
TELEX: 910-338-0584

TRANSTECTOR SYSTEMS
800-648-3387
TELEX: 33-8647

UREI
213-764-1500
TELEX: 65-1389

US JVC
212-476-8010
TELEX: 12-6081

UTAH SCIENTIFIC INC.
801-973-6840

VIDEO AIDS CORP.
303-667-3301

VIDEOMAX/DIV. ORROX CORP.
408-988-2000
TELEX: 910-338-0554

VIDEOTEK
215-327-2292

VISCOUNT INDUSTRIES LTD.
614-327-9446
TELEX: 045-08605

VITAL INDUSTRIES INC.
904-378-1581
1-800-874-4608
TELEX: 810-825-2370

WARD BECK SYSTEMS LTD.
416-438-6550
TELEX: 06-525399

YARDNEY ELECTRIC CORP.
203-599-1100
TELEX: 710-470-0260

Broadcast Equipment Manufacturers

The manufacturers listed in this year's Source are producers of 11 major categories of products for the broadcast and CATV industries. Each manufacturer received an extensive questionnaire from BM/E. Based on the completion of that form and review of supporting literature supplied by the manufacturer, many have been listed as verified sources. Also included in this section are some distributors that are nationwide exclusive sources for certain brands of equipment.

A

ABERDEEN COMPANY

PO Box 2663 Culver City CA 90230
213 870-5353

Lashing wire, messenger stand, pole line hardware, buried system accessories

ACCURATE SOUND CORP

114 5th Ave Redwood City CA 94063
415 365-2843

Mic booms & dollies; audio cassette player/recorders; open reel player/recorders; replacement & rebuilt tape heads; tape duplicators; production equip rental; facility turnkey installation

See ad pg 185

ACHRO-VIDEO LTD

10 Virginia Ave West Nyack NY 10994
914 358-5504

TV lens repair service

ACOUSTIC RESEARCH

10 American Dr Norwood MA 02062
617 769-4200

Turntables

ACRODYNE INDUSTRIES INC

21 Commerce Dr Montgomeryville PA 18936
215 368-2600

TV transmitters & translators; RF amps; TV exciters

ADC PRODUCTS

4900 W 78 St Minneapolis MN 55435
612 835-6800

Patch panels, connectors, hum bucking coils, transformers

ADDA CORP

1671 Dell Ave Campbell CA 95008
408 379-1500

Digital frame stores, electronic still stores, frame synchronizers

See ad pgs 97, 165—refer to rep/dist section

GA Adda Corp 2693 Twigg Circle
Marietta 30067 404 953-1500

ADERHOLD CONSTRUCTION CO

3384 Peachtree Rd NE Atlanta GA 30326
404 233-5413

TV and radio facility construction

ADVANCE CONVERSION DEVICES CO

109 Eighth St Passaic NJ 07055
201 778-0707

Emergency power supply, uninterruptible power systems, inverters

ADVANCE INDUSTRIES INC

2301 Bridgeport Dr Sioux City IA 51102

712 252-4101

Antenna towers, tower hardware and lighting VS
See ad pg 184

ADVENT CORP

195 Albany St Cambridge MA 02139
617 661-9500

Loudspeakers, TV projection systems, receiver monitors VS

AEL COMMUNICATIONS CORP

PO Box 507 Lansdale PA 19446
215 822-2929

Connectors, standard converters, passive distribution accessories, test equip, CATV systems design and turnkey installations

AF ASSOCIATES INC

100 Stonehurst Court Northvale NJ 07647
201 767-1000

VTR rebuilding, mobile van construction, facility turnkey installations, production equip rentals, color framer editing aid device, gated video circuits VS

AGFA-GEVRAET INC

275 North St Teterboro NJ 07608
201 288-4100

Magnetic audio tape, mag film, test tapes

AIC PHOTO INC

168 Glen Cove Road Carle Place NY 11514
516 742-7300

Lenses film and TV (Soligor), film cameras and accessories (Bauer), film processors (JOB0)

AILTECH (A CUTLER HAMMER CO)

19535 E Walnut Dr City of Industry CA 91748
213 965-4911

Los Angeles Operations
5340 Alla Rd Los Angeles CA 90066
213 822-3061

RF amps & attenuators; frequency monitors & counters; spectrum analyzers

AITKEN COMMUNICATIONS INC

214 Harrison St Taft CA 93268
805 765-5403

Automation programmer, audio controller, time control VS

AKG ACOUSTICS DIV PHILIPS AUDIO VIDEO SYSTEMS

91 McKee Dr Mahwah NJ 07430
201 529-3800

Condenser mics, dynamic mics, special purpose mics; headphones, reverb systems; phono cartridges VS

See ad pg 134—refer to rep/dist section

AKG SALES DIV CANADA PHILIPS

200 Consumers Rd #105 Willowdale Ont M2J 4R4
416 494-1453

VS means that BM/E has reviewed this manufacturer's supporting literature

Reverb units; stereo pickups; headphones; mics (dynamic, condenser, wireless, shotgun, lavalier); mic accessories

AKAI AMERICA LTD

2139 E Del Amo Blvd Compton CA 90220
213 537-3880

Portable video cameras, portable videotape recorder/players

ALAN GORDON ENTERPRISES INC

1430 N Cahuenga Blvd Hollywood CA 90028
213 466-3561

Wireless mics, booms & dollies, accessories; tape cassette player/recorders; cine cameras; camera tripods & accessories; motion picture projectors VS
See ad pg 205

ALC (AUERNHEIMER LABS & CO)

4561 E Florence Ave Fresno CA 93725
209 442-1048

Speakers VS

ALCO PRODUCTS INC

1551 Osgood St No Andover MA 01845
617 685-4371

Machined aluminum knobs VS

ALDEN ELECTRONIC & IMPULSE RECORDING EQUIP CO INC

1 Washington St Westboro MA 01581
617 366-8551

Fax recording systems; weather data systems, satellite earth station receivers; analogue & digital facsimile weather chart scanners & recorders; remote weather radar recorders; weather satellite picture receiving systems, marine radiofacsimile weather chart recorders; facsimile communications equip VS

ALEXANDER MFG CO

PO Box 1645 Mason City IA 50401
515 423-8963

Batteries, portable power packs, emergency power equip VS

See ad pg 162—refer to rep/dist section

CO Alexander 425 S Elm St Palantine
60067 312 359-1153
NJ Alexander NE 47 Lenape Dr
Montvale 07045 201 263-1888

ALFORD MFG CO

15 Sixth Rd Woburn MA 01801
617 935-8610

continued on page 76

The Source '78

Antennas, FM, TV, microwave; duplexers, RF loads; microwave units; transmission line & line accessories; impedance bridge, CATV test equip

ALL MOBILE VIDEO INC
630 9 Ave New York NY 10036
212 757-8919

Equip rental services, production equip; post production services

ALLIED IMPEX CORP (DIV OF AIC PHOTO INC)
168 Glen Cove Rd Carle Place NY 11514
516 742-7300

Photographic equip & accessories including super-8 cameras also optical & misc accessories

ALLIED TOWER CO
PO Box 331 South Houston TX 77587
713 946-9546

Antenna towers & accessories; tower design, construction, erection **VS**

ALLISON RESEARCH INC
2817 Erica Place PO Box 40288 Nashville TN 37204

615 255-4766
Limiter/compressor, console programmers

ALPHA ELECTRONIC SERVICES INC
8431 Monroe Ave Stanton CA 90680
714 821-4400

Multi-function tone generators (audible, subaudible), digital clocks, remote control

ALPHA WIRE CORP
711 Lidgerwood Ave Elizabeth NJ 07207
201 925-8000

Cable, wire; tools

ALTEC LANSING SOUND PRODUCTS DIV
1515 S Manchester Ave Anaheim CA 92803
714 774-2900

Audio power amp, public address amp; slide attenuator, equalizers and filters (passive and active); audio mixers; portable dynamic & condenser mics; booms & dollies; accessories, speakers **VS**

AMBER ELECTRO DESIGN LTD
4810 Jean Talon West Montreal Canada H4P 2N5
514 769-2739

Multipurpose audio test set, audio spectrum analyzers, audio generators, dB, HD meters **VS**

AMCO ENGINEERING CO
7333 W Ainslie St Chicago IL 60656
312 867-8500

Racks, cabinets, enclosures **VS**

AMERICAN DATA
401 Wynn Dr NW Huntsville AL 35805
205 837-5180

Audio line, distribution, and monitor amps; chroma keys; video pulse distribution and subcarrier amps; production switchers, automated master control, routing switchers; segs **VS**

See ad pg 24
CA American Data 3760 Cahuenga Blvd N. Hollywood 91604..... 213 760-3221
CT American Data PO Box 452, New Hartford 06057..... 203 370-7840
GA J Ryan 2219 Oakawana Atlanta 30345..... 404 633-2100
IN American Data PO Box 27324 Indianapolis 46227..... 317 784-3000
MD D Wilcox 5504 Waterway Rockville 20853..... 301 460-1454
WA American Data PO Box 23 Mercer Island 98040..... 202 244-2345

AMERICAN ELECTRONIC LABORATORIES INC
PO Box 552 Lansdale PA 19446
215 822-2929

FM exciters, AM & FM transmitters, SCA equip, RF amps

AMERICAN TECHNOLOGY CO INC
4330 N 39th Ave Phoenix AZ 85009
602 272-9415

Passive distribution accessories

AMERICAN LASER SYSTEMS INC
106 James Fowler Rd Goleta CA 93017
805 967-0423

Infrared video transmission system **VS**

AMERICAN MICROSIGNAL CORP
8431 Monroe Ave Stanton CA 90680
714 761-1222

Tone generators, encoders & decoders; land mobile communications systems

AMILON CORP
49-12 30th Ave Woodside NY 11377
212 274-1794

Audio cassette transport mechanisms, tape, cartridge transport mechanisms **VS**

AMPEREX ELECTRONIC CORP
230 Duffy Ave Hicksville NY 11803
516 931-6200

Power tubes for RF, VHF and UHF, variable vacuum capacitors, klystrons, camera tubes **VS**

AMPEREX ELECTRONIC CORP EOD DIV
Providence Pike Slatersville RI 02876
401 762-3800

Plumbicon and vidicon camera tubes, VF picture tubes, UHF & VHF transmitting tubes, rectifier stacks, ferrite circulators, vacuum capacitors **VS**
See ad pg 153

CA Amprx 3040 Scott Blvd Santa Clara 95050..... 408 249-1134
GA Amprx 3300 N E Expwy Ste 1G Atlanta 30341..... 404 458-2519
IL Amprx 175 Scott St Elk Grove Village 60007..... 312 640-2544
NY Amprx 230 Duffy Ave Hicksville 11802..... 516 931-6200
TX Amprx 13773 N Central Expwy Ste 1228 Dallas 75231..... 214 231-1202

AMPEX CORP
401 Broadway Redwood City Ca 94063
415 367-2011

Audio tape; audio tape recorders/players (portable, studio, multi-channel); audio time code gen; var speed ocs; videotape; videotape recorder/reproducers (quad & helical); automatic video cassette recorder/reproducer; broadcast color cameras; time base correctors; video editing equip; electronic still store, production switchers **VS**

See ad pgs 14-15
Amplex is also exclusive distributor of EECO products (see listing)

CA Amplex 500 Rodier Dr Glendale 91201..... 213 240-5000
GA Amplex 3135 Chestnut Dr Suite 101 Atlanta 30340..... 404 451-7112
IL Amplex 2201 Lunt Ave Elk Grove Village 60007..... 312 593-6000
MD Amplex 10215 Fernwood Rd Bethesda 20034..... 301 530-8800
NJ Amplex 75 Commerce Way Hackensack 07601..... 201 489-7400
OH Amplex 4130 Linden Ave Dayton 45432..... 513 254-6101
TX Amplex 1615 Prudential Dr Dallas 75235..... 214 637-5100
UT Amplex 2880 S Main St Ste 105 Salt Lake City 84115..... 801 487-8181

AMPRO BROADCASTING INC
850 Pennsylvania Blvd Feasterville PA 19047
215 322-5100

Audio consoles & mixers; audio controls, equalizers, attenuators; tape cartridge player/recorder; multiscart machines; test tapes; tape accessories, radio facility turnkey installation **VS**

See ad pg 10—refer to rep/dist section

AMP SPECIAL INDUSTRIES
Valley Forge PA 19482
215 647-1000

CATV connectors & tools; patch panels & terminals **VS**

AMTRON CORP
5620 Freedom Blvd Aptos CA 95003
408 688-4445

Color video monitors **VS**

See ad pg 87—refer to rep/dist section

ANDERSEN (WALTHER M A) & ASSOCIATES INC
4 Main St Ext Tariffville CT 06081
203 658-7666

Video delay lines and modules **VS**

VS MEANS IT'S VERIFIED

ANDREW CORP
10500 W 153rd St Orland Park IL 60462
312 349-3300

Earth station antennas; antennas, TV & microwave; transmission line & line connectors; general connectors **VS**

ANDREWS TOWER INC
1420 Layton Ave Ft Worth TX 76117
817 831-1222

AM antennas; antenna towers, tower accessories; tower lighting **VS**

ANGENIEUX CORP OF AMERICA
1500 Ocean Ave Bohemia NY 11716
516 567-1800

Video camera lenses, cine lenses, lens accessories & associated hardware controls, lens repairing **VS**
See ad pgs 101, 133

CA Ang 13381 Beach Ave Venice 90291..... 213 821-5080
CAN Ang 4 Haven Hill Sq Agincourt Scarborough Ontario M1V 1M4..... 416 291-2362

ANIXTER-MARK
4711 Golf Rd Skokie Ill 60076
312 675-1500

Microwave antennas & accessories; point to point antennas, two way antennas **VS**

ANN ARBOR TERMINALS INC
6107 Jackson Rd Ann Arbor MI 48103
313 769-0926

Display & terminal CRT equip; alphanumeric generators **VS**

ANNIS (R B) CO
1101 Delaware St Indianapolis IN 46202
317 637-9282

Demagnetizing kits, magnetometers **VS**

ANTENNA PRODUCTS CO
Box 520 Mineral Wells TX 76067
817 325-3301

Antennas, AM, microwave towers

ANVIL CASES
4128 Temple City Blvd Rosemead CA 91770
213 575-8614

Racks, cabinets, shipping cases & transit cases **VS**

ANTENNAS FOR COMMUNICATIONS INC
Silver Springs Shores Industrial Pk 486 Cypress Rd Ocala FL 32670
904 687-4121

Microwave antennas; earth station antennas **VS**

AP CIRCUIT CORP
865 West End Ave New York NY 10025
212 222-0876

Equalizers, filters (active) **VS**

APPLIED VIDEO ELECTRONICS INC
PO Box 25 Brunswick OH 44212
216 225-4443

Video pulse and distribution amps, radio and TV studio design, mobile van construction, facility turnkey installation **VS**

ARISTOCART DIV OF WESTERN BROADCASTING LTD
1960-505 Burrard St Vancouver BC V7X 1M6
604 687-2844

Tape cartridges, test tapes; cartridge racks **VS**

See ad pg 42—refer to rep/dist section

ARP INSTRUMENTS INC
45 Hartwell Ave Lexington MA 02173
617 861-6000

Music synthesizers, portable **VS**

ARRIFLEX CORP OF AMERICA
1 Westchester Pl Elmsford NY 10523
914 592-8510

16mm & 35mm cine cameras, camera lenses, silver recovery; HMI lights **VS**

continued on page 78

Better video—digitally— for any TV standard

PAL/SECAM



CVS-517 Digital Time Base Corrector

Broadcast quality (SECAM optional), L. Lock and V. Lock. SECAM option also provides PAL/SECAM bi-directional standards conversion. Features: 2h + window, Gen Lock, DOC, Vel Comp, Proc Amp. Options include: SECAM, Image Enhancer/Noise Reducer, 16h window.

PAL-M



CVS-515 Digital Time Base Corrector

Broadcast quality; has NTSC to PAL-M standards conversion. Features: 2h + window, Gen Lock, DOC, Vel Comp, and Proc Amp. Image Enhancer/Noise Reducer and 16h window optional.

NTSC



CVS-510 Digital Time Base Corrector

Ideal for CCTV and CATV; monochrome or heterodyne color. Features include: 1h + window, DOC, Proc Amp, Color Interface.



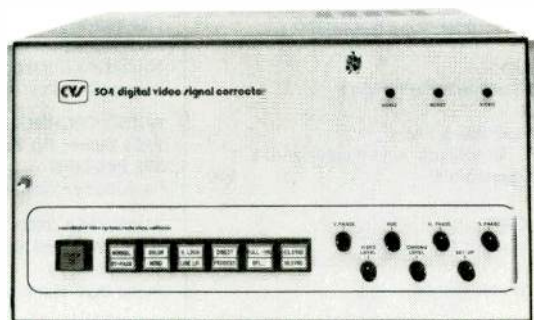
CVS-516 Digital Time Base Corrector

Broadcast quality, specifically designed for heterodyne VTRs. Features: 2h + window, Gen Lock, DOC, Vel Comp, Proc Amp. Options: Image Enhancer/Noise Reducer, 16h window.



CVS-520 Digital Time Base Corrector

Broadcast quality for every VTR; segmented or nonsegmented. Only TBC with 9 bit 4x subcarrier digital processing. Can update mono quad to color; has DOC, line-by-line Vel Comp and digital outputs.



CVS-504B Digital Time Base Corrector

Broadcast quality, monochrome, direct and heterodyne color, (L. Lock and V. Lock). Includes: 3h window, Gen Lock, Proc Amp. Options: Vel Comp, Heterodyne Phase Corrector.



CVS 310 Image Enhancer/Noise Reducer

Reduces luminance & chroma noise 6 dB; enhances horiz. & vert.; minimizes fine grain noise, moiré & streaking; reduces chroma-to-luminance crosstalk by 20 dB; corrects chroma/luma delay errors.

EPIC™ Computer Aided Editor

A complete, software-based system for on or off-line use with multiple VTRs—from quad and 1" to 3/4" cassette types. With EPIC, functions that, before, required separate, costly hardware—like time code generation—are now in software. As a result, total system cost is reduced while versatility and convenience are increased.

Want to know more about TBCs?

Ask for our free booklet, the "What, Why and When of Time Base Correction."



Consolidated Video Systems, inc.

U.S. Headquarters
1255 E. Arques Avenue
Sunnyvale, California 94086
Phone: (408) 737-2100
Telex: 35-2028

European Office
293 Regent Street
London, W1V2HR England
Phone: 636 3850
Telex: 268316

CVS is making digital technology work for video users worldwide. To keep up to date on our new product developments call or write.

The Source '78

ARTISTS' ENGINEERING

PO Box 11457 San Francisco CA 94101
415 928-4210

Digital clocks; timers

VS

ARVIN/CATV

4490 Old Columbus Rd NW Carrol OH 43112
614 756-9211

RF amps & switchers; AM, FM & TV field intensity meters; weather radar systems

ARVIN/ECHO SCIENCE

485 E Middlefield Rd Mountain View CA 94043
415 961-7145

Electronic cassette disc; frame & field synchronizers; segmented-helical, automated, disc VTRs; VTR head refurbishing; two VTR editor-controller (disc); video action recorders (disc); slo mo, variable speed, time lapse); electronic still stores; comb decoders; A/D converters; weather radar systems

VS

ASACA CORP OF AMERICA

1289 Rand Rd Des Plaines IL 60016
312 298-4380

Color studio cameras; ENG/EFP cameras; picture monitors (b&w, color, DC portable); image enhancers; sync & color bar generator systems; quad VTRs; A/D converters; harmonic distortion meters; video noise meters; diff phase-gain measurement; production equip rental

VS

See ad pgs 11, 35—refer to rep/dist section

ASHLY AUDIO

1099 Jay St Rochester NY 14611
716 328-9560

Audio pre-amps; AM & FM compressor/limiters/filters; active equalizers & filters; audio generators

VS

ASTATIC CORP

Box 120 Conneaut OH 44030
216 593-1111

Pickups, mics, mic stands

ATLANTIC RESEARCH CORP

5390 Cherokee Ave Alexandria VA 22314
703 354-3400

Mobile van construction, facility turnkey installation, consulting

VS

ATLAS SOUND

10 Pomerroy Rd Parsippany NJ 07054
201 887-7800

Mic stand & accessories, speakers, columns

VS

AUDIO ACCESSORIES INC

163 Water St Keene NH 03431
603 352-2320

Patch panels, plugs, jacks, audio connectors

AUDIO DESIGNS & MFG INC

16005 Sturgeon St Roseville MI 48066
313 778-8400

Audio consoles; audio amps, equalizers, attenuators; audio processors; VU and PPM meters; custom consoles, noise reduction systems, speakers, intercom systems, patch panels; equalizers & filters

VS

See ad pgs 38-39—refer to rep/dist section

FL J Sims 5151 SE 44 Rd Ocala
32670..... 904 694-4032

AUDIO & DESIGN RECORDING INC.

84 Oxford Rd Reading Berkshire England
0734 53411

Audio distribution amps, pre-amps, AM & FM compressor/limiters, equalizers and filters active, special effects, delay lines, turntable pre-amps, noise reduction, VU & PPM level indicators, design and development

VS

See ad pg 202—refer to rep/dist section

CA N Branwell PO Box 902
Marina 93933..... 408 372-9036

HA Audio & Design PO Box 23047
Honolulu 96822..... 808 845-7226

AUDIO DEVELOPMENTS INTERNATIONAL

644 Emerson St Palo Alto CA 94301
415 321-3035

Audio monitor and power amps, active equalizers and filters; multitest systems, modulation monitors, spectrum analyzers, production equip rental

VS

AUDIOMARKETING

See Audiotechniques Inc
See ad pg 204

AUDICO LTD

219 Crossen Ave Elk Grove IL 60007
312 640-1030

Semi-automatic cassette loader

VS

AUDIONICS OF OREGON

Suite 160 10950 SW Fifth St Beaverton OR 97005
503 641-5225

Audio dist, power & monitor amps; pre-amps; op-amp modules; turntables; quad matrix equip

VS

AUDIOSEARS CORP

South St Stamford NY 12167
607 652-7305

Headphones, microphones

AUDIO-TECHNICA US INC,

33 Shawassee Ave Fairlawn OH 44313
216 836-0246

Headphones; dynamic & condenser mics; phono cartridges & styli; stereophones; audio accessories; direct to disc records

VS

See ad pg 89

AUDIOTECHNIQUES INC

652 Glenbrook Rd Stamford CT 06906
203 359-2312

Audio amps (monitor, power, public address); equalizers & filters (active & passive); mixers; mic booms & dollies; speakers

VS

AUDIO TECHNOLOGY

1169 Tower Rd Schaumburg IL 60195
312 885-0066

Peak power indicators

AUDIO/TEK INC

502 D Van Dell Way Campbell CA 95008
408 378-5586

Audio tape duplicators

AUDI-CORD CORP

1845 West Hovey Ave Normal IL 61761
309 452-9461

Tape cartridge player/recorders

VS

AUDIOTRONICS CORP

7428 Bellaire Ave, North Hollywood CA 91605
213 765-2645

Headsets, mics, tape cassette player/recorders, picture monitors; speakers; pulse signal systems

VS

AUDIOTRONICS VIDEO DISPLAY DIV

530 Fifth Ave NW New Brighton MN 55112
612 633-3131

B&W and color video monitors

AUDIO-VIDEO ENGINEERING CO

65 Nany Blvd Merrick NY 11566
516 546-4239

Hum bucking coils

VS

AUDITRONICS INC

3750 Old Getwell Rd Memphis TN 38118
901 362-1350

Audio consoles, line amps, equalizers

VS

AUDIX LTD

Station Rd Wenden Saffron Walden Essex UK
Saffron Walden (0799) 40888

Audio amps, distribution line, pre-amps, op-amps, monitors and power amps, PA; equalizers; audio consoles, mixers (stereo, mono, quad, TV audio) portable mixers

VS

AURATONE CORP

PO Box 698 Coronado CA 92118

Speakers, recording and broadcast reference monitors

VS

VS MEANS IT'S VERIFIED

AUTOGRAM CORP

631 J Place PO Box 456 Plano TX 75074
214 424-8585

Automation equip; audio amps; mono & stereo consoles

AUTOMATED BROADCAST CONTROLS INC

1110 Taft St Rockville MD 20850
301 762-0558

Full line audio automation equipment

See ad pg 98

AUTOMATED BUSINESS CONCEPTS INC

8828 Complex Drive San Diego CA 92123
714 560-1647

Radio & TV computer business services

AUTOMATED PROCESSES INC

790 Park Ave Huntington NY 11743
516 427-6024

Automated multi-channel mixer, full line of audio consoles and amplifiers, audio attenuators, equalizers and filters, special effects; memory units, intercom systems, synchronizing equipment; telephone coupling equipment

VS

AUTOMATION ELECTRONICS INC

1001 South St Lafayette IN 47905
317 423-2572

Radio business automation systems

AVA ELECTRONICS

4000 Bridge St Drexel Hill PA 19026
215 284-2500

Cable TV multiple dwelling terminals; distribution amps, line extenders; coaxial connectors; passive accessories; camera lenses and accessories; RF amps, attenuators and filters, cables and connectors, video attenuators, transmission lines and connectors; TV combiners

VS

AVANTEK INC

3175 Bowers Ave Santa Clara CA 95051
408 249-0700

CATV test equip, microwave STLs

AVONIX DIV OF AV ELECTRONICS INC

PO Box 505 Brookfield WI 53005
414 784-1800

Video tape editor-controller, V-lock system, mini-console; production equip rental; post production services; TV studio design

VS

B

BACH AURICON INC

6950 Romaine St Hollywood CA 90038
213 462-0931

Heads, mounts & dollies; cine cameras & lenses

BALD MOUNTAIN LAB

230 Belleview Rd Troy NY 12180
518 279-9753

Audio stepping test generators, harmonic distortion meters, RF filters, EBS two-tone systems, off air frequency measurement services

VS

BALLANTINE LABORATORIES INC

PO Box 97 Boonton NJ 07005
201 335-0900

Frequency monitors and counters; dB meters; voltmeters; multimeters; oscilloscopes

VS

BALL BROTHERS RESEARCH CORP

ELECTRONIC DISPLAY DIV
PO Box 43376 St Paul MN 55164
612 786-8900

Color & b&w monitors

VS

BARBIZON ELECTRIC

426 W 55th St New York NY 10019
212 586-1620

Lamps, gels & filters

VS

BARDWELL & MCALISTER

7269 Santa Monica Blvd Hollywood CA 90046
213 876-4133

Lighting equip, heads, stands, fixtures, diffusion material

VS

continued on page 80

Here's how useful a distortion analyzer can be

Monitor voltage, power, distortion or dB ratio.

No manual nulling controls required (the 1710A is always in auto-null, reaches a null in less than 5 seconds).

Intermodulation Distortion Analyzer optionally available.

Oscillator distortion is typically .001%.

Measure generator signal at load with the push of a button.

Selectable 18 dB per octave filters reject hum and high frequency noise.

Fast pushbutton operation lets you set level, measure voltage or power, then measure distortion.

Measure voltage or power from 10 Hz to 110 kHz.

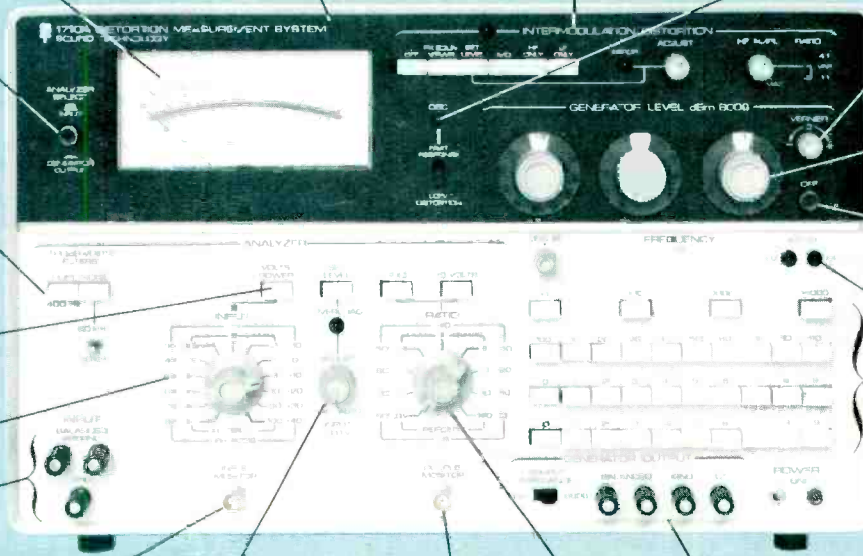
100 k Ω Balanced Input.

View input signal on a scope.

Automatic Set Level is optionally available.

View distortion products on a scope.

Measure distortion down to .002%, voltage or S/N ratios with 100 dB dynamic range.



± 1 dB Vernier adds fine level control.

Internal oscillator adjustable from +26 dBm to -89.9 dBm in 0.1 dB steps.

Turn off oscillator for quick S/N measurement.

Tuning indicators help measure distortion of an external source.

Simultaneously select oscillator and analyzer frequency with fast-to-use pushbuttons. 10 Hz to 110 kHz.

Balanced and floating 150 Ω or 500 Ω Generator output.

Two of the above features are so outstandingly valuable that we especially invite your attention to them.

One is the fast, easy measuring you get with pushbutton-selected distortion-measuring circuits (signal source and measuring circuits are simultaneously selected with the **same** pushbuttons). Pushbuttons make it so simple to measure quickly and to repeat measurements.

Secondly, you can drive virtually any type of circuit from the signal source output — whether

balanced, unbalanced, off-ground or whatever. That's because the signal source output circuit is **fully isolated and balanced**.

There is no output transformer to introduce noise or distortion.

Besides these outstanding conveniences, you can have the Sound Tech 1710A with an option that enables you to measure **intermodulation distortion**.

Call Mike Hogue/Larry Maguire to get full information on an instrument recognized everywhere as the standard of the audio field.



SOUND TECHNOLOGY

1400 DELL AVENUE
CAMPBELL, CALIFORNIA 95008
(408) 378-6540

Circle 142 on Reader Service Card

The Source '78

BARKER & WILLIAMSON INC

10 Canal St Bristol PA 19007

215 788-5581

RF amps; audio test equip, RF coils; TVI filters, antenna switching unit, filament & plate chokes VS

BASF SYSTEMS

Crosby Dr Bedford MA 01730

617 271-4000

Audio tape (open reel, cartridges, cassettes); calibration tape VS

BAUSCH & LOMB SOPD

1400 N Goodman St Rochester NY 14602

716 338-6000

TV camera lenses, motion picture camera lenses, spectrum analyzers

BAYLY ENGINEERING LTD

(AEG-TELEFUNKEN)

167 Hunt St Ajax Ontario L1S 1P6

416 683-8200

Audio amps (distribution, line, pre-amps, monitor, power); equalizers & filters (passive), portable consoles, intercom systems, patch panels, connectors; exciters; modulators; STLs, intercity microwave; remote control; comm receivers & monitor, RF amps, RF loads, RF attenuators, RF converters, RF filters, RF switchers; AM & FM transmitters & antennas, voltmeters, dB meters, RF wattmeters, RF watt emergency power equipment, racks & cabinets, RF tubes, vacuum tubes, camera pickup tubes, rectifiers, surge protectors VS

BCS—See Kaman Sciences

BEAULIEU (BELL & HOWELL)

7100 McCormack Rd Chicago IL 60645

312 262-1600

Film cameras & lenses; camera accessories VS

BEBELL INC

MOTION PICTURE LAB DIVISION

416 W 45th St New York NY 10036

212 245-8900

Film lab services VS

BEI MICROELECTRONICS

1101 McAlmont Little Rock AR 72203

501 372-7351

Audio processing equip, equalizers and filters (active) VS

BELAR ELECTRONICS LABORATORY INC

Box 826 119 E Lancaster Ave Devon PA 19333

215 687-5550

AM, FM, & TV frequency & modulation monitors; RF amps; SCA equip VS

See ad pg 130

BELDEN COMMUNICATIONS INC

25 W 45th St New York NY 10036

212 730-0172

Lamps (Lee and Thorn), diffusion material, gels and filters, heads, stands & fixtures VS

BELDEN CORP (ELECTRONIC DIV)

PO Box 1327 Richmond IN 47374

317 966-6661

RF cable; audio cable; wire; transmission lines; coaxial cable VS

BELL & HOWELL (AV PRODUCTS DIV)

7100 McCormick Rd Chicago IL 60645

312 262-1600

Film chains; motion picture & slide projectors, camera lenses & accessories, cameras VS

BELL P/A PRODUCTS CORP

994 Freeway Dr N Columbus OH 43229

614 846-2766

Amps, background music systems, commercial sound systems; public address amps; continuous loop tape decks

BENJAMIN ELECTRONIC SOUND CORP

790 Park Ave Huntington NY 11743

516 673-8600

Audio equip; CCTV equip VS

BERKEY COLORTRAN INC

1015 Chestnut St Burbank CA 95102

213 843-1200

Studio lights, stands, gels, filters, accessories, camera dollies; light control systems (manual, auto, dimmer packs); patch terminals VS

BESTON ELECTRONICS INC

903 S Kansas Ave Olathe KS 66061

913 764-1900

Automatic telecine light controls; character generators; alphanumeric generators VS

BETA TECHNOLOGY INC

94 Verdi St Farmingdale NY 11735

516 293-4313

Sync generator assignment control; videotape editor-controller, time code reader, tape timer; colorizer

BEYER DYNAMIC

155 Michael Dr Syosset NY 11791

516 364-1900

Mics, wireless mics, headsets, mic accessories VS

BIDDLE JAMES G CO

Township Line & Jolly Rds Plymouth Meeting PA 19462

215 646-9200

CATV test equip; time domain reflectometer VS

B I ELECTRONICS

128 Donaldson Center Greenville SC 29065

803 277-5985

Teletype alarm systems

BIOMATION

4600 Old Ironside Dr Santa Clara CA 95050

408 988-6800

A/D color video digitizer

BIRD ELECTRONIC CORP

30303 Aurora Rd Cleveland (Solon) OH 44139

216 248-1200

RF wattmeters; RF loads; RF filters; RF attenuators; status & alarm systems; CATV test equip VS

BIRNS SAWYER INC

1026 No Highland Ave Los Angeles CA 90038

213 466-8211

Camera heads, tripods, dollies; camera & lens accessories; film editing equip; lights & light stands; batteries; equip rental VS

BJA SYSTEMS INC

666 Davisville Rd Willow Grove PA 19090

215 659-1414

Color video synthesizer, colorizer, animation equip VS

B&K INSTRUMENTS INC

5111 W 164th St Cleveland OH 44142

216 267-4800

Condenser mics, chart recorders, audio and RF generators, impedance bridges, voltmeters, dB meters, harmonic distortion meters, intermodulation meters, phase meters, RF meters, oscilloscopes, spectrum analyzers, wave form monitors, wow and flutter meters, diff phase-gain VS

BLONDER-TONGUE LABORATORIES INC

One Jake Brown Rd Old Bridge NJ 08857

201 679-4010

CATV headends, signal processing equip; MATV equip; CATV test equip; RF amps, loads, filters; FM & TV antennas; pay-TV systems VS

BOGNER BROADCAST EQUIP CORP

401 Railroad Ave Westbury NY 11590

516 997-7800

TV transmitting antennas; microwave antennas

BONNEVILLE PRODUCTIONS

130 Social Hall Ave Salt Lake City UT 84111

801 237-2400

Audio dist & line amps; high speed tape duplication VS

See ad pgs 203

BOONTON ELECTRONICS CORP

Rte 287 at Smith Rd Parsippany NJ 07054

201 887-5110

FM-AM signal generators; impedance bridges; dB meters; RF watt meters; capacitance test meters;

VS MEANS IT'S VERIFIED

modulation meters

VS

See ad pg 51

BORG-WARNER (INGERSOLL PRODUCTS DIV)

See EMCOR

ROBERT BOSCH CORP See Fernseh

BOSTON INSULATED WIRE & CABLE CO

65 Bay St Boston MA 02125

617 265-2102

Cable systems for TV cameras, connectors; wire & cable VS

BOSTON SOUND AND POWER SYSTEMS

3 Fredith Rd Weymouth MA 02189

617 335-6406

RF filters, voltage transient suppressors, mini mixers, digital clocks, precision power supplies

BOZAK INC

587 Connecticut Ave S Norwalk CT 06854

203 838-6521

Amps (pre-amps, monitor, power, public address); equalizers & filters (passive); delay lines VS

BROAD-REX CO

PO Box 498 Willimantic CT 06226

203 423-7771

Flexible transmission line, coaxial cable, wire & cable

BROADCAST AUTOMATION ASSOCIATES INC

PO Box 277 Ft Pierce FL 33450

205 464-5465

Audio equipment; radio & TV studio design; facility turnkey installation systems

BROADCAST CARTRIDGE SERVICE

1122 E Chevy Chase Dr Glendale CA 92105

213 245-7708

Tape cartridges; empty reels, carts, cassettes; cartridge rebuild service VS

BROADCAST ELECTRONICS INC

4100 N 24 St PO Box 3606 Quincy IL 62301

217 224-9600

Spotmaster single and multi-deck cartridge machines, recorders, cart machine accessories; audio consoles; program automation equip; audio processing and distribution amplifiers, sound studio equip and accessories; video monitors, VS

tapeheads VS

See ad pg 135

BROADCAST SOUND ASSOC

PO Box 337 Blue Bell PA 19422

215 539-7091

Warning lights; stylus scales, turntables, pick-up arms, stereo and quad (Satin); digital wall clocks (Chronalert) VS

BROADCAST VIDEO SYSTEMS LTD

Unit 15 1050 McNicoll Ave Agincourt Ontario

M1W 2L8 Canada

416 497-1020

RGB, encoded, luminance chroma keyers; color encoders; color picture monitors; small production switchers; post production switchers; special effects generators; video delay lines; comb decoders; safe area generator; RF modulators; vectorscopes, waveform monitors & analyzers VS

See ad pg 86—refer to rep/dist section

BSC INC

2932 River Road River Grove IL 60171

312 452-5551

Cabinets VS

BTX CORP

438 Boston Post Rd Weston MA 02193

617 891-1239

SMPTTE time code synchronizers; time code generators/readers; audio-video recorder synchronizers VS

See ad pgs 127, 142—refer to rep/dist section

BUHL OPTICAL

1009 Beech Ave. Pittsburgh PA 15233

continued on page 82

Far-out news team.

Microwave 2GHz links extend your live ENG coverage up to 50%.

Now you can expect a good live feed even when you send your ENG crew out to the boonies. With the M/A 2GT microwave receiver and its low, 4.5 db noise figure, you can extend your live coverage by 30 to 50%. This greater coverage translates to higher ratings and increased ad revenues in outlying sections.

For fast setup and great results, the compatible 2CP (2-Watt) and 2EP (8-Watt) portable transmitters are rugged, weatherproof, easy to handle and are proven performers in everyday use.

And for extra long hops, the M/A solid-state PA-215M amplifier really gives your ENG signal a boost. The unit is light enough to be mast mounted, delivers full legal power directly to the antenna, and provides all-channel operation.

For greater live ENG coverage, flexibility and mobility, M/A equipment lets you cover prime areas and the boonies better than ever. It's a far-out news team that can make more money for you.

For complete engineering information, write or call the ENG pioneer, Microwave Associates, Communications Equipment Group, 63 Third Ave., Burlington, MA 01803, (617) 272-3100.

Circle 143 on Reader Service Card



Field Sales Offices: Atlanta, GA (404) 455-3815.
Dallas, TX (214) 234-3522, Kansas City, MO (816) 891-8538.
Sunnyvale, CA (408) 733-0222, Seattle, WA (206) 232-3550.
Honolulu, HI (808) 537-3991, Edina, MN (612) 831-3920.



**Microwave
Associates**

A M/A-DOM COMPANY

The Source '78

412 321-0076

CCTV film chains; slide projectors, multiplexer w.o. dedicated cameras VS

BULOVA WATCH CO INC AM TIME PRODUCTS DIV

61-20 Woodside Ave Woodside NY 11377
212 335-6000

Studio clock systems & frequency standards

BURNUP & SIMS

PO Box 2431 West Palm Beach FL 33401
305 689-8312

Cable TV construction, strand mapping, field engineering

C

CABLEDATA

3200 Arden Way Sacramento CA 95825
916 485-2911

Data processing services to CATV systems VS

CABLE FACTS

2444 Palumbo Dr Lexington KY 40509
606 269-2323

Computerized subscriber billing/management service with tele-processing

CABLEVISION CONSTRUCTION CORP

2000 So Post Oak Rd Suite 1490 Houston TX
77056

713 961-7315

Construction services system mapping VS

CABLEWAVE SYSTEMS INC

60 Dodge Ave N Haven CT 06473
203 239-3311

Transmission lines & line connectors; microwave antennas; transmission line pressurizing equip; waveguide & waveguide accessories VS

CALICO VIDEO CO INC

PO Box 2405 Stockton CA 95201
209 462-1010

New videotape; cassette reloading

CALVERT ELECTRONICS INC

220 E 23 St New York NY 10010
212 481-5303

Camera pick-up tubes CCTV and broadcast; rectifiers; power tubes VS

THE CAMERA MART

456 W 55th St NY NY 10019
212 757-6977

TV production equipment rental VS
See ad pg 28

CANON SCOOPIC

10 Nevada Dr Lake Success NY 11040
516 488-6700

Professional 16mm motion picture cameras; lenses (including zoom); complete systems VS

CANON USA INC

10 Nevada Dr Lake Success NY 11040
516 488-6700

Video camera lenses, cine camera & lenses, camera controls and accessories VS

See ad pg 67

CA Canon USA 123 Paularino Ave E Costa Mesa 92626..... 714 979-6000

HA Canon USA 1050 Ala Moana Blvd Bldg B-2 Honolulu 96814..... 808 521-0361

IL Canon USA 140 Industrial Drive Elmhurst 60126..... 312 833-3070

CAN Canon OBM 3245 American Dr Mississauga Ontario L4V 1N4..... 416 678-2730

VS MEANS IT'S VERIFIED

CAPITOL MAGNETIC PRODUCTS

1750 N Vine St Hollywood CA 90028
213 462-6252

Broadcast cartridges VS

CARINGELLA ELECTRONICS INC

PO Box 727 Upland CA 91786
714 985-1540

Clocks, time systems, standard-time receivers, audio compressors; security systems VS

CASES INC

1745 W 134 St Gardena CA 90249
213 770-4444

Racks, shipping cases VS

CATEL DIV UNITED SCIENTIFIC CORP

1400 D Stierlin Rd Mountain View CA 94043
415 959-9400

FM modulators & demodulators; FM microwave sub-carrier systems; FM head end processors, TV modulators; filters; video FM link; CATV microwave equip & head end processors VS

CAT CONSTRUCTION CO

401 E 74 St New York NY 10023
212 988-0290

Radio & TV studio design, emergency power equipment; mobile van construction; facility turnkey installation; weather radar systems VS

CATERPILLAR TRACTOR

100 NE Adams Peoria IL 61629
309 675-1000

Emergency power generators

CBS TECHNOLOGY CENTER

227 High Ridge Rd Stamford CT 06905
203 327-2000

Quadraphonic encoders, test records VS

CCA ELECTRONICS CORP

Box 5500 Broadcast Plaza Cherry Hill NJ 08034
800 424-1500

ALC & AGC amps; AM & FM compressor/limiters; FM filters; mono, stereo & TV audio consoles & mixers; RF diplexers, exciters & modulators; remote control systems; RF switchers, AM, FM, UHF & VHF transmitters; program sub-carriers; phasing networks; TV combiners; RF cables; FM processors; RF connectors; AM, FM, HP & CP antennas; transmission line connectors; antenna tuning units; DA equip VS
See ad pg 117—refer to rep/dist section

C-COR ELECTRONICS INC

60 Decibel Rd State College PA 16801
814 238-2461

CATV trunk, distribution, extender amps; headend equip; cable passives; CATV test equip; emergency power equip; maintenance VS

CECO COMMUNICATIONS INC

2115 Ave X Brooklyn NY 11235
212 646-6300

Power tubes, camera pick-up tubes VS

CENTRAL DYNAMICS CORP

331 W NW Hwy Palatine IL 60067
312 991-4720

TV automated technical operations systems; computerized videotape & audio tape editing equip; tape machine synchronizers; processing amps, chroma keyers, video production switchers, pulse distribution amps, routing switchers; sync generators, special effects generators, colorblock & cue dot generators, time code readers, video mixing amps, CCTV, CATV video production switchers; computer/microprocessor controllers; complete automation systems; telecine systems; video production switchers VS
See ad pgs 179

CA CDL 15130 Ventura Blvd Suite 307 Sherman Oaks 91403..... 213 789-0574

NJ CDL 230 Livingston St Northvale 07647..... 201 767-1300

CAN CDL 147 Hymus Blvd Montreal Quebec H9R 1G1..... 514 697-0811

CENTRO CORPORATION

4848 Ronson Ct San Diego CA 92111
714 560-1578

Small production switchers; portable production

consoles; radio & TV studio design; TV van design & construction VS

CENTURY PRECISION CINE/OPTICS

10661 Burbank Blvd North Hollywood CA 91601
213 766-3715

Wide-angle lenses for 16mm & 35mm cine use; motion picture accessories; cine camera lenses VS

CERRO COMMUNICATION PRODUCTS

Halls Mill Rd Freehold NJ 07728
201 462-8700

Trunk distribution & drop cable; wire & cable; connectors; passive distribution accessories VS

CETEC AUDIO DIV CETEC CORP

13035 Saticoy St N Hollywood CA 91605
213 875-1900

Mixers; tape duplicators, speakers VS

CETEC BROADCAST GROUP

1110 Mark Ave Carpinteria CA 93013
805 684-7686

Pre-amps, rotary & slide attenuators; ALC & AGC amplifiers, FM, AM compressors/limiters; relay sequencers, time insertion sequencers, computer/microprocessor controllers, memory units, reel decks, multi-cart machines, read out/display, data input devices, auto loggers, time generators, auto time/weather announcers, full line of audio consoles; turntables, pick-up arms, stereo pickups, turntable pre-amps & controls, complete disc consoles, headphones, intercom systems; full line of microphones; noise reducer systems; speakers; studio cabinets & furniture, acoustic materials & treatment for studios; magnetic tape; single, dual, multiple & time delay tape cartridge player/recorders; portable & time delay open-reel player/recorders, logging recorder; tape & head erasers, open-reel, cartridge & cassette tape storage; demodulators, diplexers; modulators; remote control systems; comm. & monitor receivers; RF amplifiers, attenuators, converters, filters, loads & switchers; AM & FM transmitters; AM, FM & microwave antennas; HP & CP TV antennas, towers, tower hardware & construction equip, tower lighting, transmission line & connectors, antenna tuning units, DA equipment; digital clocks, master clocks, slave clocks, timers, time distribution systems; chart recorders; tape loggers, log printers, Full radio program automation systems. VS

See ad pg 125

CA J Clements 1110 Mark Ave Carpinteria 93013..... 805 684-7686

CO Cetec B'cast PO Box 2537 Grand Junction..... 303 243-5373

FL H Simmons 4018 Middlebury Dr Pensacola 32504..... 904 478-1181

MI D Hill 2791 E 14 mi Rd Sterling Heights 48077..... 313 979-6320

NY L Bruno 14 Snow Ave W Babylon 11704..... 516 587-5579

PA G Papula 401 Carver Dr Bethlehem 18017..... 215 432-3832

TX T Copeland 10523 Maplegrove Dallas 75218..... 214 328-4944

VA B Dix PO 31 Marion 24354..... 703 783-2001

CHANNELMATIC ELECTRONICS

2232 Lindsay Michelle Dr Alpine CA 92001
714 445-2691

Automated videocassette programmer; A-V switchers; routing switchers, distribution amps; automated earth station receiver controllers; real time microprocessor controllers, DTMF tone control equip VS

CHRISTIE ELECTRIC CORP

3410 W 67th St Los Angeles CA 90043
213 750-1151

Battery, emergency power equip, Ni-Cad 20 min chargers, power packs, video cameras VS

CHRISTY CONCRETE PRODUCTS INC

44100 Christy St Fremont CA 94538
415 657-7070

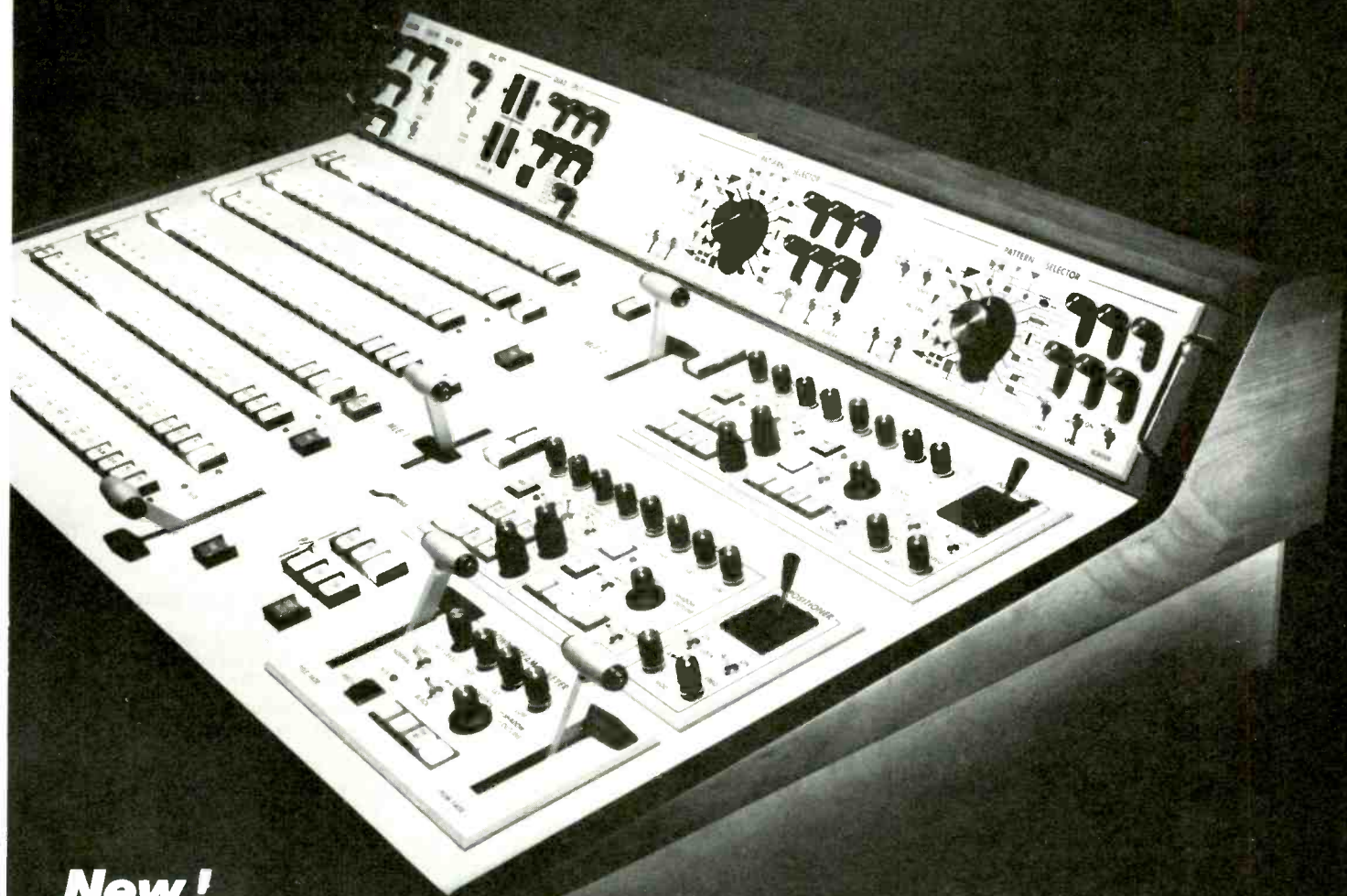
Precast concrete & plastic housing for underground cable systems

CHRONO-LOG CORP

2 W Park Rd Havertown PA 19083

continued on page 84

Simply Sophisticated



New!

ROSS 500 Series Multi Level Effects Switchers ...are

Sophisticated . . .

- Each Multi Level Effects (MLE) Amplifier processes 2 background and 2 key signals.
- Exclusive Transition Preview system. Complicated program transitions can be previewed with the On-Air MLE Amplifier.
- Rotary and Spin wipes with unique controls.
- Pattern Multiplier can be controlled with joystick.
- Videc & Key inputs for a character generator.
- Auto transition & editor interfaces.
- Downstream Keyer, Master fade to black, PST/PGM Bus, Soft keys and wipes, border and background generator, RGB & Encoded chroma keyers, and up to 24 inputs... and 4 Auxiliary buses.

yet . . . Simple to Operate

- Clean, logical panel layout designed for the operator.
- Quad Split *does not* tie up a primary buss.
- One RGB Keyer accommodates 2 cameras.
- Exclusive feedback circuitry plus low power consumption keeps the electronics "rock stable" and eliminates the twiddle pots.
- Packaged as a console with turret.
- Only 46 inches long (max)...and *only* 14 inches for rack electronics...including all options.
- Models: 1 or 2 MLE Amplifiers, 16 to 24 inputs... many options...NTSC, PAL & PAL-M.

Call ■ 613-652-4889 or write, **ROSS VIDEO LTD.**
9 Iroquois Plaza, Iroquois, Ontario, Canada K0E 1K0
In U.S.A.: P.O. Box 67000, Ogdensburg, N.Y. 13669



The Source '78

215 853-1130

Digital clocks & calendars; time-code generators & readers; master & slave clocks; time distribution systems **VS**

CHYRON TELESYSTEMS

233 Newton Rd Plainview NY 11803

516 249-3296

Character generators; graphics systems; special effects generators; alphanumeric generators **VS**

CHYRON CORP VIDEO PRODUCTS DIV

265 Bethpage-Spagnoli Rd Melville NY 11746

516 249-5202

Videocassette cleaning & evaluating **VS**

CINE 60 INC

630 Ninth Ave New York NY 10036

212 586-8782

ENG camera braces, power packs, portable video camera leads, stands and fixtures; batteries; snaplocks; battery powered lights, kits; battery chargers **VS**

See ad pg 126

CINEMA PRODUCTS CORP

2037 Granville Ave Los Angeles CA 90025

213 478-0711

ENG/EFP cameras, 16mm film cameras; lenses for 16mm cameras; camera tripods, body braces; video/film camera stabilizing system; cases, accessories; camera sound recording systems & accessories; film to tape transfer systems, studio & location lights, light stands, accessories **VS**

See ad pg 53

CLEAR/COM

759 Harrison St San Francisco CA 94107

415 989-1130

Portable intercom systems **VS**

See ad pg 164

CLEWER COMMERCIAL & TECHNICAL SERVICES LTD

836 Yeovil Rd Trading Estate Slough Berkshire England

Film projectors, telecine systems, film editing equip, mag film

CMX SYSTEMS (DIV OF ORROX CORP)

3303 Scott Blvd Santa Clara CA 95050

408 988-2000

Videotape editing equip, portable time code generators readers **VS**

See ad pg 3

CA CMX Los Angeles 213 980-7927
 NY CMX New York 212 947-8031
 TX CMX Dallas 214 785-5764

COASTCOM

2312 Stanwell Dr Concord CA 94520

415 825-7500

Demodulators; duplexers; modulators; video filters; subcarrier amps; program subcarriers **VS**

COAXIAL DYNAMICS INC

13110 Enterprise Ave Cleveland OH 44135

216 267-2233

RF filters, RF loads, RF switchers, directional power detectors, couplers, RF wattmeters, adjustable-tap RF sampler **VS**

COHERENT COMMUNICATIONS CO

13733 Glen Oaks Blvd Sylmar CA 91342

213 362-2566

Power supplies for cond mics; importer of Rycote windshield; lavalier mic; film footage counter; audio for TV, ENG carts; portable battery-operated audio mixers for film & TV (KMS Electronics) **VS**

COHU INC ELECTRONICS DIV

5725 Kearny Villa Rd PO Box 623 San Diego CA 92122

714 277-6700

TV color studio cameras; TV mono cameras; image enhancers; color correctors & encoders; film telecine multiplexers & systems; color film chain cameras; b & w picture monitors; pulse, distribution & sub-carrier amps; routing switchers; sync & color bar generator systems; automatic telecine light control; video equalizers **VS**

See ad pg 162—refer to rep/dist section

AL CoHu 4100 Aldebaran Way
 Mobile 36609 205 661-9088
 CA CoHu 2307 Orange Ave
 Costa Mesa 92627 714 772-5211
 CA CoHu 770 Welch Rd Suite 154 Palo
 Alto 94305 415 326-0280
 MI CoHu 41816 Langley Dr Sterling
 Heights 48078 313 739-5444
 NJ CoHu 23 E Madison Ave Florham
 Park 07932 201 377-6636

COLLINS — See Commercial Telecommunications (Rockwell)

COLORADO VIDEO INC

PO Box 928 Boulder Co 80306

303 444-3972

Video compression equip; color synthesizers; special effects generators; video test equip; sync generating systems; electronic still stores; digital video effects; colorizers; waveform monitors & analyzers **VS**

COLUMBIA VIDEO SYSTEMS

1805 St Johns Ave Highland Park IL 60035

312 433-6010

CCTV & CATV video systems & rentals service, post production services **VS**

COLUMBINE SYSTEMS INC

PO Box 740 Golden CO 80401

303 27-4000

Computer business systems for radio, TV **VS**

COMARK INDUSTRIES INC

PO Box 196 Main Line Ind Park Westfield MA

01805

413 568-1870

Demodulators, duplexers, RF filters, transmission line accessories; remote control systems; RF switchers; phasing networks; TV combiners; facility turnkey installation **VS**

COMEX SYSTEMS INC

Executive Dr Hudson NH 03051

603 889-8564

Audio Special effects equip; audio delay lines **VS**

COMET SALES

PO Box 4755 Springdale CT 06907

203 329-2764

Vacuum capacitors **VS**

COMMERCIAL ELECTRONICS INC (CEI)

880 Maude Ave Mountain View CA 94043

415 969-1910

TV cameras, studio, convertible & portable **VS**

See ad pg 195

COMMERCIAL TELECOMMUNICATIONS GROUP OF ROCKWELL INTERNATIONAL, COLLINS BROADCAST PRODUCTS

1200 N Alma Rd Richardson TX 75081

214 996-5424

Mono & stereo audio consoles; RF demodulators, duplexers & exciters; intercity microwave equip; transmit/receive & receive only satellite earth stations; AM & FM transmitters; RF phasing networks; FM antennas **VS**

See ad pgs 22, 23

AK RF Cassidy PO Box 2743 Fairbanks
 99707 907 452-6044
 AL D Hultsman 2280 Rockcreek Trail
 Birmingham 35226 205 822-1078
 AZ Morris Courtright 1450 W Arroyo Dr
 Yuma 85364 602 783-6380
 IN V Landau 4611 Jason Dr Ft Wayne
 46815 219 485-8354
 MN JL Littlejohn 200C W Branch Rd
 Maple Plain 55359 612 479-2633
 MO JC Schideler Rt #1 Box 217-B Oak Grove
 64075 816 443-2080
 NJ Keith Leach PO Box 16 Newton
 07860 201 383-8797
 NY John Ring RR #2 Westport
 12993 518 962-4567
 OR TT Cauthers 1215 SE 73rd Ave
 Portland 97215 503 254-2818
 TN RC Evans Rt #2 Box 12 Glenmore Dr
 Rockford 37853 615 573-9717
 TX WR Sheffield 1200 N Alma Rd
 Richardson 75080 214 690-5424

COMMSCOPE CO

Rt 1 Box 199 A Catawba NC 28609

704 241-3142

Drop and distribution coaxial cable for CATV **VS**

COMMUNICATION TECHNIQUES

1279 Rt 46 Parsippany NJ 07054

201 263-7200

Microwave equip, modulators, RF generators

COMMUNICATIONS TECHNOLOGY CORP

2237 Colby Ave Los Angeles CA 90064

213 473-5024

CATV splicing, materials, fittings

COMQUIP INC

366 S Maple Glenrock NJ 07452

201 444-3800

Fixed lens adapters for TV; distributor of lenses & film equip; stands, dollies; video animation aids; TV cameras, VTRs **VS**

COMPUTER IMAGE CORP

2475 W 2nd Ave Denver CO 80223

303 934-5801

Animation equip, computer animation services **VS**

COMPUTER LABS INC

505 Edwardia Dr Greensboro NC 27409

919 292-6427

A/D converters; D/A converters; deglitchers **VS**

COMPUTER MAGNETICS CORP

125 W Providencia Ave Burbank CA 91502

213 843-6674

Refurbished VTR and audio heads, video discs, color correctors, video equalizers; diff phase-gain measurement **VS**

COMREX CORP

PO Box 269 Sudbury MA 01776

617 443-5077

Wireless mic systems for news gathering; RF cue systems; off-air pocket aural monitor; low frequency extenders; radio ENG repeater systems **VS**

See ad pg 63

COMSONICS INC

PO Box 1106 Harrisonburg VA 22801

703 434-5965

Surge protectors; test equip & maintenance services for CATV remote switching equipment for CATV, RF leakage detector **VS**

CONRAC DIV CONRAC CORP

600 N Rimsdale Ave Covina CA 91722

213 966-3511

TV monitors **VS**

See ad pg 115—refer to rep/dist section

IL J. Deenan 3166 Des Plaines
 60018 312 298-8577
 NY R. Sanford 280 280 N. Central Ave
 Hartsdale 10530 914 946-3575
 TX F. Duval 2925 LBJ Fwy Ste 180
 Dallas 75234 214 243-1834
 CAN B. Mitchell 514 Champagne Dr
 Downsview, Ontario M3J 2T9,
 416 635-1039

CONRAC CORP SYSTEMS EAST DIV

32 Fairfield Pl W Caldwell NJ 07006

201 575-8000

Large screen projectors; production equipment rentals and post production services **VS**

CONSOLIDATED ELECTRONIC INDUSTRIES

9721 Singleton Dr Washington DC 20034

301 530-6080

Radio automation equip, studio systems, open-reel tape, cartridges, controllers, reel decks, multi-cart machines, read out/display data input devices, complete systems **VS**

CONSOLIDATED VIDEO SYSTEMS

1255 E Arques Ave Sunnyvale CA 94086

408 737-2100

Image enhancers; digital noise reducers/filters; two VTR editor controllers; computer assisted video tape editors; time code gens/readers; audio/video recorder synchronizers; time base correctors (quad, helical capstan servo & non-servo) **VS**

See ad pg 77

AL J Knight 11001 Donneita Dr Huntsville
 35810 205 852-9358
 CA M Lang 1255 E Arques Ave Sunnyvale
 94086 408 737-2100
 IA C Seithun 1421 W 1 St Pella
 50219 515 628-9389
 MD J Wellman 1428 Judy Way Edgewood
 21040 301 679-6062
 PA D Smith 1101 Davisville Rd Southampton
 18966 215 355-6642

continued on page 86

TV Camera Report '78

Flexible Camera Systems for Studio Use and ENG/EFP

A complete product line distinguished by four basic features: Quality, versatility, mobility, systems concept

Today's manufacturers of professional TV cameras are required to design their camera range for all imaginable applications. Bosch Fernseh meets this demand with highly versatile camera SYSTEMS which cover the whole spectrum of applications: from sophisticated studio cameras through mobile versions for electronic journalism to modestly priced simpler models for economic productions.

Bosch cameras allow a production team to work as a complete creative unit in any conditions.

picture sharpness is enhanced with horizontal and vertical aperture correction utilizing a dual delay line system with comb filter and coring. Easily interchangeable coaxial or multi-wire kit options are available as required.



News broadcast with the KCK

A light-weight alternative KCK/R camera head is integrated into the KCK system

The shoulder-mounted KCK/R allows a cameraman the freedom of movement necessary for dynamic productions. The KCK/R reporter camera head can be connected to the standard CCU via an interface electronics pack.



Freedom of operation with the KCK/R

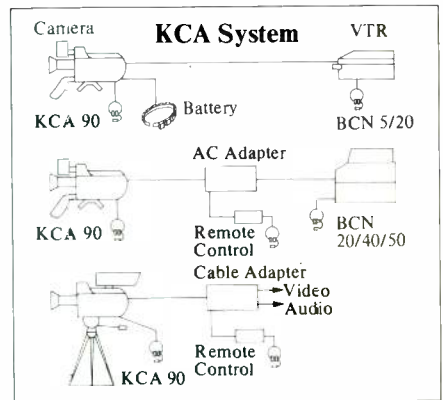
This versatile Bosch reporter camera has the features of the KCK, but combines the operational flexibility of a portable camera with the advantages of a top-quality studio camera. In this case, too, the set-up and operating functions have been largely automated and coaxial or multi-wire operation is possible (max. 2000/800 m).

Ideally suitable for all ENG/EFP applications: the KCA 90

This portable battery-operated camera system provides the cameraman with full freedom of movement. The KCA 90 is easily integratable into OB and studio systems and operations.



KCA 90



Of considerable advantage for ENG use are the various power supply options: battery belt, car battery and mains power. The entire electronics are packed into the light-weight camera head. Iris, white balance and black level are automatically controlled. The portable, battery-operated BCN 5 (cassette) and BCN 20 (reel to reel) VTRs are ideally suitable for full broadcast quality recording of the KCA 90 output signals.

Applications in all three fields; ENG, OB and studio productions result in ultimate investment economy and utilization.

TCX, TXK: CCTV cameras with studio quality

Bosch Fernseh's activities in the field of medical, educational and industrial TV have produced a complemen-



TCX

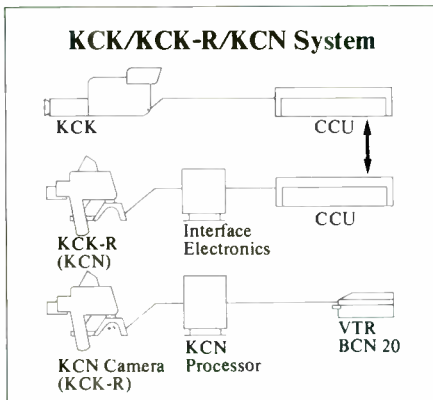
tary range of lowpriced cameras. The TCX with its three 2/3" tubes and accurate color reproduction also provides studio quality signals.

BOSCH

Robert Bosch GmbH,
Geschäftsbereich Fernsehanlagen,
Postfach 429, D-6100 Darmstadt,
Federal Republic of Germany

Robert Bosch Corporation, Fernseh Group,
279 Midland Road, Saddle Brook,
New Jersey 07662, USA.,
Phone (201) 797-7400

Circle 145 on Reader Service Card



A first-class highly automated camera chain: KCK

The KCK camera system is intended for tripod-mounted studio or hand-held operation (using an optional portable camera head) and is also ideally suitable for OB van productions.



Outdoor production with the KCK

The camera, compact CCU and operating control unit constitute a superior-quality camera chain, available in all TV standards and color systems. Numerous functions have been automated, such as black balance, white balance, iris and centring.

The KCK uses the 3-tube separate luminance principle. 1 1/4" tubes ensure high resolution. The excellent

The Source '78

CONTINENTAL ELECTRONIC - CONTEL
1620 W 32 PI Hialeah FL 33012
305 822-1421

Tape cartridge single player/recorders VS

CONTINENTAL ELECTRONICS MFG CO
PO Box 270879 Dallas TX 75227
214 381-7161

High-power AM broadcast transmitters; 5/10 kW transmitters; AM antennas; diplexers & RF loads VS
See ad pg 184

CONVERGENCE CORP
17935 Sky Park Circle Irvine CA 91724
714 549-3146

Video editing control systems, frame counter, tape timer; audio tape editing equip VS
See ad pg 73

COOPER GROUP, ELECTRONICS DIV, WELLER WIFF XCELITE
PO Box 728 Apex NC 27502
919 362-7511

Soldering guns, wire stripping tools, hardware

COPPERWELD BIMETALLICS GROUP
Robinson Plaza II Pittsburgh PA 15205
412 664-3500

Tower hardware & construction equipment; wire & cable; cable distribution & drop VS

CORNING GLASS WORKS
3900 Electronic Drive Raleigh NC 27604
919 876-1100

Video delay lines, ultra sonic delay lines VS

COSMIC OPTICAL CO LTD DIV ASAHI PRECISION CO LTD
424 Higashi — Oizumi Nerima-ku Tokyo Japan
Video camera lenses; camera heads, mounts & dollies; CCTV camera lenses, cine lenses VS
See ad pg 194—refer to rep/dist section

COX DATA SERVICES
Suite 100 Prado N 5600 Roswell Rd NE Atlanta GA 30342
404 256-5200

Computer systems for TV and CATV VS

COYNE ASSOC
1010 Sherbrook St W Ste 307 Montreal Que H3A 2R7 Canada
514 282-8027

Computer aided systems design for CATV; broadband consulting service VS

CPAC INC
2364 Leicester Rd Leicester NY 14481
716 382-3223

Silver recovery and pollution control systems VS

CROCK BRUCE A INC
9118 Winton Rd Cincinnati OH 45231
513 521-5040

Storage racks for cartridges

CROSSROADS AUDIO INC
121 Payne St Dallas TX 75207
214 742-6002

Cable fault tester; speakers

CROWN INTL
1718 W Mishawaka Rd Elkhart IN 46514
219 294-5571

Audio power amps, audio preamps; equalizers; variable filters; intermodulation distortion test equip; time analyzation equip VS

CROSSPOINT LATCH CORP
316 Broad St Summit NJ 07901
201 273-1090

Intercom systems; encoded chroma keyers; color encoders; small production switchers; special effects generators; sync, color bar, black burst generator systems; colorizers VS

VS MEANS IT'S VERIFIED

CSI ELECTRONICS INC
3800 S Congress Ave Boynton Beach FL 33435
305 737-5626

Transmitters (AM, FM, carrier current); status and alarm indicators; stereo and SCA generator VS
See ad pg 181

AL W Moats PO Box 861 Athens 35611..... 205 232-5325

CA H Dempsy 1743 W Vartikian Fresno 93705..... 209 439-0991

MN D Doty 3323 Flag Circle N Minneapolis 55427..... 612 545-3372

PA W Hoffman 556 E Winona Ave Norwood 19074..... 215 534-5640

CAN P MacFarlane 7 Bovis St Pte Claire Quebec..... 514 695-8130
514 484-6601

CSP INC
203 Airport Rd Doylestown PA 18901
215 345-7386

RF inductor, diplexers, remote control system, RF filters, RF loads, RF switchers, phasing network, antenna tuning unit, DA equip VS

CUSH CRAFT
621 Hayward St Manchester NH 03103
603 627-7877

Yagi antennas for CATV

CUSTOM AUDIO ELECTRONICS
2828 Stommel Rd Ypsilanti MI 48197
313 482-6568

Audio mixing consoles; slide attenuators, equalizers & filters (active); intercom systems; manual light control systems VS

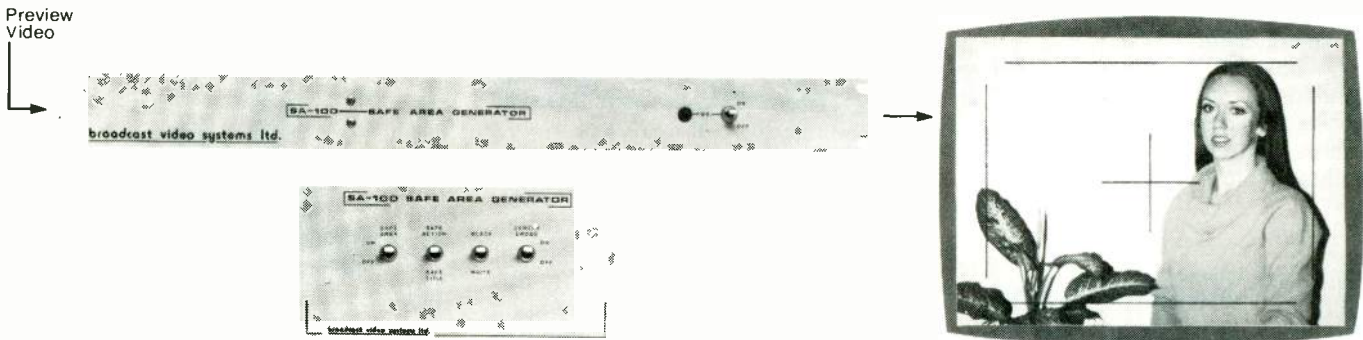
D

DABURN ELECTRONICS & CABLE CORP
70 Oak St Norwood NJ 07648

continued on page 88

AT LAST, A STATE-OF-THE-ART METHOD TO ENSURE CORRECT POSITIONING OF PICTURE INFORMATION REGARDLESS OF MONITOR SCAN.

THE SA-100 SAFE AREA GENERATOR*



The SA-100 eliminates the guesswork of where to position graphics and other important information in a television picture. Vertical and horizontal borders, 120 nanoseconds wide, are generated and non-additively mixed into the composite video connected to the SA-100 input. This "safe area" pattern, keyed into video, will appear at the SA-100 output for display on a picture monitor. The pattern can be remotely switched from Safe Title to Safe Action area substantially as specified in SMPTE Recommended Practice No. RP27.3.

Also included is a cross-hair pattern showing the exact picture center.

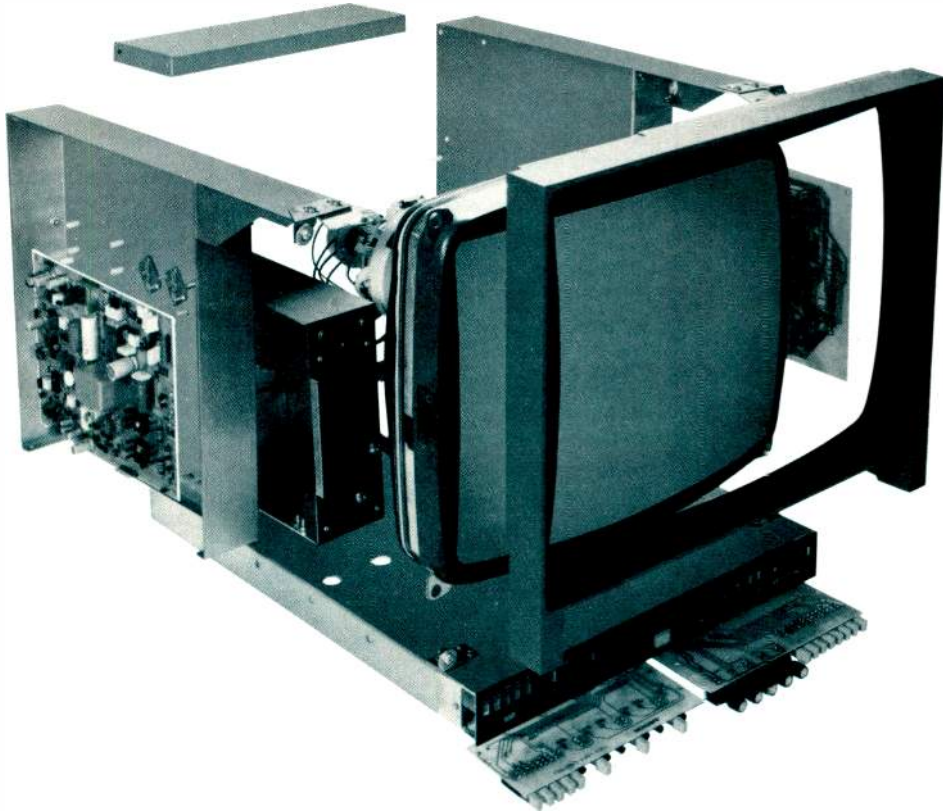
Both patterns can be switched on or off, black or white, from the remote panel included with the unit.

No external drives are required as all system timing is derived from program sync. This ensures that Safe Area is always correct, regardless of monitor scan adjustments.

A second output is provided which delivers a pattern signal only (not keyed into video) for in-house distribution.

* patent pending

broadcast video systems Ltd. 1050 McNicoll Ave., Agincourt, Ont., Canada
(416) 497-1020 Tlx. 065-25239



Simple.

In a clatteringly complicated world, it's nice to find somebody working to simplify something . . . making it easy to understand, easy to use, and focusing on greater accuracy, reliability and efficiency. Such is the case with our new 7800 Series high-resolution color video monitors.

Amtron 7819 and 7813 models represent a new level of technical excellence in the field of professional video monitors. In addition to being quality display devices, both are designed as critical measurement and evaluation instruments.

This is the result of painstaking design efforts, of course, plus a healthy measure of serendipity!

You see, we also make high-resolution raster-scan color CRT display modules for data graphics and computer imagery systems. These RGB monitors require resolution capabilities up to 1000 pixels square (about 800 TV lines) and broadband circuits up to 7 MHz.

The logic is simple. If we modularize this RGB approach to fit broadcast video, by adding a first-quality decoder before the processor, we would have a single wideband unit

meeting all data graphics specifications . . . and providing the transparency for accurate picture assessment so necessary in broadcasting and critical teleproduction applications.

The result is simple. Amtron 7800 Series. The simple approach can be most demanding, however, as each section must meet more exacting specifications without compromise.

For example, video processing utilizes wideband video op amps and full pulse, sample and hold feedback for virtually every function . . . from DC restoration, to gain control, to phase-lock loop of the color decoder oscillator. The deflection circuit uses switch-mode horizontal scan and Class B op amp-style vertical scan for optimum geometric control along nine axes.

The power supply uses a combination of switch-mode and series-mode regulation for maximum performance and efficiency.

There are other refinements as well. All controls are DC with no active circuits on the control panel boards. Interconnect wiring is simplified; all critical connections are

made on the boards themselves.

A high resolution picture tube (12,000 spacing shadow mask) was selected for maximum resolution and is virtually free from moire. Color-matched phosphors guarantee accuracy of colorimetry.

Each 7800 chassis and sub-chassis is based on the rigid format of the common box . . . strong and simple.

But best of all, Amtron 7800 Series monitors . . . being based on wideband RGB architecture . . . allow near perfect transparency to any video signal, without corrective matrixes or compensating circuits.

What you've got is what you see.
And that's simple.



AMTRON

Amtron Corporation, Aptos, CA 95003
(408) 688-4445 TWX 910 598 8420

Circle 147 on Reader Service Card

The Source '78

201 195-0050

Wire and cable, connectors, terminals

VS

DAGE-MTI INC

208 Wabash St Michigan City IN 46360
219 872-5514

TV mono cameras; b&w picture monitors; distribution amps; sync generator systems; production switcher

DAK INDUSTRIES INC

10845 Vanowen St N Hollywood CA 91605
213 984-1559 800 423-2636

Audio tape (open reel, cartridges); empty reels, carts & cassettes; leader tape; new videotape; audio tape duplication services

DATA COMMUNICATIONS CORP (BIAS)

3000 Directors Row Memphis TN 38131
901 332-3544

Computer service for sales, traffic, operational accounting (TV & radio)

DATA LOGIC /RUST

PO Box 273 Everett MA 02149
617 389-3380

Remote control systems

VS

DATAMETRICS INC

340 Fordham Rd Wilmington MA 01887
617 658-5410

Time code gens/readers, digital clocks, master & slave clocks; time code readers, videotape editing
See ad pg 160

VS

DATAPOINT PERIPHERAL PRODUCTS

686 W Maude Ave Sunnyvale CA 94086
408 732-7330

Disc & tape drive peripheral equip for computers; slo mo video action recorders

DATA PRECISION CORP

Audubon Rd Wakefield MA 01880
617 246-1600

Frequency monitors and counters; voltmeters; multimeters

VS

DATATEK CORP

1166 W Chestnut St Union NJ 07083
201 964-3656

Video/audio routing switchers; video, audio & pulse distribution amps; video color phase equalizers & waveform correctors video sweep generators; video test equip; audio processing amps; color correctors; subcarrier distribution amps; SMPTE time code/cue tract distributor amps

VS

See ad pg 99—refer to rep/dist section

DATATRON INC

1562 Reynolds Ave Irvine CA 92714
714 540-9330

Videotape editing equip; time code readers/generators, synchronizing equip, character generators

VS

DAVID CLARK CO INC

360 Franklin St Worcester MA 01604
617 756-6216

Headphones, intercom systems

VS

DAVIS MANUFACTURING DIV OF JI CASE

PO Box 9228 Wichita KS 67277
316 945-0111

Trenchers for direct cable burial; line layers

DBX INC

71 Chapel St Newton MA 02195
617 964-3210

Tape recorder noise reduction systems; dynamic expanders; noise reduction modules, gain control modules; dB meters

VS

DECCA AUSTIN INSULATORS

71 Selby Rd Brampton ONT L6W 1K5
416 457-8722

Insulators, transformers for towers and antennas

VS MEANS IT'S VERIFIED

DELTA-BENCO-CASCADE LTD

124 Belfield Rd Rexdale ON Canada M9W 1G1
416 241-2651

Headend, trunk amps, distribution amps for CATV, intelligent devices ITS

VS

DELTA ELECTRONICS INC

5534 Port Royal Rd Springfield VA 22151
703 321-9845

Antenna/transmitter remote control systems; antenna monitors; impedance bridges, monitoring & test accessories; automatic modulation controller, power controller

VS

DELTA ELECTRONICS INC DIV LONG ENGINEERING

961 Burke St Winston-Salem NC 27101
919 725-2306

Audio distribution & line amps; pre-amps, monitor amps; audio consoles (mixers, mono, stereo, quad, audio for TV, portable); complete audio studio construction; impedance bridges; radio & TV studio design; facility turnkey installation

VS

DICTAPHONE CORP

120 Old Post Rd Rye NY 10580
914 967-6211

Telephone answering equip

DIELECTRIC COMMUNICATIONS DIV OF SOLA BASIC

Rte 121 Raymond ME 04071
207 655-4555

RF watt meters, RF loads, RF switchers; diplexers; waveguide & accessories; dehydrators

VS

DIGITAL COMMUNICATIONS INC

310 14th Ave S St Petersburg FL 33701
813 895-4201

Pay-TV systems & software

continued on page 92

HMI FRESNELS

High intensity, daylight sources that are lightweight, portable and economical.

- Produce nearly four times the intensity of filament lamps. 85-102 lumens per watt.
- A complete range of lamps from 575W to 4000W.
- Ideal for location filming and television broadcasting—5600°K.
- Greatly reduced power consumption.
- Operate from standard AC power supplies.
- Short warm-up time and instant hot re-strike.



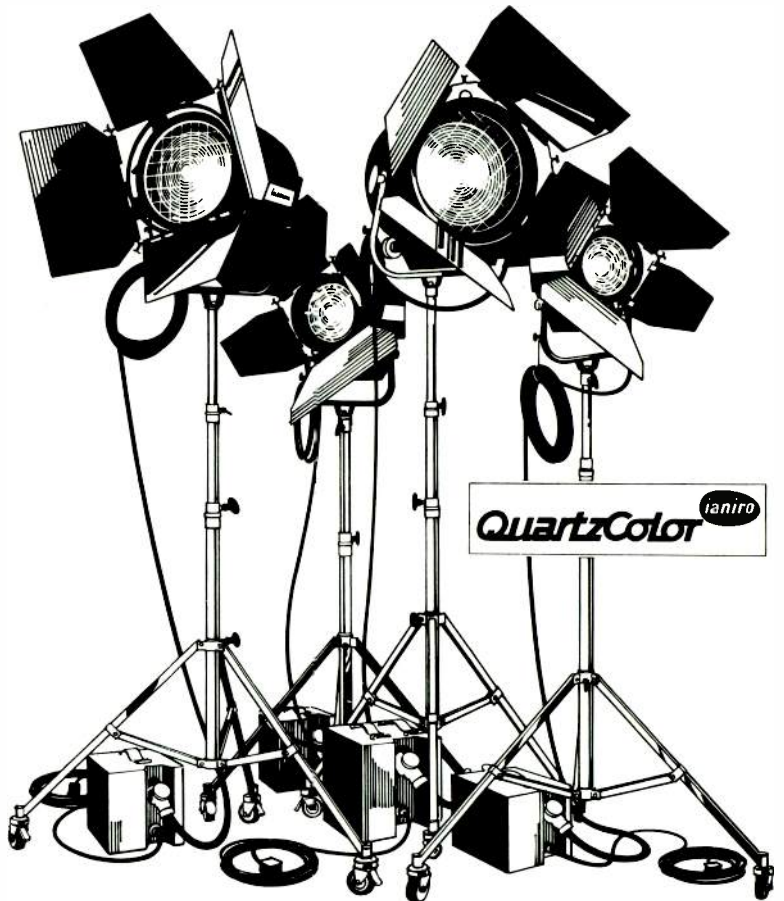
STRAND CENTURY
A COMPANY WITHIN THE RANK ORGANISATION

Strand Century Inc., 5432 West 102nd Street, Los Angeles, California, 90045, U.S.A., (213) 776-4600

Strand Century Inc., 20 Bushes Lane, Elmwood Park, New Jersey, 07407, U.S.A., (201) 791-7000, (212) 564-6910

Strand Century Limited, 6334 Viscount Road, Mississauga, Ontario, Canada, L4V 1H3, (416) 677-7130

THEATRICAL, TV, MOTION PICTURE,
ARCHITECTURAL LIGHTING AND CONTROLS.



Circle 148 on Reader Service Card

Audio-Technica rewrites the book on professional phono cartridges.

Introducing The Professionals

The new Audio-Technica ATP Series Dual Magnet™ Stereo Phono Cartridges

What do you really need from a professional phono cartridge? Impeccable quality. Reliability. Uniformity. And reasonable cost. The goals we've met with the new ATP Series cartridges.

The new ATP Series are flat, smooth, low distortion performers that will do your station, studio, disco, library, or commercial installation proud. They are also very tough... the next best thing to "bullet proof". Because we know that "needle drop" isn't just a way to pay for music or SFX. It's a fact of life!

Both ATP cartridges and styli are *uniformly* excellent. When you at last need to replace a stylus, you always get "like new" performance again, and again, and again.

Don't confuse the ATP Series with other "professional" cartridges that are merely modified home units. ATP units don't have to be treated with kid gloves. And yet we haven't sacrificed tracking ability to make them rugged.



The all-new ATP cartridges were specially developed for the working environment. Three models provide a choice of either spherical or elliptical styli. Each cartridge is hand-tuned for optimum performance, with stereo channels matched within 1.5 dB to eliminate balance problems.

All ATP cartridges feature tapered cantilever tubes that combine high strength with minimum moving mass. There's no problem with back cueing, and the brightly colored cantilever tip is readily visible so that you can spot an LP cut quickly and accurately.

ATP cartridges are priced from \$25.00 suggested professional net. Write for complete specifications. Try the ATP Professionals on your own turntables. We know you'll be pleased with what you hear. From the thoughtful pros at Audio-Technica.

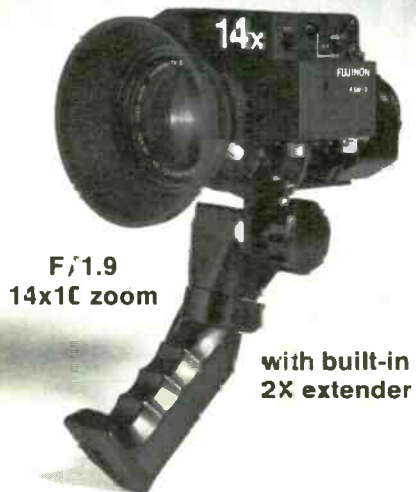


Upgrade your entire record-playing system with new ATP tone arms. Rugged and precise, like ATP cartridges. Professional in every respect. Model ATP-12T or ATP-16T just \$120.00 suggested professional net.

 **audio-technica**
® INNOVATION □ PRECISION □ INTEGRITY

AUDIO-TECHNICA U.S., INC., Dept. 98BM, 33 Shiawassee Avenue, Fairlawn, Ohio 44313 • In Canada: Superior Electronics, Inc.

With Fujinon...



**F/1.9
14x1C zoom**

**with built-in
2X extender**



**F/1.7
12x9 zoom**



**F/1.4 6mm
ultra wide angle**

**10X close-focusing
wide angle zoom**



**14X wide-angle
high resolution zoom**



**16X lightweight
4-range wide angle zoom**



**22X triple range
field zoom**



**30X twin range
field zoom**



**Beam Splitting
Optical Systems**



what you see is always what you get.

Exactly. Everytime. From edge to edge, corner to corner. The color, the clarity and the fringe transmission are all unexcelled. In fact, no other lenses can equal Fujinon's low distortion, spectral transmission and flare characteristics. It all helps explain why more television cameras are equipped with Fujinon than any other lens. (Notice how many ads for cameras show Fujinon lenses?)

Whatever the application, whatever the conditions, Fujinon offers a lens that will give you exactly what you want. For ENG/EFP cameras, Fujinon can put you in the middle of the action even when you can't get anywhere near it. (Our 14x10 zoom with built in 2X extender gives you 10 to 280mm zoom; that's equal to 544mm on a 1 1/4" format.) And when things get close, you can, too, with a 6mm lens that focuses down to 0-inch.

For studio and field cameras, choose from 10 to 30X zooms including the widest, close focusing lens up to a 60X zoom that gives you 620mm focal length without attachments. In addition to broadcast, Fujinon offers the **longest line of lenses for closed circuit television**. Including lenses for high light and low light conditions; for high radiation environments, for surveillance and education. You can also turn to Fujinon for **hologram and moire cameras, medical fiber optic devices, and binoculars** (from 4x25 up to 25x150).

Besides being light years ahead in performance, value and quality, Fujinon backs you up with service that's the best available. Check the specs below on Fujinon BCTV lenses. Then ask for a free side-by-side demo. You'll soon agree that with Fujinon, what you see is always what you get. And if you don't see exactly what you want, just ask.

MODEL NO.	FORMAT	FOCAL LENGTH (mm)	f	M.O.D. (METERS)	DIAGONAL	FIELD ANGLE HORIZONTAL	VERTICAL	BACK FOCAL LENGTH (mm)	OPERATION				REMARKS
									MOUNT	IRIS	ZOOM	FOCUS	

ENG/EFP Lenses (For Prism Type Cameras)

A10X10.5	3/8"	10.5X105	1.4	1.5	57°38'-6°18'	47°30'-5°04'	36°32'-3°47'	60.12		DC	Flexible Cable	Flexible Cable	Adaptable for 2X extender
A12X10	3/8"	10-120	1.9	0.8	57°37'-5°15'	47°30'-4°12'	36°32'-3°09'	58.08		DC	DC	Manual	
A12X19	3/8"	9-108	1.7	0.8	62°52'-5°50'	52°06'-4°40'	40°16'-3°30'	30.63		DC	DC	Manual	
A12X9	3/8"	10-140	1.9	0.8	57°37'-4°30'	47°30'-3°36'	36°32'-2°42'	38.99		DC	DC	Manual	Built-in 2X extender
A14X11	3/8"	11-154	2.1	0.8	53°08'-4°05'	43°36'-3°16'	33°24'-2°27'	60.36		DC	DC	Manual	Built-in 2X extender
A22X12.5	3/8"	12.5-275	1.6	2.5	47°9'-2°19'	38°30'-1°52'	29°21'-1°24'			DC	Manual	Manual	Built-in 2X extender
AF6	3/8"	6	1.4	0.2	83°54'	70°36'	56°00'			Manual		Manual	

ENG/EFP Lenses (For Relay Type Cameras)

N10X10	3/8"	10-100	1.9	1.0	57°37'-6°18'	47°30'-5°02'	36°32'-3°47'	29.02		DC	Manual	Manual	
N12X9	3/8"	9-108	1.7	0.8	62°52'-5°50'	52°06'-4°40'	40°16'-3°30'	29.30		DC	DC	Manual	
N14X10	3/8"	10-140	1.9	0.8	57°37'-4°30'	47°30'-3°36'	36°32'-2°42'	32.49		DC	DC	Manual	

Optical Accessories Systems for ENG/EFP Lenses

Servo Zoom Module (ZSM)	Grip Attachment (GHA)	DC Power Source (DPS)	Flexible Cable (CFC)
Servo Focus Module (FSM)	Extension Cable (ECA)	Mounting Clamp (MCA)	Zoom Handle (CZH)
Lens Grip (SRD)	Servo Focus Demand (FMM)	Manual Zoom Module (ZMM)	Manual Focus Demand (FMM)
			Focus Grip (CFH)

Studio/Field Television Lenses

R10X11	1"	11-110	2.1	0.35	72°00'-8°18'	60°12'-6°36'	47°06'-5°00'	60.52		DC	Flexible Cable	Flexible Cable	Adaptable for X1.5, 2, 2.5 extenders
R14X13	1"	13-182	1.6	0.75	63°00'-5°00'	52°30'-4°00'	40°30'-3°00'	61.53		DC	Flexible Cable	Flexible Cable	Adaptable for X1.5, 2, 2.5 extenders
R16X13	1"	13-210	1.6	0.75	63°13'-4°22'	52°25'-3°29'	40°32'-2°37'	61.70		DC	Manual or Servo Drive	Manual or Servo Drive	Built-in X1.5, 2, 2.5 extenders
R22X18	1"	18-400	1.8	2.5	46°27'-2°17'	37°54'-1°50'	28°53'-1°22'	60.84		DC	Flexible Cable	Flexible Cable	Built-in <1.5, 2 extenders
R30X16	1"	16-500	1.8	2.5	53°08'-1°50'	43°36'-1°28'	33°24'-1°06'	70.03		DC	Manual or Servo Drive	Manual or Servo Drive	Built-in 2X extender
P10X15	1 1/4"	15-150	2.8	0.35	71°00'-8°00'	59°20'-6°30'	46°20'-4°54'	63.74		DC	Flexible Cable	Flexible Cable	Built-in 2X extender
P14X17	1 1/4"	17-240	2.2	0.75	63°00'-5°00'	52°30'-4°00'	40°30'-3°00'	88.37		DC	Flexible Cable	Flexible Cable	Adaptable for X1.5, 2, 2.5 extenders
P16X17	1 1/4"	17-270	2.1	0.75	64°22'-4°32'	53°27'-3°38'	41°23'-21°23'	81.72		DC	Manual or Servo Drive	Manual or Servo Drive	Built-in X1.5, 2, 2.5 extenders
P22X25	1 1/4"	25-550	2.2		46°19'-2°17'	37°46'-1°49'	28°47'-1°22'	95.98		DC	Flexible Cable	Flexible Cable	Built-in >1.5, 2.5 extenders
P30X20	1 1/4"	20-620	2.2	2.5	56°17'-1°59'	46°20'-1°35'	35°36'-1°11'	91.39		Servo Drive	Manual or Servo Drive	Manual or Servo Drive	Built-in 2X extender

Fujinon Beam Splitting Optical Systems for Color TV Cameras

Dichroic Prisms 3/8", 1" and 1 1/4" format systems. Other sizes available.
 Dichroic Relays 3/8", 1" and 1 1/4" format systems. Other sizes available.
 Striped Filters Overcoated and non-overcoated available in monochrome, cross and color sequence types.
 Tolerance of center deviation: Less than 0.2mm.
 Flatness: Within 5 fringes over the faceplate.
 Surface parallelism: 0.05mm maximum thickness variation.
 Tolerance of stripe width: For stripes less than 30 μm wide — less than 3 μm.
 For stripes over 30 μm wide — less than ±10%
 Tolerance of pitch width: Less than ±2 m.
 Tolerance of total pitches: Less than 5 m to 100 pitches.

Image Format	1" Type	3/8" Type	The Others
Diameter	26.2 ± 0.1mm	17.6 ± 0.1mm	Variable
Thickness	2.5 ± 0.3mm	1.5 ± 0.2mm	Variable
Edge Bevel	0.25 ± 0.13mm X 45°	0.2 ± 0.1mm X 45°	Variable

The Source '78

DIGITAL CONCEPTS CORP
249 Rt 46 Saddle Brook NJ 07662
201 845-7101
Digital clocks, timers VS

DIGITAL VIDEO SYSTEMS
519 McNicoll Ave Willowdale Ontario M2H 2C9
416 499-4826
Time base correctors (helical capstan servo & non-servo, quad); frame & field synchronizers; special effects generators; image enhancers, digital noise reducers, dropout compensators, sync generator systems; video effects devices, comb decoders, A/D converters VS

DIGITRON
Box 2214 Salem OR 97308
503 363-6606
Frequency monitors & counters; status alarms & indicators VS

DITCH-WITCH TRENCHERS
PO Box 66 Perry OK 73177
405 336-4404
Trenchers, vibratory plows; earth saw; backhoe; hydraulic breaker VS

DI-TECH INC
311 Wyandanch Ave N Babylon NY 11704
516 643-4040
Audio-video pulse distribution amps; audio-video routing switchers; video presence detectors; telephone touchtone control systems; audio monitor amps VS

DIX HILLS ELECTRONICS INC
25 N Mall Plainview NY 11803
516 420-1166

VS MEANS IT'S VERIFIED

Cross modulation, intermodulation & distortion measurement equip for CATV

DOLBY LABORATORIES INC
731 Sansome St San Francisco CA 94111
415 392-0300
Noise reduction systems VS

DORROUGH ELECTRONICS
5221 Collier Pl Woodland Hills CA 91364
213 999-1132
AM & FM compressor/limiters/filters VS

DOWNE COMPUTER SERVICES INC
112 Tenth St Des Moines IA 50309
515 282-5131
Subscriber billing services for CATV TV

DRACON INDUSTRIES
9541 Mason Ave Chatsworth CA 91311
213 882-8595
Aluminum relay racks, loudspeaker paging systems VS

DRANETZ ENGINEERING LABS
2385 S Clinton Ave S Plainfield NJ 07080
201 755-7080
Frequency monitors & counters, impedance bridges, voltmeters, multimeters, phase meters, diff phase-gain measurement VS

D & S CORLEY LTD
80 Galaxy Blvd Unit 3 Rexdale Ontario M9W 4Y8
416 675-3511
Video test charts & slides; video test generators VS

DUCA-RICHARDSON CORP
11465 W 48th Ave Wheat Ridge Co 80033
303 423-1300
Master control, production routing switchers. VS
See Ampex for field offices
See ad pg 169

DUNCAN ELECTRONICS INC
2865 Fairview Rd Costa Mesa CA 92626
714 545-8261
Linear faders, electrical slide controls and knobs VS

DU PONT (EI DUPONT DE NEMOURS & CO)
MAGNETIC PRODUCTS DIV
Old Dupont Airport Site Wilmington DE 19898
302 999-4253
Videotape and video cassettes VS

DUNLAP CLARKE ELECTRONICS
54 Felton St Waltham MA 02154
617 899-2030
Audio power amps

DURNELL ENGINEERING INC
PO Box 60 Hwy 4 S Emmetsburg IA 50536
712 852-2611
Aerial personnel lift trucks

DYMA ENGINEERING
PO Box 1697 Taos NM 87571
505 758-2686
Audio switchers, audio effects units, cabinetry, cart storage accessories, mics, limiter/ducker amps; custom audio consoles, studio builders; RF detuning choke, AC & signal line surge protectors VS

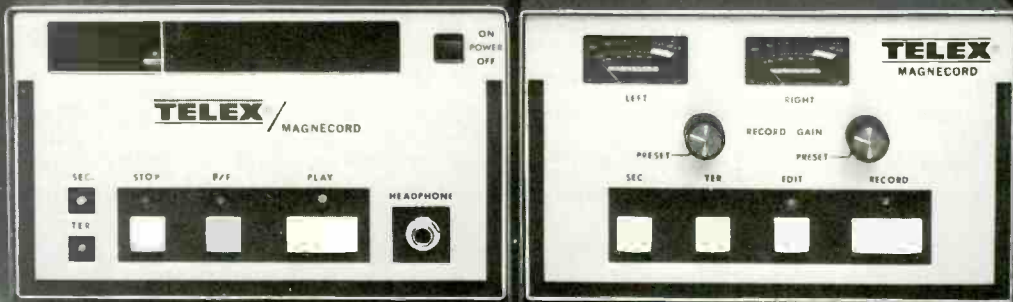
DYNAIR ELECTRONICS INC
5275 Market St San Diego CA 92114
714 263-7711
Video pulse, subcarrier & distribution amps, routing switchers, sync generators, spec effects generators, modulators, demodulators, equalizers, audio preamps, audio monitor amps, audio switchers, RF switchers, Transmitters, remote control systems VS
See ad pgs 199, 201, 203, 205

DYNASCAN CORP B&K PRECISION
6460 W Cortland Ave Chicago IL 60635
312 889-9087
CATV test equip

DYNASCIENCES VIDEO PRODUCTS
Township Line Rd Blue Bell PA 19422
215 643-0250

continued on page 94

At Last, a Cart Machine that Keeps its Cool



Telex/Magnecord broadcast cart machines run cool and steady. So cool no ventilation is required, so steady not even voltage or frequency fluctuations will alter their speed. Thanks to our dc servo flutter-filter drive.

The MC series offers broadcasters a host of options, including field convertability from mono to stereo or play to record and, of course, end of message, secondary/tertiary cue tones.

Designed for type A or B carts, the MC series meets all NAB specifications, offers full immunity to EMI and RFI, is remote controllable and automation compatible with CMOS digital logic. Audio muting, air damped low voltage

dc solenoid and fast forward are standard features on every MC unit.

Four broadcast cart machines to choose from in the Telex/Magnecord MC series. Running cool and steady. With a pleasant surprise—they're affordable.

For detailed information please write:

PRODUCTS OF SOUND RESEARCH
TELEX[®]
COMMUNICATIONS, INC.

9600 ALDRICH AVE, SO. • MINNEAPOLIS, MINN. 55420 U.S.A.
Europe: 22 rue de la Legion-d'honneur, 93200 St. Denis, France
Canada: Telak Electronics, Ltd., Scarborough, Ontario

Circle 191 on Reader Service Card



Sam VanZandt at K101 Studio A

To stay on top

in San Francisco... according to Michael Lincoln, Program Director, K101, "we've got to have the brightest, cleanest, loudest sound free of fatiguing processing side-effects.

"We feel our new OPTIMOD-AM has proven to be as lethal a competitive weapon as our OPTIMOD-FM."

Hear OPTIMOD-AM in San Francisco on K101 (AM, 1010) and at Orban's Booth 114 at NRBA.

Circle 151 on Reader Service Card

Write or call for complete information about OPTIMOD-AM from

orban

Orban Associates Inc. 645 Bryant St. San Francisco, CA 94107 Toll Free (800) 227-4498 In California (415) 957-1067

The Source '78

Image enhancers, processing amps, production switchers, pulse, subcarrier & distribution amps, routing switchers, sync generators, encoded chroma keyers, video identification systems **VS**
See ad pg 43—refer to rep/dist section
 IL R Priske 5050 Mulford St Skokie 60076..... 312 677-7857

DYNATECH DATA SYSTEMS
 7644 Dynatech Ct Springfield VA 22153
 703 569-9000

Auto time/weather announcers; coaxial & twin axial patching equip **VS**

DYTEK INDUSTRIES INC
 2492 W 2nd Ave Denver CO 80223
 303 935-3514

Production switchers, routing switchers, automated switchers, special effects generators, chroma-keyers, edit controllers **VS**

See ad pg 157—refer to rep/dist section
 CA J Morriso 999 N Sepulveda Blvd S 314 El Segundo 90245..... 213 640-2348

E

EASTMAN KODAK CO MOTION PICTURE & AUDIOVISUAL MARKETS DIV
 343 State St Rochester NY 14650
 716 325-2000

Motion picture cameras; motion picture film; projectors for TV; film processors **VS**

ECONCO BROADCAST SERVICE INC
 1302 Commerce Ave Woodland CA 95695
 916 662-4495
 Power tube repair/rebuilding **VS**
See ad pg 197

EDCO PRODUCTS INC
 680 Bizzell Dr Lexington KY 40504
 606 259-0434

Stereo phase enhancers; tape cartridge players/recorders; audio cassette player/recorder/editors **VS**

EDCOR DIV OF PAC
 3030 Red Hill Ave Costa Mesa CA 92626
 714 556-2740

Audio power & public address amps; computer/microprocessor controllers; memory units **VS**

EDISON ELECTRONICS
See McGraw-Edison

EEOC
 1441 E Chestnut Ave Santa Ana CA 92701
 714 835-6000

(SEE AMPEX) Audio & video tape editing equip; character generators, synchronizing equip **VS**

EEV INC
 7 Westchester Plaza Elmsford NY 10523
 914 592-6050

RF tubes, vacuum tubes, camera pickup tubes, rectifiers, surge protectors, vacuum capacitors, klystrons, Leddicons **VS**

See ad pg 113
 KY R Bossert 4206 Arbor Court Independence 41051..... 606 371-1284

LA R Lewis 915 Congress St New Orleans 70117 504 945-5675

MA D Green 3 Buckingham Rd Natick 01760 617 653-8300

NY L Barreca 4727 Meyer Rd North Tonawanda 14120..... 716 625-8686

WA D Rose 19001 40th PI NE Seattle 98155 206 363-2200

EEV CANADA LTD
 67 Westmore Drive Rexdale Ontario M9V 3Y6
 416 745-9494

RF tubes, vacuum tubes, camera pickup tubes, rectifiers, surge protectors, vacuum capacitors, klystrons, Leddicons **VS**

EFRA TOM CALIF INC
 18851 Bardeen Ave Irvine CA 92715
 714 752-2891
 Rubidium freq standard

EDISON ELECTRONIC CO
 PO Box 96 Temple TX 76501
 817 773-3901

Quartz crystals for frequency control **VS**

EIGEN VIDEO
 PO Box 1027 Grass Valley CA 95945
 916 273-1341

Color floppy disc recorder (slo mo, variable speed, time lapse); animation devices **VS**
See ad pg 130

EIMAC DIV OF VARIAN
 301 Industrial Way San Carlos CA 94070
 415 592-1221

Complete line of broadcast, quality power grid tubes (triodes, tetrodes, pentodes) **VS**
See ad pg 46

AZ Varian 7117 Third Ave Suite 106 Scottsdale 85251..... 602 947-5461

CA Varian 4940 El Camino Real Los Altos 94022 415 968-7630
 Varian 2901 Wilshire Blvd Suite 102 Santa Monica 90430 213 828-5588

CAN Varian 45 River Dr Georgetown Ontario L7G 2J4..... 416 457-4130

FL Varian 314 S Missouri Suite 307 Clearwater 33516 813 446-8513

GA Varian 1115B Watson Blvd Warner Robins 31093 912 923-6387
 Varian 665-Powers Ferry Rd NW Suite 100 Atlanta 30339 404 955-1397

IL Varian 205 W Touhy Ave Park Ridge 60068 312 825-6686

MA Varian 400 Totten Pond Rd Bldg 1 Waltham 02154 617 890-4560

MD Varian 4701 Lydell Rd Cheverly 20781 301 773-7010

NJ Varian 306 Fellowship Rd Mt Laurel 08054 609 235-6800
 Varian 25 Rte 22 Springfield 07081 201 376-6600

NY Varian 6489 Ridings Rd Syracuse 13206 315 437-2568

OH Varian 4134 Linden Ave Suite 101 Dayton 45432 513 258-3930

TX Varian PO Box 689 558 S Central Expy Suite 202 Richardson 75080 214 235-2385

EIP INC
 3230 Scott Blvd Santa Clara CA 95051
 408 244-7975

Microwave and FM frequency counters

ELCOM ENGINEERING
 PO Box 10432 Santa Ana CA 92711
 714 544-5760

Audio preamps; ALC and AGC amps; compressor limiters; AM sample transformers; frequency monitoring system; tower lighting; EBS systems, AM/FM facility turnkey installations **VS**

ELECTRA CO DIV OF MASCO OF INDIANA
 300 S County Line Rd Cumberland IN 46229
 317 894-1440

Automatic scanning monitors **VS**

ELECTROHOME LTD
 809 Wellington St N Kitchener ON CAN N2G 4J6
 519 744-7111

Color & b&w monitors, pay-TV descramblers; large screen projectors **VS**

ELECTRO CONSOLES INC
 2975 So 300 West Salt Lake City UT 84115
 801 487-9861

Lighting heads, stands & fixtures; manual & automated light control systems & dimmer packs; patch terminals **VS**

ELECTRONIC DEVICES INC
 21 Gray Oaks Ave Yonkers NY 10710
 914 965-4400

Solid state rectifiers, replacements for vacuum tubes **VS**

ELECTRONIC INTERFACE SYSTEMS INC
 2411 S Broadway Santa Ana CA 92707
 714 979-0033

Automated video cassette controller (random access)

ELECTRO IMPULSE INC
 PO Box 870 Red Bank NJ 07701
 201 741-0404

AM/FM/TV dry loads, cooling systems, RF

VS MEANS IT'S VERIFIED

attenuators; wattmeters **VS**
See ad pg 205

ELECTRONEERING INC
 PO Box 85 Selma NC 27576
 919 284-4928
 Digital timers

ELECTRONIC INDUSTRIAL ENGINEERS
See RCA Community Antenna Systems

ELECTRONICS DIVERSIFIED
 1675 NW 216th St Hillsboro OR 97123
 503 645-5533
 Studio light controls; patch panels **VS**

ELECTRONICS MISSILES & COMMUNICATIONS INC
 PO Box 116 White Haven PA 18661
 717 443-9575

TV translators; low power TV transmitters for broadcast; TV transmitters for ITFS and MDS; TV antennas **VS**

ELECTRONIC MUSIC LABORATORIES
 PO Box H Vernon CT 06066
 201 875-0751

Music synthesizers

ELECTRO & OPTICAL SYSTEMS LTD
 3015 Kennedy Rd Scarborough Ontario M1V 1E7
 416 291-4492

SMPT E time code systems; PPM level indicators remote control camera mounts; alphanumeric generators; digital noise reducers/filters; color correctors; 16mm projectors; b & w, color & DC portable picture monitors; TV mono cameras; small production switchers; post production switchers; routing switchers; special effects generators; standard converters; frame & field synchronizers; TBCs; VTR machine rebuilding; two VTR editor/controllers; time code gens/readers; digital video effects; video repositioners & compressors; A/D converters; automated light control systems; RF demodulators & modulators, vectorscopes; waveform monitors & analyzers; TV studio design; mobile van construction; facility turnkey installation **VS**

See ad pg 148—refer to rep/dist section
 NY E&O Systems 227 East 45 St NY 10017 212 682-4783

ELECTRO SOUND INC
 160 San Gabriel Dr Sunnyvale CA 94086
 408 245-6600

Tape auto loaders, splicing blocks, open-reel tape recorders, portable, and deck, tape duplicators

ELECTROVERT INC
 86 Hartford Ave Mount Vernon NY 10553
 914 664-6090

Harnessing devices, markers

ELECTRO-VOICE INC SUB OF GULTON IND INC
 600 Cecil St Buchanan MI 49107
 616 695-6831

Mics; loudspeakers

See ad pg 193

ELF AUDIO VISUAL LTD
 836 Yeovil Rd Trading Estate Slough Berks England

Tel: Slough 36123 Telex: 847628
 Film projectors **VS**

ELPA MARKETING INDUSTRIES INC
 Atlantic & Thorens Aves New Hyde Park NY 11040
 516 746-3002

Manual tape editing equip (Editall); turntables (Thorens) **VS**

ENGLISH ELECTRIC VALVE CO LTD
 Chelmsford England CM1 2QU
 0245-61777

RF tubes, vacuum tubes, camera pickup tubes, rectifiers, surge protectors, vacuum capacitors,

continued on page 96

WHAT TO DO DURING YOUR NEXT OBSCENE PHONE CALL.

Order Eventide's BD-955 Broadcast Delay Line. It will delete your obscenities & tape loops. And more.

When Eventide — the world's foremost manufacturer of digital delay equipment* — decided to build a better time delay system for obscenity deletion, it went digital.

The result is the BD-955, a RAM based DDL providing up to 6.4 seconds of delay.

Substitute the BD-955 for the tape machine you're now loading, monitoring and changing tapes on. The BD-955 will allow plenty of time for either the engineer, announcer — **or both** — to hit re-rotatable DUMP buttons.

The BD-955 cancels the objectionable program material; its rear-panel terminals allow automatic control of the phone and/or auxiliary equipment.

** According to Billboard Magazine's latest U.S. Equipment Brands Usage Survey, 44.9% of major U.S. recording studios use Eventide delay equipment vs. only 6.0% for the nearest competitive digital.*

THE BD-955's EXCLUSIVE CATCH-UP MODE:

Here's where the BD-955 really shows its stuff — and makes the switch to Eventide obscenity deletion as much a programming decision as a technical one —

When the DUMP button is hit, programming instantly returns to real-time. Here you have a choice — use The BD-955 merely to substitute for your old Tape delay & insert a profanity-fill cart, or *let it automatically build a new delay margin, digitally.* In its exclusive "Catch-Up" mode, the BD-955 can eliminate the need for a profanity-fill cart; the BD-955 automatically builds up delay after a deletion by increasing delay during pauses in the program. LEDs indicate the margin of protection afforded at any moment. Stay alert and the show can continue — in delay — almost immediately. Sound like magic? We've manipulated time like this for over five years.

When it's not being used for obscenity deletion, the BD-955 serves double-duty as a production tool. It allows front-panel selection of delays from 6.5 milliseconds up through the full delay available, for musical and segue effects — including vocal doubling

and automatic double tracking (the audible illusion through which a single voice or instrument is made to sound like two) and digitally-clean slapback echo.

Other significant features about the BD-955 Broadcast Delay Line:

1. Full 15 kHz response and 90 dB dynamic range equals the specs of the best music recording delay lines; 7.5 kHz response, perfect for telephone talk shows *at lower cost.*
2. Full digital Random Access Memory. Like the Eventide 1745M music recording DDL, it runs cool, can take the mallet.
3. *It's available.* With more experience than any other manufacturer in building digital audio delay systems, the BD-955 is an extension of proven techniques. More than just a design: it's available now!

Pricing Information		FREQUENCY RESPONSE	
		7.5 kHz	15 kHz
DELAY	1.6 seconds	\$2300	\$2950
	3.2 seconds	\$2950	\$3900
	6.4 seconds	\$3900	\$6300

DUMP AND GO!



Eventide's BD-955 Broadcast Delay Line.

Available for immediate shipment:

THE KEN SCHAFER GROUP, INC.
10 East 49th Street • New York, N.Y. 10017 • (212) 371-2335

The Source '78

klystrons, leddicons VS

ENCLOSURE CORP
4529 Adams Circle Cornwells Hts PA 19020
215 638-9550
Racks, cabinets VS

ENG MANUFACTURING CO
10009 C Shary Cir Concord CA 94518
415 798-4060
ENG/EFP cameras (integral head/electronics);
ENG camera braces, cranes, dollies, remote control
mounts; ENG microwave equip, supports, portable
microwave equip; mobile van construction

ENTERPRISE ELECTRONICS CO
PO Box 1216 Ind Blvd Enterprise AL 36330
205 347-3478
Weather radar systems VS

ESC ELECTRONICS
534 Bergen Blvd Palisades Pk NJ 07650
201 947-0400
Delay lines, LC filters; equalizers VS

ESE
505 1/2 Centinela Ave Inglewood CA 90302
213 674-3021
Digital clocks, programming devices, timers, time
calculators; tape timer; LED VU meter; EBS two
tone system VS
See ad pg 180

ESSEX INTERNATIONAL INC
COMMUNICATIONS/CATV DIV
6235 S Harlem Ave Chicago IL 60638
312 586-3000
Coaxial cable; CATV drop cables; wire & cable

EVENTIDE CLOCKWORKS INC
265 W 54th St New York NY 10019
212 581-9290
Audio phase controllers; audio
compressor/expander/limiters; audio digital delay
lines; audio flanger, pitch changer, microprocessor
controllers, special effects, reverb units VS

E-Z WAY PRODUCTS INC
PO Box 22845 Tampa FL 33622
813 677-7144
Communication towers VS

F

FAIRCHILD SOUND EQUIPMENT
See Robins Broadcast & Equipment Corp

FARINON
1691 Bayport Ave San Carlos CA 94070
415 592-4120
Microwave systems; multiplex equip; microwave
repeaters; FM over video systems; relay systems
for radio & TV broadcasters; microwave
accessories; video distribution & subcarrier amps;
aural carrier generator; FM sub-carrier equip;
engineering services; receive-only satellite earth
stations VS

F&B CECO INC
315 W 43rd St New York NY 10036
212 974-4600
Manufacture & rental of motion picture cameras,
projectors, lighting equip, sound equip, editing
equip & CCTV equip VS

FERNSEH GROUP ROBERT BOSCH CORP
279 Midland Ave Saddlebrook NJ 07662
201 797-7400
Studio & portable TV cameras, lenses, accessories;
VTRs (segmented helical cassette, automated
systems); picture monitors, color; two-VTR
editor-controller, computer-assisted editor; slo mo
video action recorders; digital video effects VS
See ad pgs 85, 146-147

FIDELIPAC
109 Gaither Dr Mt Laurel NJ 08057

609 235-3511
Magnetic tape cartridge, test tapes, cartridge parts,
carts, cassettes, splicing blocks & tape, alignment
gauges, bulk erasers, tape cartridge storage, audio
& videotape bulk erasers, on-air lights, wow & flutter
meters, hot tape VS
See ad pg 144

FILMLINE CORP
43 Erna St Milford CT 06463
203 878-2433
Film processors

THE FINNEY CO
34 W Interstate St Bedford OH 44146
216 232-6161
CATV trunk & distribution amps, receiving amps;
drop & distribution cable; standard & filter trap
convertors/descramblers for CATV; passive
distribution accessories; power supplies VS

IMERO FIORENTINO ASSOC INC
10 W 66th St New York NY 10023
212 787-3050
TV color contrast evaluator kit; TV monitor analyzer
kit; set design; dealers for 3M scanamurals; TV
studio design consultants; lighting direction &
consultation; production design, direction &
supervision; seminars on TV lighting & staging
techniques; production support services VS

FISHER BERKELEY CORP
5800 Christie Ave Emeryville CA 94608
415 655-9696
Intercom systems VS

FISHER-BURKE
PO Box 2468 Phoenix AZ 85003
602 257-0225
Complete line of audio products VS

FIXTUNE SOLID STATE ELECTRONICS INC
1 W 30th St New York NY 10001
212 695-4767
One station crystal controlled FM receivers; SCA
receivers; EBS receivers VS

FLASH TECHNOLOGY CORP OF AMERICA
55 Lake St Nashua NH 03060
603 883-6500
Strobe beacons for towers, beam elevation
adjustment brackets VS

FLUKE JOHN B MFG CO
PO Box 43210 Mountlake Terrace WA 98043
206 774-2211
Frequency counters, calibrators, test sets, gen
purpose test equip; audio & RF generators;
voltmeters, dB meters, multimeters; log printers VS
See ad pg 159—refer to rep/dist section

FORGFLO CORP
Third & Regan St Sunbury PA 17801
717 286-5611
Magnetic recorder heads VS

FORT WORTH TOWER CO INC
PO Box 8597 Fort Worth TX 76112
817 457-3060
Towers, prefab bldgs, aerial lifts, earth stations VS

FREQUENCY DEVICES INC
25 Locust St Haverhill MA 08130
617 374-0761
Audio amplifier power supplies, active equalizers &
filters; tone generators; noise reduction systems;
audio generators VS

FREELAND PRODUCTS CO
3233 Conti St New Orleans LA 70119
504 822-9222
Rebuilt power tubes

FREZZOLINI ELECTRONICS INC
7 Valley St Hawthorne NJ 07506
201 427-1160
Professional 16mm cameras, lenses, accessories;
motion picture lights; portable power packs for video
cameras, batteries VS
See ad pg 13

VS MEANS IT'S VERIFIED

FRIBLEY ENTERPRISES
PO Box 389 Canada Rd Painted Post NY 14870
607 962-3890
Terminal boxes for CATV MATV

FUJI PHOTO FILM MAGNETIC TAPE DIV
350 Fifth Ave New York NY 10001
212 736-3335
Videotape; audio tape VS

FUJINON OPTICAL IN2 White Plains Rd
Scarsdale NY 10583
914 472-9800
Camera lenses VS
See ad pgs 90-91—refer to rep/dist section
CA 18248 Index St Northridge
91324..... 213 360-0206

FUNG ENGINEERING CO
PO Box 1082 San Carlos CA 94070
415 592-8434
Video processing amps, RF converters, filters,
switchers, demodulators, modulators; TV field
intensity meters VS

G

GABRIEL ELECTRONICS
PO Box 626 Scarborough ME 04074
207 883-5161
Parabolic, horn & shrouded antennas; elliptical
waveguides, tower construction equip;
transmission lines & connectors; facility turnkey
installations VS

GAMCO INDUSTRIES INC
291 Cox St Roselle NJ 07203
201 241-7500
CATV fittings; splitters; directional 1 taps; field pay
trapester, passive distribution accessories;
transformers; locking terminators; hardware,
complete line of coral active gear

GARNER INDUSTRIES
4200 N 48th St Lincoln NE 68504
402 464-5911
Tape duplication systems; conveyor-type tape
erasers; bulk erasers VS

GARDNER COMMUNICATIONS CORP
200 S Post Rd Suite 1490 Houston TX 77056
713 961-7348
Transmit/receive & receive-only satellite earth
stations VS

GATES BROADCAST DIVISION
See Harris Corp.

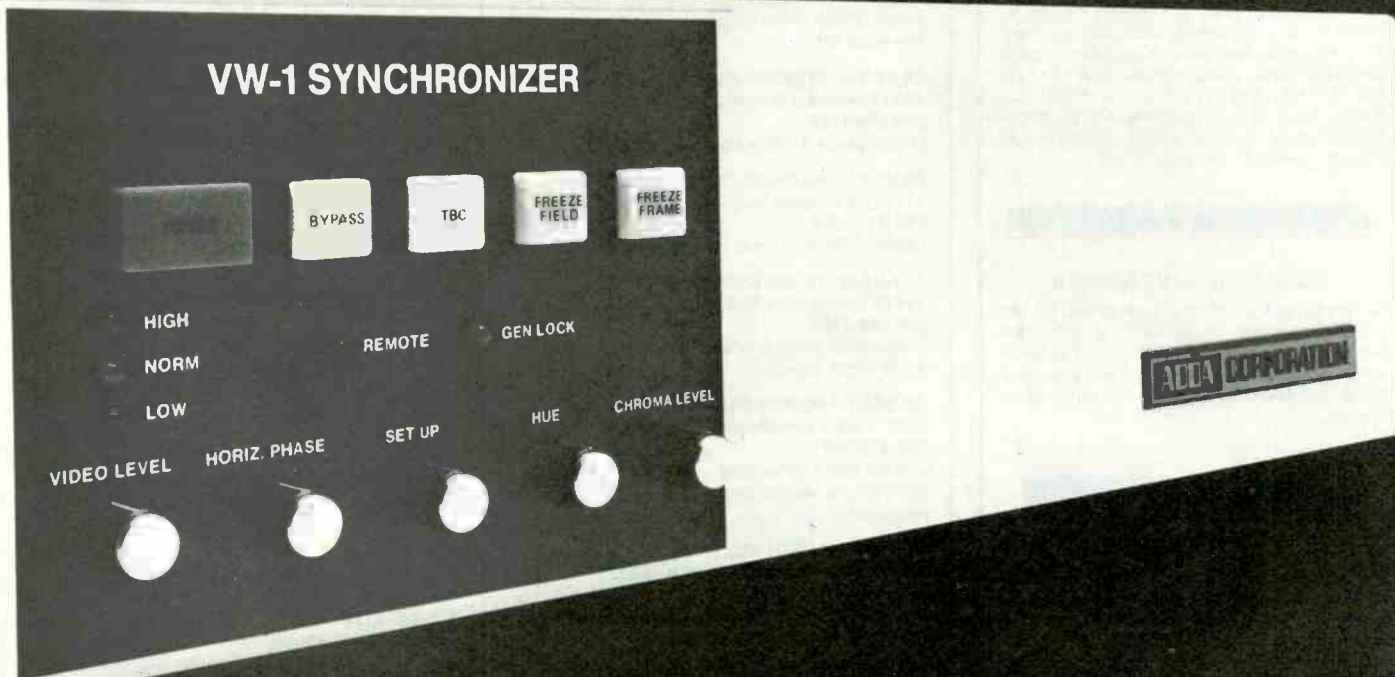
GAW CO INC
53 S Jefferson Rd Whippany NJ 07981
201 887-7210
Frequency monitors and counters, audio
generators, voltmeters, harmonic distortion meters,
EBS two tone systems

GBC CLOSED CIRCUIT TV CORP.
315 Hudson St New York NY 10013
212 989-4433
TV cameras, studio & portable (b&w color); camera
mounts; telecine chains; monitors; sync gens; spec
effect gen; VTRs (helical); videotape; audiotape;
coaxial connectors, video distribution amps, pulse
distribution amps

GENERAL CABLE APPARATUS DIV
PO Box 666 5600 W 88th Ave Westminster Co
80030
303 427-3700
CATV construction tools; aerial lifts; underground
splicing modules; cable construction accessories
(clamps, etc)

GENERAL CABLE CORP
500 W Putnam Ave Greenwich CT 06830
203 661-0100
Ventilators; heaters; dryers, aerial lifters, pole
hardware, trunk & distribution cable, drop wire for
CATV, optical fiber cables VS
continued on page 98

ADDA does it again!



A frame synchronizer with TBC and freeze frame for under \$20,000.

We asked you what you wanted in a low cost synchronizer, and you told us. Now ADDA Corporation delivers just what you need. A digital frame synchronizer that locks remote, network, ENG, and satellite feeds to your station reference. With fourth, not third, harmonic sampling. With time base correction for heterodyne color U-Matic recorders. With freeze frame and a separate field freeze mode that eliminates interfield jitter.

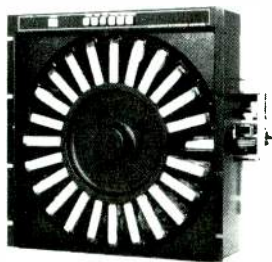
But here's the clincher. The ADDA VW-1 synchronizer protects the vertical blanking interval at the lowest price in the industry. We give you the latest in digital technology, not extraneous bells

and whistles. So you get more of what you need for less money.

Let us show you our solution to your blanking problems. Use the reader service card, write or call ADDA Corporation, 1671 Dell Avenue, Campbell, California 95008. Telephone: (408) 379-1500. Southeast District Office: 2693 Twigg Circle, Marietta, Georgia 30067. Telephone: (404) 953-1500.

ADDA CORPORATION

AM, FM, SW MODULAR PROGRAM AUTOMATION



2400R MULTIPLE CARTRIDGE PLAYER

2400R "Kartel" is the ideal multiple cartridge machine to replace obsolete units or to incorporate into new automation systems. We use a four channel tone detector card, which senses 150 HZ, 1K HZ, 4K HZ, and 8K HZ pre-recorded cue tones. Like all our equipment the 2400R is completely solid state, modular designed printed circuit cards



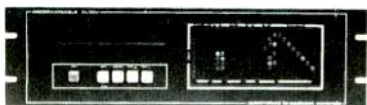
2500S 25 Hz TONE SENSOR

Senses the presence of pre-recorded 25 Hz tones on audio material and provides automation control functions. Features tone removal filter, adjustable stop contacts, and fixed tone alarm for automatic rewind.



2500G 25 Hz TONE GENERATOR

For production studio use to insert the standard 25 Hz automation actuating tone. Starts tape transport and actuates muting to eliminate bias pops and other start-up noises. Tone button applies 25 Hz tone and stops transport at end of tone.



1200C TIME PROGRAM CONTROLLER

Provides 10 programmable exact time points per hour for real time control of 2800S and 2800APM plus digital clock display. 8 relay function outputs for time announcements, transmitter on/off control and other functions. Crystal time base and battery backup.

automated broadcast controls

1110 taft street
rockville, maryland 20852
(301) 762-0558

Circle 153 on Reader Service Card

The Source '78

GENERAL CAMERA CORP

471 11th Ave New York NY 10018
212 594-8700

Cine cameras; camera accessories; film magnetic recording equip

GENERAL ELECTRIC CO MIDPS

Rm 301 Bldg 7 Electronics Pk Syracuse NY
13201

315 456-3293

CCTV cameras; CCTV systems; lenses; tripods & accessories

GENERAL ELECTRIC CO LIGHTING BUSINESS GROUP

Nela Park Cleveland OH 44112

216 266-2092

Stage, studio, TV lamps

GENERAL ELECTRIC CO VIDEO DISPLAY EQUIP

Electronics Pk 6-205 Syracuse NY 13221
315 456-2562/2533/2179

Large screen video projectors

See ad pg 151

VS

GENERAL ELECTRODYNAMICS CORP

4430 Forest Ln Garland TX 75042

214 276-1161

Monochrome TV cameras; camera tubes

GENERAL MACHINE PRODUCTS CO INC

3111 Old Lincoln Hwy Trevoese PA 19047

215 357-5500

Cable installation tools, pole hardware

VS

GENERAL TELEVISION NETWORK

13225 Capital Ave Oak Park MI 48237

313 548-2500

Production facilities, post production services, TV equip repair service

VS

GILBERT ENGINEERING CO

3700 N 36th Ave Phoenix AZ 85019

602 272-6871

Coaxial cable connectors, adapters, fittings, terminations, accessories, tools, enclosures & pedestals

GLASSMAN HIGH VOLTAGE INC

124 W Main St High Bridge NJ 08829

201 735-8800

DC power supplies, power displays, TV, flying spot scanners

GLOBE UNION INC BATTERY DIV

5757 N Green Bay Ave Milwaukee WI 53201

414 228-2581

Batteries, battery charges

VS

GOLDMARK COMMUNICATIONS CORP

98 Commerce Rd Stamford CT 06904

203 327-7270

Film to video transfer systems; tape duplication

VS

GORMAN-REDLICH MFG CO

6 Curtis St Athens OH 45701

614 593-3150

Antenna monitors, phase meters, EBS two tone systems, weather receiver

VS

See ad pg 178—refer to rep/dist section

GOTHAM AUDIO CORP

741 Washington St New York NY 10014

212 741-7411

Condensor mics (Neumann); audio disc cutting equip (Neumann); test records; reverberation units (EMT); audio recorder/players (Telefunken); compressor/limiters (EMT); broadcast turntables (EMT); tape timers; flutter meters (Woelke); phase meters (Neumann); audio attenuators (Danner); polarity testers; rumble meters (Neumann); digital audio delay unit; monitor speakers (K&H); wire & cable (EMT); input transformers (Beyer); noise reduction system (telefunken); peak reading and vu meter (NTP)

VS

GOULD INC

2050 Cabot Blvd W Langhorne PA 19047

215 752-0555

Batteries, battery chargers; emergency power equipment systems

GRALEX INDUSTRIES DIV

155 Marine St Farmingdale NY 11735

516 694-3600

Digital voltmeters

VS

GRANDY INC

1275 Bloomfield Ave Bldg #1 Fairfield NJ 07006

201 575-1433

Magnetic heads, relapping service-heads, high speed duplicating heads

GRASIS CORPORATION

5601 Gardner Ave Kansas City MO 64120

816 483-1100

Broadcast, CATV, microwave towers; molded fiberglass head-end buildings

THE GRASS VALLEY GROUP INC

PO Box 1114 Grass Valley CA 95945

916 273-8421

Master control switchers, automated switchers, technical operations automation, digital video effects devices, colorizers; video production & routing switchers; pulse & distribution amps, chroma keyers, processing amps; sync generators, special effects generators; colorizers; equalizers; frame synchronizers

VS

See ad pg 5

CA GVG 4419 Van Nuys Blvd Suite

307 Sherman Oaks 91403..... 213 990-6172

GA GVG 1644 Tullie Cir NE Suite 102

Atlanta 30329..... 404 634-0521

IN GVG 810 W Bristol St Suite E

Elkhart 46514..... 219 264-0931

MN GVG 3585 N Lexington Ave Suite 374

Arden Hills 55112..... 612 483-2594

NY GVG Station Plaza E Great

Neck 11021..... 516 487-1311

TX GVG 2639 Walnut Hill Ln Suite 143

Dallas 75229..... 214 358-4229

GRAY ENGINEERING LABS

504 W Chapman Ave Orange CA 92668

714 997-4151

SMPTC time code systems

VS means that BM/E has reviewed this manufacturer's supporting literature

THE GREAT AMERICAN MARKET

PO Box 178 Woodland Hills CA 91364

213 883-8182

Lighting heads, stands, fixtures, light projected patterns, special effects, fresnels, control systems

VS

See ad pg 20—refer to rep/dist section

GRINNAN FIXTURE CO

16041 Georgetown St NE, Minerva OH 44657

216 862-2323

Studio cabinets & furniture; complete studio construction; open reel & cartridge tape storage; racks & cabinets; finance services; mobile van construction; facility turnkey installation; building & remodeling plans

VS

GRUBER PRODUCTS CO

5254 Jackman Rd Toledo OH 43613

419 476-7200

Mobile ENG carts, A/V carts, projection tables

See ad pg 204

GTE LENKURT INC

1105 Country Rd San Carlos CA 94070

415 595-3000

Microwave STLs; microwave radio equip; remote control systems; RF program subcarriers

VS

GTE SYLVANIA CATV EQUIPMENT & INSTALLATION OPERATION

10841 Pellicano Dr El Paso TX 79935

915 591-3555

Trunk & distribution amplifiers, line extenders, cable drop & distribution, converters/descramblers, addressable taps, power supplies; pole hardware; system design services

continued on page 100

THE BETTER WAY

Datatek ROUTING SWITCHER SYSTEMS

- Video-Audio Switching Systems
- Additional Audio Levels
- Video-only Switching Systems
- Audio-only Switching Systems
- SMPTE Time Code Signal Switching Systems
- Source-oriented Assignment Systems

Look to Datatek for all your routing switcher needs. We manufacture a high quality system to satisfy your initial requirements, with built-in expansion provision for future enlargement . . . as well as routing switcher-related systems with compatible control facilities.

FEATURES

- High audio output capacity with low noise (dynamic range)
 - Independent control system for each output bus
 - Built-in expansion — no group switching required
- Wide choice of matrix building block size — 20x10, 20x15, 20x20, 30x10, 30x15
- Differential (hum bucking) bridging video inputs with high return loss
 - Multi-reference vertical interval video switching
 - Four section continuously adjustable cable equalization on both inputs and outputs
 - Standard ECD positive logic, computer-compatible control systems
 - Redundant Power Supplies*
 - Watch Retention Battery Supplies*

Optional

For More Information, write or call

D
DATATEK
CORP.

1166 W. CHESTNUT ST.
UNION, N.J. 07083
(201) 964-3656

Other Advanced Datatek Products:

TV Transmitter Color Phase Equalizers and Waveform Correctors, Video Sweep Generators, Envelope Delay Measuring Sets, and Distribution Amplifiers for video, pulse, audio and SMPTE time code signals

PROFESSIONAL WUHY-FM, Philadelphia, rates Stanton's 881S superior in every aspect!



Disc Jockey, Stephen Brooks at the mike

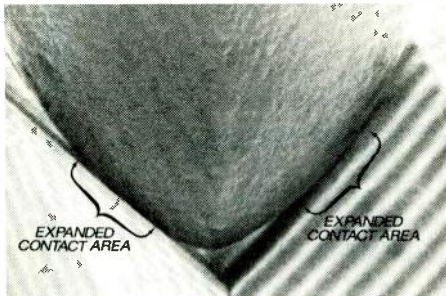
The Stanton 881S cartridge, with its Stereohedron stylus, has been rated, worldwide, as the outstanding stereo cartridge of its time. So, it ought to be a rather delicate pick-up. Not so, says WUHY...outstanding National Public Radio FM Station in Philadelphia. Mr. Ajit George, Director of Development and Awareness, quotes his Engineering Staff in this way:

- 1) "We back cue the 881S with no damage to the stylus.
- 2) It has excellent flat frequency response.
- 3) It handles high level complex music passages with complete freedom from mis-tracking.
- 4) The 881S has the highest output compared to average high quality magnetic cartridges, plus the fact that it gives superior signal-to-noise ratio from the phono pre-amp."

We are in total agreement with all of the above except, honestly, the 881S was not designed for back cueing.

Stanton guarantees each 881S to meet the specifications within exacting limits. The most meaningful warranty possible, individual calibration test results, come packed with each unit. Whether your usage involves recording, broadcasting or home entertainment, your choice should be the choice of the professionals...the Stanton 881S.

© Stanton 1978



Scanning Electron Beam Microscope photo of Stereohedron® stylus, 2000 times magnification; brackets point out wider contact area

For further information write: Stanton Magnetics, Terminal Drive, Plainview, N.Y. 11803



STANTON!

Circle 155 on Reader Service Card

The Source '78

GTE SYLVANIA (LIGHTING PRODUCTS GROUP)

100 Endicott St Danvers MA 01923
617 777-1900
Studio, theatre & TV lights, accessories

GULTON INDUSTRIES INC ENGINEERED MAGNETICS DIV

13041 Cerise Ave Hawthorne CA 90250
213 679-0111
CATV standby power & amp protection systems

H

HALLIKAINEN & FRIENDS

340 Higuera St San Luis Obispo CA 94301
805 541-0200

Auto loggers; auto time/weather announcers; audio consoles for TV; remote control systems VS

HAMLIN INTERNATIONAL CORP

126 SW 153rd St Seattle Wa 98166
206 246-9330

CATV band-pass filters: converters; passive head-end processing devices; couplers; receivers

HAMMOND INDUSTRIES

155 Michael Dr Syosset NY 11791
516 364-1900

Stereo disco mixers (Meteor); power amps (Meteor); speakers (Heco, Meteor), speaker overload protectors (Meteor); sound-to-light controllers, lighting units, light projectors (Meteor); headphones, mics (Beyer Dynamic); equalizers, (Klark-Teknik); audio test unit; audio response analyzer (Ferrograph); equipment racks and shelving (Click Systems) VS

HARRIS CORP BROADCAST PRODUCTS DIV

PO Box 4290 Quincy Il 62301
217 222-8200

AM & FM transmitters; radio automation; TV transmitters; TV exciters, modulators, drivers; RF switches, duplexers; TV, AM, FM antennas & accessories; TV studio cameras; telecine equip; video distribution switchers, color encoders; TV & audio consoles; mics, turntables, arms, limiting amps; tape cartridge player/recorders; tape accessories; monitor speakers; video monitors; sync generators, waveform monitors; videotape recorder/players; phase modulation, frequency monitors; RF amps; transmission lines & accessories; remote control equip, SCA equip, services VS

HARRIS CORP SATELLITE COMM DIV ANTENNA OPERATIONS

2600 N Longview St Kilgore TX 75662
214 984-0555

Satellite earth ground terminals VS

HARRIS CORP SATELLITE COMMUNICATIONS DIV

PO Box 1700 Melbourne FL 32901
305 724-3000

Earth stations, towers, satellite & CATV receiving antennas VS

HARRISON SYSTEMS

Box 22964 Nashville TN 37202
615 834-1184

Consoles, (mixers, mono, stereo, quad) audio components; equalizers & filters (active); controllers, computer/microprocessor

HARWALD CO

4700 Chase Lincolnwood IL 60646
312 677-3000

Film, inspection, cleaning equip; splicers; editing equip; racks, shipping cases

HARWOOD MFG CO

1800 W Fullerton Chicago IL 60614
312 929-1100

VS MEANS IT'S VERIFIED

Photographic & electronic lighting equip, portable lighting bars

HEATH CO

Benton Harbor MI 49022

616 982-3200

Intercoms; tape cartridge equip; loudspeakers; oscilloscopes; multimeters; frequency counters; signal generators, AF & RF; distortion meters; impedance bridges; CATV test equip, (Heath/Schlumberger Instruments)

HEINDL MASK MOUNTS

200 St Paul St Rochester NY 14604

716 454-5080

Mounts & masks for photo slides

HELWICK AUDIO

2409 23rd St Gulfport MS 39501

601 863-0304

CATV test equip

HEWLETT-PACKARD CO

1501 Page Mill Rd Palo Alto CA 94304

415 493-1501

Oscilloscopes, frequency counters, waveform analyzers, digital multimeters, signal generators, sweep oscillators, spectrum analyzers, other test equip for broadcast and CATV VS

HICKOK INSTRUMENT CO

10514 DuPont Ave Cleveland OH 44108

216 541-8060

Frequency monitors & counters, generators, audio, RF, impedance bridges, voltmeters, multimeters, RF wattmeters, oscilloscopes, video test generators for servicing VS

HIGH-LITE CORP

23 Selwyn Dr Greenville SC 29615

803 268-7702

Towers; emergency power equipment systems; mobile van construction systems

HITACHI DENSHI AMERICA LTD

58-25 Brooklyn-Queens Expy Woodside NY 11377

212 898-1261

Studio & portable color & mono video cameras; video monitors; pulse distribution amps; sync generators; special effects generator; videotape recorder/players; video cartridge recorder/players; microwave equip; semi-conductors; image enhancers; oscilloscopes; portable video camera power packs VS

See ad pg 71

CA	Hit 21015-21023 S Figueroa St Carson 90745.....	213 328-2110
GA	Hit 3610 Clearview Pkwy Doraville 30340.....	404 451-9453
IL	Hit 1725 N 33 Ave Melrose Pk 60160.....	312 344-4020
TX	Hit 14169 Proton Rd Dallas 75240.....	214 233-7623
CAN	Hit 922 Dillingham Rd Pickering Ontario L1W 1Z6.....	416 839-5134

HITACHI LTD

6-2 Otemachi 2-chome, Chiyoda-ku, Tokyo 100 Tokyo (270) 2111

Camera pick-up tubes Saticon® VS

See ad pg 163

IL	Hitachi America Ltd 2700 River Rd Des Plaines 60018.....	312 298-0840
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HM ELECTRONICS INC

6151 Fairmont Ave San Diego CA 92120

714 280-6050

Wireless mic systems..... VS

See ad pg 202—refer to rep/dist section

HOLLAND ELECTRONICS INC

970 E 92nd St Brooklyn NY 11236

212 649-7330

Audio amps (line, monitor, power); pre-amps; op-amp modules; consoles (mixers, quad, audio for TV); headphones; intercom systems VS

HOLMES FRANK LABS INC

1947 First St San Fernando CA 91340

213 365-4501

Lab, filmstrip and slides

HOLLOGON OPTICAL SYSTEMS CORP

225 Park Ave S New York NY 10003

continued on page 102

TNG

TOTAL NEWS GATHERING SYSTEM

THE ANGENIEUX TOTAL LIGHTWEIGHT-COMPACT SYSTEM FOR ENG/EJ provides all angles from super wide to extreme telephoto as well as high magnification for ultra close-ups. Centering around the Angenieux 15X9.5, 9.5-142mm, f/1.8 zoom lens, the system allows the cameraman to carry only the components which are necessary for his specific assignment. All focal lengths from 7 to 615mm are available with this unique system, including remote control capability. Objects as small as 0.7x0.9" (17x22mm) can be covered while retaining zoom capability. All in a basic package weighing 5.5 lbs. (2.5kg) including servo zoom/iris and pistol grip.



angenieux corporation of america

1500 OCEAN AVE., BOHEMIA, NEW YORK 11716 • (516) 567-1800
13381 BEACH AVE., VENICE, CALIFORNIA 90291 • (213) 821-5080
4 HAVEN HILL SQ., AGINCOURT, ONT. M1V1M4 • (416) 291-2363

Circle 156 on Reader Service Card

The Source '78

212 260-2150

Film projectors (motion pic, flickerless, non-intermittent, variable speed or sync)

HOUSTON PHOTO PRODUCTS INC

655 E 20th St Yuma AZ 85364

602 782-3677

Film processors

HOWE-YIN RESEARCH CO INC

PO Box 3518 Dept ME Fremont CA 94538

415 656-9400

RF amps, VHF transmitters

HUGHES MICROWAVE COMM PRODUCTS

PO Box 2999 Torrance CA 90509

213 534-2146

Intercity microwave equip; receive only satellite earth stations; CATV microwave equip VS

HUGHEY & PHILLIPS INC

3050 N California St Burbank CA 91505

213 849-1104

Tower lighting, beacons, de-icers

HUNT-PIERCE CORP

230 Old Gate Lane Milford CT 06460

203 878-7491

Aerial platforms; cable handling; pulling equip

VS means that BM/E has reviewed this manufacturer's supporting literature

IDEAL INDUSTRIES

1780 Becker Pl Sycamore IL 60178

815 895-5181

Wire, cable stripping equip

IGM DIV OF NORTHWEST TECHNOLOGY INC

4041 Home Rd Bellingham WA 98225

206 733-4567

Time insertion sequencers; computer/microprocessor controllers; tone generators; auto time/weather announcers; complete automation systems; multiple tape cartridge player/recorders; log printers VS
See ad pg 18—refer to rep/dist section

IKEGAMI ELECTRONICS (USA) INC

29-19 39th Ave Long Island City NY 11101

212 932-2577

Portable color TV cameras, accessories, telecine equip, production switchers, monitors VS

IMAGE MAGNIFICATION INC

739 Airway Cir New Smyrna Beach FL 32069

904 427-5294

Large screen TV projection systems VS

IMAGE TRANSFORM INC

4142 Lankershim Blvd N Hollywood CA 91602

213 985-7566

Videotape film transfers, scene by scene video correction, chroma keying/matting, standards conversions VS

IMAGE DEVICES INC

1825 NE 149 St Miami FL 33181

305 945-1111

Audio mixers & consoles; pulse signal systems headphones; intercom systems; condenser & lavalier mics. VCRs; tripods; ENG camera braces; color & portable DC monitors; carrying cases; magnetic recording equip & accessories; production equip rental; TV studio design; battery chargers, shipping cases

INDUSTRIAL ELECTRIC REELS INC

10102 F St Omaha NE 68127

402 339-9300

Cable reels & collector rings

INDUSTRIAL SCIENCES INC (ISI)

3521 SW 42 Ave PO 1495 Gainesville FL 32608

904 373-6783

Chroma keyers, processing amps, pulse and distribution amps; audio distribution amp, production switchers; routing switchers; sync generators; VIRS generators; spec effects generators; colorizers; automatic telecine light control; signal equalization system; intercom (Farrtronics) audio consoles; video processing amps; post production switchers VS

INNOVATIVE TELEVISION EQUIP

Box 681 Woodland Hills CA 91367

213 888-9421

Heads for TV cameras, pedestals, stands, tripods, dollies; remote control mounts VS
See ad pg 167

INOVONICS INC

503-B Vandell Way Campbell CA 95008

408 374-8300

ALC & AGC amps; AM & FM compressor/limiters/filters; noise reduction systems; replacement tape recording electronics; constant tensioning kit for studio recorders; spectrum analyzers VS
See ad pg 50

INSTRUMENT LABORATORIES CORP

350 N Eric Dr Palatine IL 62067

312 358-8850

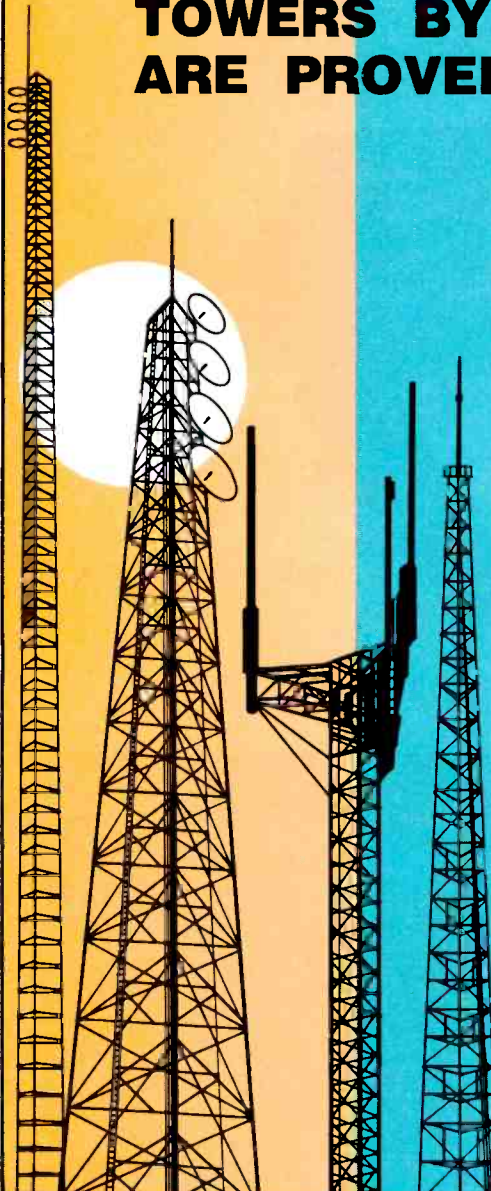
Test equip; cable locators; fault finders

continued on page 104

From burning deserts

To frigid mountain tops...

TOWERS BY STAINLESS ARE PROVEN!



Performance-proven under the worst environmental conditions, "towers by Stainless" have earned us our reputation as number one in tall tower construction.

A Stainless microwave tower in Florida, built to withstand 160 mph winds, showed no structural damage during hurricane "Eloise" in 1975. Other Stainless towers have withstood ice and winter winds equally well.


We build with integrity — through experience, advanced engineering techniques, uncompromising standards and quality of materials.

Yet our prices are extremely competitive. We keep costs down through use of automated fabrication wherever possible and though we've built 2000' towers, we're just as particular in building 200' ones.

Worldwide, for AM/FM, TV, microwave or radar, we've satisfied commercial, government, industrial and military needs for over 30 years.

"Package" programs are available with site selection, soil analysis, fabrication and erection.

For your tower needs — choose Stainless, the *Proven* performer.

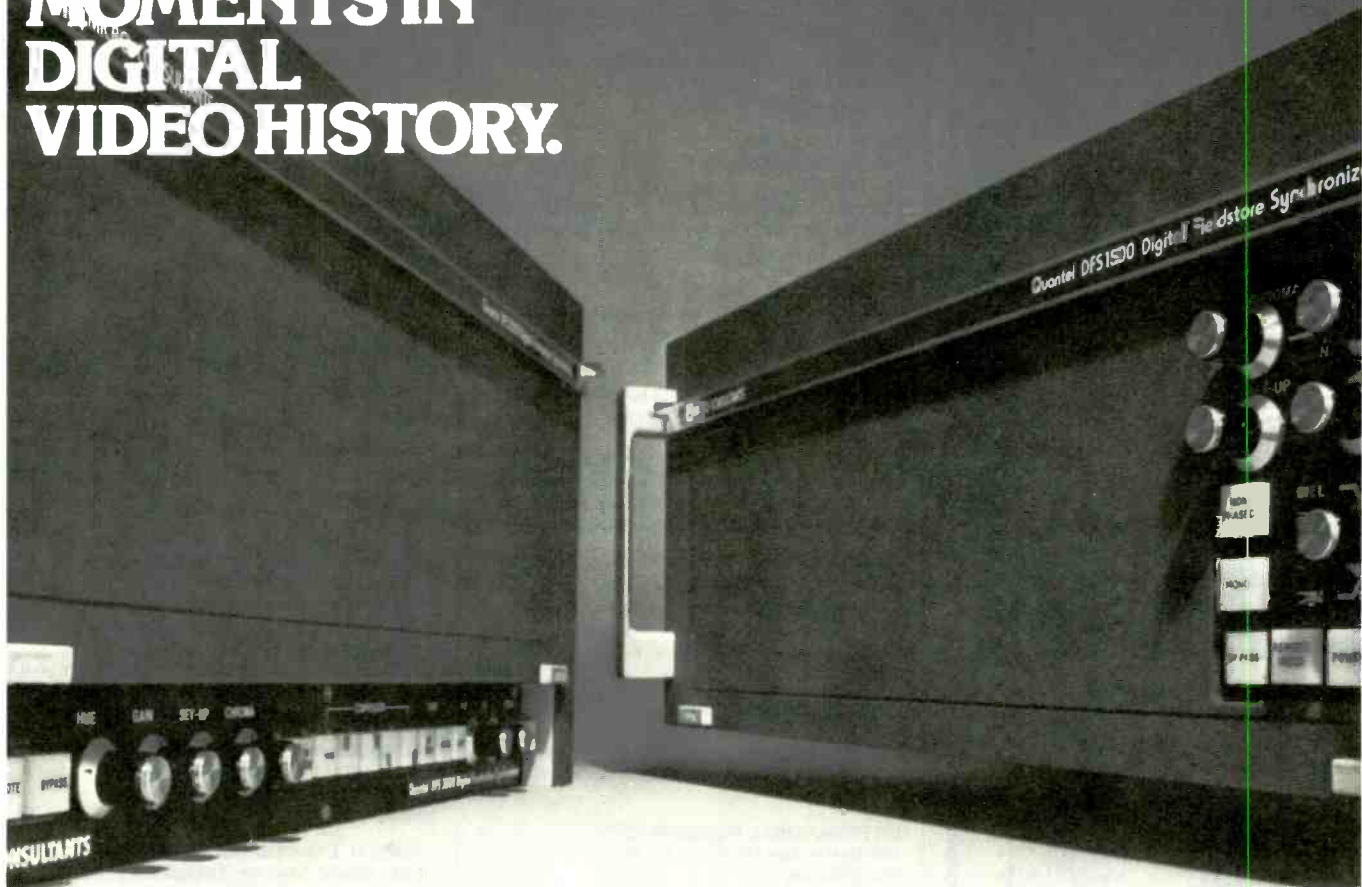


Stainless, inc.

North Wales, PA 19454 U. S. A.
Phone 215/699-4871
TWX: 510-661-8097

C0178

GREAT MOMENTS IN DIGITAL VIDEO HISTORY.



THE SYNCHRONIZER BECOMES MORE POWERFUL. AND LESS POWERFUL.

AND MICRO CONSULTANTS IS THERE WITH THE QUANTEL DFS 3100 AND DFS 1500.

The new DFS 3100 is the successor to the DFS 3000, the world's most highly acclaimed digital framestore synchronizer. But the microprocessor-controlled DFS 3100 is more powerful. Its production control option puts a wide range of effects at the producer's fingertips.

Effects like freeze with automatic updating. Video compression. Joystick control of compressed and full frame pictures. Automatic positioning to predetermined locations. Automatic tracking of chroma key for compressed images.

Automatic fast or slow wipes. Smooth cuts from compressed to full frame video. And more.

But if you need **less**, the new DFS 1500 gives you basic fieldstore synchronization and truly outstanding time base correction. It's ideal for broadcasters who don't need all the power of the 3100, as well as those who have a need to use it **in addition to** a 3100.

Both synchronizers are portable and rugged. Both dissipate only 250VA. Both are perfect for studio or OB van.

So whether you need more synchronizer—or less synchronizer—get in touch with Micro Consultants, Inc., P.O. Box 10057, Palo Alto, California 94303, (415) 321-0832.



The digital video people



Circle 158 on Reader Service Card

if you

WANTED TO

design a range of professional

headsets & headphones

You Would Probably Specify:

A lightweight headphone with comfortable foam cushions that gently envelop but do not press on the ears—a padded headband—really tough components that would withstand even the most ham-fisted abuse and a design which would simplify parts replacement with common tools.

You would offer several models—each dedicated to the requirements of the specific job and there would be a wide selection of mikes and phones to fill any customer's requirement.

WE'VE HAD THE SAME IDEA.



Astrolite with standard ear-enveloping foam cushions—provides good attenuation.



Minilite headset—no physical ear contact.

Ampligard—when ambient noise exceeds 85 dB

Literature on request from

Television Equipment Associates, Inc.



Box 260, South Salem, N.Y. 10590

Tel: 914-763-8893

TWX: 710-575-2600

Circle 159 on Reader Service Card

The Source '78

INTECH LAB

160 Wilbur Pl Bohemia NY 11716
516 859-8800
Automatic CATV spectrum analyzer

INTERFACE VIDEO SYSTEMS

2033 M St NW #506 Washington DC 20036
202 857-0062
Videotape/film recording transfer

INTERAND CORP

450 E Ohio St Chicago IL 60611
312 943-1200
Electronic video graphic systems, telestrator, audio graphics, interactive video educating devices; two-way cable input devices

INTERNATIONAL AUDIO INC

2934 Malmo Dr Arlington Heights IL 60005
312 956-6030
Audio cassette tape duplicators VS

INTERNATIONAL ELECTRO-MAGNETICS INC

350 N Eric Dr Palatine IL 60067
312 358-4622
Passive audio equalizers & filters; tape cartridge player/recorders (single, dual, multiple); open reel tape studio systems; rebuilt & replacement tape heads; magnetic recording equip & accessories

INTERNATIONAL INSTRUMENTS DIV SIGMA

INSTRUMENT INC
88 Marsh Hill Road Orange CT 06477
203 795-4711
Analog, VU & peak indicators, voltmeters, dB meters VS

INTERNATIONAL MICROWAVE CORP

33 River Road Cos Cob CT 06807
203 661-6277
Microwave equip; STL & remote pickups, intercity, portable, ENG VS

INTERNATIONAL NUCLEAR CORP

608 Norris Ave Nashville TN 37204
615 254-3365
Chroma keyers; video processing amps; video switchers; routing switchers, pulse distribution amps, burst phase corrector, audio distribution amp, line equalizer amp

INTERNATIONAL RECTIFIER CORP

233 Kansas St El Segundo CA 90245
213 322-3331
High power cartridge rectifiers columns; solid state tube replacements; RF tubes, rectifiers, surge protectors

INTERNATIONAL TAPETRONICS CORP

2425 S Main St Bloomington IL 61701
309 828-1381
Tape cartridge equip; reel-to-reel; multi-cart machines, audio recorder/players VS
See ad pg 21

INTERNATIONAL VIDEO CORPORATION (IVC)

455 W Maude Ave Sunnyvale CA 94086
408 738-3900
Color studio cameras; studio/field convertible cameras; ENG/EPF cameras; remote control mounts; helical & segmented-helical VTRs; VTR head refurbishing VS

IONIC INDUSTRIES INC

128 James St Morristown NJ 07960
201 539-1040
Music synthesizers, sound effects VS

IRISH ELECTRONIC ENTERPRISES INC

270 Newtown Rd Plainview NY 11803
516 293-5582
Videotape

ITI ELECTRONICS INC

369 Lexington Ave Clifton NJ 07011
201 546-3900
CCTV video leveler; audio amps and processing equip VS

ITT CANNON ELECTRIC

666 E Dyer Rd Santa Ana CA 92702
714 557-4700
CATV connectors and plugs VS

ITT JENNINGS 970 McLaughlin Ave San Jose

CA 95122
408 292-4025
Coaxial switchers, variable vacuum capacitors; RF voltmeters; vacuum relays, coaxial relays & switchers; RF switchers VS

ITT SUPRENANT

172 Sterling St Clinton MA 01510
617 365-6331
CATV wire, cable

ITT WEAVER

8676 Pennel Dr St Louis MO 63114
314 997-5555
Bonded copper ground rods, ground rod clamps; jumper clamps

IVIE ELECTRONICS INC

500 W 1200 S, Orem UT 84057
801 224-1800
Audio generators, voltmeters, spectrum analyzers VS

J

J&D ELECTRONICS DIV J&D INTERNATIONAL Unit E-East, Interstate Ind Pk Bellmawr NJ 08031 609 931-4100

Monitor, distribution amps; chroma keyers, processing amps, pulse & distribution amps, video production switchers, black burst generators, special effects generators, colorizer, equalizer; post production switchers; routing switchers; emergency power equip

JACOBSEN MFG CO SOD MASTER DIV

1721 Packard Ave Racine WI 53403
414 637-6711
Vibratory plows for cable burial VS

JAMES B. LANSING SOUND INC (JBL)

8500 Lansing Blvd Northridge CA 91329
213 893-8411
Audio amps (line, pre-amps, monitor, power, public address); speakers; audio monitors VS
See ad pg 41—Call factory for nearest distributor

CA	R Taylor 8500 Baboia Blvd Northridge 91329.....	213 893-8411
MI	T Roseberry 3040 Charlevoix Grand Rapids 49506.....	616 455-6270
NY	W Watkins 55 Ames Ct Plainview 11803.....	516 822-2488
TX	C Cathcart 1413 Leicester Garland 75042.....	214 495-5145

JAMIESON FILM COMPANY

6901 Forest Park Rd Dallas TX 75235
800 527-2298
Color film processors; film processor accessories VS

JAMPRO ANTENNA CO DIV OF CETEC CORP

6939 Power Inn Rd Sacramento CA 95828
916 383-1177
AM, FM, TV antennas; antenna accessories; RF filters; RF phasing networks, TV combiners, FM diplexers; antenna tuning units, DA equip VS

THE JANSON INDUSTRIES

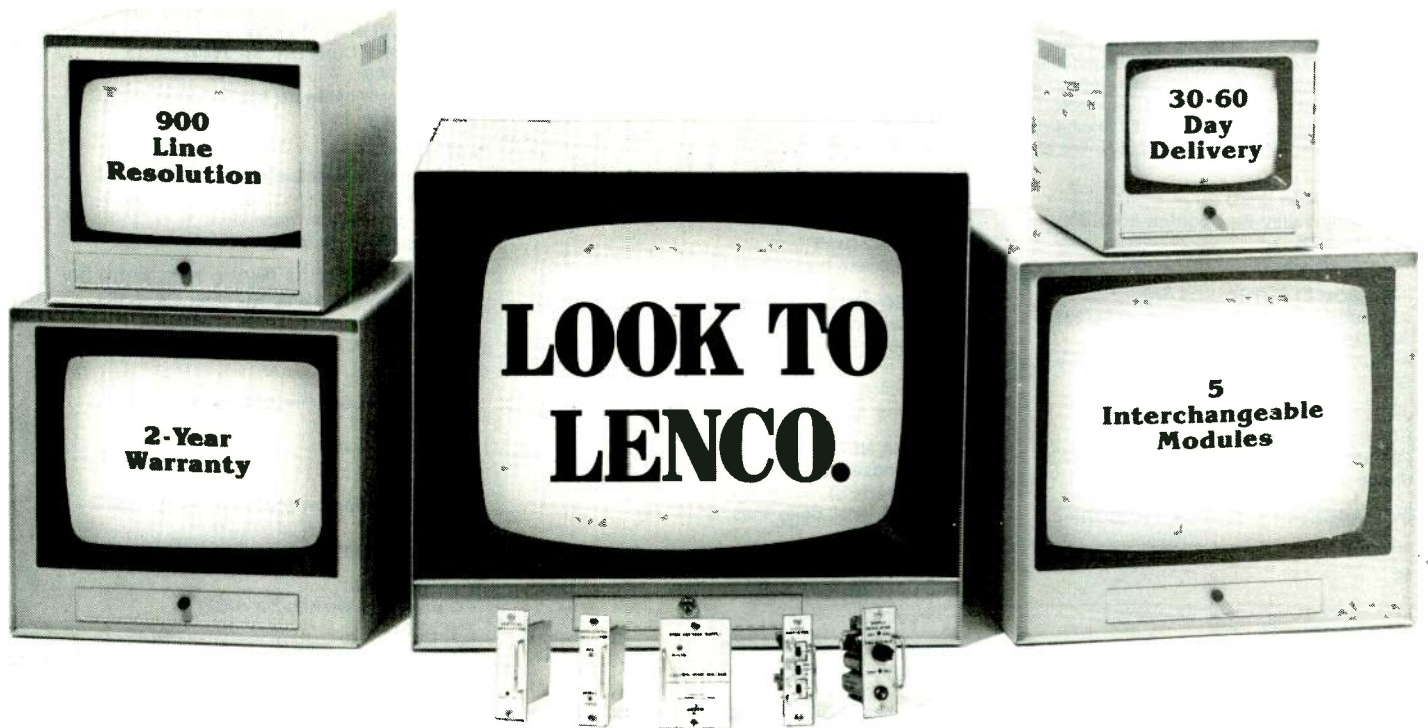
1200 Garfield Ave SW Canton OH 44706
216 455-7029
Lighting equip heads, stands & fixtures, manual dimmer controls; scenery, seamless materials; facility turnkey installations VS

VS MEANS IT'S VERIFIED

JAVELIN ELECTRONICS

6357 Arizona Circle Los Angeles CA 90045
213 641-4490
Camera lenses & accessories, picture monitors, helical videotape recorder/players
continued on page 106

NEED MONITORS NOW?



Lenco's new line of PMM-900 Series professional monochrome monitors is not only the finest available, but it's available *now*. Unlike other monitor manufacturers, we don't make promises . . . we deliver.

Our special warm, white phosphors produce an exceptionally sharp, bright picture with *900 lines of resolution*. And the foot-candle output is twice that of other monitors on the market.

And only Lenco gives you the unique, plug-in modular chassis that allows you to inter-

change the five individually shielded circuit modules with any of the 900 Series monitors regardless of CRT size.

Couple that with our *two-year warranty*, underscan and pulse-cross options, a range of cabinet monitors from a 9" through a 23", dual 9" and 12", 15" and 19" rack-mounted models. That's a combination that can't be beat.

So forget about waiting for Brands "A", "B", or "C". Lenco is here with the best . . . **NOW!**



LENCO, INC., ELECTRONICS DIVISION

300 N. Maryland St., Jackson, MO 63755, (314) 243-3147

13620 Littlecrest Dr., Dallas, TX 75234, (214) 241-0976 • Post Office Box 301, Atchison, KS 66002, (913) 367-1146
1 Elmwood Lane, Westport, CT 06880, (203) 226-4482 • 2390 Tiffany Circle, Decatur, GA 30035, (404) 288-2080

Circle 160 on Reader Service Card

The Source '78

JEFFERSON DATA SYSTEMS

Executive Plaza 501 Archdale Dr Charlotte NC 28210
704 374-3631
Business data systems for radio & TV VS

JERROLD ELECTRONICS CORP

PO Box 487 Byberry Rd & PA Turnpike Hatboro PA 19040
215 674-4800

Cable trunk, distribution & line extender amps; cable passive distributors; headend processors; complete headend systems; turnkey cable installations; cable system design; coax connectors; pay-cable systems; antennas for cable MATV; modulators, demodulators, RF amps; transmission line end connectors VS

JOHANSON MFG CO

Rockaway Valley Rd Boonton NJ 07005
201 334-2676
Variable capacitors

JOHNSON ELECTRONICS INC

62 South Hwy 17-92 Casselberry FL 32707
305 339-2111

Audio dist, power, public address amps; pre-amps; SCA FM translators; receiving antennas VS

JRF CO

PO Box 833 Sparta NJ 07871
201 827-4855

Stereo power amps VS

JVC INDUSTRIES—See US JVC CORP

K

K&H PRODUCTS LTD

PO Box 246 N Bennington VT 05257
802 442-9118

ENG camera mounting braces, dollies, ENG equip carts, shipping cases

KAHN COMMUNICATIONS INC

74 N Main St Freeport NY 11520
516 379-8800

Passive equalizers and filters; telephone coupling equip; stereo RF equip

KAITRONICS CORP

1540 Gilbreth Rd Burlingame CA 94010
415 697-9102

SMPT E time code equip, tape evaluators; two VTR editor-controllers VS

KALART VICTOR CORP

Hultenius St Plainville CT 06062
203 747-1663

Large screen TV projectors; TV image enhancer; optical multiplexer; TV film chain; 16mm movie projectors, film editing equip, accessories; video attenuators; opaque, overhead & lantern slide projectors VS

KALLMAN ASSOCIATES INC

2525 Hyperion Ave Los Angeles CA 90027
213 660-4900

Alpha-numeric character generators

KAMAN SCIENCES CORP (BROADCAST COMPUTER SERVICES)

1500 Garden of the Gods Rd Colorado Springs CO 80907
303 599-1500

Radio and TV computer business services

KANDTT PRODUCTS

Box 246 N Bennington VT 05257
1-802 442-0118

ENG camera braces & dollies

KAPCO ENTERPRISES INC

947 Janesville Ave Fort Atkinson WI 53538
414 563-8441

Pulse and distribution amps; subcarrier; small production switchers; sync, black burst, generator systems; spec effect generator for CCTV; mixers

KAPPA NETWORKS INC

165 Roosevelt Ave Carteret NJ 07008
201 541-1600

Audio & video delay lines; video filters

K/TRONIC INC

3260 Scott Blvd Santa Clara CA 95051
408 246-6830

Videotape

KAY ELEMETRICS CORP

12 Maple Ave Pine Brook NJ 07058
201 227-2000

Audio spectrum analyzers; rotary attenuators, slide attenuators; RF generators; test equipment CATV

KAY INDUSTRIES INC

604 N Hill St South Bend IN 46617
219 234-0171

Rotary phase converters (single phase to three phase)

KITCHEN PRODUCTIONS

205 S Silver Ridge Dr Ridgecrest CA 93555
714 375-5690

SCA equip translators (FM, VHF, UHF)

KLEIN TOOLS INC

7200 McCormick Rd Chicago IL 60645
312 677-9500

Hand tools; safety equip for CATV VS

KLIEGL BROS INC

32-32 48th Ave Long Island City NY 11101
212 786-7474

Lighting hardware, fixtures, heads, stands; lamps; diffusion material; gels & filters; automatic dimmer controls; patch terminals, plugs & connectors; TV studio lighting design; lighting kits VS

KLINE IRON & STEEL CO

PO Box 1013 Columbia SC 29202
803 779-7080

Towers, tower hardware & construction equip, tower lighting

KNOX LTD

16021 Industrial Dr Gaithersberg MD 20760
301 840-1930

Graphic art character generators VS

See ad pg 183—refer to rep/dist section

KOLLMORGEN CORP PHOTO RESEARCH DIV

3000 N Hollywood Way Burbank CA 91505
213 843-6100

Exposure meters, color temperature meters VS

KORTICK MFG CO

5600 Third St San Francisco CA 94124
415 822-6660

Pole line hardware

KOSS CORP

4129 N Washington St Milwaukee WI 53212
414 964-5000

Headphones, dynamic & electrostatic; speakers

KREONITE INC

PO Box 2099 Wichita KA 67201
316 263-1111

Film lab and graphics studio design and turnkey installations; film processors

KVC INC

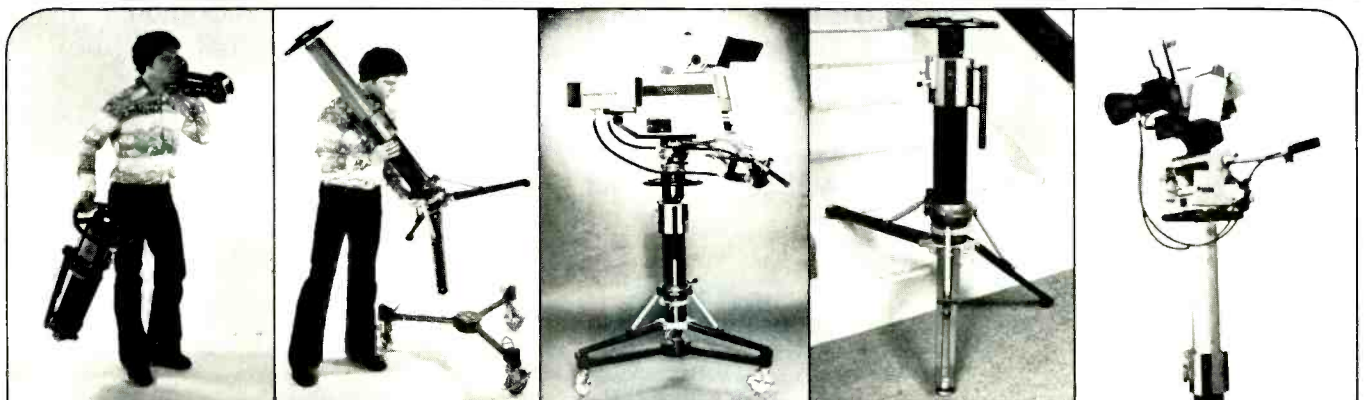
770 Lexington Ave New York NY 10021
212 752-3690

Portable video camera shoulder braces; camera mounts, heads, tripods, equip rental services, video repair services, studio design

L

LAIRD TELEMEDIA INC

continued on page 111



PUT-IT-ANYWHERE "PortaPed." Pneumatic, Lightweight, Folding, Self Leveling, Self Charging, Portable Studio and Field Pedestal

* 100 lb. capacity * available with foldable crab dolly and foldable castor dolly



**LISTEC
TELEVISION
EQUIPMENT CORP.**

LISTEC
39 CAIN DRIVE, PLAINVIEW, NEW YORK 11803
(516) 694-8963 TELEX 640470
(WEST COAST)
4527 SAN FERNANDO ROAD, UNIT 1, GLENDALE,
CALIFORNIA 91204 (213) 244-0838

Circle 161 on Reader Service Card



**For you,
the new breed of
video professional,
the new breed of
professional video from
JVC.**



If you're a video professional today, you're a tougher customer than ever. So JVC's rugged professional line delivers the quality and features you demand at prices you want to pay.

We know you've got a lean new attitude about the video equipment you buy, no matter how long you've been in the business. Or whether you're in broadcasting...a sophisticated corporate A/V operation...a top production house...or building your first video capability.

And that attitude is, with all the people vying for your video dollar, you want more state-of-the-art technology in equipment

that costs you less to own and maintain.

JVC's attitude is basic too. We build in engineering innovations—we don't add them on later. And we do it first. Which means you enjoy better picture and sound quality, easier operation, and sophisticated features you may not even find in equipment selling for twice the price.

For instance:

You wanted faster performance and greater accuracy in 3/4-Inch video editing.

And JVC's new CR-8500LU Recorder/Editor System offers bi-directional fast/slow search from approximately 10 times to 1/20 time, with editing accuracy to ± 2 frames.

It's a new generation of 3/4-Inch VCR editing—the fastest, surest way to get the frame-by-frame accuracy you need.

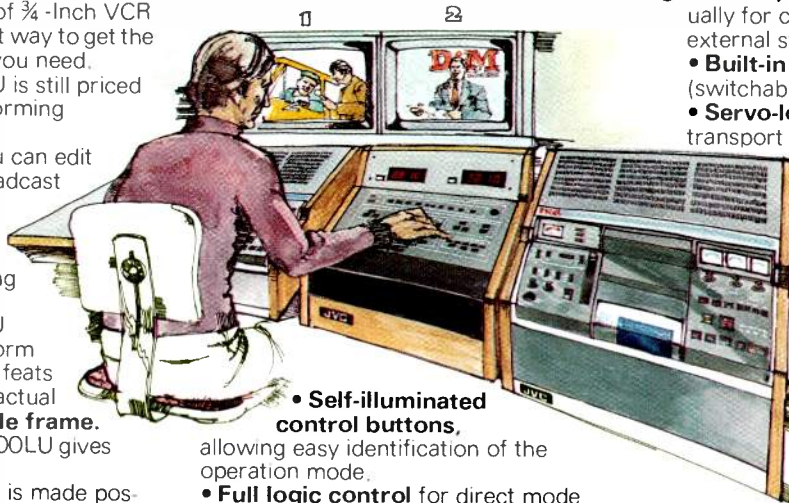
But JVC's CR-8500LU is still priced well below its closest performing competition.

With a single unit, you can edit with full functions and broadcast quality. Even if you don't happen to have special technical knowledge.

With a complete editing system of two CR-8500LU units and the new RM-85U Control Unit, you can perform the most advanced editing feats at approximately 10 times actual speed, then stop on a single frame.

Here's how the CR-8500LU gives you that kind of precision:

- **Frame to frame editing** is made possible with the capstan servo/built-in rotary erase head/blanking switcher frame servo design. A design that also ensures true assemble and insert editing with no distortion at the edit points. Plus horizontal sync phase compensation to minimize timing error at the editing points.
- **Variable speed auto-search** lets you perform both high speed and low speed search. You can search at approximately 10 times in fast forward or reverse to find edit points faster. Or slow speed search at 2 times, 1 time, 1/5 time and 1/20 time. Or use the special auto-speed shift feature to automatically slow you down from 2 times, real time, 1/5 time, 1/20 time.
- **Automatic pre-roll** enables you to pre-roll tape between edits, with an automatic on/off switch. Which can come in especially handy during successive assemble edits using camera signals.



• **Self-illuminated control buttons,**

allowing easy identification of the operation mode.

- **Full logic control** for direct mode change without pressing the stop button.
- **Remote control** of all operations, with the optional remote control unit RM-85U.
- **Audio level control with meters,** preventing over-level recording without audible distortion, with attenuator. Also, manual audio level controls let you adjust the audio recording level by checking the level meters.
- **Auto/Manual selection for video recording level control,** adjustable by the automatic gain control circuit or manually by referring to an independent video level meter.
- **RF output** to connect an external drop-out compensator.
- **Patented color dubbing switch** for stable color multi-generation dupes.
- **S.C./sync input connector** allows connection of time base corrector and allows for two second pre-roll.
- **Chroma level** can be controlled man-

ually for convenient connection to an external system.

- **Built-in comb-filter** for playback (switchable on-off).
- **Servo-lock indicator** to check the tape transport condition.

• **Counter search mechanism,** permitting Auto-Search of a particular section of the tape.

• **Solid construction for easy maintenance:** both side panels, top and bottom panels are detachable for easy access to the inside.

• **Tracking control meter**

for maximum

tracking adjustment.

• **Heavy fan motor** for better

circulation.

All that with one editing unit. But when you combine two editing units with our new RM-85U automatic editing control unit, you'll enjoy all the benefits of a total-performance system.

Starting with the kind of control only JVC's RM-85U can give you:

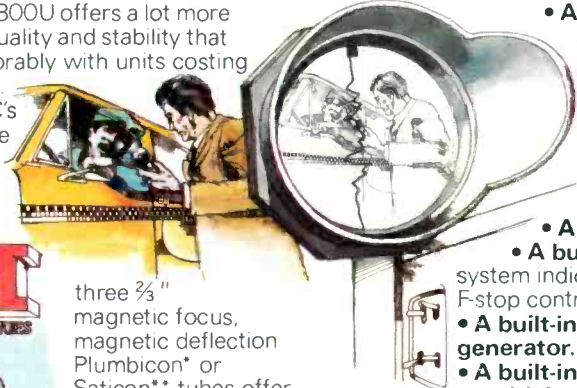
- **Independent LED time counters** for player and recorder, read out edit points in minutes, seconds and frames.
- **Edit-in and edit-out automatic control.** Four built-in memories let you control edit-in and edit-out points of both the player and recorder. And once starting and ending points are determined, accurate editing is memory-controlled automatically.
- **Edit shift control** allows frame-to-frame edit point correction.



- **Lap time indicated** for each insert edit length by LED display.
- **Edit preview mode available**, for "rehearsals" of actual edits.
- **Edit-in point search mechanism.** After each edit, a Return button rewinds the tape automatically to the edit-in point, so it's easier to check edit conditions.
- **Auto-shift search mechanism** to step down the tape speed automatically, and ensure quick and accurate location of the editing point.
- **Tape safety guard circuit.** Because leaving the unit in the still-frame mode can eventually cause damage to tape or video heads, a tape safety guard circuit places the unit into the stop mode automatically.

You demanded more versatility in a moderate-priced, broadcast-quality camera. And JVC's value-packed CY-8800U goes with you from studio to location.

Our CY-8800U offers a lot more than picture quality and stability that compares favorably with units costing twice as much. Thanks to JVC's technology, the CY-8800U camera, utilizing



three 2/3" magnetic focus, magnetic deflection Plumbicon* or Saticon** tubes offer total flexibility. And a rugged die cast chassis in front and back to hold up under the toughest conditions.

With the **Basic** configuration, it's a compact ENG/EFP camera that's completely self-contained—no CCU required. It's easy to operate, ready to plug into our CR-4400LU/CR-4400U portable recorder, with optional cables available up to 66 feet.

With the **Studio** configuration it's a hard-working studio camera. Just add the RS-8800U remote Synchronizing unit and the large screen, top mounted viewfinder.

And as for big-ticket features, we've built in what the others would let you add on later:

if it is left in the still-frame mode for more than 10 minutes.

- **Selective editing modes**—assemble editing, insert editing for audio channel-1, audio channel-2 or video.
- **Versatile editing capability** offering techniques like "edit-in/out," pre-roll, and automatic pre-roll.

You'll find that nothing in its price class performs anywhere near the CR-8500LU/RM-85U videocassette editing system. And that you'd have to spend a lot more on the competitive unit that offers many of the same features.

That's what we mean by giving video people more of what they want, for less than they expect to pay.

- **A built-in 1.5 inch adjustable electronic viewfinder** for the convenience of the operator.
- **A built-in battery warning system.**
- **A built-in tally light.**
- **A built-in VSI**—video

system indicator for precision F-stop control.

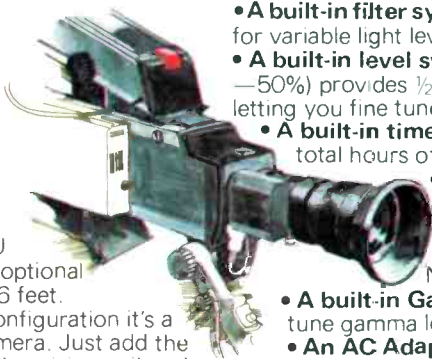
- **A built-in color bar generator.**
- **A built-in +6dB, +12dB sensitivity switch** for low light level applications.

- **A built-in auto white balance.**
- **A built-in fast warm-up capability.**
- **A built-in electrical color temperature adjustment** for different applications (variable from 3000°K to 10,000°K).
- **A built-in filter system** (neutral density) for variable light levels.

- **A built-in level switch** (+50%, 0, -50%) provides 1/2 F-stop adjustment, letting you fine tune for added contrast.
- **A built-in time lapse meter** to show total hours of camera use.

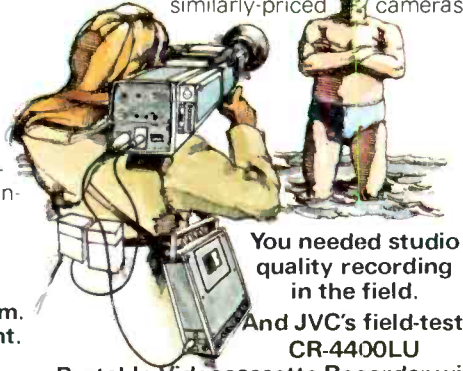
- **A built-in intercom system** for studio applications.
- **An RGB output**, and NTSC encoding (Y, I, Q).

- **A built-in Gamma control** to fine tune gamma level.
- **An AC Adaptor**—standard
- **Lightweight—17.4 lbs.—portability.**
- **Optional 12-to-1 zoom lens** with automatic iris and power zoom.



- **Built-in horizontal and vertical contour correction circuits.**
- **Signal-to-noise ratio of 49dB,** F.4/3000 lux.
- **Resolution of 500 lines at center.**
- **Return video** in the viewfinder.
- **A built-in -G circuit** for registration.
- **Minimum illumination** F 1.9/300 lux (+6dB switch on).
- **A comfortable hand grip** to stop and start the recorder. With a switch to operate iris control and a switch for return video.
- **A built-in CCU.**

And that adds up to a lot more features than you'd find in similarly-priced cameras.



You needed studio quality recording in the field.

And JVC's field-tested CR-4400LU

Portable Videocassette Recorder with automatic editing lets you bring your recording/editing capability wherever you need to shoot.

If you spend time on location in either ENG or EFP applications, you need a portable video system that can shoot, edit, and give you something to show in no time flat. Without awkward equipment hassles.

JVC's CR-4400LU is the one to take along when you can't bring a studio.

Because it's the lightweight machine with heavyweight features:

- **Weighs in under 27 lbs.** So you can take it anywhere, and assemble edit on the spot. You enjoy total flexibility. Complete freedom. Fast results.
- **AEF (Automatic Editing Function)** gives you clean assemble edits.
- **Built-in, full color recording and playback circuitry.** No need to buy an adaptor.
- **Low-power consumption** that lets you operate on a miserly 13.5 watts, for longer battery life. A multi-purpose meter checks battery, audio, video and servo levels for precise control of all functions.
- **Flexibility to record with the CY-8800U** or other high quality color cameras.

So if you need a field-tested recording system with the features you want at a price you can afford, check out our CR-4400LU Portable Videocassette Recorder.



*registered trademark of North American Philips Corporation.
**registered trademark of Hitachi Corp.

JVC's new breed of professional video. Backed by an old tradition of JVC quality and reliability.

For the past fifty years, more and more professionals have turned to JVC for innovative equipment they can count on to perform.

Isn't it time you discovered why?

Call your JVC representative for a demonstration. Or write to your nearest JVC office:

58-75 Queens Midtown Expressway
Maspeth, N.Y. 11378
(212) 476-8010

3012 Malmo Dr.
Arlington Heights, Ill. 60005
(312) 593-8997

1011 W. Artesia Blvd.
Compton, Ca. 90220
(213) 537-8230

3400 South Loop East
Houston, Texas 77021
(713) 741-3741



JVC Professional Video. The tough new breed.

JVC
JVC INDUSTRIES COMPANY
DIVISION OF US JVC CORP

The Source '78

**2125 SW Temple Salt Lake City UT 84115
801 487-6251**

Character generators; telecine multiplex equip;
slide projectors; automatic telecine light control VS
See ad pgs 178, 199—refer to rep/dist section

**LAMPKIN LABS INC
PO Box 9048 Bradenton FL 33506
813 792-5566**

FM deviation meters; communication service
monitors for mobile radio VS

**LANDY ASSOCIATES INC
1890 E Marlon Pike Cherry Hill NJ 08003
609 424-4660**

TV production equip; rental service, full line VS

**LAUDERDALE ELECTRONIC LABS
16 SW 13 St Ft Lauderdale FL 33315
305 764-7755**

Audio distribution amps & pre-amps; ALC & AGC
amps; AM & FM compressor/limiter/filters; passive
& active equalizers & filters; reverb units; turntable
pre-amps & controls; studio cabinets & furniture;
tape cartridges, cassettes & test tapes; leader tape;
tape timers; head degaussers; bulk erasers;
cartridge & cassette storage; telephone coupling
equipment; audio connectors & accessories;
splitter/combiners; record maintenance; digital
clocks; timers; radio studio design VS

**LEADER INSTRUMENT CORP
151 Dupont St Plainview NY 11803
516 822-9300**

Frequency monitors & counters; audio & RF
generators; multiple output video generators;
impedance bridges; multimeters; harmonic
distortion meters; RF wattmeters; oscilloscopes;
video test generators; wow & flutter meters

**LEAR SIEGLER INC BOGEN DIV
Box 500 Paramus NJ 07652
201 343-5700**

Amplifier failure detectors, extenders, transformers,
intercom system; audio amps (distribution, line,
pre-amps, monitor, power, public address); power
supplies, ALC & AGC amps, compressor/limiters
AM & FM equalizers & filters (passive & active)

**LEBOW LABS INC
424 Cambridge Allston MA 02134
617 782-0600**

Radio and TV studio design and installation VS

**LEE-RAY INDUSTRIES INC
38 E 1 Ave Mesa AZ 85202
602 962-6806**

Video equipment carriers VS

**LECTROTECH INC
5810 N Western Ave Chicago IL 60659
312 769-6262**

Frequency monitors & counters, RF generators,
oscilloscopes, vectorscopes, waveform monitors &
analyzers

**LEITCH VIDEO LTD UNIT
46 705 Progress Ave Scarborough Ontario M1H
2X1
416 438-5060**

Video synchronizing and timing systems, sync
gens, video pulse and proc amps; pulse assignment
switchers; video test equip; digital clocks; master &
slave clocks; time distribution systems VS
See ad pg 131—refer to rep/dist section
NY Leitch 210 S 8 St Lewiston
14092 716 754-4349

**LENCO INC ELECTRONICS DIV
300 N Maryland St Jackson MO 63755
314 243-3147**

Color encoders, processing amps; pulse
distribution amps; sync generators; black burst
generators; video presence detector; video noise
meters, test generators; b&w picture monitors;
delay amps; routing switchers; signal equalizing
systems; video delay lines; comb encoders; video

equalizers; oscilloscopes; VITS, VIR systems &
equip; waveform monitors & analyzers; diff
phase-gain measurement VS
See ad pg 105—refer to rep/dist section

**LEVIT ELECTRONICS
200 Park Ave S New York NY 10003
212 777-5517**

RF tubes, vacuum tubes, camera pickup tubes;
rectifiers VS

**LENZAR OPTICS CORP
210 Brant Rd Lake Pk FL 33403
305 844-0263**

Camera lenses

**LEXICON INC
60 Turner St Waltham MA 02154
617 891-6790**

Audio digital delay system; variable speed tape
recorder; speech compressor/expander VS

**LIGHTNING ELIMINATION ASSOC
12412 Benedict Ave Downey CA 90242
213 923-1268**

Dissipation array system; transient and surge
eliminators; lightning warning systems VS

**LINDSAY SPECIALTY PRODUCTS INC
50 Mary St W Lindsay Ontario K9V 4S7
705 324-2196**

CATV headend antennas; cable connectors; trunk
& distribution amps; distribution accessories

**LINES AUDIO/VIDEO SYSTEMS
219 S Jefferson Springfield MO 65806
417 862-5533**

Small video switcher/fader

**LIPSNER-SMITH CORP
4700 Chase Lincolnwood IL 60646
312 675-8473**

Ultrasonic film cleaning machines VS

**LISTEC TELEVISION EQUIPMENT CORP
39 Cain Dr Plainview NY 11803
516 694-8963**

Video camera heads, pedestals, tripods, cranes,
dollies (Vinten and TVP) audio consoles (mixers,
stereo, quad, audio for TV, portable); video delay
line (BAL); prompting systems (Autocue);
character/graphics systems; small production
switchers; time code gens/readers; post production
switchers; special effects generators; peak program
meters; production equip rental VS
See ad pg 106

CA M Jacobs TV Optics 4527 San Fernando Rd
Unit I Glendale 91204 213 244-0838

**LOGITEK ELECTRONIC SYSTEMS
PO Box 25304 Houston TX 77005
713 523-7878**

EBS two tone systems; pre-amps; active equalizers
& filters; reverb units; mono, stereo & audio for TV
consoles; turntable pre-amps & controls; scoring,
timing & accessories for game shows; digital clocks;
timers VS

**THE LONDON CO
811 Sharon Dr Cleveland OH 44145
216 871-8900**

Audio & RF generators; harmonic distortion meters;
wow & flutter meters VS

**LONG ENGINEERING CO
961 Burke St Winston Salem NC 27101
919 729-2306**

Multi-media; radio & TV studio design, facility
turnkey installation custom mixers and consoles
(Deltronix); amp modules, transformers (Deltronix);
intercom systems (Deltronix)

**LOWEL-LIGHT MANUFACTURING INC
421 W 54th St New York NY 10019
212 245-6744**

Lowel lamps; heads, stands & fixtures; diffusion
material; gels & filters VS

**LPB INC
520 Lincoln Highway Frazer PA 19355
215 644-1123**

Stereo and mono consoles; modular studio
furniture; turntables; audio distribution amp;

VS MEANS IT'S VERIFIED

compressor/limiter; LED peak level indicator; low
power FM transmitter; carrier current system VS
See ad pg 202—refer to rep/dist section
CA Richard W. Burden 20944 Sherman Way
Suite 216 Canoga Park 91303 213 340-4590
CAN MSC Electronics 254 Wildcat Rd Downsview
Ontario M3J 2N5 416 661-4180

**LRC ELECTRONICS
901 South Ave Horseheads NY 14845
607 739-3844**

Cable TV connectors; CATV distribution passives;
cable tools & accessories; RF connectors VS

**L-W INTERNATIONAL
6416 Varlet Ave Woodland Hills CA 91367
213 348-8614**

Athena telecine; flickerless projectors; 16mm film
chain projectors; slo mo freeze frame telecine
projectors
See ad pg 114

**LUMITROL LTD
400 Don Park Rd Unit 23 Markham L3R 1C6 Ont
416 495-1762**

Lighting Heads, stands & fixtures; manual light
control systems; dimmer packs; patch terminals;
rigging, drapery, curtains, grids, battens, screens &
frames VS

M

**M CO MAGNETIC AUDIO/VIDEO PRODUCTS DIV
3M Center Bldg 223-5N St Paul MN 55101
612 733-1662**

Full line of recording tape for audio & video, magne-
tic film; accessories VS
See ad pg 139

**3M CO MINCOM DIV
3M Center Bldg 23-5E St Paul MN 55101
612 733-7603**

Video character generators, titling and graphics sys-
tems, random access disc memory; video produc-
tion switchers, VI bridging switcher; sync
generators; distribution amps; processing amps;
helical drop out compensator; video encoder; video
routing systems; audio routing systems; special ef-
fects equipment; image enhancers; pulse & subcar-
rier amps; post production switchers; colorizers;
comb decoders VS
See ad pgs 52, 168, 170—refer to rep/dist section

CA Mincom 688 Wasatch Dr Fremont 94536 415
791-8344
IL Mincom 6723 Meadow Dr Crystal Lake
60014 815 455-0202
MD Mincom 15932 Shady Grove Rd
Gaithersburg 20760 301 948-0460
AL Mincom 3070 Leeman Ferry Rd Huntsville
35801 205 883-7370
M Center Bld 223-5E St Paul
55101 612 733-8132
TX Mincom 2121 Santa Anna Ave Dallas
75228 214 324-8100

**MACKENZIE LABS INC
5507 Peck Road Arcadia CA 91006
213 579-0440**

Single-, dual-, multiple tape-, continuous loop car-
tridge player/recorders; film projectors (motion pic,
slidz; automatic light dimmer control

**MAGNASYNC/MOVIOLA CORP
5539 Riverton Ave N Hollywood CA 91601
213 877-2791**

Film editing equip; field & studio film recorders &
accessories VS

**MAGNA-TECH ELECTRONIC CO INC
630 Ninth Ave New York NY 10036
212 586-7240**

Magnetic film recorder/players; synchronizers for
magnetic film recorders & motion picture film equip;
telecine projectors; digital counters VS

**MAGNAVOX CO CATV DIV
133 W Semeca St Manlius NY 13104
315 682-9105**

eb1CATV trunk & distribution amps, distribu-
continued on page 112

The Source '78

tion passives, connectors, terminals, accessories, converters; terminal products for pay-TV, subscriber hook-up equipment **VS**

MAGNAVOX VIDEO SYSTEMS

1700 Magnavox Way Ft Wayne IN 46804
219 482-4411

Studio & portable video color cameras; video monitors, educational TV receivers **VS**

MAGNECRAFT ELECTRIC CO

5575 N Lynch Chicago IL 60630
313 282-5500

Coaxial and RF switches/relays **VS**

MAGNETIC REFERENCE LAB

229 Polaris Ave Suite 4 Mountain View CA 94043

415 965-8187
Test tapes **VS**

MAGNUM TOWERS INC

PO Box 419 Fair Oaks CA 95670
916 985-7727

Tower & antenna supports; portable equip, RF cables, antennas, tower, transmission lines

MARATHON PRODUCTS

334 W Boylston St W Boylston MA 01583
617 853-0988

Tape cartridges; empty reels, carts & cassettes; tape cleaners; torque & speed indicators; head degaussers; cartridge storage; reloaded video quad carts **VS**

MARCONI ELECTRONICS INC

100 Stonehurst Court Northvale NJ 07647
201 767-7250

TV cameras; telecines; switchers; transmitters; audio consoles; intercoms; video pulse & distribution amps; Type C 1-inch helical VTRs, editors, slo mos **VS**

See ad pg 161—refer to rep/dist section

MARCONI INSTRUMENTS DIV

100 Stonehurst Ct Northvale NJ 07647
201 767-7250

Modulation monitors; TV sideband analyzers, spectrum analyzers, video test generators; automatic TV monitors, digital synchronizers, noise test sets; sweep generators; other TV test gear; frequency counters; audio & RF signal generators; distortion meters **VS**

See ad pg 69—refer to rep/dist section

MARTI ELECTRONICS INC

PO Box 661 Cleburne TX 76031
817 645-9163

Remote pick-up & aural STL equip; audio amps; remote control telemetry; RF amps; SCA equip; FM transmitter; audio line amps; audio compressor/limiters **VS**

See ad pg 203

MASTERTONE CO INC

228 Fifth St Suite 2 W Des Moines IA 50165
515 225-6122

Radio studio design

MATSUSHITA

See Panasonic

MATTHEY PRINTED PRODUCTS LTD

See Television Equipment Associates

MAXELL CORPORATION OF AMERICA

60 Oxford Dr Moonachie NJ 07074
201 440-8020

Audio tepe, helical video tape **VS**

McBEE LABORATORIES

5151 Wisconsin Ave NW Washington DC 20016
202 244-2345

ENG cue receivers, wireless intercom systems, custom-built audio systems

McCURDY RADIO INDUSTRIES

1711 Carmen Dr Elk Grove Village IL 60007
312 640-7077

Audio consoles; audio distribution, line & preamps;

audio controls & attenuators; audio processing units; intercom systems; patch panels; turntables, pickup arms; telephone coupling equip, monitor speakers; racks; cabinets, console assemblies; audio tape cartridges; complete studio installations **VS**

See ad pg Cov 2—refer to rep/dist section

NJ

dm070, McCurdy 223 W Saddle River Rd Saddle River 07458..... 201 327-0750

NY

McCurdy 1051 Clinton St Buffalo NY 14206..... 716 854-6700

MCG ELECTRONICS INC

160 Brook Ave Deer Park NY 11729
516 586-5125

Surge protectors

McGRAW-EDISON CO EDISON ELECTRONICS DIV

Grenier Air Park Manchester NH 03103
603 669-0940

Audio line amps, audio attenuators & potentiometers; field calibration meters, IM distortion meters; AF & RF signal generators; audio level meters

MCI INC

4007 NE 6th Ave Fort Lauderdale FL 33334
305 566-2853

Full line audio consoles, slide attenuators, open reel recorder/players, synchronizer, phasemaker, VU and peak meters; magnetic film recording accessories; stereo phase enhancer; SMPTE time code systems **VS**

McKAY DYMEK

PO Box 5000 Claremont CA 91711
714 623-1236

High fidelity AM receiver, shielded loop antenna, audio monitors; all wave receiving antenna

McMARTIN INDUSTRIES INC

4500 S 76th Omaha NE 68127
402 331-2000

AM & FM transmitters; exciters; remote control equip; remote pickup & STL; SCA equip; FM antennas; antenna monitors; Audio & TV consoles; audio mixers; line amps; audio limiters; PA amps; turntables; arms, intercom systems; RF amps; frequency monitors; signal generators; modulation monitors; EBS two-tone equip **VS**

See ad pg 26

AK T. Butler PO Box 119 Limestone 72646..... 501 428-5257

AL R Beattie 1815D Arboretum Circle Birmingham 35216..... 205 979-8124

CA K Blake 4625 Mason St Pleasanton 94556..... 415 846-9000

CA R Switzer 22262 Chestnut Ln El Toro 92630..... 714 837-5250

FL J Menefee Jacksonville

HA Pacific Media Consultant 101 Dillingham Blvd Suite 207A Honolulu 96817..... 808 841-4021

IL J Tollefson 914 S Lynn Champaign 61820..... 217 356-5436

NY J Grey 4 F Underhill Rd Middletown 10940..... 914 342-5113

TX D Jones 2608 Mollimar Plano 75074..... 214 596-5503

VA K Jones Warrenton 22186

WA J Schneider 13516 89 Pl NE Kirkland 98033..... 206 822-3888

MEDIA CONCEPTS INC

559 49 St S, St Petersburg FL 33707
813 821-2122

Automated VTR systems; time code gens/readers; production equip rentals; post production services; videotape/film recording transfer **VS**

MEMOREX CORP

PO Box 1000 Santa Clara CA 95052
408 987-2495

Audiotape; audiotape accessories; videotape for all video record formats; videotape accessories **VS**

MERLIN ENGINEERING WORKS

1880 Embar Cadero Palo Alto CA 94303
415 329-0198

Rebuilt VTR machines, high band color systems, air systems, TBCs, custom built quad VTRs & accessories **VS**

MERRILL CABLE EQUIP (MCE) CORP

PO Box 13741 2949 W Usborn Phoenix AZ 85017
602 271-9181

Trunk & distribution amps, line extenders, connectors, addressable taps, news service, CATV test equip & maintenance **VS**

MICHIGAN MAGNETICS

203 W 3 ST Vermontville MI 49096
517 726-0590

Replacement tape heads **VS**

MICMIX AUDIO PRODUCTS INC

2995 Ladybird Ln Dallas TX 75220
214 352-3811

Reverberation units; audio special effects units; LED peak/VU panel meters **VS**

MICRO COMMUNICATIONS INC

RFD 3 Grenier Field Manchester NH 03103
603 624-4351

RF transmitting/receiving equip, diplexers, ENG microwave equip, waveguides, remote control systems, RF filters, RF loads, FM and TV antennas, transmission lines and components **VS**

MICRO CONSULTANTS INC

2483 E Bayshore Rd Suite 209 Palo Alto CA 94303
415 321-0832

Dropout compensators, standards converters, framestore & field synchronizers, time base correctors, repositioners, compressors, A/D converters, digital effects systems; image enhancers; digital noise reducers/filters; production equip rentals **VS**

See ad pg 103

CA Charles Martin 18931 Sylvan St Reseda 91334..... 213 345-9880

CA D Dever, R Frillman 1101 Embarcadero Rd Ste 209 Palo Alto 94303..... 415 321-0832

GA Paul Fletcher 2971 Flowers Rd S 106 Atlanta 30341..... 404 457-1266

MICRO CONTROL ASSOCIATES

PO Box 13250 Arlington TX 76013
817 265-2912

STL, remote control and SCA subcarrier equip

MICROFLECT CO INC

3575 25th St SE Salem OR 97302
503 363-9267

Towers, tower hardware & construction equip, tower lighting **VS**

MICROPROBE ELECTRONICS INC

Suite 1532A 875 N Michigan Ave Chicago IL 60611

312 440-3111

Automatic sequencers, complete automation systems **VS**

See ad pg 132

MICROTIME INC

1280 Blue Hills Ave Bloomfield CT 06002
203 242-0761

Time base correctors; image enhancers, skew correctors; digital noise reducers/filters; color correctors; dropout compensators; video delay lines & filters **VS**

See ad pg 33—refer to rep/dist section

CA R Lyons 2351 Daphne Pl Fullerton 92633..... 714 992-4332

FL P Dubs 9771 NW 24th Ct Sunrise 33322..... 305 741-9191

MN W Baird 6317 Aldrich Ave S Minneapolis 55423..... 612 861-6228

MICRO-TRAK CORP

620 Race St Holyoke MA 01040
413 536-3551

Audio dist amps, pre-amps, monitor & power amps; complete automation systems; mono, stereo, audio for TV, portable & sportcaster consoles; studio cabinets & furniture; audio cart & cassette storage; DA antenna heater controls; racks, cabinets & shipping cases; turntables, pickup arms; turntable pre-amps & controls; complete disc consoles; tape cartridge & cassettes **VS**

MICROTRAN CO INC

145 E Mineola Ave Valley Stream NY 11582
516 561-6050

Bulk tape erasers; tape spot erasers; head and tape

continued on page 114



LEDDICONS

The image standard for quality camera tubes.

Leddicon[®] vidicon and transmitting tubes.

EEV, Inc., 7 Westchester Plaza, Elmsford, NY 10523. 914-592-6050

EEV Canada Ltd., 67 Westmore Drive, Rexdale, Ont. M9V 3Y6. 416-745-9494

English Electric Valve Co. Ltd., Chelmsford, England CM1 2QU.

Your Image Is Our Business



The Source '78

degaussers, telephone pick-up coils

MICROVISION SYSTEMS

800 No El Camino Real #2 San Mateo CA 94401
415 348-1344
Videotape editor controller VS

MICROWAVE ASSOC INC

63 Third Ave Bldg 5 Burlington MA 01803
617 272-3100
Demodulators; modulators; microwave STLs; intercity, portable & ENG microwave equip; RF amps, attenuators, converters, filters, loads; switchers; receive only satellite earth stations; program subcarriers; microwave antennas VS

See ad pg 81—refer to rep/dist section

CA	MA 850A Stewart Dr Sunnyvale	94086	206 232-3550
GA	MA 14 Perimeter Pk Atlanta	30341	404 455-3815
MA	MA South Ave Burlington	01803	617 272-3000
MA	MA 2 Clarence Rd Wayland	01778	617 358-5054
MO	MA 8800 Blue Ridge Blvd Kansas City	64138	816 763-5395
TX	MA 13771 N Central Expy Dallas	75243	214 234-3522

MICROWAVE ASSOCIATES INC (LAND MOBILE COMMUNICATIONS DIV)

850 A Stewart Dr Sunnyvale CA 94086
408 736-9330
UHF/VHF transmitter combiners, receiver combiners, isolators, circulators; RF filters, loads, terminations, power meter panels

MICROWAVE POWER DEVICES INC

Adams Court Plainview NY 11803
516 433-1400
Microwave power amps; RF amps; FM, TV transmitters VS

MID-STATE COMMUNICATIONS INC

174 S First Ave Beech Grove IN 46107
317 787-9426
AM, FM & TV field intensity meters; frequency monitors & counters; RF generators; voltmeters spectrum analyzers; CATV test equip VS

MILAM AUDIO

1504 N 8 St Pekin IL 61554
309-346-3161
Facility turnkey installation (not RF)

MILLER-STEPHENSON CHEMICAL CO INC

PO Box 928 Danbury CT 06810
203 743-4447
Degreaser, head cleaner; contact cleaner

MINNEAPOLIS MAGNETICS INC

8125 Pleasant Ave South Minneapolis MN 55420
612 884-7393
Magnetic tape recorder heads; replacements for leading recorder brands; rebuild head assemblies VS

MINOLTA CORP

101 William Dr Ramsey NJ 07446
201 825-4000
TV crt color analyzer; light measurement equip; color temperature meter, lenses, photo equipment

MODULAR AUDIO PRODUCTS UNIT OF MODULAR DEVICES INC

50 Orville Dr Bohemia NY 11716
516 567-9620
Audio dist, line, monitor & power amps; pre-amps; op-amps modules; amplified power supplies; active equalizers & filters; mono, stereo, quad & audio for TV consoles VS

MODTEC

See Broadcast Electronics

MOHAWK WIRE & CABLE CORP

9 Mohawk Dr Leominster MA 01453
617 537-9961
Broadcast color camera cables, connectors, accessories, CATV cables, connectors

VS MEANS IT'S VERIFIED

MOLE-RICHARDSON CO

937 N Sycamore Ave Hollywood CA 90038
213 851-0111
Lighting heads, stands, stands & fixtures; diffusion material; gels & filters; dimmer packs; plugs & connectors VS

MONROE ELECTRONICS INC

100 Housel Ave Lyndonville NY 14098
716 765-2254
Unattended phone answering devices, tone signal generators, detectors, timers, comm & monitor receivers VS
See ad pg 205

MOOG MUSIC INC

2500 Walden Ave Buffalo NY 14225
716 681-7200
Music synthesizers

CHARLES MOORE

PO Box 2023 Rocky Mount NC 27801
919 442-1284
Audio amps (distribution, line, pre-amps, op-amp modules), monitor amps; consoles, mixers, mono, stereo, audio for TV, video pulse & distribution amps VS

MOSELEY ASSOCIATES INC

111 Castilian Dr Goleta CA 93017
805 968-9621
ALC and AGC amps, microwave systems for remote pickup & STLs; RF amplifiers; status & alarm indicators, RF modulators, FM processors; AM & FM compressor/limiters/filters; computer/microprocessor controllers; portable consoles; RF demodulators; intercity, portable & ENG microwave equip; RF program subcarriers VS
See ad pg 29

MOUNTAIN WEST ALARM

4215 N 16th St Phoenix AZ 85016
602 263-8831
Burglar & fire alarm systems

MOXON INC SRC DIVISION

2222 Michelson Dr Irvine CA 92664
714 833-2000
CCTV cameras; surveillance TV cameras; mobile vans; airborne microwave TV systems

MPB TECHNOLOGIES INC

PO Box 160 Ste Anne de Bellevue Que H9X 3L7
514 457-2035
Character/graphics systems; alphanumeric generators; color encoders; special effects generators; digital video effects; animation; character generators VS

MPCS VIDEO IND INC

514 W 57 St New York NY 10019
212 586-3690
Production equip rental; post production services; TV studio design; video tape/film recording transfer; video camera & monitor modification distributors of full line of video equip

MSI TELEVISION

4788 S State St Salt Lake City UT 84107
801 262-8475
Character generators; weather, news, stock data systems; titling equip; data casting for CATV VS

MU-DEL ELECTRONICS INC

2426 Linden Ln Silver Spring MD 20910
301 587-6087
RF amps; RF attenuators & multicouplers; band-pass filters; duplexers; RF converters; TV combiners VS

MULTIPLIER INDUSTRIES CORP

464 S 10th Ave Mt Vernon NY 10550
914 699-0990
Vehicle (aerial bucket), lineman safety equip, surge suppressors, batteries VS

MULTI-PRODUCTS INTERNATIONAL

PO Box 684, 302 Allwood Rd Clifton NJ 07012
201 778-1978

continued on page 116

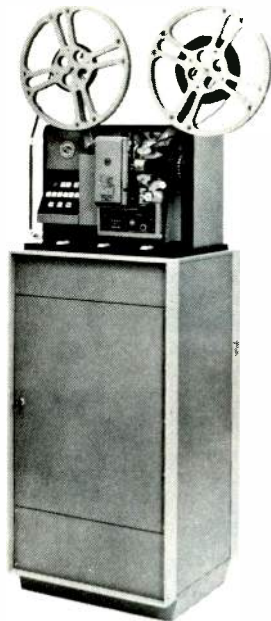
FREEZE-FRAME & SLO-MO

"the easy way"

ATHENA 4000

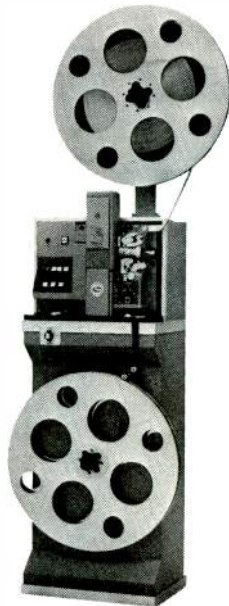


ATHENA 5000



The Athenas give you six more features than the RCA TP-66 or the EK CT-500: AT LOWER COST!

1. Freeze-frame, instant start/stop, animation, slo-mo—all direct from film to tape by TV film chain.
2. Digital control CMOS circuitry for complete low-voltage remote control and/or computer control.
3. 115V 60 HZ or 220V 50 HZ
4. Modular digital design for easy service.
5. Extended 2-3 year warranty.
6. Insured against obsolescence—retrofittable to new design improvements and options.



Call or write Pat Smith, Dave Stern or Bob Lawrence for additional information and/or name of nearest dealer.



L-W INTERNATIONAL
6416 Variel Avenue
Woodland Hills, CA 91367 U.S.A.
Telephone: 213/348-8614

Circle 163 on Reader Service Card

Beauty more than screen deep.



A multiple group of matched color monitors is a beautiful sight. And that's just what you get when you standardize on Conrac monitors, with carefully matched screen phosphors. But the fact that our Colormatch standard has become the industry standard isn't the reason we outsell all other makes of broadcast monitors six to one.

The real beauty of Conrac monitors is deep inside, where we've maintained a technological leadership position since the beginning. We've grown up with the industry, and the breadth of our monitor line has grown accordingly. There's a specialized Conrac color or monochrome monitor for every studio application.

Our top-of-the-line color model incorporates some sophisticated innovations that can

only be described as breakthroughs, such as our optional comb filter separator.

And even our lowest priced color models feature advanced modular design and front pull drawers for access to critical controls. Contact Conrac for complete details on all our monitors.

They're a beautiful choice, any way you look at them.

Conrac Division, Conrac Corporation, 600 North Rimsdale Ave., Covina, CA 91722. (213) 966-3511.



CONRAC

We're more than meets the eye.

Circle 164 on Reader Service Card

Because things happen fast in sporting events, quick reflexes are essential. The same goes for sports coverage. The NEC wide-window time base corrector lets you select the frame you want whether the VTR is in pause, rewind, or fast-forward. Now capture individual color-locked pictures quickly, thanks to NEC's momentary locking circuit.

And the versatile NTC-5000 can be used with Quadruplex, U-matic, and High-band Helical Scan VTR's, regardless of color-processing technique. Get complete color processing with a 3.58 MHz feedback to the VTR, or optional heterodyne adapter. And stay on top of the action with remote-controlled Mode-Switching, Video Gain, Chroma Gain, Hue, and Set-up.

Other performance-proven features include "Sync-lock" for direct as well as indirect recording, a Velocity Compensator for handling velocity error (including "1 H delay"), a black clipper to eliminate mis-clamping, and a Comb-filter to reduce noise to approximately 3 db with U-matic VTR.

For dependability in-studio and on location, choose the light, compact NEC NTC-5000 Time Base Corrector. The one with the record you can't beat.

*NEC America, Inc.
Broadcast Equipment Division
130 Martin Lane
Elk Grove Village, Illinois 60007
(312) 640-3792*



VERSATILITY

NEC

Nippon Electric Co., Ltd.

Circle 182 on Reader Service Card



NTC-5000
Time Base Corrector

The Source '78

TELONIC/BERKELEY

2700 DuPont Dr Irvine CA 92715
714 833-3300

Test instruments; RF attenuators; sweep generators, RF filters, microwave sub-systems; impedance bridges; dB meters VS

TENTEL CORP

50 Curtner Ave Cambell CA 95008
408 377-6588

Audio & video tape tension guages VS
See ad pg 201—refer to rep/dist section

TEPCO CORP

PO Box 680 Rapid City SD 57701
605 343-7200

TV translators; receivers, comm. and monitors, microwave equip VS

TERRACOM DIV OF CONIC CORP

9020 Balboa Ave San Diego CA 92123
714 278-4100

Microwave equip for CATV; microwave STLs; intercity, portable & ENG microwave equip; receive only satellite earth stations; microwave antennas VS
See ad pg 191

TEXAS ELECTRONICS INC

PO Box 7225 Inwood Sta Dallas TX 75209
214 631-2490

Meteorological (weather) monitoring equip

TEXSCAN CORP

2446 N Shadeland Ave Indianapolis IN 46219
317 357-8781

RF switchers, filters; signal generators, sweep generators, oscilloscopes, spectrum analyzers, impedance bridges, cable TV system analyzers, tunable filters, VHF/UHF tuner test equip, test accessories & terminators VS

THE TEXWIPE CO

51 Prospect Place Hillsdale NJ 07642
201 664-0555

Cleaners for tape heads

THALNER ELECTRONIC LABS

7235 Jackson Rd Ann Arbor MI 48103
313 761-4506

Character generators; pulse & distribution amps; sync generators, screen splitters, video identification systems; digital clocks, timers VS

THEATRE TECHNIQUES INC

60 Connolly Pkwy Hamden CT 06514
203 281-6111

Audio mixers, portable mixer, intercom system, patch panel, manual & automatic light dimmer control VS

THERMODYNE INTL LTD

12600 Yukon Ave Hawthorne CA 90250
213 679-0411

Reusable shipping & handling containers VS

THETA-COM

PO Box 9728 Phoenix AZ 85068
602 944-4411

Microwave equip

THOMSON-CSF ELECTRON TUBES

750 Bloomfield Ave Clifton NJ 07015
201 779-1004

RF power tubes, vacuum tubes, UHF/VHF tetrodes & circuits, UHF klystron VS

THOMSON-CSF LABORATORIES

37 Brownhouse Rd Stamford CT 06902
203 327-7700

Audio dist amps; ALC & AGC amps; AM & FM compressor/limiters/filters; active equalizers & filters; intercom systems; wireless mics; color studio cameras; ENG/EFP cameras; character/graphics; alphanumeric generators; encoded & luminance chroma keys; image enhancers; digital noise reducers/filters; color correctors; complete film telecine systems; frame synchronizers; colorizers; ENG microwave equip VS

See ad pg 7

CA J Smith 2016 Tondolea Ln Lacanada
91011..... 213 790-4393

CO J Vondergeest 1801 E Girard Ave
Englewood 80110..... 303 781-4502

CT T Hindle 37 Brownhouse Rd Stamford
06902..... 203 327-7700

J Ewansky 37 Brownhouse Rd Stamford
06902..... 203 327-7700

GA B Mills 522 S Lee St Americus
31709..... 912 924-8309

IL L Mialy 1726 Birch Pl Apt 107
Schaumburg 60195..... 312 397-1118

MO H Caplan 396 Chez Paree Dr St Louis
63042..... 314 831-3320

TX M McGreevy 11911 Sixth St Alief
77072..... 713 495-3195

VA A Audick 8407 Brewster Dr Alexandria
22308..... 202 296-9189

THOR ELECTRONICS CORP

321 Pennsylvania Ave Linden NJ 07036
201 486-3300

Power tubes & rectifiers

TIME & FREQUENCY TECHNOLOGY INC

3090 Oakmead Village Dr Santa Clara CA 95051
408 246-6365

Microwave STLs; remote control systems; frequency monitors & counters; modulation monitors; status & alarm indicators; EBS selective calling & alert VS
See ad pg 65—refer to rep/dist section

TIMES WIRE & CABLE CO

358 Hall Ave Wallingford CT 06492
203 265-2361

CATV cable & wire; fiber optic cables CATV systems

TM SYSTEMS INC

25 Allen St Bridgeport CT 06604
203 366-4571

Line amps, amp power systems, VU meters, dB meters; conditioning equip

TOCOM INC

3301 Royalty Row Irving TX 75062
214 438-7691

CATV trunk, distribution amps; head-end processors; connectors; distribution passives; two-way cable communication systems

TOMCO COMMUNICATIONS INC

1077 Independence Ave Mountain View, CA
94043

415 969-3042
Pre-amps, converters for CATV VS

TONER CABLE EQUIP INC

969 Horsham Rd Horsham PA 19044
215 675-2053

Amps, cable, pay TV, filter trap passive, addressable taps, head end processors, weather scan, non-duplication switchers, power supplies, CATV cable installation tools, enclosures & pedestals, maintenance, racks, surge protectors; converters/descramblers (standard, pay TV, filter trap)

TOPAZ ELECTRONICS

3855 Ruffin Rd San Diego CA 92123
714 279-0111

Power supply converters, uninterruptible power systems, power isolators, surge protectors

TOWNSEND ASSOCIATES INC

PO Box 1122 Westfield MA 01085
413 562-5055

Demodulators, diplexers, exciters, RF amps, HV power supplies for TV transmitters, TV transmitters, TV transmitter repair service VS

TORPEY CONTROLS & ENGINEERING LTD

108 Carnforth Rd Toronto M4A 2L4 Ont Canada
416 751-1067

Automated master control systems; digital clocks, master & slave clocks

TRACOR INC

6500 Tracor Lane Austin TX 78721
512 926-2800

Automatic, crystal frequency standards, visual carrier generator, remote subcarrier systems, countdown unit

VS MEANS IT'S VERIFIED

TRANSIST-O-SOUND INC

1728 Yosemite Dr Indianapolis IN 46217
317 897-1549

ALC and AGC amps, portable mixer amps, recording amps for mag sound on film VS

TRANS-LUX CORP

625 Madison Ave New York NY 10022
212 751-3110

Rear projection screens VS

TRANSTECTOR SYSTEMS

PO Box 11159, Zephyr Cove NV 89448
800 648-3387

Transient over voltage protectors VS
See ad pg 19

TREISE ENG INC

1941 First St San Fernando CA 91340
213 365-3124

Motion picture color and B/W film processors; film cleaners; film processor accessories VS

TREPAC CORP OF AMERICA

30 W Hamilton Ave Englewood NJ 07631
201 567-3810

Audio/video automatic line program alarm VS

TRI-EX TOWER CORP

7182 Rasmussen Ave Visalia CA 93277
209 732-8383

Self-supporting, guyed towers; portable towers VS

TRIPLETT CORP

286 Harmon Rd Bluffton OH 45817
419 358-5015

VU & dB meters; voltmeters; multimeters

TRI-TRONICS INC

4019 Tujunga Ave N Hollywood CA 91604
213 877-9912

Production equip rental, post-production services, studio design, radio and TV; mobile van construction, facility turnkey installation, color video monitor; video tape/film recording transfer

TROMPETER ELECTRONICS INC

8936 Comanche Ave Chatsworth CA 91311
213 882-1020

Coax, twinax, triax cable patching equip; coax, twinax switching matrices, RF attenuators, switchers, cables, connectors; audio switchers; patch panels; audio connectors; wire & cable VS

TRUE TIME INSTRUMENT CO

3243 Santa Rosa Ave Santa Rosa CA 95401
707 528-1230

Clocks, time systems; frequency monitors and counters VS

TT ELECTRONICS INC

2214 Barry Ave Los Angeles CA 90064
213 478-8224

RF inductors, RF filters, audio & video filters, intermodulation distortion measurement filters VS

TSC DEVELOPMENT LABS

2217 Purdue Ave Los Angeles CA 90064
213 473-6741

Time lapse video action recorders; digital video effects; colorizers; animation; weather radar systems

2005AD INC

2005 Naudain St Philadelphia PA 19146
215 545-3488

Audio consoles, VU meters

U

UHF ASSOCIATES

4600 Muniz Ranch Rd PO Box 24 Jenner, CA
95450

707 632-5580
RF modulators, CCTV switcher VS

continued on page 140



Scotch[®] 479 Master Broadcast

SCOTCH IS FIRST IN BROADCAST. GIVE OR TAKE AN INCH.

Scotch[®] has been state of the art in broadcast videotape for more than twenty years. It's an industry-wide fact that nobody knows tape like 3M.

So when the industry looks at a new format, the industry looks to Scotch.



In broadcast quality one-inch, it's Scotch Master Broadcast 479. 479 has all of the qualities you've come to expect from a tape named Scotch.

Like superior color noise and signal-to-noise. And nobody gives you better RF output.

Scotch Master Broadcast 479.

When you come to that new format, you'll have an old friend.

Scotch[®] is a registered trademark of 3M Company, St. Paul, MN 55101 © 1977, 3M CO.

The Source '78

ULTRA AUDIO PRODUCTS PIXTEC BOX 921 Beverly Hills CA 90213 213 276-2726

Audio consoles; rewinders; video picture monitors; videotape cleaners; prompters, titling equip; waveform monitors; pulse cross monitors, vectorscopes; audio amps (line, monitor, power, public address); pre-amps; audio for TV; complete audio studio construction; sync generators; video test generators **VS**

UMC ELECTRONICS CO SENSTROL DIV 460 Sackett Pt Rd North Haven CT 06473 203 288-7731

Relay sequencers; computer/microprocessor controllers; multi-cart machines; auto time/weather announcers; complete automation systems; audio consoles (mixers, mono, stereo, quad, audio for TV); complete audio studio construction; tape cart player/recorders (single, dual, multiple, time delay); replacement tape heads; bulk erasers **VS**

UNARCO-ROHN DIV OF ROHN IND INC PO Box 2000 Peoria IL 61656 309 697-4400

Towers, hardware and construction equip; tower lighting **VS**

UNIDYNE CORP RADONIC DIV 981 Scott St Norfolk VA 23502 804 855-1089

Business automation systems for radio & TV

UNIMEDIA Rte 2 PO Box 2574 E Auburn CA 95603 916 272-1971

Color picture monitors **VS**

UNION CONNECTOR CO INC 149 Babylon Tpk Roosevelt NY 11575 516 623-7461

Patch terminals; heavy duty plugs/connectors **VS**

UNITED PRESS INTL 220 E 42nd St New York NY 10017 212 682-0400

News wire service; cable newswire; satellite-delivered picture & voice-over news service **VS**

UNI-SET DIV OF KNIFF WOODCRAFT CORP 449 Ave A Rochester NY 14621 716 544-3820

Modular studio staging system **VS**

UNI-SYNC 742 Hampshire Rd Westlake Village CA 91361 805 497-0766

Audio power amps; audio consoles (mixers, mono & stereo) **VS**

UNITED RECORDING ELEC IND (UREI) 11922 Valerio St, No Hollywood CA 91605 213 764-1500

Audio line amps & pre-amps; amplifier power supplies; compressor/limiters, AM & FM; active equalizers & filters; delay lines; mono, stereo & quad consoles; turntable pre-amps & controls; speakers; VU meters; chart recorders **VS**
See ad pg 145—refer to rep/dist section

UNITED RESEARCH LAB CORP 16 E 52nd St New York NY 10022 212 751-4663

Op-amp modules, audio generators, professional tape recorders **VS**

UNITED SYSTEMS CORP (DIGITEC) 918 Woodley Rd Dayton OH 45403 513 254-6251

Frequency counters, counter-timers; digital clocks; digital voltmeters; frequency converters, frequency synthesizers; pulse, sine, square-wave generators; time base generators, status and alarm indicators **VS**

US JVC CORP 58-75 Queens Midtown Expy Maspeth NY 11378

212 476-8010

Video color cameras; portable video cameras; cameras; lenses, camera accessories; videotape recorders/players; monitors; videotape; video cassette players; video editor-controller, mics **VS**

See ad pgs 107-110

CA US JVC CORP 1011 W Artesia Blvd Compton 90220..... 213 537-8230
IL US JVC CORP 3012 Malmo Dr Arlington Hts 60005..... 312 593-8997
TX US JVC CORP 3400 So Loop E Houston 77021..... 713 741-3741

US PIONEER ELECTRONICS CORP 85 Oxford Dr Moonachie NJ 17074 201 440-8100

Tape recorders; head sets; mics; stereo monitor receivers **VS**

UTAH SCIENTIFIC INC 2276 So 2700 W, Salt Lake City UT 84119 801 973-6849

Audio switchers; video routing switchers **VS**
See ad pg 176—refer to rep/dist section

UTILITY BODY CO 91 Gilman St Berkeley CA 94710 415 524-9333

Aerial lifts

UTILITY PRODUCTS CO 6665 N 60 St Milwaukee WI 53223 414 353-1010

Buried cable closures, pole hardware

UTILITY TOWER CO 3200 NW 38th PO Box 12369 Oklahoma City OK 73157 405 946-5551

Antennas & towers for AM, FM, TV & microwave **VS**

V

VACUUM TUBE INDUSTRIES 35 Pecutt St Box 358 Canton MA 02021 617 828-1650

Vacuum power tubes, rebuilt

VALAD ELECTRIC HEATING CO 160 Wildey St Tarrytown NY 10591 914 631-4927

Electric heaters for mobile vans & stations

VAMCO ENGINEERING 11104 E 56 St Tulsa OK 74145 918 252-4142

Digital tape timers; clock systems; A/V distribution amps; videotape timer (also for ENG & TVC); A/V routing switcher; chroma-key kit **VS**

VAN LADDER INC Box 709 Spencer IA 51301 800 831-5051

Aerial lifts **VS**

VARIAN ASSOC ELECTRON DEVICE GROUP 611 Hansen Way Palo Alto CA 94303 415 493-4000

See also EIMAC
Audi power amps & pre-amps; video pulse amps; studio lemps; diplexers, exciters & modulators; intercity microwave equip; RF amps, attenuators, filters & loads; satellite earth stations; UHF transmitters; RF & vacuum tubes; rectifiers; CATV microwave equip **VS**
See ad pg 46

VARIAN/BEVERLY MICRO-LINK PRODUCTS 8 Salem Road Beverly MA 01915 617 922-6000

ITFS & MDS microwave & systems; microwave RF components, assemblies & subsystems; exciters, modulators, TV translators **VS**

VEGA ELECTRONICS DIV OF CETEC 9900 Baldwin PI El Monte CA 91731 213 442-0782

Wireless mic systems; wireless mic accessories **VS**

VS MEANS IT'S VERIFIED

VERMEER MFG CO PO Box 200 Polla IA 50219 515 628-3141 Trenchers

VERSA COUNT ENGINEERING 553 Lively Blvd Elk Grove Village IL 60007 312 593-0208

Video processing amps; FM and TV translators; FM transmitters; exciter; emergency power equip, batteries **VS**

VICON INDUSTRIES 125 E Bethpage Rd Plainview NY 11803 516 293-2200

CCTV monitor console; camera lenses; pan & tilt & scan drives; motion detector **VS**

VIDEO AIDS CORP OF COLORADO 325 E 7th St Loveland CO 80537 303 667-3301

Audio dist amps; ENG/EFP cameras; dropout compensators; complete film telcine systems; b/w & color picture monitors; ENG sync generator systems; new videotape; demodulators; cross pulse & multiple output video generators; burst phase meters; vectorscopes; VITS & VIR systems & equip; H-phase meter **VS**
See ad pg 166—refer to rep/dist section

VIDEO COMPONENTS INC 601 S Main St Spring Valley NY 10977 914 356-3700

Anton Bauer power supplies; distributor of wide range of broadcast & industrial video equip **VS**

VIDEO DATA SYSTEMS 40 Oser Ave Hauppauge NY 11787 516 231-4400

Character generators; TV titling & data display systems **VS**

VIDEO ELECTRONICS LTD Gibfield Works Atherton Manchester M29 0RH ENGLAND Atherton 2332

Time code generator; alpha-numeric character generator; chroma keyers; pulse, distribution & subcarrier amps; sync generator systems; videotape editing systems; colorizer **VS**

VIDEOMAX/DIV OF ORROX CORP 3303 Scott Blvd Santa Clara CA 95050 408 988-2000

Rebuilt video recording heads & headwheel assemblies, replacement heads; VTR head refurbishing **VS**

See ad pg 27
CA R Murphy 316 19 Pl Manhattan Beach 90266..... 213 980-7927
GA J Drummond 2087 Wood Creek Ct Tucker 30084..... 404 992-4490
NY R Holmes 800 Riverside Dr New York 10032..... 212 947-8031

VIDEOMEDIA 250 N Wolfe Rd Sunnyvale CA 94086 408 733-6500

Automated master control systems; two VTR editor-controller; broadcast mod kits for VTRs **VS**

VIDEO PRODUCTION SERVICES 1442 San Pablo Ave Berkeley CA 94702 415 526-6741

Production equip rentals; post production services **VS**

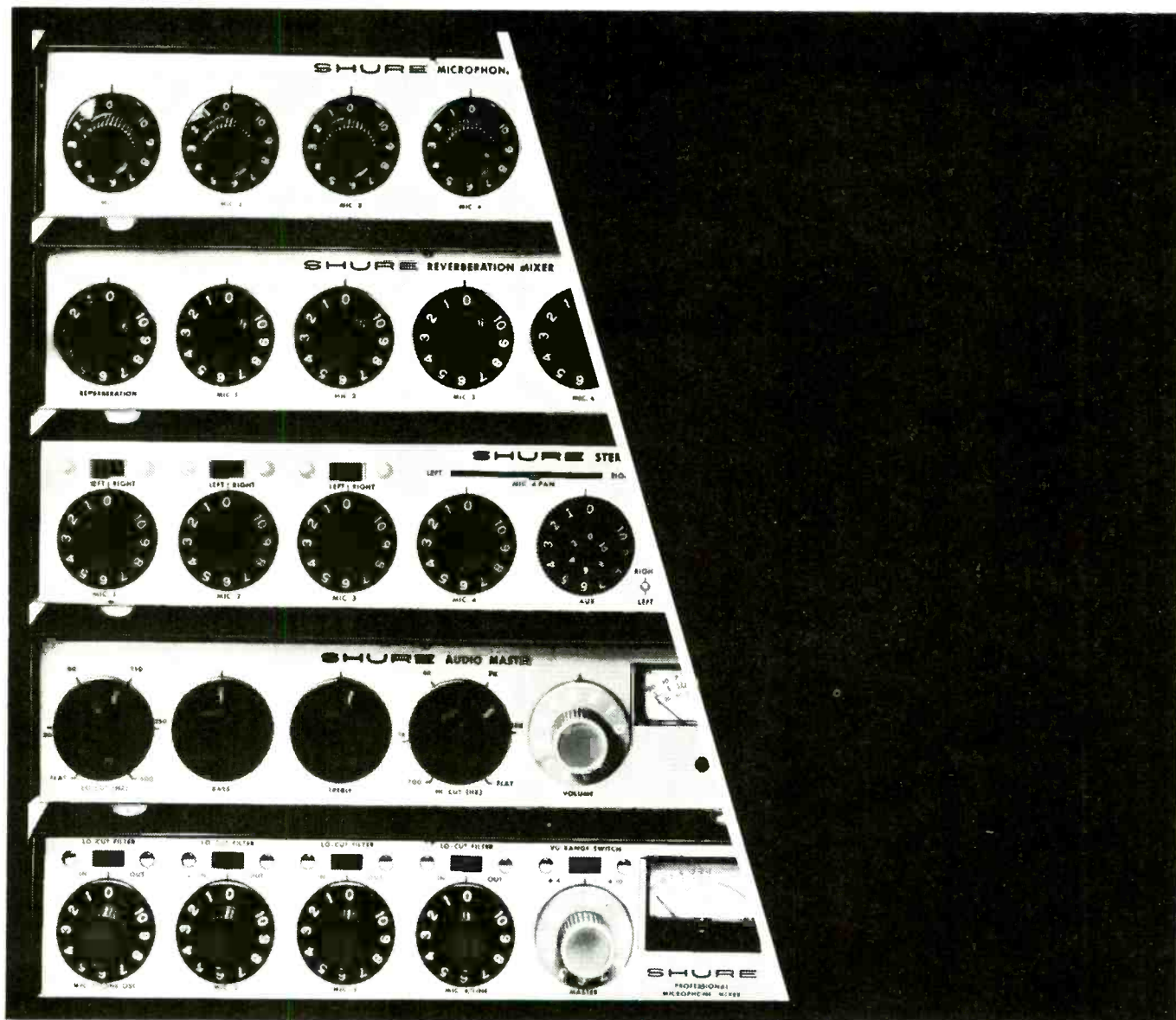
VIDEO OPTICS 1916 Old Middlefield Way Mountain View CA 94043 415 965-4298

Low light level camera

VIDEO SENTRY SYSTEMS 1080 Rte 46 Clifton NJ 07013 201 777-7600

Video/audio TV program loggers

continued on page 142



Rack 'em up.



For studio, broadcasting, recording, or public-address, Shure audio control components offer more features and more performance—dollar for dollar, than similar equipment. And—just as important—Shure audio components are easier to work with. Their compact size and versatility equip them for an extremely wide variety of audio control applications—and built-in input-output flexibility means quick set-up anywhere. For a permanent installation or a component system that can be adapted to meet any need, Shure has the right combination. To obtain a copy of the Shure catalog, see your dealer or write:

Shure Brothers Inc.
222 Hartrey Ave., Evanston, IL 60204
In Canada: A. C. Simmonds & Sons Limited



Manufacturers of high fidelity components, microphones, sound systems and related circuitry.

Circle 183 on Reader Service Card

The Source '78

VIDEO SPECIALTIES

4178-A Sorrento Valley Bl San Diego CA 92121
714 453-9380

Custom automated master control systems

THE VIDEO TAPE CO

10545 Burbank Blvd N Hollywood CA 91601
213 985-1666

Videotape; tape duplication & distribution services

VIDEOTEK INC

125 N York St Pottstown PA 19464
215 327-2292

Color monitors

VS

See ad pg 213—refer to rep/dist section

AZ 2115 W Mountinside Rd Ste 1
Phoenix 85021 602 997-7523

VIDTRONICS

855 N Cahuenga Blvd Hollywood CA 90038
213 466-9741

Film to tape transfer; all post production services for videotape

VIF INTERNATIONAL

Box 1555 Mt View CA 94042
408 739-9740

Audio amplifiers (op-amp modules), compressor/limiters, AM; compressor/limiters, filters, FM; equalizers & filters — active; reverb units; relay sequencers, reel decks, tone generators, complete automation systems; microphones, speakers; tape heads, bulk erasers, other audio accessories

VS

VIKRON

520 Blanding Wood Rd S St Croix Falls WI 54024
715 384-3233

Magnetic tape heads

VS

VINTEN—See LISTEC

VISCOUNT INDUSTRIES LTD

105 E 69th Ave Vancouver BC V5X 2W9
604 327-9446

Video production switchers; pulse & distribution amps; routing switchers; special effects generators; chroma keyers

VS

See ad pg 197

VISUAL INFORMATION INSTITUTE INC

PO Box 33 Xenia OH 45385
513 372-8637

Test equip for CCTV, sync generator systems, video test materials and generators; monitor calibrators

VS

VISUAL METHODS INC

5 Wortendyke Ave Montvale NJ 07645
201 391-7383

TV surveillance cameras; camera lenses

VITAL INDUSTRIES INC

3700 NE 53rd Ave Gainesville FL 32601
904 378-1581

Audio dist amps; video processing amps; pulse, dist & subcarrier amps; large, small & auto production switchers; automated master control systems; post production switchers; routing switchers; special effects generators; frame synchronizers

VS

See ad pg 9

CA	B Holland 7960 W Beverly Blvd Los Angeles 90048	213 653-9438
IN	M Beavers 2644 North 7th Street Terre Haute 47804	812 466-3212
NY	R McAll 34 Autumn Lane Hicksville 11801	516 735-0055
TX	G Peters Box 912 Arlington 76010	817 261-6855
VA	E King Fox Hill Road Lynchburg 24503	804 384-7001

VITEK ELECTRONICS INC

200 Wood Ave Middlesex NJ 08846
201 469-9400

CATV test equip; filter traps; convertors; radiation detection devices

VS

VS MEANS IT'S VERIFIED

W

WABASH TAPE CORP

2720 Des Plaines Ave Des Plaines IL 60018
312 298-8585

Helical-scan video magnetic tape; audio magnetic tape

WARD BECK SYSTEMS LTD

841 Progress Ave Scarborough ONT M1H 2X4
416 438-6550

Audio consoles (TV & radio); TV intercom systems; audio dist & switching systems; related audio components

VS

See ad cover 4

AZ WBS Inc 6900 E Camelback Rd Suite 1010
Scottsdale 85251

WATERS MANUFACTURING INC

Longfellow Center Wayland MA 01778
617 358-2777

Audio attenuators & controls, rotary & slide

VS

WAVETEK INDIANA INC

66 N First Ave Beech Grove IN 46107
317 783-3221

CATV test equip; sweep/signal generators, RF detectors; function, signal, sweep generators; oscilloscopes; phase meters; transmission level test set; programmable waveform synthesizers; test accessories

VS

WESTLAKE AUDIO

6311 Wilshire Blvd Los Angeles, CA 90048
213 655-0303

Tape splicing block & cleaner; speakers, cabinets, furniture, acoustic materials, complete studio construction

VS

Superior SMPTE from BTX

4100 Edit Code
Generator
\$2,850

4400
Decoder
\$995

4300 Reader
and Video Display
\$1,500

4200 Reader
and Digital Display
\$2,850

BTX guarantees superior performance from 1.5 to 1200 IPS even at -18dBm or with any degree of time jitter.

BTX guarantees superior reliability and assures it with a 100-hour operational burn-in prior to shipment.

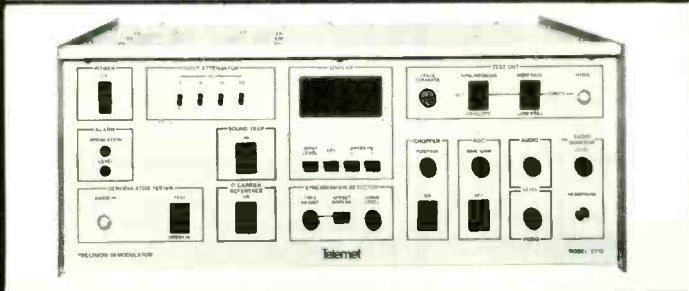
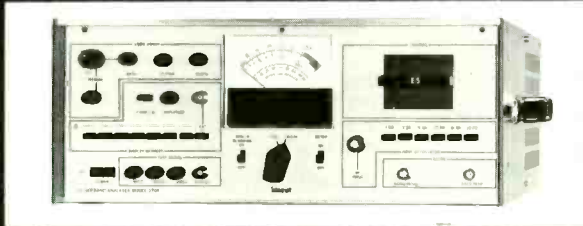
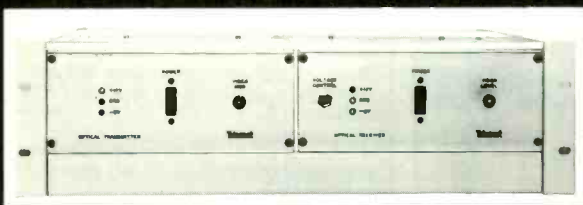
BTX guarantees time-code system compatibility with its complete line of cost-effective modular building blocks. For complete information, call:

The BTX Corporation • 438 Boston Post Road
Weston, Massachusetts 02193 • 617-891-1239



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TOF PHOTO: New Fiber-Optic Transmission Link Transmitter/Receiver Model 4210.
CENTER: TV Sideband Analyzer Model 3706.
BOTTOM: New Precision Demodulator Model 3710

Telemet



A GEOTEL COMPANY

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Amityville, L.I., New York 11701
Telephone (516) 842-2300
TWX 510-227-9850

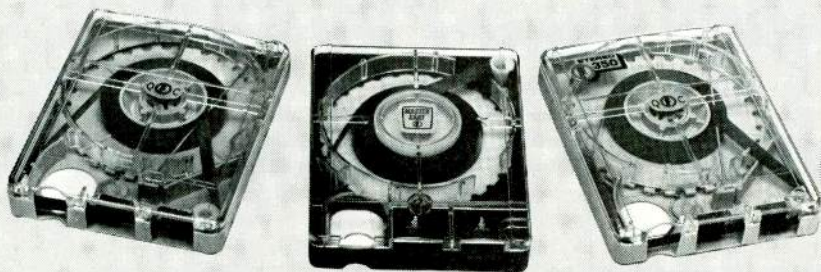
Please send me information on the following:

- | | | |
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| <input type="checkbox"/> Fiber Optic Transmission Systems | <input type="checkbox"/> Modulators | <input type="checkbox"/> Pulse Distribution Amplifiers |
| <input type="checkbox"/> Sideband Analyzers | <input type="checkbox"/> Demodulators—Fixed Frequency | <input type="checkbox"/> Clamper Amplifiers |
| <input type="checkbox"/> Video Test Signal Generators | <input type="checkbox"/> Demodulators—Variable Tuned | <input type="checkbox"/> Monoscope Generator |
| <input type="checkbox"/> Envelope Delay Test Set | <input type="checkbox"/> Video Signal Conditioners | <input type="checkbox"/> Video Routing Switchers |
| <input type="checkbox"/> Differential Phase and Gain Measuring Systems | <input type="checkbox"/> Audio Monitors | <input type="checkbox"/> Video Production Switchers |
| <input type="checkbox"/> Video Transmission—Cable Equalizing Systems | <input type="checkbox"/> Audio Distribution Amplifiers | <input type="checkbox"/> Chroma Keyer—RGB |
| <input type="checkbox"/> Video Sweep Generators | <input type="checkbox"/> Video Distribution Amplifiers | <input type="checkbox"/> Chroma Keyer Decoder—NTSC |

- Please send me your complete catalog.
 Please add my name to your technical bulletin mailing list.

Name _____ Title _____
Company _____
Address _____ City _____
State _____ Zip _____ Phone _____

For mono, stereo...AM, FM, TV...
ONLY FIDELIPAC® GIVES YOU A CHOICE



MODEL 300

The most popular NAB cartridge...performance and price make it the mono broadcaster's first choice.

MASTER CART

For the modern stereo broadcaster satisfied with nothing less than the ultimate in performance.

MODEL 350

For use in stereo machines with inadequate tape guidance. The precision is provided by adjusting the cartridge.

AND, for extended play...Fidelipac's Models 600 and 1200.
 For details, contact your Fidelipac Distributor or



FIDELIPAC®

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® Trademark

Circle 186 on Reader Service Card

A BIT DIFFERENT

Time Code Generators, Readers & Comparators

Skotel specializes in counting and controlling bits, and that's why our products provide you greater flexibility and reliability for video tape production and programming...and that takes a big byte out of your costs.



Our products give you the flexibility and convenience you've wanted for User Data bits, and they reliably generate, read and compare every Time Code bit.

Standard features...also a bit different...include: transformer isolated inputs and outputs for simpler installation, AGC, compatible with other SMPTE equipment, remoteable controls, and plug in options that include...a unique Video Character Generator/Insertor, and Jam Sync.

For more value, Skotel makes the difference...so call or write

North: Mike Dyer (313) 478-2157 East: Jim Landy (609) 424-4660 South: Gene Sudduth (214) 785-5764 West: Dave Hill (415) 573-2157

skotel

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 Brossard, Que., Canada J4W 1Z3
 (514) 676 1813

Circle 187 on Reader Service Card

The Source '78

WESTINGHOUSE ELECTRIC CORP/IND & GOVT TUBE DIV
 Westinghouse Circle Horsehead NY 14845
 607 796-3211
 RF & vacuum tubes; rectifiers VS

WESTON INSTRUMENTS DIV OF SANGAMO-WESTON INC
 614 Frelinghuysen Ave Newark NJ 07114
 201 242-2600
 Analog VU meters, voltmeters, multimeters, dB meters

WHIRLWIND MUSIC & AUDIO INC
 100 Boxart St Rochester NY 14612
 716 663-8820
 Cabinets, connectors, wire & cable mobile van construction, RF cables, patch terminals, plugs & connectors, complete studio construction VS

WHITE INSTRUMENTS INC
 PO Box 698 Austin TX 78767
 512 892-0752
 Equalizers & filters (passive & active), real time spectrum analyzers VS

WIDE BAND ENGINEERING CO INC
 PO Box 21652 Phoenix AZ 85036
 602 254-1570
 RF amps, analyzers; impedance bridges; directional couplers; power dividers; CATV test instruments VS

WIDE RANGE ELECTRONICS CORP
 2119 Schuetz Rd St Louis MO 63141
 314 567-5366
 Head degaussers; bulk erasers; magnetic recording equip & accessories; optical sound recorders, systems & components VS

THE WIDGET WORKS INC
 PO Box 79 Medina OH 44256
 216 336-7500
 ATS equip, radio and TV

WILKINSON ELECTRONICS INC
 PO Box 738 Trainer PA 19013
 215 497-5100
 AM & FM broadcast transmitters; audio consoles; audio compressor/limiters; distribution amps, equalizers, line amps; demodulators, exciters, RF amps; modulation & frequency monitors; AC line surge protectors; rectifier stacks VS

WINEGARD CO
 3000 Kirkwood St Burlington IA 52601
 319 753-0121
 CATV antennas, amps, drop and distribution equip; accessories; home system amps; over the air pay TV equip VS

WINSTED CORP
 8127 Pleasant Ave S Minneapolis MN 55420
 612 888-1957
 Racks, cabinets, shipping cases, storage trucks, consoles, tape storage VS

WOLF COACH INC
 200 Bartlett St Northboro MA 01532
 617 393-2551
 Mobile van construction

WORLD VIDEO INC
 PO Box 117 Boyertown PA 19512
 215 367-6055
 Broadcast & CCTV one-gun (Trinitron) color monitors; demodulators, AC/DC color portable monitor; intercom systems VS

Y

YAMAHA INTERNAT'L CORP MUSICAL INSTRUMENT DIV
 6600 Orangethorpe Ave Buena Park CA 90620
 714 522-9011

Audio consoles, mixers, audio for TV; power amps; speaker system; frequency crossover networks VS

YARDNEY ELECTRIC CORP
82 Mechanic St Pawcatuck CT 02891
203 599-1100
Silver, zinc & cadmium batteries; chargers, high intensity lights VS
See ad pg 183—refer to rep/dist section

Z

ZEI-MARK CORP
PO Box 182 Brookfield Center CT 06805
203 355-0008
Optical multiplexer; telecine film chain with preview; film chain adapters for 16mm & super-8mm film projectors, lap dissolve slide projector, telecine accessories VS

ZOOMAR INC
55 Sea Cliff Ave Glen Cove NY 11542
516 676-1900
Optics; optical instruments

Nominate Your Station For BM/E's Fourth Annual Best Station Award

Use a postcard to give us the call letters of your station and its category, AM, FM or TV. In a few words as possible describe why your station is best, such as its overall operation, a recent modernization or completely new facility. Provide us with the name and telephone number of the person who can give us the details. The stories of the finalists will appear in the December issue of BM/E to be voted on by our readers.

Mail to:
'78 Best Station Award
BM/E Magazine
295 Madison Avenue
New York, NY 10017

The Mod One Is The Flexible One

Start With The Console Format You Need Now, Expand Later.

Modular design lets you select a wide range of input modules and plug-in amplifier cards as you grow. 10 mixing positions with up to 30 inputs. Modern vertical faders; silent operating switches; state-of-the-art circuitry.

Custom features and options with off-the-shelf availability. Monaural, stereo, or quad. Meets all FCC - AM and FM standards. UREI quality, of course.

Available through your UREI dealer.



UREI "Instrumental in Audio"

8460 San Fernando Road, Sun Valley, California 91352 (213) 767-1000

Exclusive export agent: Gotham Export Corporation, New York

Circle 188 on Reader Service Card

1"-VTR-Report '78

BCN Format corresponds to SMPTE 1" Type B Standard. Now there are over 550 BCN VTRs worldwide in operation. EBU procedures for BCN Format in progress. End user feedback from over 100 customers leads to doubling of video head guarantee time - now 1000 hours.



BCN scanner (life size), equally suitable for reel to reel and cassettes

The BCN worldwide success story has its roots in basic technical parameters:

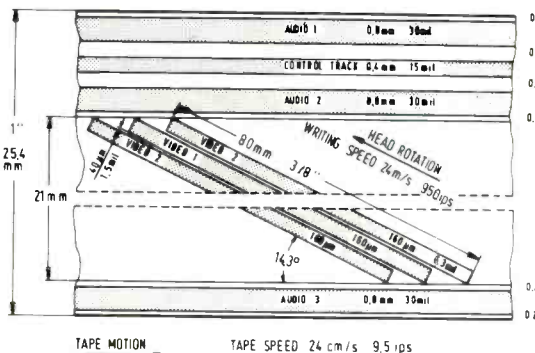
- Short video track - only 80 mm.
- Additional tracking correction system is not necessary.
- Omega wrap angle of 190° enables multigeneration copies with minimal chroma noise.
- Overlapping 2-head technique enables uninterrupted recording of the video signal encompassing also the entire vertical blanking period.
- No additional head required to record vertical blanking period.
- Superior luminance S/N ratio because digital TBCs and their inherent A/D and D/A conversions are not necessary.
- Video track tilt angle of $14,3^\circ$ ensures insensitivity to longitudinal dropouts.
- Suitable for reel to reel and cassette applications.
- Stills, jogging and slow motion with no risk to video tape.
- Digital quad split option.

The BCN-Format has three audio tracks

Apart from the video and control tracks there are three audio tracks of equal quality. It is therefore possible to record full stereo sound or multilingual commentary. Track 3 can also be used to record a time code, using either the built in time code generator or an external one.

The BCN Editing Systems solve every problem

- Integrated insert/assemble operation
- Automatic electronic editing using the EES 9 with two BCN 40/50 machines
- An automatic editing system EPS 7000 for up to 5 BCN units
- A freely programmable, computer controlled editing system such as the ESC 40 K - offering an enormous range of applications.
- Editing point definition using the most modern digital techniques: Unlimited "still" picture reproduction without any danger of damaging the valuable master tape; jogging and slow motion are also possible as well as special digital production effects such as "Quad Split".



BCN format, basis of SMPTE-1"-Type B-Standard

Identical tape transport for all TV Standards

The segmented field technique makes possible the adaption of the number of segments per field from 6 (625/50) to 5 (525/60). The conversion of any BCN machine to any standard NTSC, PAL, PAL-M or SECAM is therefore purely an electronic and not a mechanical matter. The tape transport and scanner remain completely unchanged.

A guaranteed future for the BCN format with respect to digital recordings

The development of the BCN format was carried out bearing in mind the requirements of a future generation of video recording techniques. As soon as tape, head and component technology provide a cost effective solution for digital recording, BCN machines will find additional applications.

Cassettes or reels for portable, mobile, or stationary operation

The BCN format concept covers all operational applications:

The BCN 5 cassette version is intended for the production of rapid, studio quality, 20 minute programme contributions and of course, for all ENG activities. The portable, battery operated BCN 20 having 65 minute playing time is ideally suitable for all mobile applications whereas the conventional BCN 40/50 machines combine mobile outside broadcast operation with stationary applications.

BCN 40/50 for studio OB van applications

The BCN system is based upon a modular building brick concept. Modules with related functions are arranged in portable units.

The standard version of this universal equipment is the BCN 40/50, the VTR for studio stationary use.

The same version, however, is also, highly suited to mobile OB van applications.

For monitoring purposes a "monitoring bridge" consisting of a black and white or colour picture monitor, waveform monitor and vector scope can be added to the deck, electronics and processor units.



BCN 50 as studio machine with "monitoring bridge" and integrated automatic editing EES 9 (optional)

Outside Broadcast productions with studio quality under all conditions: BCN 20

This battery or mains operated BCN 20 version with 65 minute reel time is intended for high quality outside broadcast productions from a car, helicopter, ship, or motorcycle.

The additional electronic unit BCWQ 9 together with the standard processor unit enable high quality BCN 20 reproduction suitable for transmission.



Compact OB van with 2 cameras KCK/R and 2 VTR BCN 40/50

The first studio quality cassette VTR: BCN 5

The BCN-cassette fulfills the demand for ENG in studio quality. Recording and reproduction are ensured under all conditions between -10°C and $+45^{\circ}\text{C}$.

The 20 minute cassette enables rapid cassette change because it can be removed in any winding state and the reels subsequently removed and replayed directly on any BCN 20/40/50 without the need for adaptors.

A multi cassette automatic unit using the same 20 minute cassettes is in preparation and intended for automatic studio applications.



Reporter with BCN 5-cassette VTR and KCA 90 camera

Experience gained from practical use



On the move recordings are possible under the most extreme conditions

Approx. 100 customers have decided in favour of the BCN system because of its outstanding economy and complete equipment range, covering both reels and cassettes. Stationary and portable BCN machines are now in operation all over the world.

The BCN format corresponds to the SMPTE-1"-Type B Standard

All BCN machines are in accordance with this standard and need no alterations. In addition, the BCN format is being processed at the IEC and published as DIN Draft 45483. The EBU regards the BCN-standard as already defined by the SMPTE; the BCN is in use in 20 EBU/OIRT countries.



More than 550 BCN-systems in operation in 44 countries

BCN. A format that has proved itself

BOSCH

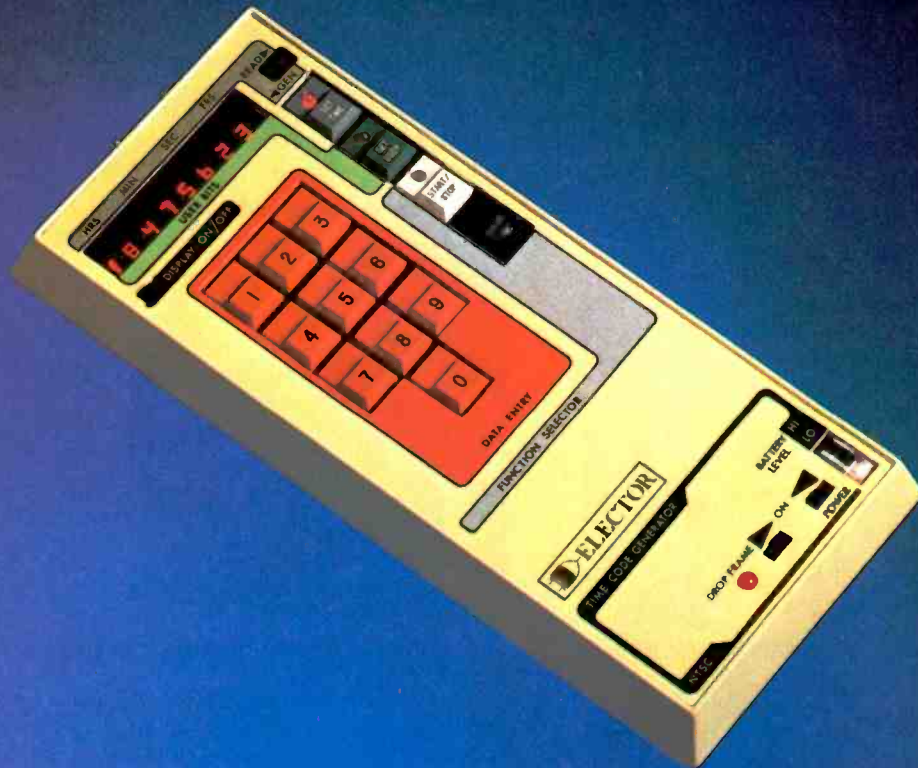
Robert Bosch GmbH, Geschäftsbereich Fernsehanlagen, Postfach 429, D-6100 Darmstadt, Fed. Rep. of Germany

Robert Bosch Corporation, Fernseh Group, 279 Midland Road, Saddle Brook, New Jersey 07662, USA., Phone (201) 797-7400

Circle 194 on Reader Service Card

Electro

introduces the first completely portable
SMPTE/EBU Time Code Generator.
(Including keyboard entry of user bit data)



It works with you wherever you go.

The Electro TCG Mk III portable Time Code Generator creates a whole new era of video production techniques with its compact, lightweight flexibility.

Measuring only 9" long, and weighing less than three pounds, the TCG Mk III runs for up to 16 hours at a time on its rechargeable batteries.

Equipped with a belt harness carrying case, or optional desk-top stand, the TCG Mk III is equally versatile out in the field or inside the studio, utilizing the battery eliminator.

Available in either NTSC, PAL or SECAM configurations, Electro's TCG Mk III works with you wherever you go in the world. An integral play-speed Time Code Reader is available as an option.

Ask us for full details and the name of your nearest distributor.



Electro & Optical Systems Limited, 3015 Kennedy Road, Scarborough, Ontario, Canada M1V 1E7. Tel: (416) 291-4492
Telex: 065-25431

Circle 195 on Reader Service Card

Independent Broadcast Reps/Distributors

Including cross reference to companies whose products are advertised

Information regarding the representatives and distributors listed in this section was supplied by the manufacturers listed in the preceding section. Some others are listed by virtue of their reputations within the localities they do business. This section may be most effectively used if the following points are kept in mind: 1) The product line attributed to each representative is very general. In most cases these reps/distributors carry the products of a number of manufacturers and may carry a broader range of products than the "line" may imply. 2) The advertiser's name which appears below the listing can be used as a guide to the dealer handling the specific product sought, and as a guide to more information on the product(s) referred to in the advertisement. 3) If no local dealer can be found, a call to the manufacturer of the product sought may be the quickest way to identify a local supplier.

ALABAMA

BCS ASSOCS

3322 S Memorial Pkwy
Huntsville 35807
205 881-6220
Line: full line video equip
Fluke see ad pg 159

CALHOUN CO INC

PO Box 76055
Birmingham 35223
205 942-7620
Line: full line video equip,
lighting equip
Strand Century see ad pg 88

CHEROKEE SUPPLY

103 Bibb St
Alexander 35010
Line: RF and audio components
CCA see ad pg 117

GRACE A/V SYSTEMS

240 Oxmoor Circle Ste 102
Birmingham 35209
Line: full line audio & visual equip
Strand Century see ad pg 88

GULF COAST ELECTRONICS

2613 Cameron St
Mobile 36607
205 476-7690
Line: full line TV

JAMES L HIGHSMITH CO

3322 S Memorial Pkwy
Huntsville 35801
205 881-3294
Line: full line broadcast equip
Boonton Electronics see ad pg 51

LEE ASSOC MID-SOUTH INC

817 Wheeler Ave
Huntsville 35801
205 533-5896
Line: full line audio & video equip
Marconi see ad pg 161

LEE ASSOCS

817 Wheeler Ave
Huntsville 35801
205 533-5896
Line: test instruments
Marconi see ad pg 69

SIGNAL ENGINEERING & SALES

720 S 23rd St
Birmingham 35202

205 328-6431

Line: video equip
CEI see ad pg 195
NEC see ad pg 136, 137, 171

MAITLAND K SMITH

1 Blake Dr
Riverside 35135
205 884-1278
Line: audio equip
HM Electronics see ad pg 202

UNITED ASSOC

823 City Federal Bldg
Birmingham 35203
205 252-3079
Line: video & lighting equip

ALASKA

HARRY J LANG & ASSOCS

1406 W 47th Ave
Anchorage 99503
907 279-5741
Line: audio & video equip
Fluke see ad pg 159

NORTHERN VIDEO SYSTEMS INC

4600 Business Park Blvd
Anchorage 99503
907 279-5571
Line: full line audio & video equip,
lighting equip
Strand Century see ad pg 88

ARIZONA

AMERICAN ELECTRONICS

313 S 36 St
Phoenix 85043
602 275-5496
Line: audio & video equip
Clear-Com see ad pg 164

BARNHILL THREE INC

7319 E Stetson Dr
Scottsdale 85251
602 947-7841
Line: full line test equip
Fluke see ad pg 159

FISHER-BURKE

120 E Willetta St
Phoenix 85004
602 257-0225

Line: audio equip
Stanton see ad pg 100

INTERNATIONAL MARKETING ASSOC

1220 W Alameda Ste 109
Tempe 85282
602 894-1318
Line: audio equip
HM Electronics see ad pg 202

LARRY McMILLAN

5607 E Horseshoe Rd
Paradise Valley 85251
602 991-1077
Line: audio/video components
Video Aids see ad pg 166

MEASUREMENT CONSULTANTS

PO Box 966
Scottsdale 85252
602 994-9519
Line: test instruments
Marconi see ad pg 69

OMNITRONICS INC

711 Indian School Rd
Phoenix 85016
602 956-6803
Line: audio equip

RIA CORP

PO Box 1670
Cottonwood 86326
Line: microwave, audio & CATV equip
Nurad see ad pg 49

FOH'S INC

4553 E Broadway
Tucson 85711
602 795-8573
Line: full line video equip, CCTV systems
3M Mincom see ad pg 52, 168, 170
Conrac see ad pg 115

VIDCOM

1908 E McDowell
Phoenix 85006
602 253-2103
Line: video; lighting equip
Strand Century see ad pg 88
Amtron see ad pg 87

ZEUS INC

546 E Portland
Phoenix 85004
602 253-6104
Line: audio & video equip
Boonton Electronics see ad pg 51

ZONAR CORP

2922 W Weldon
Phoenix 85617
602 264-2100
Line: full line audio & video equip
Strand Century see ad pg 88

continued on page 150

Reps/Dists

ARKANSAS

CUSTOM PRODUCTS

107 East Calhoun
Magnolia 71753
501 234-7399
Line: audio/video components & equip
Ramko see ad pg 118-119

PAUL JAMESON

PO Box 247
Magnolia 71753
501 234-3778
Line: attenuators

TECHNICAL INDUSTRIES

3520 W 69th St Suite 306
Little Rock 72209
501 568-2294
Line: full line video equip
Strand Century see ad pg 88

CALIFORNIA

ACEY-DECY INC

1123 N McCadden Pl
Hollywood 90028
213 464-0201
Line: video & lighting equip
Strand Century see ad pg 88

AUDIO CONCEPTS

7138 Santa Monica Blvd
Hollywood 90046
213 851-7172
Line: audio equip
Audio & Design see ad pg 202

AUDIO INDUSTRIES CORP

1419 N LaBrea Ave
Hollywood 90028
213 851-4111
Line: audio components, equip
MCI see ad pg 37

TOM AYE ASSOC

1508 Albatross Dr
Sunnyvale 94087
408 738-1406
Line: full line broadcast equip
Sintronic see ad pg 174
Stanton see ad pg 100

JOHN BAUMANN

5526 East La Palma Ave
Anaheim 92807
714 528-9505
Line: video switchers, animation equip
Duca Richardson see ad pg 169

BAY-TRONICS

PO Box 443
San Carlos 94070
415 588-0958
Line: power supplies
Yardney see ad pg 183

JACK BERMAN CO INC

PO Box 6003
Inglewood 90301
213 649-6111
Line: audio equip
Shure see ad pg 141

PATRICK BOHANA/DON CRUMM

2025 Gateway Pl Ste 320
San Jose 95110
408 286-9152
Line: full line of CATV equip
Scientific-Atlanta see ad pg 129

BCD INC

1400 Coleman Ave Ste H14
408 984-6614
Santa Clara 95050
Line: full line broadcast equip
Ampro see ad pg 10

BROADCAST CART SERVICE

11917 Laurelwood Dr
N Hollywood 91604
213 245-7708
Line: audio tape & accessories
Aristocart see ad pg 42

BROADCAST COMMUNICATIONS DEVICES INC

5526 E LaPalma Ave
Anaheim 92807
714 528-9505
1850 Warburton Ave Suite 203
408 984-6614
Line: full line audio & video equip, lighting equip
Ampro see ad pg 10
B'cast Video Systems see ad pg 86
CCA see ad pg 117
Conrac see ad pg 115
Datatek see ad pg 99
ROH see ad pg 134
Stanton see ad pg 100
TFT see ad pg 65

RICHARD W BURDEN

20944 Sherman Way Ste 216
Canoga Park 91303
213 340-4590
Line: full line audio equip
LPB see ad pg 187

CARLILE & ASSOC

31143 W Via Colinas Ste 402
West Lake Village 91361
805 492-5262
Line: full line audio equip
Otari see ad pg 173

CINEMA SERVICES

3866 Bayshore Blvd
Brisbane 94005
415 468-5220
Line: film, video, lighting equip
Strand Century see ad pg 88

COMMUNICATIONS CO

3490 Noell St
San Diego 92110
714 297-3261
Line: audio & video Equip
Clear-Com see ad pg 164

DUNLOP ELECTRONICS

3030 Bechelli Lane
Redding 96001
916 243-6513
Line: video equip

BRYANT W ELLIS

1227 North Vine Street
Hollywood 90038
213 464-5108
Line: audio equip
Aristocart see ad pg 42

EXPRESS SOUND CO

1833 Newport Blvd
Costa Mesa 92627
714 645-8501
Line: audio equip
Audio & Design see ad pg 202

F&B CECO of CALIF, INC

7051 Santa Monica Blvd
Hollywood 90038
213 466-9361
Line: full line film & video equip

FILMWAYS AUDIO/VIDEO INC

5540 Cleaon Ave
N Hollywood 91601
213 877-9711
Line: audio & video equip
Clear-Com see ad pg 164
HM Electronics see ad pg 202

FERCO

363 Brannon St
San Francisco 94107
415 957-1787
Line: TV production equip
Strand Century ad pg 88

HARRY FORMAN

10120 Hollow Glen Circle
Los Angeles 90024
213 550-7070
Line: full line lighting equip
Strand Century see ad pg 88

FOUR STAR STAGE LIGHTING

3935 N Mission Rd
Los Angeles 90031
213 221-5114
Line: lighting equip, accessories
Grt American Mkt see ad pg 20

GENERAL ELECTRONICS SYSTEMS INC

PO Box 11085
1440 San Pablo Ave
Berkeley 94702
415 527-7700
Line: audio & video equip
Conrac see ad pg 115

HALZMUELLER CORP

2545 16 St
San Francisco 94110
415 864-7800
Line: lighting equip, accessories
Grt American Mkt see ad pg 20

HELD & MOLLARD INC

3995 E Bayshore Rd Suite 104
Palo Alto 94303
415 965-9321
Line: audio components
Tech Labs see ad pg 182

INSTRUMENT SPECIALIST SALES GROUP

2020 N Lincoln Blvd
Burbank 91504
213 849-7181
7152 Convoy Ct
San Diego 92111
714 278-7752
2351 De La Cruz Blvd
Santa Clara 95050
408 244-1505
Line: full line test instruments
Fluke p see ad pg 159

MARTY JACKSON

1400 Coleman Ave Suite H14
Santa Clara 95050
408 984-6614
Line: automation & video switching equip
TFT see ad pg 65
CCA see ad pg 117

KOESSLER SALES CO

2010 W Burbank Blvd
Burbank 91506
213 849-5716
Line: audio equip
Telex see ad pg 44,92

LASER INT'L CORP

444 Saratoga Ave Ste 40F
Santa Clara 95050
408 249-3309
Line: full line of video equip
CEI see ad pg 195

LIGHT & POWER SALES AG

3366 Hancock Suite B
San Diego 92110
714 461-9352
Line: audio equip

MACPHERSON SALES CO.

PO Box 5212 Walnut Creek
Walnut Creek, 94596
415 937-1482
Line: Audio Equip
AKG Acoustics see ad pg 134

MARCOM

PO Box 66507
Scotts Valley 95066
408 438-4273
Line: full line audio & video equip
Electro & Optical Systems see ad pg 148
ROH see ad pg 134

MARSHANK SALES CO

10455 W Jefferson Blvd
Culver City 90230
213 559-2591
Line: full line A/V equip
AKG Acoustics see ad pg 134

THE MASTERING LAB

6033 Hollywood Blvd

Los Angeles 90028
213 466-8589
Line: audio & video equip
Stanton see ad pg 100

METROVONICS INC

3808 Catalina St
Los Alamitos 90720
714 827-4580
Line: video equip

CHARLES MICHAEL

13400 Mulholland Dr
Beverly Hills 90210
213 788-3531
Line: full line A/V equip
Laird Telemedia see ad pg 178, 199
Video Aids see ad pg 166

MOULTHROP SALES INC

7080 Commerce Dr
Pleasanton
415 846-0550
Line: audio components, equip
Telex see ad pg 44,92
Shure see ad pg 141

MOXON ELECTRONICS

17801 B Sky Pk Circle Dr
Irvine 92707
714 556-6500
2376 Walsh Rd
Santa Clara 95050
408 249-2491
7969 Engineer Rd
Sandiego 92111
714 292-4800
1440 S State College Blvd
Bldg 6E
Anaheim 92806
714 635-7600
Line: test instruments
Marconi see ad pg 69

MUNDAY & COLLINS

270 Willow St
PO Box 5669
San Jose 95150
Line: video equip

O'HALLORAN ASSOC

10700 Ventura Blvd
N Hollywood 91604
213 877-0173
1020 Corporation Way
Palo Alto 94303
415 326-1493
Line: full line audio & video equip
Boonton Electronics see ad pg 51

OLSEN

1535 Ivar Ave
Hollywood 90028
213 461-4631
Line: lighting equip
Grt American Mkt see ad pg 20

OMEGA ASSOC

14326 Isis Ave
Lawndale 90260
213 679-9021
Line: full line video equip, lighting equip
CEI see ad pg 195
Conrac see ad pg 115
Knox see ad pg 183
Ross Video see ad pg 83
Strand Century see ad pg 88

PACIFIC RECORDERS & ENG CORP

11760 Sorrento Valley Rd
San Diego 92121
714 453-3255
Line: full line audio equip accessories
See ad pg 8
Stanton see ad pg 100

PACIFIC VIDEO PRODUCTS

1128 E Chestnut St
Santa Ana 92705
714 547-8834
Line: video equip
Dynasciences see ad pg 45

continued on page 152

GENERAL ELECTRIC Large Screen TV Projectors

The General Electric Large Screen Video Projectors incorporate advances in simplicity, reliability and performance in large screen television projection.

This solid-state, high-brightness television projector is engineered for remote control operation; with improved circuit design for enhanced picture quality, power efficiency, and increased ease of operation, maintenance and service.

It utilizes the exclusive GE light valve—single gun, single optical path system which requires no convergence adjustments to faithfully reproduce monochrome and natural color TV pictures of high resolution and contrast.

Built-in remote control capability allows set-up adjustment and operating control at the projector, or from 200 feet away, with the addition of an accessory cable.

APPLICATIONS

In addition to projecting information from all standard video sources such as off-air TV tuner, video tape, video cassette, live camera, closed-circuit data network, video film chain, etc., the versatile system can be coupled to computer facilities through suitable interface equipment. It can project alpha-numeric data, graphic displays and computer generated images in real time.

GE large screen TV projectors are now in use in Business, Industry, Education, Medicine, Military, Government, Entertainment and the Arts.

Business—Instant review and analysis of computer data bank information, stockholders meetings, conferences, presentation of advertising and sales promotional campaigns, sales meetings.

Industry—Safety and Industrial training programs.

Military—Command and control displays, computer read-out, dynamic visual simulators, tactical and operational situation displays.

Medicine—Teaching surgical techniques, medical procedures, nursing, training and consultation conference information displays.

Entertainment—Sports, CCTV, standard TV, concerts, box office extensions.

Education—Off-campus programs and seminars, demonstration of the arts, teaching sciences, lecture demonstrations.



"Thousand" Series Projectors. (PJ500 and PJ700 not shown.)

PERFORMANCE FEATURES

- High efficiency power circuits permit operation at low line voltages without affecting picture quality.
- Low input power . . . 1,200 watts compared to 1,700 watts or more for other professional television projectors.
- Operates from standard 120v/20 amp appliance outlets.
- No radiation hazard. Highest voltage used is 7,200 v.
- LED circuit monitors and beam current meter included.
- Sweep reversal switches allow easy projected image changeover for front or rear screen applications.
- Variable picture size from 2 to 20 feet in width.
- Versatile projector mounting includes table top gimbal, or on its matching, accessory base.
- Accessory rolling base allows easy transportability.
- Afocal lenses available to vary projection distance from standard 3.0:1 (throw distance to screen width) by factors of 2 or 1/2.

GE Large Screen Television Projector Specifications

Model	Projector Type	Minimum Output (in lumens)	Power Supply	Video Input & Standards	Price*
PJ500**	Color	220	60 Hz, 117 v., ± 10%	NTSC & RGB	\$35,000
PJ700**	Monochrome	600	60 Hz, 117 v., ± 10%	525 lines/60 f.p.s.	\$30,000
PJ5000	Color	220	50/60 Hz, 117 v., ± 10%	525 lines/60 f.p.s. or 625 lines/50 f.p.s., NTSC & RGB	\$55,000
PJ5100	Color	220	60 Hz, 117 v., ± 10%	1023 lines/60 f.p.s., RGB	\$72,500
PJ5800	Color	220	60 Hz, 117 v., ± 10%	875 lines/60 f.p.s., RGB	\$72,500
PJ7000	Monochrome	600	50/60 Hz, 117 v., ± 10%	525 lines/60 f.p.s.	\$48,500
PJ7010	Monochrome	600	50/60 Hz, 117 v., ± 10%	625 lines/50 f.p.s.	\$48,500
PJ7050	Monochrome	1000	50/60 Hz, 117 v., ± 10%	525 lines/60 f.p.s.	\$53,500
PJ7100	Monochrome	600	60 Hz, 117 v., ± 10%	1023 lines/60 f.p.s.	\$52,000
PJ7150	Monochrome	1000	60 Hz, 117 v., ± 10%	1023 lines/60 f.p.s.	\$57,000

**used/factory refurbished

*effective 1/78

Video Display Equipment Operation
Electronics Park, Building 6-206,
Syracuse, New York 13221
Phones: (315) 456-2562/2533/2179

GENERAL ELECTRIC

Circle 264 on Reader Service Card

Reps/Dists

PERSPECTIVE MEASUREMENT

8369 Vickers St Ste D
San Diego 92111
714 278-8931
2141 W La Palma Ste 1
Anaheim 92801
714 772-5211

Line: video equipment
CEI see ad pg 195
Cohu see ad pg 195

PROGRESSIVE MARKETING INC

75 Mt Hermon Rd
Scotts Valley 95060
408 438-1097

Line: video, transmitting & measuring
equip
Rohde & Schwarz see ad pg 121

RICHARD REILLY

150 Old Adobe Way
Los Gatos 95030
408 866-9486

Line: full line audio & video equip
Asaca see ad pg 11,35

ROBERT RICCI

1571 Parkway Rd
Tustin 92680
714 731-3011

Line: full line audio & video equip
Asaca see ad pg 11, 35

RIGGINS ELECTRONICS

3272 E Willow St
Long Beach 90806
213 598-7007

Line: audio components, equip
Stanton see ad pg 100

ROLLS ELECTRONICS

4260 Lankerskim Blvd
N Hollywood 91602
213 877-4424

Line: audio equip

RUSSCO ELECTRONICS MFG

1707 Brookhaven Dr
Clovis 93612
209 291-5591

Line: audio equip
Stanton see ad pg 100

BETTY SCHNEIDER

5432 W 102 St
Los Angeles 90045
213 776-4600

Line: full line lighting equip
Strand Century see ad pg 88

SIERRA AUDIO

621 S Glenwood Pl
Burbank 91506
213 843-8115

Line: audio equip
Pacific Recorders see ad pg 8

SIERRA MARKETING INC

470 Aldo Ave
Santa Clara 95050
408 988-2833

Line: audio equip
HM Electronics see ad pg 202

R E SNADER & ASSOC

216 E Strawberry Dr
Mill Valley 94941
415 383-4263

Line: video & lighting equip
Strand Century see ad pg 88

SOUND DYNAMICS INC

PO Box 32055
San Jose 95152
408 926-3588

Line: audio components
Automated Broadcast Controls see
ad pg 98

SOUND DYNAMICS, INC

PO Box 1335
Sunnyvale 94088
408 926-3588

Line: audio components

SOUND GENESIS INC

445 Bryant St
San Francisco 94107
415 391-8776

Line: audio equip

SPECTRUM ASSOCIATES, INC

1823 E 17th St
Santa Ana 92711
213 323-0603

Line: audio components
Tech-Labs see ad pg 182

SYSCOM

880 Maude Ave
Mountain View 94043
415 967-8229

Line: full line audio & video equip
CEI see ad pg 195
Knox see ad pg 183

SYSTEM ASSOC

6117 Reseda Blvd Ste 205
Reseda 91335
213 344-3552

Line: full line audio & video equip
Electro & Optical Systems see ad pg
148

Utah Scientific see ad pg 176

TELAUDIO CENTER

7471 Melrose Ave
Los Angeles 90046
213 276-2726

Line: full line video equip
Microtime see ad pg 33

TELEVISION ASSOCIATES

2410 Charleston Rd
Mountain View 94043
415 967-6040

Line: full line video & audio equip
Dynasciences see ad pg 45

TOTAL VIDEO SERVICE

405 Chester Ave
Bakersfield 93301
805 324-7239

Line: video equip
Microtime see ad pg 33

TRI TRONICS INC

4019 Tujunga Ave
N Hollywood 91604
213 877-9912

Line: full line video equip
Conrac see ad pg 115
3M Mincom see ad pg 52, 168, 170
Strand Century see ad pg 88
TEA see ad pg 104

UNITED MEDIA INC

1571 Parkway Loop Unit D
Tustin 92608
714 431-3011

Line: full line video equip
150 Old Adobe Way
Los Gatos 95030
408 736-3600
Line: full line video equip
ADDA see ad pg 97, 165

VIDEO EQUIPMENT CORP

7377 Convoy Ct
San Diego 92111
714 278-4400

Line: audio & video equip, lighting
equip
CEI see ad pg 195

3M Mincom see ad pg 52, 168, 170
NEC see ad pg 136, 137, 171
Strand Century see ad pg 88
Videotek see ad pg 213

VIDEO LOGIC SERVICES INTL

PO Box 1434
Los Gatos 95030
408 356-1031

Line: full line video equip
Dynasciences see ad pg 45

VIDEO MEDIA

250 Wolfe Rd
Sunnyvale 94086
408 733-6500

Line: video & lighting equip
Amtron see ad pg 87
Strand Century see ad pg 88

VIDEO MEDIA SYSTEMS

Santa Clara
405 733-6500

Line: full line video equip
3M Mincom see ad pg 52, 168, 170

VIDEO SYSTEMS INC

12530 Beatrice St
Los Angeles 90066
213 871-0677

Line: full line video equip, lighting equip
Dynasciences see ad pg 45
Amtron see ad pg 87
BTX see ad pg 127, 142
Rohde & Schwarz see ad pg 121
Strand Century see ad pg 88

WARSCO

4311 S Figueroa St
Los Angeles 90037
213 233-8171

Line: full line video equip
Video Aids see ad pg 166

PAUL WELCOME

40454 La Jolla Ct
Fremont 94538
415 657-6452

Line: full line audio & video equip
Telemet see ad pg 143

WESTERN AV SYSTEMS

122 Cajon St
Redlands 92373
714 793-2905

Line: video equip

WESTLAKE AUDIO

6311 Wilshire Blvd
Los Angeles 90048
213 655-0303

Line: full line audio equip
Audio & Design see ad pg 202

COLORADO

ARTCOM

PO Box 176
Arvada 80001
303 979-3225

Line: audio equip
CCA see ad pg 117

AUDIO-VIDEO SYSTEMS INC

Robt Pechar
3390 Peoria Ste 306
Aurora 80010

303 341-9994
Line: audio & video equip
Knox see ad pg 183

B&B ELECTRONIC PRODUCTS INC

500 Quebec S
Denver 80237
303 733-6700

Line: audio equip
AKG Acoustics see ad pg 134
Otari see ad pg 173

BARNHILL THREE INC

1980 S Quebec St Unit 4
Denver 80231
303 750-1222

Line: full line audio & video equip
Fluke see ad pg 159

CEAVCO AUDIO VISUAL

7475 W 16 Ave
Denver 80215
303 238-6493

Line: video equip
3M Mincom see ad pg 52, 168, 170

CEC

1602 S Parker Rd Ste 102
Denver 80231
202 751-3252

Line: full line audio & video equip
Marconi see ad pg 161

CENTENNIAL ENTERPRISES

711 Vallejo St
Denver 80204
303 534-2228

Line: video equip
Video Aids see ad pg 166

DAVIS AUDIO-VISUAL INC

1801 Federal Blvd
Denver 80204
303 455-1122

Line: video & lighting equip
Amtron see ad pg 87
3M Mincom see ad pg 52, 168, 170

DIDIER/DENVER

PO Box 1599
Evergreen 80439
303 674-6000

Line: full line broadcast equip
ADDA Corp. see ad pg 97, 165
Ampro see ad pg 10

Cohu see ad pg 162
Datatek see ad pg 99
Electro & Optical see ad pg 148
Leitch Video see ad pg 131
3M Mincom see ad pg 52, 168, 170
ROH see ad pg 134
TEA see ad pg 104
TFT see ad pg 65

GENERAL SOUND & ELECTRONICS

1369A W Byers Pl
Denver 80223
303 722-1861

Line: audio & video equip
Clear-Com see ad pg 164

HIGHLAND ASSOC

80 Garden Office Ctr
1380 W Midway Blvd
Broomfield 80020
303 854-2003

Line: full line audio & video equip
Ramko see ad pg 118-119

HP MARKETING

2530 W Church Ave
Littleton 80120
303 794-8367

Line: audio & test equip

INTER-MOUNTAIN VIDEO SYSTEM

2635 S Santa Fe Dr
Denver 80223
303 744-2724

Line: video & lighting equip
Strand Century see ad pg 88

INVERNESS MARKETING INC DIV OF CLIFF-JOHN ELECTRONICS INC

Bldg 1-Suite 1
14 Inverness Dr East
Englewood 80110

303 770-2300
Line: audio components
Tech-Labs see ad pg 192

MCCLOUD & RAYMOND CO

2020 S Pontiac Way
Denver 80222
303 756-1589

Line: audio equip
Shure see ad pg 141
Telex see ad pg 44, 92

MILE HIGH

6000 E Evans
Denver 80222
303 759-5841

Line: video equip
Knox see ad pg 183

PAR ASSOC

7305 Spring Ct
Boulder 80303
303 499-4736

Line: test instruments
Marconi see ad pg 69

RIA CORPORATION

430 Garland St
Lakewood 80226
303 238-2593

Line: TV broadcast equip
Nurad see ad pg 49

SCIENTIFIC INSTRUMENTS

5765 Logan Suite 206
Denver 80216
303 623-6447

Line: video equip

continued on page 154



**If you want
Plumbicon* picture quality
from your ENG camera—
specify Plumbicon TV camera tubes.**

As predicted, the Plumbicon $\frac{2}{3}$ -inch camera tube changed the entire course of broadcast journalism and helped make ENG the world's most important medium of information.

Amperex

TOMORROW'S THINKING IN TODAY'S PRODUCTS

A NORTH AMERICAN PHILIPS COMPANY

AMPEREX ELECTRONIC CORPORATION, SLATERSVILLE DIVISION, SLATERSVILLE, RHODE ISLAND 02876 • TELEPHONE: 401-763-3800

* Registered trademark N.V. Philips of the Netherlands.

Circle 197 on Reader Service Card

Reps/Dists

VIDEO SERVICES

1805 S Bellaire St #100
Denver 80222
303 753-0887
Line: full line video equip
Dynasciences see ad pg 45

CONNECTICUT

JOHN B ANTHONY

922 High Ridge Rd
Stamford 06905
203 822-9202
Line: full line audio equip
AKG Acoustics see ad pg 134
HM Electronics see ad pg 202
Otarl see ad pg 173
Urei see ad pg 145

AUDIO/TECHNIQUES INC

652 Glenbrook Rd
Stamford 06906
203 359-2312
Line: full line audio equip, recording
accessories imported and domestic
Audio & Designs see ad pg 202
Stanton see ad pg 100

BURNS ELECTRONIC SECURITY INC

735 Route 5
S Windsor 06074
203 528-2186
Line: full line audio & video equip
Dynasciences see ad pg 45
Videotek see ad pg 196

CONCORD COMMUNICATIONS DIV

Auvitel Systems Corp
76 Main St Box 825
Norwalk 06852
203 846-9575
Line: video & audio equip

DENSON ELECTRONICS CORP

Longview St
Rockville 06066
603 434-0731
Line: video equip

H&B SYSTEMS

21 Audio Ln
New Haven 06519
203 777-5301
Line: video & lighting equip
Strand Century see ad pg 88

ROBERT HENSON

1 Elmwood Lane
Westport 06880
203 226-4482
Line: full line video & CATV equip
Lenco Inc see ad pg 105

IRI SALES GROUP

124 Hebron Ave
Glastonbury 06033
203 633-0777
Line: test & monitoring instruments
Fluke see ad pg 159

KEMP COMMUNICATIONS

150 Lost Acres Rd
N Granby 06060
203 653-2519
Line: audio & telco equip
Monroe see ad pg 205

NBS ASSOCIATES

PO Box 179
106 Main St
Thomaston 06787
203 283-5959
Line: audio components
Tech Labs see ad pg 182

SCIENTIFIC DEVICES

3074 Whitney Ave
Mt Carmel 06518
203 248-9361
Line: audio & video equip
Boonton Electronics see ad pg 51

VIDEOPLAY INDUSTRIES

Kinsbury Ave
Rockville 06066
203 872-9195
Line: video equip
3M Mincom see ad pg 52, 168, 170

DISTRICT OF COLUMBIA

BRENNER CINE-SOUND

5215 Wisconsin Ave NW
Washington 20015
202 344-3800
Line: sound & lighting equip
Strand Century see ad pg 88

COMREX CORP

PO Box 17011
Dulles Intl Airport
Washington 20041
Line: full line video equip
Dynasciences see ad pg 45

McBEE LABORATORIES

5151 Wisconsin Ave NW
Washington DC 20016
202 244-2345
Line: TV systems, equip
NEC see ad pg 136, 137, 171

PROFESSIONAL PRODUCTS INC

4964 Fairmont Ave
Bethesda 20014
301 933-3451
Line: full line video equip
Strand Century see ad pg 88

FLORIDA

BCS ASSOC INC

940 N Fern Creek Ave
Orlando 32803
305 896-4881
Line: measuring equip, monitors, audio
& video equip
Fluke see ad pg 159

BROADCAST EQUIPMENT CORP

744 Nest Church St
Orlando 32805
305 423-8299
Line: full line broadcast equip
Microtime see ad pg 33

FRED CANON & ASSOC

Tropic Isle
Delray Beach 33444
205 278-1114
Line: power supplies
Yardney see ad pg 183

CONTINENTAL ELECTRONICS

WHOLESALE CORP
1620 W 32 St
Hialeah 33012
Line: audio & RF equip
CCA see ad pg 117

CONTROLLED TECHNOLOGY INC

2513 Tortugas Lane
Ft Lauderdale 33312
305 587-2716
Line: full line audio & video equip
IGM/NTI see ad pg 18

DESIGN LIVE INC

5485 Jet Port Blvd
Tampa 33614
Line: audio & video equip
Clear-Com see ad pg 164

ELECTREX CO

200 NE 162 St
N Miami Beach 33162
305 945-6483
Line: audio & video equip
Stanton see ad pg 100

PR FERMAINTT

1031 SW 74 Ct
Miami 33144
315 261-4755
Line: audio & RF equip
CCA see ad pg 117

FLORIDA VIDEO SYSTEMS

14422 NW 7 Ave
Miami 33168
305 688-6618
5089 NE 12 Ave
Ft Lauderdale 33334
305 771-4784
Line: video & lighting equip
Microtime see ad pg 33
Strand Century see ad pg 88

GRAY COMMUNICATIONS

5401 Southern Comfort Blvd
Tampa 33614
813 885-1411
Line: broadcast equip
Ampro Broadcasting see ad pg 10
3M Mincom see ad pg 52, 168, 170

HARRIS CO

633 Shenandoah
Miami 33145
305 854-2003
Line: audio equip
Stanton see ad pg 100

JAMES L HIGHSMITH CO

4190 NW Oak Circle
Boca Raton 33431
305 368-9194
2545 Industrial Blvd
Orlando 32804
305 293-5202
Line: audio & video equip
Boonton Electronics see ad pg 51

HUTTO-HAWKINS-PEREGOY INC

PO Box 1277
Maitland 32751
305 831-2474
Line: audio equipment
Shure see ad pg 141

IMAGE DEVICES INC

1825 NE 149th St
Miami 33181
305 945-1111
Line: video & audio equip

J&J ELECTRONICS

5855 Johnson St
Hollywood 33021
305 771-4784
Line: video production switchers, pulse
& distribution amps, routing switchers,
special effects generators
Amtron see ad pg 87

LAUDERDALE ELECTRONICS LABS

16 SW 13th St
Ft Lauderdale 33315
305 764-7755
Line: audio components
Stanton see ad pg 100

LEE FLORIDA INC

PO Box 672
Winter Haven 33880
813 294-5815
110 Algonquin Terrace
Indian Harbor Beach 32937
305 773-8114
Line: full line broadcast equip
Marconi see ad pg 161

LYKES ELECTRONICS CORP

1800 NW 23rd St
Miami
5426 W Crenshaw
Tampa 33622
813 886-6621
Line: full line audio & video equip
3M Mincom see ad pg 52, 168, 170

MIDWEST TELECOMMUNICATIONS

3331 NW 82nd Ave
Miami 33122
305 592-5355
Line: audio & video equip, lighting
equip
Amtron see ad pg 87

Conrac see ad pg 115
3M Mincom see ad pg 52, 168, 170

MORT PRESS

1800 San Souci Blvd Suite 305
N Miami 33161
305 895-2262
Line: video components, equip
Video Aids see ad pg 166

PHOTOMART

6237 S Orange Ave
Orlando 32809
305 851-2780
Line: video equip, lighting equip
Strand Century see ad pg 88

REPELECT

Box 7102
Tampa 33603
813 277-5051
Line: audio & video equip
Ramko see ad pg 118-119
TFT see ad pg 65

REYNOLDS & ASSOC

476 North A1A-Suite 1A
Satellite Beach 32937
305 773-4700
Line: audio components
Tech Labs see ad pg 182

SOUTHEAST ELECTRONICS

1125 Rouselle St
Jacksonville 32203
904 356-3007
Line: full line of audio/video equip
CCA see ad pg 117
QEI see ad pg 187

STAGE EQUIPMENT & LIGHTING INC

12231 NE 13 Ct
Miami 33161
305 891-2010
Line: lighting equip
Grt American Mkt see ad pg 20

SUN VIDEO COMM & PRODUCTIONS

8100 Ulmerton Rd
Largo 33541
813 886-6651
Line: video equip
Strand Century see ad pg 88

SPROCH SALES INC

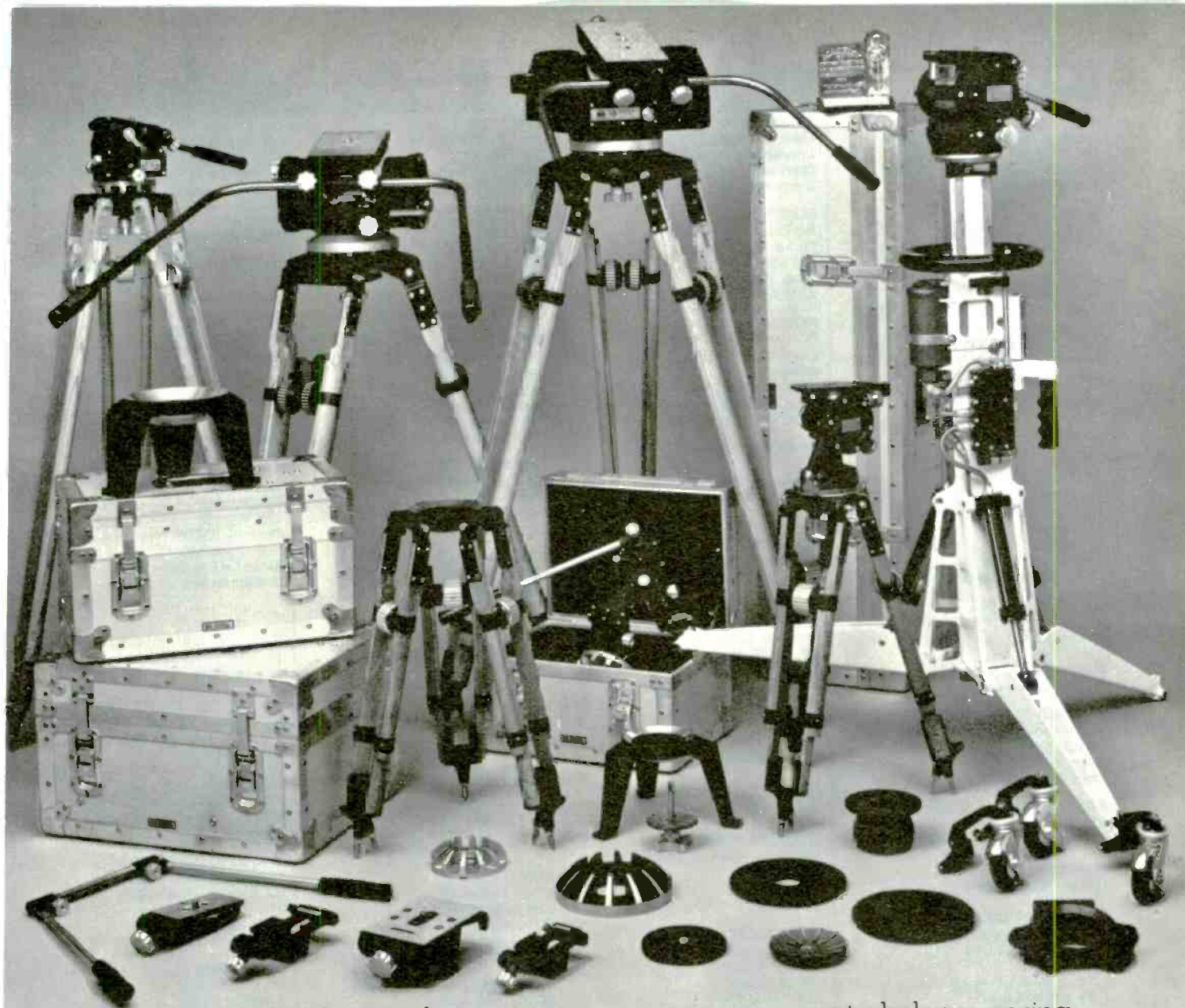
3520 W Broward Blvd
Ft Lauderdale 33312
305 587-3792
12 Anchor Way
Golf Harbor, Newport Richieu 33552
813 849-6067
Line: audio equip
HM Electronics see ad pg 202

UNITED ASSOC

2945 Bay St
Gulf Breeze 32561
904 932-5670
2925 Seminole St
Miami 33133
305 856-6749
320 W Park Dr
PO Box 2454
Ft Lauderdale 33315
305 523-0308
5020 Cypress St Suite 214
Tampa 33607
813 877-6091
PO Box 2308 J
119 Seewald St
Jacksonville 32203
904 354-5985
Line: video & lighting equip

URO-FI

9999 NE 2 Ave
Miami Shores 33138
305 893-3518
Line: audio equip
Audio & Designs see ad pg 202
continued on page 156



It all started with a single invention. The fluid camera head, back in 1952.

Today, O'Connor offers the most comprehensive professional camera support system anywhere. All designed around the fluid head. All designed to interchange easily with the ever expanding array of motion picture and video products.

The O'Connor system includes six different fluid heads with

FIRST THE O'CONNOR FLUID HEAD.

numerous counterbalance spring options, nine solid teakwood "Claw Ball" type tripods, the super-rigid, yet flexible Hydro-Ped, twelve camera platforms, six optional bases, three adaptors, extended or adjustable video handles and durable cases for everything. For information,

write: O'Connor Engineering, 100 Kalmus Dr., Costa Mesa, CA 92627; or 11 Rue des Moraines, 1227 Carouge, Geneva, Switzerland.

NOW THE TOTAL SYSTEM.

Circle 198 on Reader Service Card

Reps/Dists

WORLD ELECTRONICS INC

18917 NE 5th Ave
Miami Beach 33160
305 949-8918
Line: audio equip
MCI see ad pg 37

WORLD WIDE PRODUCTS

PO Box 279
Miami 33168
305 754-5475
Line: audio components, equip, tape recorders
AKG Acoustics see ad pg 134
Otari see ad pg 173
Telex see ad pg 44,92

GEORGIA

ABSCOM INC

1411 Dresden Dr NE
Atlanta 30319
404 261-3031
Line: audio & video equip
Clear-Com see ad pg 164

CM ALLEN CO INC

6145 Barfield Rd NE Ste 180
Atlanta 30328
404 393-1721
Line: power supplies
Yardney see ad pg 183

ATLANTA FILM EQUIP RENTALS

1838 Briarwood Rd NE
Atlanta 30329
404 633-4101
Line: film & lighting equip

BCS ASSOCS

2522 Tanglewood Rd
Atlanta 30033
404 321-0980
Line: full line video equip
QEI see ad pg 187

BROADCAST COMM ASSOC

105 Butternut Lane
Peachtree City 30269
404 487-9559
Line: audio & RF equip
CCA see ad pg 117

CALHOUN COMPANY

121 Forrest Ave NE
Atlanta 30303
404 636-3096
Line: full line video/audio & lighting equip
3M Mincom see ad pg 52, 168, 170
Strand Century see ad pg 88
Videotek see ad pg 196

CAVENDISH SALES CO

2737 Fountainbleau Dr
PO Box 47331
Atlanta 30360
Line: audio & video equip
Video Aids see ad pg 166

ELECTRO ACOUSTIC SYSTEMS

PO Box 1923
Athens 30601
404 353-1283
Line: audio equip
Audio & Designs see ad pg 202

GEORGIA BROADCASTING

Box 13646
Savannah 31406
912 354-4000
Line: full line A/V equip
Ramko see ad pg 118-119

GRADY DUCKETT SALES

PO Box 20967
Atlanta 30329
404 451-3529
Line: audio systems, components
Tech Labs see ad pg 182

ELECTRONIC EQUIPMENT INC

526 Plaster Ave NE
Atlanta 30324
404 873-5841
Line: audio components & equip
Conrac see ad pg 115
Otari see ad pg 173
Stanton see ad pg 100

ELREP SALES CO

PO Box 61
Tucker 30084
404 938-7108
Line: Video equip
AKG Acoustics see ad pg 134

FIDELICOM INC

PO Box 80644
Chamblee Station
Atlanta 30341
404 458-3616
Line: audio equip, test equip
Otari see ad pg 173

GRAY COMMUNICATIONS

1709 Stuart Ave
Albany 31707
912 439-3121
Line: audio & video equip, video systems
Dynamics see ad pg 45
3M Mincom see ad pg 52, 168, 170
Strand Century see ad pg 88

C HARRISON ASSOCS

6290 McDonough Dr Ste 2
Norcross 30093
404 449-7696
Line: audio & video equip
Videotek see ad pg 196

PAUL HAYDEN ASSOC

PO Box 90668
1530 Mabell Ave
East Point 30364
404 766-0261
Line: video equip
Video Aids see ad pg 166

CHARLES JOHNSON

1213 Lake Hearn Pl NE
Atlanta 30319
404 255-2202
Line: video & lighting equip

AIRE LANDRUM

2390 Tiffany Circle
Decatur 30032
404 288-2080
Line: video equip
Lenco Inc see ad pg 105

MILLAR ELECTRONICS INC

PO Box 12137
Northside Station
Atlanta 30305
404 261-6160
Line: audio equip
Shure see ad pg 141

RADFORD ASSOCS

Low Radford
3203 Lanier Dr
Atlanta 30319
404 237-6097
Line: full line broadcast equip
Ampro see ad pg 10
Aristocart see ad pg 186
Asaca see ad pg 11, 35
Knox see ad pg 183
Nurad see ad pg 49
ROH see ad pg 134
Sintronic see ad pg 174
TFT see ad pg 65
Utah Scientific see ad pg 176

ROSCOM INC

PO Box 54129
Atlanta 30308
404 577-4689
Line: audio equip
Ramko see ad pg 118-119

MAITLAND K SMITH INC

2321 4 St Ste 210
Tucker 30084
404 939-3323
Line: audio equip

HM Electronics see ad pg 202

SPRADLIN BROS STAGE LIGHTING

PO Box 149
Red Oak 30272
404 964-2495
Line: lighting equip
Grt American Mkt see ad pg 20

STANCO COMM PRODUCTS

PO Box 29921
1639 Tully Cir NE Ste 109
Atlanta 30329
404 636-3096
Line: audio & video equip
Strand Century see ad pg 88

TECHNICAL SYSTEMS REPS

2065 Peachtree Ct
Chamblee 30341
404 457-0426
Line: audio equip
Telex see ad pg 44, 92
UREI see ad pg 145

TRACKSIDE ENGINEERING

661 San Fernando Dr
Smyrna 30080
404 436-3024
Line: audio equip

VISUAL SYSTEMS

3870 N Peachtree Rd
Atlanta 30341
404 457-1388
Line: video equip
Amtron see ad pg 87
Strand Century see ad pg 88

HAWAII

ATTCO

28855 Koapaka St
Honolulu 96819
808 841-0991
Line: video & lighting equip
Strand Century see ad pg 88

BRADY PHOTO

92564 Pailailai St
Ewa Beach 96706
808 672-3479
Line: lighting equip
Grt American Mkt see ad pg 20

BROADCAST SERVICES INC

2877 Kalakaua Ave
Honolulu 96815
808 533-3877
Line: audio & RF equip
CCA see ad pg 117

MATT CABOT & ASSOC

PO Box 3780
1210 Auahi St #120
Honolulu 96814
808 533-1867
Line: video & lighting equip

ELECTRONIC SYSTEMS INC

875 Waimana St Suite 500
Honolulu 96813
808 533-3848
Line: full line of audio/video equip
Microtime see ad pg 33

EMC CORP

Dave Caldwell
2979 Ualena St
Honolulu 96819
808 847-1138
Line: video & test equip
Fluke see ad pg 159
Knox see ad pg 183

LEE GABER CO

PO Box 8237
Honolulu 96815
808 839-9059
Line: full line audio equip
Shure see ad pg 141

HAWAII BROADCAST ASSOC

PO Box 1344
Honolulu 96806

808 537-3991

Line: broadcast equip
Microwave Assoc see ad pg 81

JC ELECTRONICS

190 S King St
Suite 976
Honolulu 96813
808 537-6787
Line: audio equip
UREI see ad pg 145

PACIFIC MEDIA CONSULTANTS

1001 Dillingham Blvd Suite 207A
Honolulu 96817
808 841-4021
Line: audio & video equip

IDAHO

HOWE INC

PO Box 804
651 Main St
Rexburg 83440
208 356-5200
Line: full line audio equip
Aristocart see ad pg 42

ILLINOIS

ALL MEDIA SALES CO

6-S-130 Park Meadow Dr
Naperville 60540
312 420-0429
Line: video equip
Knox Ltd see ad pg 183
Video Aids see ad pg 166
Videotek see ad pg 196

ANCHA ELECTRONICS

189 Gordin Street
Elk Grove Village 60007
312 437-7712
Line: audio/video equip
Dynamics see ad pg 45

BELL & HOWELL

2411 Howard St
Evanston 60645
312 869-9393
Line: full line film & video equip

LARRY BROWN

303 Greenfield
Lombard 60148
312 609-1664
Line: full line video equip, lighting
Strand Century see ad pg 88

BSC INC

2932 River Rd
River Grove 60171
312 452-5551
Line: audio equip

COZZENS & CUDAHY SALES GROUP

1400 Hicks Rd
Rolling Meadows 60003
312 398-0850
Line: test & monitoring instruments
Fluke see ad pg 159

CRIMSON ENGINEERING CO

PO Box 286
Glenview 60025
312 724-1780
Line: audio equip
Tech Labs see ad pg 182

VICTOR DUNCAN INC

676 St Clair St
Chicago 60611
312 321-9406
Line: full line video, film, lighting equip
Strand Century see ad pg 88

continued on page 158



WHEN IT'S TIME TO SWITCH...

Then switch to the Video Controller

When Broadcast quality is required and cost versus performance is a must... take the time to evaluate the computer Image Video Controller... a product of Dytek Industries Inc. Models available starting as low as \$14,000 and up to \$80,000 depending on your individual needs.

QUALITY PRODUCTS ARE AVAILABLE FOR:

- Production
- Master Control
- Routing
- Computer Editing
- Automation
- Mobile Van Operations

STATE-OF-THE-ART FEATURES:

(Available On Most Models)

- Multiple Level Keying Per M/E
- Over 100 Wipe Effects
- Rotary Wipes
- Computer Interface
- Image Compression
- Status Mode Readouts
- Automated Transition Control
- ... And Many More

**TOMORROW'S
INNOVATIONS ... TODAY**



**COMPUTER IMAGE
VIDEO CONTROLLER**

A PRODUCT OF **DIYTEK**

INDUSTRIES INC.

2402 West Second Ave.
Denver, Colorado 80223
(303) 935-3514

Reps/Dists

RODGER EKENBERG

1010 S Edgewood
Lombard 60148
312 495-1948
Line: full line audio & video equip
Telemet see ad pg 143

BARNEY GEOLAT

6400 W Main
Belleville 62223
618 397-9251
Line: full line audio & video equip
Scientific-Atlanta see ad pg 129

GRAND STAGE LIGHTING

630 W Lake St
Chicago 60606
312 332-5611
Line: lighting equip
Grt American Mkt see ad pg 20

HELIX LTD

679 N Orleans
Chicago 60610
312 944-4400
Line: video & lighting equip
Strand Century see ad pg 88

RAY R HUTMACHER ASSOC INC

7205 W Pratt Ave
Chicago 60631
312 631-3248
Line: audio components,
communications equip, tape recorders
Shure see ad pg 141

WILLIAM M LINZ ASSOC

821 Skokie Blvd
Northbrook 60062
312 498-9600
Line: audio equip; components
Telex see ad pg 44, 92

MCCURDY RADIO IND INC

1711 Carment Dr
Elk Grove Village 60007
312 640-7077
Line: audio tape & accessories
Stanton see ad pg 100

MEADE ELECTRONICS CO INC

3100 S 25 St
Broadview 60153
312 378-2800
Line: audio components
Dynasciences see ad pg 45

MILAM AUDIO CORP

1504 N 8 St
Pekin 61554
309 346-3161
Line: audio components, equip,
recorders
Audio & Designs see ad pg 202

KENNETH MEYERS

7442 N Harlew
Chicago 60648
312 882-4808
1242 Remington Rd
Schaumburg 60195
312 882-4808
Line: full line audio & video equip
Boonton Electronics see ad pg 51
Marconi see ad pg 161

OTTAWA EQUIP

6838 N Ottawa
Chicago 60631
312 774-5115
Line: audio & video equip
Stanton see ad pg 100

THEODORE PAPPAS ASSOC

5218 W Diversey Ave
Chicago 60639
312 635-2338
Line: audio equip
AKG Acoustics see ad pg 134
Otari see ad pg 173
UREI see ad pg 145

GEORGE PETITT CO INC

50300 A McDermot Dr
Berkeley 60163
312 261-0342
505 Avondale Dr
E Peoria 61611
309 699-3301
Line: audio equip
HM Electronics see ad pg 202

RICH INC

3531-35 N Martens St
Franklin Park 60131
312 678-3100
Line: audio & video equip
Conrac see ad pg 115

IRVING ROSE ASSOCS

8137 Ridgeway Ave
Skokie 60076
312 674-6790
Line: audio and video equip
Sound Technology see ad pg 79

ROSCOR CORP

6160 W Oakton St
Morton Grove 60053
312 539-7700
Line: full line video equip
Amtron see ad pg 87
CEI see ad pg 195
3M Mincom see ad pg 52, 168, 170
Rohde & Schwarz see ad pg 121

HOWARD SPRACKLEN

905 S Neil St
Champaign 61820
Line: video equip

STUDIO ELECTRONICS

3252 W Foster
Chicago 60625
312 478-2050
Line: full line of audio & lighting equip
Strand Century see ad pg 88

SWIDERSKI ELECTRONICS

5456 N Milwaukee Ave
Chicago 60630
312 775-0777
Line: audio & video equip, lighting
equip
Amtron see ad pg 87
Clear-Com see ad pg 164
Conrac see ad pg 115
3M Mincom see ad pg 52, 168, 170
Strand Century see ad pg 88

INDIANA

ALLIED BROADCAST EQUIP

635 S 6 St
Richmond 47374
317 962-8596
Line: audio equip for radio
ESE see ad pg 180
Stanton see ad pg 100

AUDIO VISUAL SPECIALIST

3753 Northop St
Fort Wayne 46805
219 483-0528
Line: full line audio & visual equip
Strand Century see ad pg 88

B&A ELECTRONICS

Terre Haute
812 232-1061
Line: audio & video equip
3M Mincom see ad pg 52, 168, 170

COMMUNICATIONS SYSTEMS

1338 Mishawaka Ave
South Bend 46615
219 289-6709
Line: video equip

COZZENS & CUDAHY SALES GROUP

5610 Crawfordsville Rd Ste 803
Indianapolis 46224
317 244-2456
Line: full line audio & video equip
Fluke see ad pg 159

ELECTRONIC SYNERGY INC

4858 N 13 St
Terre Haute 47805
812 466-1221
5335 N Tacoma Ste 20
Indianapolis 46220
317 251-0800
Line: full line of video equip
Strand Century see ad pg 88

GRAHAM ELECTRONICS

133 South Penn St
Indianapolis 46204
317 634-8202
Line: audio components
Amtron see ad pg 87

INDIANAPOLIS VIDEO

6226 LaPas Trail
Indianapolis 46268
317 293-3313
Line: video equip, lighting equip
Strand Century see ad pg 88

INDY LIGHTING

8002 Castleway Ct
Indianapolis 46250
317 849-1233
Line: full line lighting equip
Strand Century see ad pg 88

JACKSON KEITH AND ASSOCIATES, INC

PO Box 65
365 Walnut
Zionsville 46077
318 873-4079
Line: audio and test equip
Sound Technology see ad pg 79

KLOPF AUDIO/VIDEO CO

3901 N Meridian St Suite 235
Indianapolis 46208
317 926-3919
Line: audio/video & lighting equip
Amtron see ad pg 87

MAISH SALES

PO Box 186
500 Madison Street
Mulberry 46058
217 296-2322
Line: audio & test equip
Sound Technology see ad pg 79

MEADE ELECTRONIC CO

1825 Summer St
Hammond 46320
219 932-2100
Line: audio & video products
Amtron see ad pg 87
Conrac see ad pg 115

KENNETH MEYERS CO

3512 Rockville Rd
Indianapolis 46222
317 243-6681
Line: test equip; TV & radio equip
Boonton Electronics see ad pg 51
Marconi see ad pg 69

NEW ERA SALES INC

316 S Range Line Rd Ste C
Carmel 46032
317 844-4530
Line: audio equip
HM Electronics see ad pg 202

SUKUP & COX INC

2070 E 54th St
Indianapolis 46220
317 253-5501
Line: audio components & equip
Telex see ad pg 44, 92

S WADE & CO

7030 E 116 St
Noblesville 46060
Line: full line audio equip
Aristocart see ad pg 42

IOWA

BEAMS INC

2318 (14B) Harding Rd
Des Moines 50314

515 255-1148
Line: audio equip

CELESTIAL POWER & LIGHT

1424 Scott Ave
Des Moines 50317
515 243-0818
Line: audio & video equip
Audio & Designs see ad pg 202

IOWA AUDIO VISUAL

2740 30th St
Des Moines 50310
515 279-3672
Line: video & lighting equip
Strand Century see ad pg 88

KIMIAN SALES CO

1804 Sycamore St
Atlantic 50022
712 243-1626
Line: audio components; equip
Telex see ad pg 44, 92

MASTERTONE CO

1st National Bank Bldg Ste 22
W Des Moines 50265
515 225-6122
Line: full line audio equip; transmitters,
monitors
Sintronic see ad pg 174

MIDWEST VISUAL EDUCATION

2709 Ingersoll Ave
Des Moines 50312
Line: full line lighting equip
Strand Century see ad pg 88

ROBERT H MILLER

9312 Ridgemont Dr
Des Moines 50322
515 276-2115
Line: power supplies
Yardney see ad pg 183

PACER CORP

1714 Beaver Ave
Des Moines 50310
515 274-3224
Line: video equip

VIDEO MIDWEST

3814½ Douglas Ave
Des Moines 50310
515 244-1447
Line: video & lighting equip
3 M Mincom see ad pg 52, 168, 170
Rohde & Schwarz see ad pg 121
Strand Century see ad pg 88

KANSAS

BEAMS INC

11593 W 75 St
Shawnee Mission 66214
913 631-0301
Line: audio equip

CENTREX AUDIO VISUAL

1234 Lane
Topeka 66604
913 234-4117
Line: audio & video equip
Strand Century see ad pg 88

DYTEC/SOUTH INC

8245 Nieman Rd
Lenexa 66214
913 888-0212
Line: audio & video equip
Boonton Electronics see ad pg 51

JIM GRUNDER

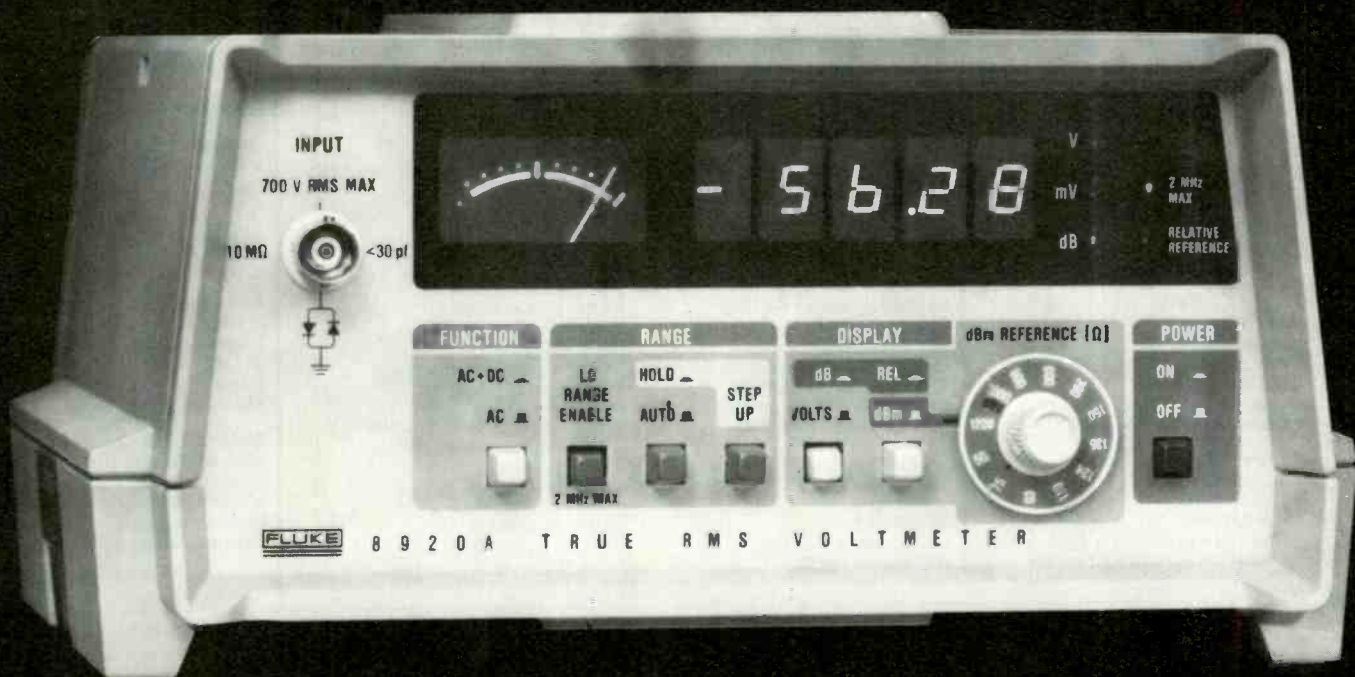
8812 Santa Fe Ln
Overland Park 66212
913 642-2993
Line: video equip
Knox Ltd see ad pg 183

HOOVER BROS INC

1511 Baltimore
Kansas City 64108
816 221-7663
Line: full line visual lighting equip
Strand Century see ad pg 88

continued on page 160

THE WIDEBAND RMS VOLTMETER ONLY FLUKE COULD CREATE.



You're probably accustomed to using analog meters for audio-to-rf measurements. Maybe you've given up hope of going digital at a reasonable price.

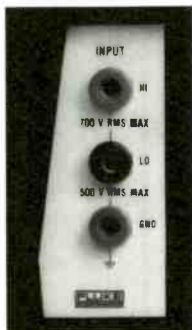
Good news!

Fluke's new 8920A wideband true rms DMM is loaded with features—some you can't buy anywhere at any price, and it sells at an analog price: \$995!

For starters, 8920A bandwidth is 10 Hz to 20 MHz for sub-audio to video AC measurements. Mid-band accuracy is 0.5%, compliments of an exclusive Fluke designed (and built) micro-electronic rms chip. Accurately measuring noise and non-sinusoidal waveforms is easy since the chip responds only to the heating effect of the waveform. You can select the AC + DC function for non-symmetrical waveforms like pulses that have a DC component.

We gave the 8920A dynamic range from 180 μ V to 700 volts, to measure from low noise levels to the output of powerful amplifiers. And, fast auto-ranging relieves you of the knob twisting chores!

Put the 8920A into dBV mode and measure from -75db to +57db (132db range), with 0.01db resolution. If you want your dbV reference somewhere else beside 1V, Fluke's



8921A's Isolated Banana Jack Input.



"Dial-An-Ohm"

exclusive *relative reference* lets you store any voltage as the 0-db point. Imagine how simple your gain measurements can be!

To make the 8920A all things to all people, we've included a "dial-an-ohm" feature for dbm measurements. Instead of laboriously correcting each of your readings from a 600 ohm reference, simply dial 50, 75, 300, or one of nine *other* impedances up to 1200 ohms, and be right on every reading. There are several selections for broadcast, telephone, TV and RF applications.

An analog meter is standard, for convenient peaking/dipping/nulling, as is a linear analog output for continuous recording. Optional are logarithmic analog output and an isolated output to drive a counter. Soon, IEEE 488 interface will be available for systems use.

If you prefer an isolated banana jack input with full floating capability, specify the 8921A (also only \$995).

*U.S. Price

For more information, contact one of the more than 100 Fluke offices or representatives, worldwide. In the U.S., CALL (800) 426-0361*, TOLL FREE. Residents of the U.S. and all countries outside of Europe, contact: John Fluke Mfg. Co., Inc., P.O. Box 43210, Mountlake Terrace, WA 98043, U.S.A. Telex: 32-0013.

In Europe, contact: Fluke (Nederland) B.V., P.O. Box 5053, Tilburg, The Netherlands. Telephone (013) 673973. Telex: 52237.

Price U.S. only.

*Alaska, Hawaii, Washington residents — please call (206) 774-2481.



2504-8118

Circle 200 on Reader Service Card For Literature

Circle 201 on Reader Service Card For Demonstration

Reps/Dists

MERTON KNOLD

PO Box 301
Atchison 66002
913 367-1146
Line: audio & video equip
Lenco Inc see ad pg 105

WILLIAM MENEZES & ASSOCS

9604 Nall St
PO Box 7070
Overland Park 66207
913 649-2680
Line: audio and video equip
Sound Technology see ad pg 79

MIDTEC ASSOC

6912 Marion
Shawnee Mission 66218
913 441-6565
Line: audio & video equip
Tech Labs see ad pg 122

PACER CORP

8511 W 69 St
Shawnee Mission 66204
816 358-6638
Line: video equip
Video Aids see ad pg 166

RADIO SUPPLY CO

131 S Laura
PO Box 1220
Wichita 67211
316 267-5213
Line: audio equip
Stanton see ad pg 100

STEVE SMITH CAMERAS

623 Kansas Ave
Topeka 66603
913 235-3481
Line: full line camera & lighting equip
Strand Century see ad pg 88

THEATRICAL SERVICES INC

123 E Douglas Ave
Wichita 67202
316 263-4415
Line: full line lighting equip
Strand Century see ad pg 88

VIDEO MASTERS INC

1820 Wyandotte
Kansas City 64108
816 474-8530
Line: full line video lighting equip
Strand Century see ad pg 88

KENTUCKY

AMERICAN SOUND & ELECTRONICS

675 W Third St
Covington 41011
606 261-9024
Line: video and audio equip

CENTURY SOUND & RECORDING

3029 Oregon St
Paducah 42001
502 554-2722
Line: audio equip

BRUCK L DAWSON

84 Belknap Beach Rd
Prospect 40059
502 228-4898
Line: video equip, cameras, lenses
Knox see ad pg 183
Video Aids see ad pg 166
Videotek see ad pg 196

ELECTRONIC LABS INC

800 S 4 St Ste 2002
Louisville 40203
502 583-2312
Line: audio & video equip
QEI see ad pg 187

ELECTRONIC SYNERGY INC

5800 Fern Valley Rd Ste 7
Louisville
502 966-4211
655 Maxwellton Ct
Lexington 40508
606 254-4887
Line: full line audio & video, lighting equip
Strand Century see ad pg 88

MIDWEST TELECOMMUNICATIONS

Louisville
502 491-2888
Line: video equip
3M Mincom see ad pg 52, 168, 170

LOUISIANA

AUDIOMEDIA ASSOCS

PO Box 29264
New Orleans 70189
504 586-0140
Line: audio components, radio transmitters
Ampro see ad pg 10
QEI see ad pg 187
Stanton see ad pg 100

BASS ELECTRONICS

1591 S Elaine Dr
Baton Rouge 70815
504 927-0282
Line: audio & video equip
Amtron see ad pg 87

INTERSTATE SCHOOL SUPPLY

2918 Neal Dr
Pineville 71360
2901 Earhart Ave
New Orleans 70131
1835 River Rd N
Baton Rouge 70821
504 387-5131

Line: audio & video equip
3M Mincom see ad pg 52, 168, 170
Strand Century see ad pg 88

LYKÉS ELECTRONICS

5745 Jefferson Hwy
New Orleans 70123
504 733-3400
Line: audio & video equip
3M Mincom see ad pg 52, 168, 170
Strand Century see ad pg 88

MAINE

MAINE VIDEO

713 Congress St
Portland 04102
207 773-2355
Line: video equip

MG ASSOC

Box 4245 Station A
Portland 04101
Line: video equip

MARYLAND

AB&T SALES CORP

PO Box 111
Grasonville 21638
301 827-8046
Line: audio equip
HM Electronics see ad pg 202

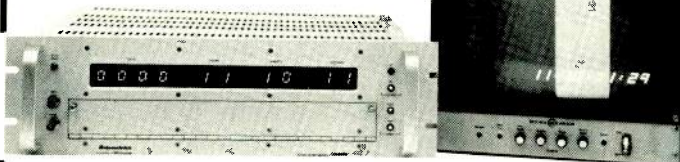
ASSOCIATED SALES REPS

8706 Wilson Ave
Baltimore 21234
301 661-2888
Line: audio equip
Otar see ad pg 173

continued on page 162

Generator - Reader - Video Generator

Datametrics Model SP-722 Generates / Translates SMPTE Code and Displays Time on Video Monitor along with Subject Matter.



Generate

- Time Code/User Bits
- Video Synchronization
- Jam Synchronization

Translate

- 0.25 to 10 Volt Sensitivity
- 1/4 to 40 Times Speed
- BCD Outputs

Time Display

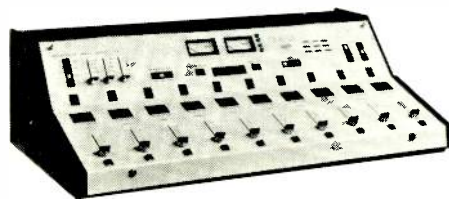
- Infinitely Positionable
- Size and Style Selectable
- Intensity Variable

D **datametrics**

Datametrics Inc.
340 Fordham Road, Wilmington, Mass. 01887
Tel (617) 658-5410 TWX 710-347-7672

Circle 202 on Reader Service Card

New OMEGA Audio Console



- Alpha Numeric Readout on Master Bus
- Programable Muting
- Plug-In Amplifiers
- Dual Cue-On Bottom of Mixer and on Channel Mixer Switch
- Program Master Control in Cabinet
- Production Timer 24 Hour and Digital Clock
- Programable Muting Select
- 42 Inputs, 34 Inputs or 26 Inputs
- Programable Gain Select on All Inputs Allowing Mixing of High and Low Level Inputs on Same Channel
- Electronic Line Protection for RF!
- Full Time Solid State Attenuators, Assure Zero Tracking Error on Stereo
- Digital Switching, No Audio on Front Panel



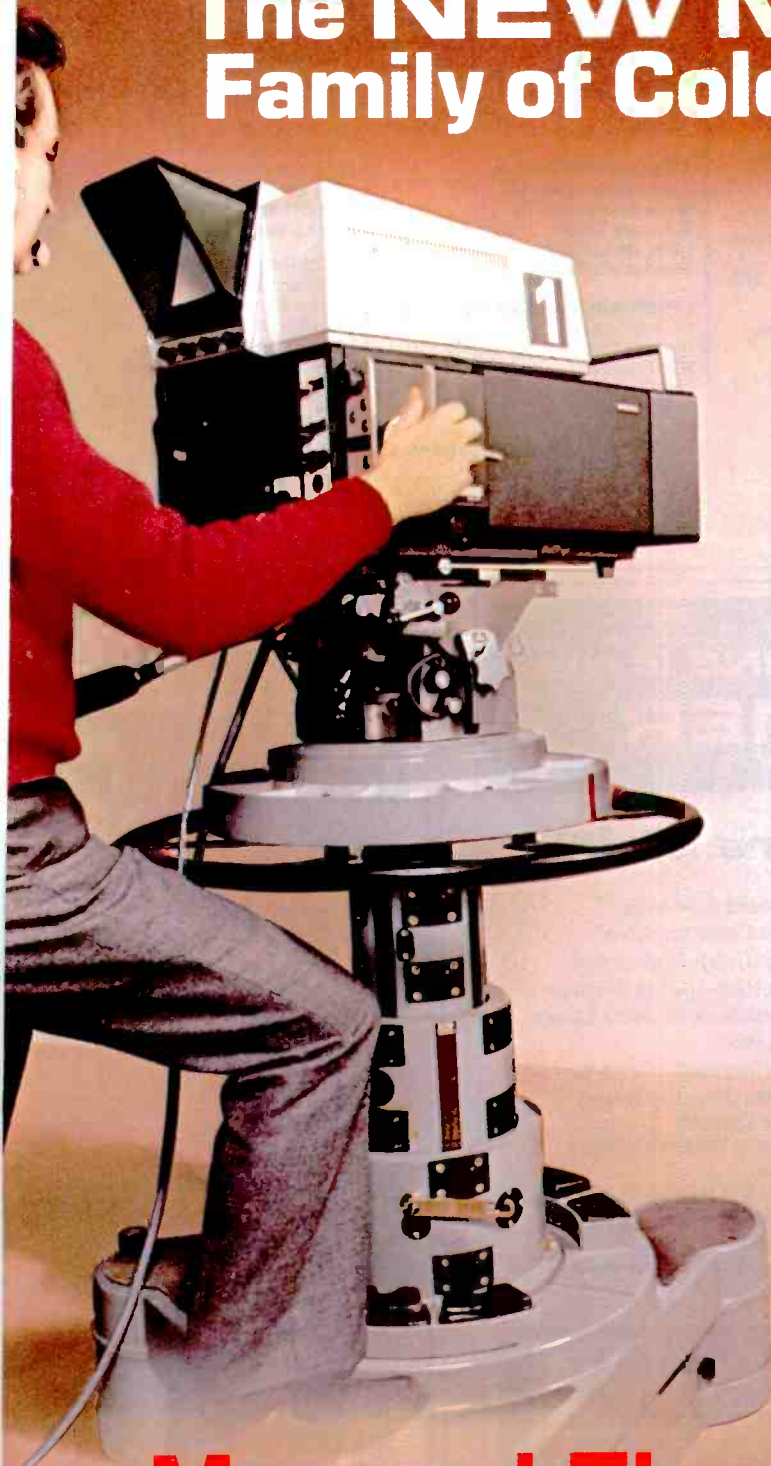
© QRK Electronic Products, Inc.

CALL TOLL FREE (800) 344-2181
Californians call collect (209) 251-4213
1568 North Sierra Vista
Fresno, California 93703

Circle 203 on Reader Service Card

IT'S GOING TO SPOIL YOU!

The **NEW MARK IX** Family of Color Cameras



- Studio/Remote/Portable
- Multiple Configurations
- Standard or Triax Cable
- Low Power Consumption (400 Watts)
- 110/220 VAC or 24 VDC
- Manual or Automatic Registration/Operation
- Over 1/2 mile with Standard Cable, up to 1 mile with Triax
- Compact, Lightweight CCU
- Select from choice of view finders 1", 3" or 7"
- Selection of pick-up tubes includes Bias Light and HOP
- Remote Control Operation up to 500 ft. . . . and much more!

Marconi Electronics, Inc.

100 Stonehurst Court Northvale, New Jersey 07647 (201) 767-7250

Circle 204 on Reader Service Card

Reps/Dists

BARTLETT ASSOCIATES INC

4405 East West Highway
Bethesda 20014
301 656-3051
Line: video equip, switchers
Cohu see ad pg 162

DAVID H BROTHERS CO

6302 Lincoln Ave
Baltimore 21209
301 764-7189
Line: audio equip; components
Telex see ad pg 44, 92

HABCO ELECT

603 Allegheny Ave
Townson 21204
301 825-9637
Line: audio, video components
Tech Labs see ad pg 182

INTERNATIONAL SOUND CORP

7102 Milford Industrial Rd
Pikesville 21208
301 484-2244
Line: video equip
Dynasciences see ad pg 45

LRS DISTR CO

29 Stonehenge Circle
Baltimore 21208
301 484-7750
Line: broadcast equip

LUMAR ASSOC

5801 Annapolis Rd Ste 306
Bladensburg 20710
301 864-0997
Line: video equip
Ramko see ad pg 118-119

MID-ATLANTIC SALES GROUP

11501 Huff Ct
Kensington 20795

301 881-3370
Line: audio & video instruments
Fluke see ad pg 159

MIDWEST TELECOMMUNICATIONS

7851 Air Park Dr Unit 210
Gaithersburg 20760
301 840-0050
Line: video & lighting equip
Conrac see ad pg 115
Strand Century see ad pg 88

PIERCE PHELPS INC

10215 Fernwood
Bethesda 20034
301 530-9580
Line: full line video equip, lighting equip
CEI see ad pg 195
Conrac see ad pg 115
3M Mincom see ad pg 52, 168, 170
Strand Century see ad pg 88

ED PIETRAS

2121 Baldwin Ave Ste 25A
Crofton 21114
301 261-3233
Line: full line audio & video equip
Scientific-Atlanta see ad pg 129

PROFESSIONAL PRODUCTS INC

4965 Fairmont Ave
Bethesda 20014
301 657-2141
Line: full line video products, lighting equip
3M Mincom see ad pg 52, 168, 170
Strand Century see ad pg 88

RECORDING CONSULTANTS INC

7912 Georgia Ave
Silver Springs 20910
301 565-2270
Line: full line of audio equip
Clear-Com see ad pg 164
Stanton see ad pg 100

R&R LIGHTING

622 Mississippi Ave
Silver Springs 20910

301 589-9025
Line: lighting equip
Strand Century see ad pg 88

SELINGER & ASSOC

5415 Butler Rd
Bethesda 20016
Line: audio & video equip

SEL-TRONICS INC

721 Ellsworth Dr
Silver Springs 20910
301 589-3391
Line: full line audio & video equip
Boonton Electronics see ad pg 51

S&S ASSOCS

4924 Hampden Lane
Bethesda 20014
301 654-1434
Line: test instruments
Marconi see ad pg 69

TAUB SALES INC

12244 Viers Mill Rd
Wheaton 20906
Line: video & audio equip
AKG Acoustics see ad pg 134

VIDEO SHOWCASE INC

7148 Ambassador Rd
Security Industrial Pk
Baltimore 21207
Line: video equip
Dynasciences see ad pg 45

VIRGINIA-MARYLAND ASSOC INC

3414 First Ave
Olney 20832
301 774-3388
Line: power supplies
Yardney see ad pg 183

VISUAL INFORMATION SYSTEMS

Owing Mills
301 363-6390
Line: video equip
3M Mincom see ad pg 52, 168, 170

WILTRONIX INC

5504 Waterway
Rockville 20853
301 460-1454
Line: broadcast equip & access
ADD see ad pg 97, 165
Leitch Video see ad pg 131
ROH see ad pg 134

MASSACHUSETTS

CRAMER VIDEO

120 Hampton Ave
Needham 02194
617 449-2100
Line: video equip

CRIMSON CAMERA

60 Landsdown St
Cambridge 02139
603 434-0731
Line: video lighting equip
Strand Century see ad pg 88

EASTERN BROADCAST SUPPLY

42 Main St
Leominster 01453
617 537-4706
Line: broadcast equip
CCA see ad pg 117
IGM/NTI see ad pg 18
Ramko see ad pg 118-119

FELDMAN AUDIO

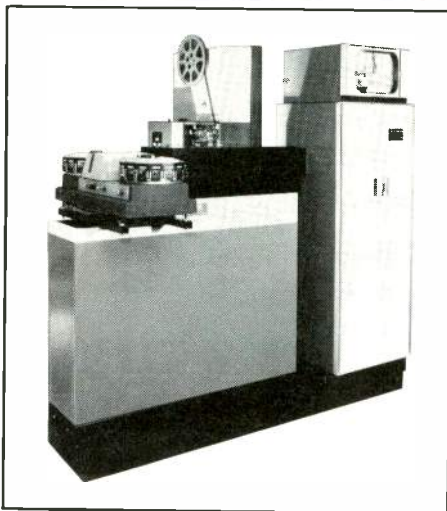
53 Southgate Park
Newton 02165
617 965-3116
Line: full line audio equip
Stanton see ad pg 100

INDUSTRIAL COMPONENTS CORP

2551 Boston Rd
N Wilbraham 01067
413 596-3854
Line: audio components
Stanton see ad pg 100

continued on page 164

COHU'S 1550 TELECINE is the PERFORMER



Here is why:

- Outstanding Colorimetry
- 700-Line Center Resolution
- Two-Level Image Enhancement
- Bias Lighting—Low Lag Operation
- Automatic Black and White Balance
- Instant Paint
- Remote Operation
- Automatic Differential Gamma Balance (Optional)
- Color Comp Variable Masking (Optional)
- COHU M-3 Multiplexer—3-Input with Mirror Positioning in Less than 50 Milliseconds
- Film and Slide Projectors Available

You expect more from Cohu
...and you get it.



Post Office Box 623
San Diego, CA 92112
Phone: (714) 277-6700

Circle 205 on Reader Service Card

NICKEL CADMIUM ENG. BATTERIES AND ONE HOUR AUTOMATIC CHARGERS



For ALEXANDER Nickel-Cadmium REPLACEMENT BATTERIES For... SONY (BP20) — JVC (PBP-1) AKAI (PACK) — etc.

CHARGERS WILL AUTOMATICALLY CHARGE IN 1 TO 4 HRS. DEPENDING ON CAPACITY... (SWITCHES TO TRICKLE)

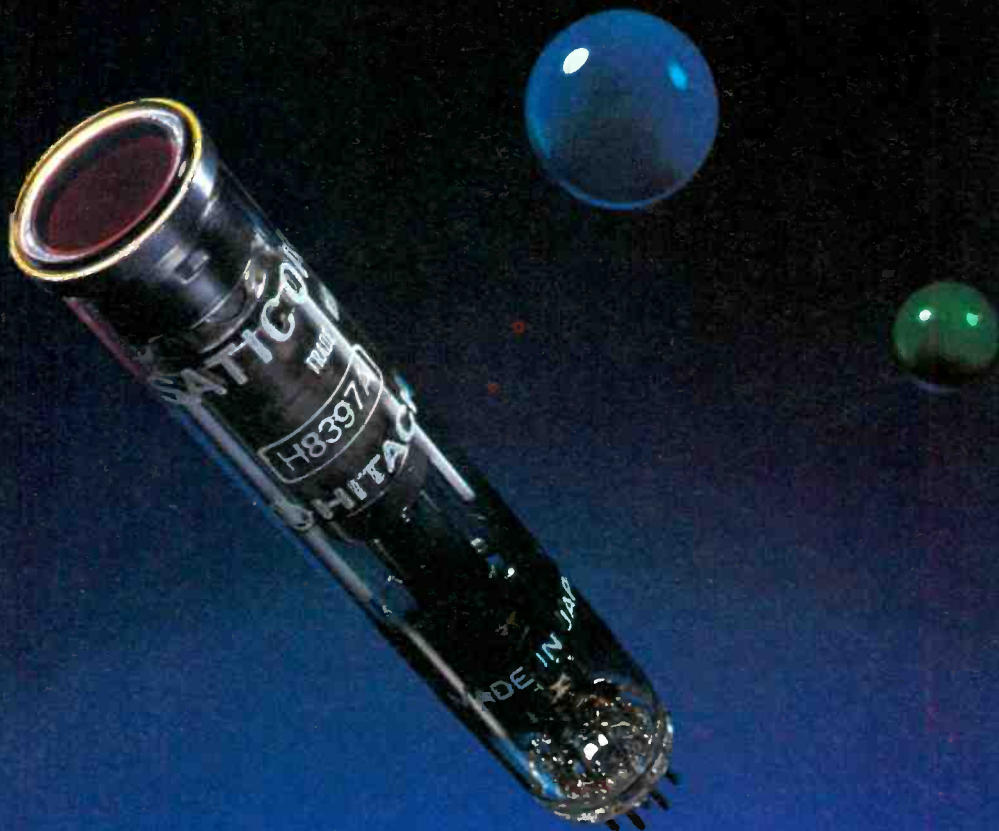
Write Wire or Phone

ALEXANDER manufacturing co.

Box 1645 Mason City, Iowa 50401
Phone (515) 423-8955

Circle 206 on Reader Service Card

HITACHI SATICON[®]



® U.S. Registration No. 1047050

The Tube for Beyond-ENG

The Hitachi SATICON H8397A is a small 2/3-inch tube that aims at Beyond-ENG, namely small live cameras with the following high performance features:

- High resolution — amplitude response of nominal 55% at 400TV lines in high voltage mode.
- Negligible flare — low reflection coefficient of photoconductor throughout the entire visible range.
- Well-balanced, highly sensitive spectral response — no R.G.B. tube selection required.
- Low lag — almost zero with bias light.
- Long shelf life — The SATICON can be replaced any time from storage without conditioning.



Hitachi, Ltd. Electronics Devices Group
6-2, Otemachi 2-chome, Chiyoda-ku, Tokyo 100
Telephone: Tokyo (270) 2111
Cable Address: "HITACHY" TOKYO
Telex: J22395, 22432, 24491, 26375

For information, write to: Hitachi America, Ltd.
Electronics Devices Sales & Service Div.
2700 River Road, Des Plaines, Illinois 60018
Telephone: (312) 298-0840 Telex: 72-6353

Reps/Dists

IRI SALES GROUP

244 Second Ave
Waltham 02154
617 890-1600

Line: test & monitoring instruments
Fluke see ad pg 159

KEN CORP

38 Montvale Ave
Stoneham 02180
617 438-5464

Line: test instruments
Marconi see ad pg 69

LAKE SYSTEMS CORP

55 Chapel St
Newton 02160
617 244-6881

Line: full line audio & video equip,
lighting equip

Amtron see ad pg 87

CEI see ad pg 195

3M Mincom see ad pg 52, 168, 170

Strand Century see ad pg 88

LEBOW LABS

424 Cambridge St
Allston 02134
617 782-0600

Line: full line audio & video equip
Stanton see ad pg 100

MALCO ELECTRONICS

5 Wolcott Ave
Lawrence 01843
617 685-4383

Line: video equip

FRANK McCABE

7 Cobb Terrace
Walpole 02081
617 668-6736

Line: audio components, test equip
Sound Technology see ad pg 79

W McFADDEN

755 Washington St
Annisquam
617 283-7507

Line: radio equip, audio
Ward-Beck see ad pg cov 4

MICRO-TRAK CORP

620 Race St
Holyoke 01040
413 536-3551

Line: full line audio equip
Stanton see ad pg 100

MULLIN TECHNICAL SALES CO INC

945 Great Plain Ave
Needham 02192
617 444-4780

Line: audio equip
Shure see ad pg 141

NBE INC

Box 188/1 Cottage St
E Hampton 01027
413 527-4430

Line: full line transmitting equip
Gorman-Redlich see ad pg 178
ROH see ad pg 134

JAMES PIPER & ASSOC

33 Marsh St
Needham 02192
617 449-1144

Line: audio & video

PVS INC

879 Beacon St
Boston 02115
617 536-7730

Line: video, transmitting & measuring
equip
Rohde & Schwarz see ad pg 121

QSI SYSTEMS INC

993 Watertown St
W Newton 02165
617 969-7118

Line: audio & video equip
Conrac see ad pg 115

MICHAEL SCOTT CO

20 Walnut St
Wellesley Hills 02181
617 235-0102

Line: audio components; equip
Telex see ad pg 44,92

RJ SICKLES ASSOC

12 Cambridge St
Burlington 01803
617 272-7285

Line: audio & video equip
Boonton Electronics see ad pg 51

F M VALENTI

16 Saddle Club Rd
Lexington 02173
617 861-0089

Line: audio equip, video equip, camera
lenses
Video Aids see ad pg 166

V F SALES, INC

181 Worcester Rd
Route #9
Natick 01760

617 237-6544

Line: audio & video products
AKG Acoustics see ad pg 134
HM Electronics see ad pg 202
Otari see ad pg 173
UREI see ad pg 145

WAHLBERG ASSOC

79 Mystic St
Arlington 02174
617 646-5394

Line: video equip
Videotek see ad pg 196
Knox see ad pg 183

MICHIGAN

R A ALBRECHT & COMPANY

PO Box 470
4379 Orion Rd

Rochester 48063
313 652-2520

Line: audio components, test equip
Scund Technology see ad pg 79

AUDIO DISTRIBUTORS

2342 Division Ave S
Grand Rapids 49507
616 452-1596

Line: full line of radio equip

CHAMPAGNE SALES CO

3645 Crooks Rd
Troy 48064
313 649-4428

Line: audio equip
Ramko see ad pg 118-119

CRUSE COMMUNICATIONS CO

4903 Dawn Ave
E Lansing 48823
517 332-3579

Line: video & lighting equip
Amtron see ad pg 87

3M Mincom see ad pg 52, 168, 170

VICTOR DUNCAN INC

11043 Gratiot Ave.
Detroit 48213
313 371-4920

Line: photo supplies & equip, lighting
equip

Strand Century see ad pg 88

H M DYER ELECTRONICS

31185 Ten Mile Rd
Farmington Hills 48024
313 478-2157

Line: full line broadcast equip

ADDA see ad pg 97, 165

Ampro see ad pg 10

Electro & Optical Systems see ad pg
148

Knox Ltd see ad pg 183

ROH see ad pg 134

Sintronic see ad pg 174

TEA see ad pg 104

TFT see ad pg 65

continued on page 166

THE STATE OF OUR ART

- New "series II" improved headsets
- 50 station capability with up to 8 channels using SB8 switchboard monitor
- External program feed with volume control
- Wide frequency response (200Hz to 12kHz) for exceptional intelligibility
- Designed for high noise environments
- Visual signalling uses bright amber lights
- Adjustable sidetone reduces feedback and background noise

- Mic on-off feature standard with headset and remote stations
- Single and two channel systems virtually immune to RF and SCR dimmer noise
- Remote stations available in portable, wall mount and rack mount versions including speakers for paging and monitoring
- Catalogue with complete specifications available upon request



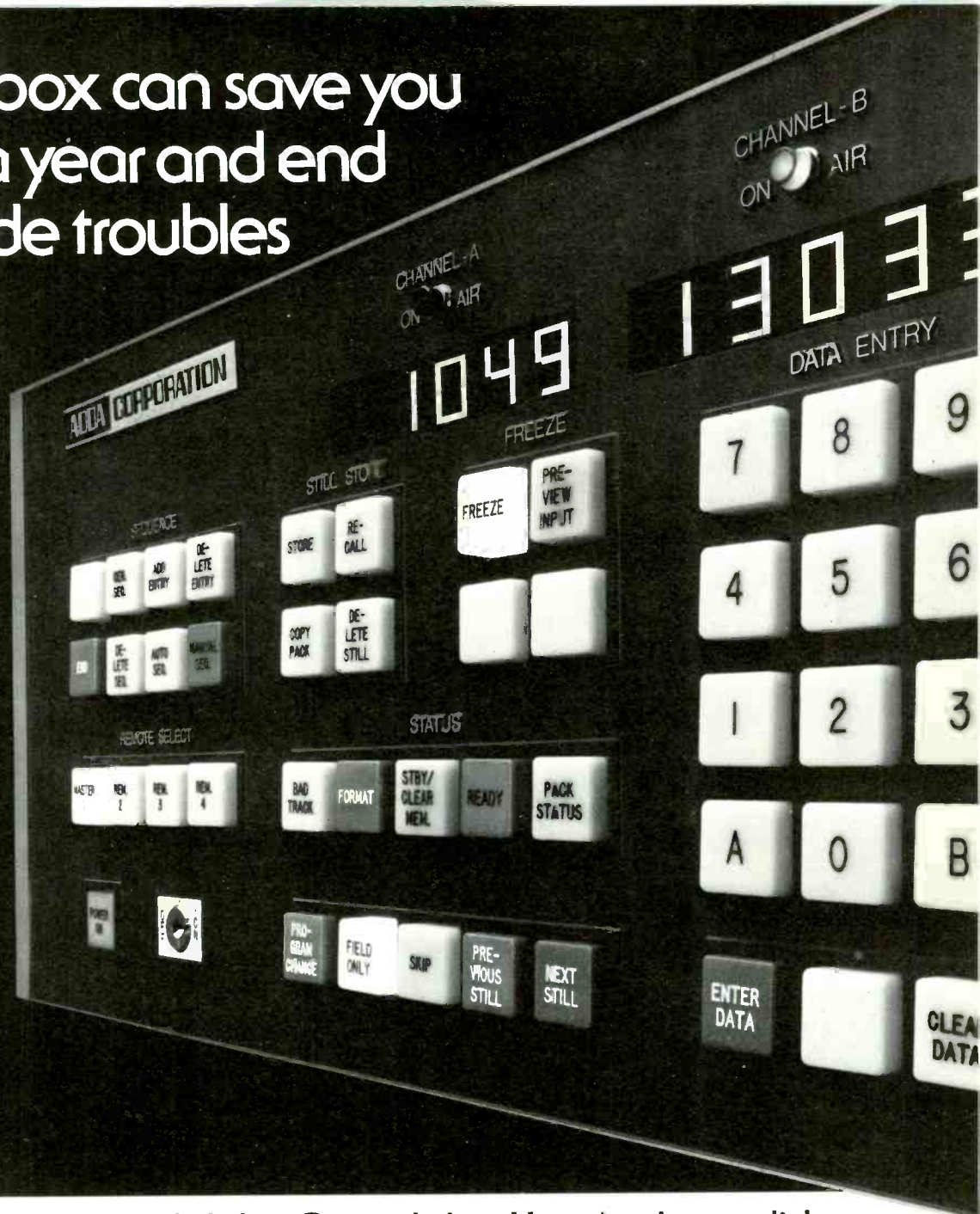
Clear-Com
intercom systems

759 Harrison Street
San Francisco, CA 94107
(415) 989-1130



Circle 208 on Reader Service Card
Dealer Inquiries Invited

This little box can save you \$12,000 a year and end station slide troubles forever.



Lost slides. Jammed slides. Dirty slides. Upside down slides. Out of sequence. Too slow. Too expensive.

You don't need trouble like this. Not when you can create, store, and retrieve up to 3,000 stills instantly with the ADDA Electronic Still Processor.

Create stills instantly from videotape, character generator film, slides, network feeds, and live camera. Store up to 3,000 images, electronically, on the ESP disk drives. Pre-program up to 800 stills for automatic advance at the touch of a button.

You can punch up any still within half-a-second. Freeze frames from any video source. Zoom or simulate animation. Create "stills" that look like they are moving. Fade, dissolve, and super two separate outputs through the program switcher. Full sequence editing capability lets you preview, add, delete, and skip.



Do it all while cutting slide handling and labor cost by 80%. Still handling and camera support time can be reduced to less than three hours a day. If you produce 80 new slides a week, you can save film and processing cost of \$12,000 a year.

Use the ADDA Electronic Still Processor with your existing computer, or as a stand-alone system. Either way, you'll improve still picture quality, make life easier, and save money.

Take a look for yourself. Call, write, or check our reader service number for more information and a demonstration.

1671 Dell Avenue/Campbell, California 95008/
(408) 379-1500

ADDA CORPORATION



\$1895

**one good sync gen
leads to another...**



\$750

When it comes to good performance, people identify with VAC's model 5000 sync generator... operating in Alaska in its rough climate synchronizing cameras to monitor ecology around the pipeline; or genlocking to a computer; or in a studio genlocking to a helical color VTR in still-frame.

But let's face it, a lot of people like you don't need all that power. That's why we developed a new ENG/EFP color sync generator that's powered with rechargeable batteries so you can synchronize 2 or more cameras in the field without a long yellow power cord. It has all the outputs you need with full NTSC/RS170 specifications. You get more performance for less money than you thought possible because at VACc you can't get too much of a good thing.

Manufacturer's of:

*Editor-Programmers Cross Pulse Generators
Party Lines Burst Phase Meters
Gen-Lock Color Sync Gen's H-Phase Meters
VIRS Inserter Black Burst Generators*



**VIDEO AIDS corporation
of colorado**

phone USA (303)-667-3301
Canada (800)-261-4088

325 East 7th Street, Loveland, Colorado 80537

Circle 210 on Reader Service Card

Reps/Dists

J MALCOLM FLORA INC
PO Box 201
Plymouth 48170
313 453-4296
Line: audio equip
Shure see ad pg 141

GENERAL TELEVISION NETWORK
13225 Capital Avenue
Oak Park 48237
313 548-2500
Line: audio components, lighting equip,
video equip
Amtron see ad pg 87
3M Mincom see ad pg 52, 168, 170
Strand Century see ad pg 88

R P HERMES CO
9600 Whittier St
Detroit 48224
313 886-4566
Line: audio & video equip
Dynasciences see ad pg 45
Conrac see ad pg 115

MICRO SALES CORP
595 Forest
Plymouth 48170
313 459-9444
Line: audio & video equip
Boonton Electronics see ad pg 51

NEWMAN VISUAL EDUCATION INC
400 32 St SE
Grand Rapids 49508
616 452-1455
Line: audio & video equip
Amtron see ad pg 87

DAVID ORIENTI
56 S Crestview
Adrian 49221
517 423-5680
Line: audio & RF equip
CCA see ad pg 117

DAN PRICE
4101 Oak Park Drive SE
Grand Rapids 49508
616 455-5529
Line: video equip

RIELY & PETCHELL SALES
25700 Plymouth Rd
Detroit 48239
313 937-3000
Line: audio components; equip
HM electronics see ad pg 202

NORWOOD SCROGGS CO
2221 Arbor Hills Rd
Jackson 49201
517 750-1170
Line: audio components
Tech Labs see ad pg 182

SHALCO INC
23716 Woodward Ave
Pleasant Ridge 48069
313 547-4771
Line: audio products
Telex see ad pg 44,92

SOUND PRODUCTIONS INC
5929 Schaefer Rd
Dearborn 48126
313 559-8303
Line: audio equip

SOUND SOLUTIONS INC
2791 E 14 Mile Rd
Sterling Heights 48077
313 979-6320
Line: audio equip
Stanton see ad pg 100

THALNER ELECTRONIC LABS
7235 Jackson Rd
Ann Arbor 48103
313 761-4503
Line: video equip
NEC see ad pg 136,137,171

VF SALES INC
8244 Dear Creek Ln

Canton 48187
313 453-8720
11395 Aspen
Plymouth 48170
313 453-3720
Line: audio equip
AKG Acoustics see ad pg 137
Otari see ad pg 173
UREI see ad pg 145

THE VIDEO GROUP
77 W Confield
Detroit 48201
313 833-6420
Line: video & lighting equip
Strand Century see ad pg 88

WKM ASSOC INC
345 Girard
Madison Heights 48071
313 588-2300
Line: test & monitoring instruments
Fluke see ad pg 159

WOLF ASSOC
15843 Seven Mile Rd W
Detroit 48235
313 835-5190
Line: lighting equip

MINNESOTA

COZZENS & CUDAHY SALES GROUP
10800 Lyndale Ave S
Minneapolis 55420
612 884-4336
Line: monitoring & test instruments
Fluke see ad pg 159

FM DEY CO
6040 Earle Brown Dr Ste 210-6
Minneapolis 55430
612 560-1095
Line: audio & video equip
Monroe see ad pg 205

ELECTRONIC CENTER INC
127 3rd Ave N
Minneapolis 55401
612 371-5200
Line: audio & video equip
Stanton see ad pg 100

EMMONS ASSOCS, INC
10700 Lyndale Ave
Minneapolis 55420
612 881-1118
Line: full line audio & video equip
Aristocart see ad pg 42
Ampro see ad pg 10
CEI see ad pg 195
Conrac see ad pg 115
Ramko see ad pg 118-119
ROH see ad pg 134
TFT see ad pg 65

MEL FOSTER CO INC
7389 Bush Lake Rd
Edina 55435
612 835-2252
Line: audio equip
Shure see ad pg 141

CLARK R GIBB CO
1311 W 25th St
Minneapolis 55405
612 377-1200
Line: audio, test equip
Telex see ad pg 44,92
UREI see ad pg 145

HMR INC
7200 Frances Ave S
Minneapolis 55434
612 920-8200
Line: video equip
Video Aids see ad pg 166

INTERNATIONAL COMM SUC
235 Borden Ave
Minneapolis 55405
612 335-6812
Line: video equip

continued on page 168

Total Television Camera Support Equipment - from the Ground Up.

The ITE product line has been designed with your camera in mind. ITE educational, industrial and closed circuit television applications. No products provide professional camera support and control for cameras matter what your requirements—pedestals, tripods, dollies, camera heads or accessories—ITE can satisfy them. Call or write us today for our short form catalog and the name and address of your nearest ITE dealer or distributor.

The ITE product line has been designed with your camera in mind. ITE products provide professional camera support and control for cameras weighing from 5 to 250 pounds. The ITE line is marketed by all leading camera manufacturers and distributors and is in use by stations throughout the world in broadcast,



INNOVATIVE TELEVISION EQUIPMENT

6445 De Soto Avenue • P.O. Box 681 • Woodland Hills, CA 91364 • (213) 888-9421

Circle 211 on Reader Service Card

Reps/Dists

K&M ELECTRONICS

7360 Ohm Lane
Minneapolis 55435
612 835-3080
Line: full line audio & video equip
3M Mincom see ad pg 52, 168, 170
Strand Century see ad pg 88

KODO ASSOCIATES, INC

8100 Penn Avenue S
Minneapolis 55431
612 881-1255
Line: audio components, equip
AKG Acoustics see ad pg 134
HM Electronics see ad pg 202

KENNETH MEYERS CO

3601 Park Central Blvd
Minneapolis 55416
612 920-7080
Line: audio & test equip
Boonton Electronics see ad pg 51
Marconi see ad pg 69

NATIONAL CAMERA EXCHANGE

9010 Olson Hwy
Minneapolis 55427
612 546-6836
Line: video & camera equip
Strand Century see ad pg 88

QUANTUM SALES

7710 Computer Ave
Minneapolis
612 831-8583
Line: video & audio components
Tech Labs see ad pg 182

SKOR

1821 University Ave
St Paul 55104
612 645-6461
Line: audio products

JOHN SCHROEDER CO

1367 Dixon Dr
St Paul Pk 55071
612 459-3636
Line: power supplies
Yardney see ad pg 183

SOUND 80, INC

2709 E 25th St
Minneapolis 55406
612 721-6341
Line: audio components, equip
Audio & Designs see ad pg 202

TELEX COMMUNICATIONS

9600 Aldrich Ave S
Minneapolis 55420
612 884-4061
Line: audio equip

TODD ELECTRONICS

7360 Ohms Ln
Minneapolis 55435

612 835-3080
Line: video equip
NEC see ad pg 136,137,171

VIDEO MIDWEST

1907 Hiawatha
Minneapolis 55404
612 338-6825
Line: video & lighting equip
Electro & Optical Systems see ad pg 148
Rohde & Schwarz see ad pg 121
Strand Century see ad pg 88

MISSISSIPPI

CENTRAL SCHOOL SUPPLY

217 W Capital St
Jackson 39205
601 969-6700
Line: audio & video equip
Rohde & Schwarz see ad pg 121
Strand Century see ad pg 88

MISSOURI

BEAMS INC

689 Craig Rd
St Louis 63141
314 649-1060
Line: audio equip
AKG Acoustics see ad pg 134

BURNSTERN APPLERY CO

3199 Mercier
Kansas City 64111
816 756-2525
Line: video equip

CALVIN CINEQUIP INC

21 SW Pershing
Kansas City 64108
816 471-7800
Line: full line cine & lighting equip
Strand Century see ad pg 88

CENTURIAN MARKETING ASSOC

Box 1011
124 Manchester Rd
Ballwin 63011
314 227-7222
Line: audio equip
Otari see ad pg 173

COMMUNITRONICS CORP

1907 S Kingshighway
St Louis 63110
Line: video, transmitting & measuring equip
Rohde & Schwarz see ad pg 121

COMMUNICATIONS SYSTEMS

10001 Perry Ave
Cape Girardeau 63701
314 334-6097
Line: audio components
Stanton see ad pg 100

COMMUNITRONICS CORP

St Louis
314 771-7160
Line: video equip
3M Mincom see ad pg 52, 168, 170

COZZENS & CUDAHY SALES GROUP

300 Brooks Dr Ste 100
Hazelwood 63042
314 731-3388
4406 Chouteau Traffic Way
Kansas City 64117
816 454-5836
Line: test & monitoring instruments
Fluke see ad pg 159

DELCOM CORP

10752 Indianhead Industrial Blvd
St Louis 63132
214 428-4200
Line: video equip
Microtime see ad pg 33

DYTEC/SOUTH INC

300 Brookes Dr
Hazelwood 63042
314 721-5400
Line: audio & video equip
Boonton Electronics see ad pg 51

FORRISTAL-YOUNG SALES CO INC

7110 Oakland Ave St Louis 63117
314 645-2361
Line: audio equip
HM Electronics see ad pg 202
Shure see ad pg 141

FOX PHOTO PRODUCTS INC

2838 Market St
PO Box 15
St Louis
314 652-1300
Line: full line photo equip
Strand Century see ad pg 88

KSW ASSOC

6314 Overton St Ste 202
Kansas City 64133
816 358-5240
Line: audio components

LINES MUSIC CO

Springfield
417 862-5533
Line: audio & video equip
3M Mincom see ad pg 52, 168, 170

NEVCO

10132 Glenfield Terrace
St Louis 63126
314 843-7406
Line: audio equip
UREI see ad pg 145

PAC

11920 Grandview Rd
Brandview 64030
816 763-4155
338 Brooks Dr Suite F
Hazelwood 63042

314 731-2331
Line: full line broadcast & test equip
Marconi see ad pg 69, 161

PACER CORP

7300 Raytown Rd
Raytown 64133
816 358-6638
Line: video equip
Video Aids see ad pg 166

RADONICS

4445 Gustine
St Louis 63116
314 481-2222
Line: video equip
Amtron see ad pg 87

TRANKLE & ASSOC

310 Baltimore
Kansas City 64108
816 421-1751
Line: audio equip
UREI see ad pg 145

TV ENGINEERING

519 Rudder Rd
Fenton 63026
314 343-5605
Line: broadcast equip
B'cast Video Systems see ad pg 86
Conrac see ad pg 115
Leitch Video see ad pg 131

MONTANA

HOLM-JAMES DISTRIBUTORS INC

4 Ave S and 6 St
Box 2487
Great Falls 59403
406 761-2420
Line: video equip
Amtron see ad pg 87

NEBRASKA

COLCO SALES

431 S 150 Circle
Omaha 68154
402 333-4709
Videotek see ad pg 196

K&M ELECTRONICS

Omaha
402 551-7600
Line: video equip
3M Mincom see ad pg 52, 168, 170

VIDEO ASSOC INC

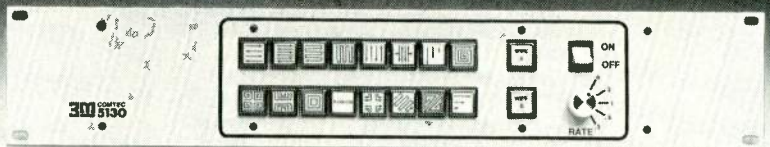
324 N 115th St
Omaha 68154
402 333-2288
Line: video equip
Strand Century see ad pg 88

continued on page 170

SIXTEEN DIGITAL EFFECTS THAT WON'T COST YOU AN ARM AND A LEG.

All you need is a production switcher with an external key capability. Add our stand-alone digital effects generator, and you've got the expensive switcher look without the cost.

The 5130 complete with power supply and cable, \$1495. Circle our reader service number, or call your local 3M Video Products Dealer. 3M Video products. Watch us in action.



3M

Introducing the Duca-Richardson Series 4000. Simply the most advanced production switcher ever created!

Color Coding

Simplified operation and reduced chance of operator errors are realized through color continuity of all video paths.

15 Button Keyboards

Easier selection of patterns, transitions, key sources and quadrant presetting is possible through the use of keyboards on the function modules, downstream keyer and quadrant selector.

10 Key Sources

6 chroma keys, the B Bus, Preview Bus and 2 external keys are selectable as key sources, and any one can be used as a composite chroma key source.

Function Modules

All basic switcher functions are consolidated on the function modules for ease of operation.

99 Time Choices

Automatic transitions can be preset from 0.1 to 9.9 seconds in 0.1 second increments.

99 Pattern Choices

You get top creative flexibility from 99 patterns, including rotary wipes and rotary patterns—each of which can be preset.

Status Lights

Status indication of all switcher operations is easily visible at a glance.

For details,
call or write
Carl A. Hedberg



Duca-Richardson Corporation
11465 W. 48th Avenue
Wheat Ridge, CO 80033 303/423-1300
Circle 213 on Reader Service Card

Reps/Dists

NEVADA

ACEY-DECY INC

3049 Rijel Ave
Blvd C-S10
Las Vegas 89102
702 873-3115
Line: lighting equip
Strand Century see ad pg 88

CINEMA SERVICES

3050 Sheridan Ct
Las Vegas 89102
702 876-4667
Line: lighting equip
Grt American Mkt see ad pg 20

LARR NELSON

6757 Groveview Lane
Las Vegas 89103
702 876-7949
Line: lighting equip
Strand Century see ad pg 88

NEW HAMPSHIRE

CHURCHILL MILLER

PO Box 333
Londonderry 03053
603 434-0890
Line: video equip
Asaca see ad pg 11, 35

NEW JERSEY

BOB CAMERON INC

2352 Linwood Ave
Ft Lee
201 461-2595
Line: audio equip
Tech Labs see ad pg 182

FLOYD CHURCHILL

PO Box 43
50 Upland Way
Haddonfield 08033
609 429-7871
Line: audio components
Tech Labs see pg 182

CRAWFORD COMMUNICATIONS

AC251 Finisterre Apts
Lindenworld 08021
609 346-1747
Line: audio & RF equip
CCA see ad pg 117

COMPREHENSIVE VIDEO SUPPLY CORP

148 Veterans Dr
Northvale 07647
800 526-0242
Line: video, lighting & broadcasting components & hardware

DAYSTRONG INTERNATIONAL

1707 N 76 St
Bergen 07047
201 868-6937
Line: audio & video equip
QEI see ad pg 187

EMCEE VIDEO SALES

PO Box 2546
1087 Plainfield Ave
Plainfield 07060
201 561-6876
Line: video equip
Video Aids see ad pg 166

H M HOLZBERG ASSOCS

PO Box 322
Totowa 07512
Line: full line audio, video, microwave equip
Ampro Broadcasting see ad pg 10
Automated Broadcast Controls see ad pg 98
Nurad see ad pg 49
TFT see ad pg 65

INTERNATIONAL VISUAL PRODUCTS

333 Rte 46
Fairfield 07006
201 575-6260
Line: video & lighting equip
Strand Century see ad pg 88

IRV JOEL & ASSOC

528 River Rd
Teaneck 07666
201 692-0010
Line: audio equip
Audio & Designs see ad pg 202

JOHN KING/DOUG LIGHT

135 Ft Lee Rd
Leonia 07605
201 461-5340
Line: audio & video equip
Scientific-Atlanta see ad pg 129

LANDY ASSOCS

12 Buxon Rd
Cherry Hill 08003
609 424-4660
1890 E Marlton Pike
Cherry Hill 08003
Line: audio & video equip
Datatek see ad pg 99
ROH see ad pg 134

KOPPE RADEN CORP

10 Stuyvesant Ave
Lyndhurst 07071
201 460-0800

Line: audio & RF equip
CCA see ad pg 117

L&M ASSOCS

511 Victor St
Saddle Brook 07662
201 843-8700
Line: test instruments
Marconi see ad pg 69

MJ LODER & SON

1090 Oakland Ave
Plainfield 07060
201 668-0860
Line: audio equip
UREI see ad pg 145

OPTIMEDIA SYSTEMS INC

1080 Rte 46
Clifton 07013
201 777-7600
Line: audio & video products
Dynasciences see ad pg 45
Microtime see ad pg 33

SBM REPRESENTATIVES SALES GROUP

460 Colfax Ave
Clifton 07013
201 778-4040
Line: monitoring & test instruments
Fluke see ad pg 159

SCIENTIFIC DEVICES

115 Grand Ave
Englewood 07631
201 871-3916
Line: audio & video equip
Boonton Electronics see ad pg 51

SHEA SALES

522 Prospect Street
Maplewood 07070
201 762-2382
Line: audio equip, test equip
Sound Technology see ad pg 79

SONNY SIMBERKOFF ASSOCS INC

71 Valley St
S Orange 07079
201 763-7900
Line: audio equip
Shure see ad pg 141

TELE-MEASUREMENTS INC

Clifton 07014
201 473-8822
Line: video equip
Amtron see ad pg 87
Conrac see ad pg 115
3M Mincom see ad pg 52, 168, 170

UNITED PAGE INT'L

481 Getty Ave
Paterson 07503
201 279-7500
Line: audio equip
CCA see ad pg 117

NEW MEXICO

BARNHILL ASSOC INC

1410-D Wyoming NE
Albuquerque 87112
505 299-7658
Line: monitoring & test instruments
Fluke see ad pg 159

CARRULT CUNNINGHAM

PO Box 1697
Taos 87571
505 758-2686
Line: radio equip
IGM see ad pg 18

DYMA ENGINEERING

PO Box 1697
Taos 87571
505 758-2686
Line: full line radio & TV equip
ADDA see ad pg 97, 165
BTX see ad pg 127, 142
CEI see ad pg 195
IGM/NTI see ad pg 18
NEC see ad pg 136-137, 171
Stanton see ad pg 100

G C VIDEO

9624 Gutierrez Rd NE
Albuquerque 87111
505 296-5653
Line: audio & video products, lighting equip
Strand Century see ad pg 88

INTEGRATED SYSTEMS INC

133 Jackson St NE
Albuquerque 87108
505 255-8127
Line: video equip

LIGHTING WEST INC

PO Box 30186
Albuquerque 87110
505 266-9830
Line: lighting equip
Strand Century see ad pg 88

MEASUREMENT CONSULTANTS INC

PO Box 951
Las Cruces 88001
505 526-2491
142 Monroe NE
Albuquerque 87108
505 265-6471
Line: test equip
Marconi see ad pg 69

VIDEO-MONO INC

222 Truman NE
Albuquerque 87108
505 265-8335
Line: video equip
Amtron see ad pg 87
Knox see ad pg 183

continued on page 172

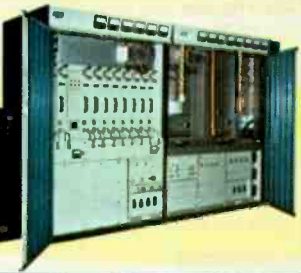
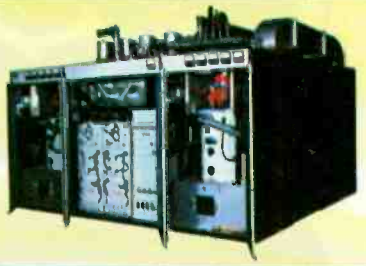
DON'T BUY MORE PROCESSING AMP THAN YOU NEED.

The P-50 Processing Amplifier does it all and works almost anywhere: before a transmitter, at the output of a production switcher or VTR, or as a remote camera control unit. Use the P-50 where you need complete control over the video signal. It also includes a cross-pulse output with automatic brightening.

For more information, circle our reader service card number. 3M Video Systems. Watch us in action.



3M
COMPANY



**20 more reasons
to buy your next
transmitter from**

NEC

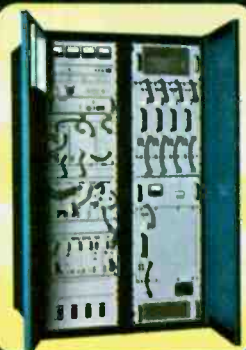
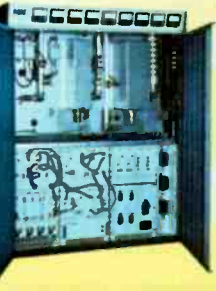
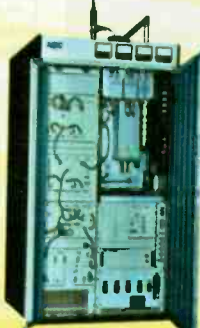
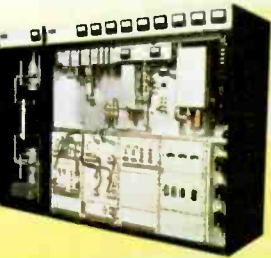
Nippon Electric Co., Ltd.
Tokyo, Japan

Call 800-323-6656/In Illinois (312) 640-3792

NEC America, Inc.

Broadcast Equipment Division
130 Martin Lane, Elk Grove, Village, Illinois 60007

Circle 215 on Reader Service Card



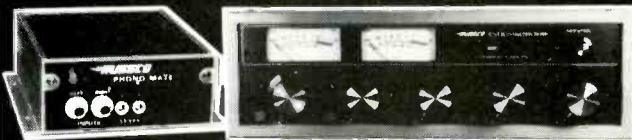
RUSSCO SOUNDS GOOD!!

If you're looking for professional audio products that will reduce down-time, increase efficiency and ease of operation and save a few bucks, come to RUSSCO! Once you get the RUSSCO story, you'll agree...RUSSCO SOUNDS GOOD!



STUDIO-PRO turntable: Rugged & simple, only 3 rotating parts, oilite bronze bearings, heavy-duty motor, no-slip starting, built-in 33/45 adapter. The Industry's Standard.

FIDELITY-PRO phone pre-amps: Self contained power supply, more headroom (+18 dBm), easy-access enclosure, 8 models: stereo or mono, balanced or unbalanced.



PHONO-MATE: NEW! lowest priced pre-amp for use with external power supply for reduced hum & noise. Straight RIAA equalization, RFI proofed against interference. Stereo or mono, balanced or unbalanced.

STUDIO-MASTER 505S stereo audio mixer: 5 channels, 5th channel accepts 5 input lines for 9 channels total. Push-button switching, plug-in pre-amps, cue amp & speaker included, Mod Pots, LED Indicators, Monoaural available.



MONITOR-MASTER 260 stereo amp: Long life and dependable service. 60 Watts RMS per channel. Clean solid-state sound with built-in power sensor protects against overload.

DISCO 421: NEW! Portable (5½ lbs.) 4 channel audio mixer for disco, remote, home recording. 1 channel: mono mike, 2 channels stereo, 1 hi-level input for tape. 3 band equalization. Inexpensive!

• Write us for our brochures

RUSSCO

ELECTRONICS INCORPORATED

5690 E. SHIELDS AVE., FRESNO, CA 93727 • PHONE (209) 291-5591

Circle 216 on Reader Service Card

Reps/Dists

ZEUS INC
310 Val Verde SE
Albuquerque 87108
505 268-3941
Line: audio & video equip
Boonton Electronics see ad pg 51

NEW YORK

AHSTON COMMUNICATIONS
140 Glendale Dr
Endicott 13760
607 748-3331
Line: video equip
3M Mincom see ad pg 52, 168, 170

AMERICAN STAGE LIGHTING
1331-C North Ave
New Rochelle 10804
914 636-5538
Line: lighting equip
Grt American Mkt see ad pg 20

ARGIL ELECTRONICS LTD
50 W 17 St
New York 10011
212 691-8111
Line: audio & video equip
Clear-Com see ad pg 164

AUDIO-VIDEO CORP
55 Delaware Ave
Delmar 12054
518 439-7611
Line: full line of audio/video equip
3M Mincom see ad pg 52, 168, 170
Strand Century see ad pg 88

AURIEMA INT'L GROUP
1 World Trade Center Ste 1829
New York 10048
212 838-0830
Line: audio & video equip
Nurad see ad pg 49

DAVID BAIN ASSOCS
PO Box 1014
Port Washington 11050
516 883-4818
Line: audio equip, video equip
CCA see ad pg 117
ESE see ad pg 180
Stanton see ad pg 100

BETTAN SALES INC
77-15 164th St
Flushing 11366
212 591-7600
Line: audio equip
Telex see ad pg 44, 92

JOE BOTTALI
PO Box 77
Amawalk 10501
914 245-1955
Line: video equip
Laird Telemedia see ad pg 178, 199

BROWN RADIO SERVICE
250 East Ave
Rochester
716 232-5580
Line: audio components & equip
Ramko see ad pg 118, 119

THE CAMERA MART
456 W 55th St
New York 10019
212 757-6977
Line: full line TV production equip
Clear-Com see ad pg 164
Dynasciences see ad pg 45
Microtime see ad pg 33
Strand Century see ad pg 88

BERNARD DARMSTEDER ASSOC
41 R Oswego St
Baldwinsville 13027
315 638-1216
Line: audio & video equip
AKG Acoustics see ad pg 134
Otari see ad pg 173

DIVERSIFIED LIGHTING SYSTEMS

116 Town Line Rd
PO Box 57
Syracuse 13211
315 455-5811
Line: lighting equip
Strand Century see ad pg 88

F&B/CECO INC
315 W 43rd St
New York 10036
212 586-1420
Line: cameras & accessories, lighting equip
Strand Century see ad pg 88

FERCO
419 W 54th St
NY 10019
212 581-5474
Line: TV production equip
Strand Century see ad pg 88

GBC CORP
74 5th Ave
NY 10011
212 989-4435
Line: video equip

GENERAL CAMERA
471 11th Ave
NY 10018
212 594-8700
Line: TV production equip
Strand Century see ad pg 88

GOTHAM AUDIO CORP
741 Washington St
New York 10014
212 741-7411
Line: audio components, test & equip
UREI see ad pg 145

B GRIFFITHS
185 Dixon Ave
Amityville 11071
516 842-2300
Line: video equip
Telemet see ad pg 143

HALSTAN ASSOC
160 New York Ave
N Babylon 11704
516 587-9384
Line: power supplies
Yardney see ad pg 183

L K HANER ASSOCS
PO Box 101
Commack 11725
516 864-2220
Line: audio components
Tech Labs see ad pg 182

ITO AVIATION
270 Park Ave
NY 10017
Line: video equip
Dynasciences see ad pg 45

OSCAR E KRAUT
530 D Grand St
New York 10002
212 228-5511
Line: video equip
Knox see ad pg 183

KVC INC
770 Lexington Ave
New York 10021
212 752-3690
Line: video equip
CEI see ad pg 195

LEWIS & DUNNIGAN CO
104 Jamesville Rd
Syracuse 13214
315 776-5522
Line: audio equip
Telex see ad pg 44, 92

L&M
175 W 12th St
NY 10011
212 243-6155
Line: test equip
Marconi see ad pg 69

continued on page 174



9 outstanding reasons why you should choose Otari

1. MX-5050-2S Two-Channel Half-Track Popular worldwide • 15 & 7½ or 7½ & 3¾ ips • Optional dc capstan servo • Also reproduces quarter-track • Other features listed below.

2. MX-5050-FL One-Channel Full-Track • 7½ & 3¾ ips • Also reproduces two-track.

3. MX-5050-QXHD Four-Channel Quarter-Inch 15 & 7½ ips • Variable speed ($\pm 7\%$) dc capstan servo • Other features same as two-track.

4. MX-5050-8D Eight-Channel Half-Inch Full eight track performance and features • 15 & 7½ ips • Variable speed ($\pm 7\%$) dc capstan servo.

5. Mark II-2 Two-Channel Quarter-Inch All MX-5050 features plus: • Separate transport and electronics • 15 & 7½ ips • Variable speed ($\pm 7\%$) dc capstan servo.

6. Mark II-4 Four-Channel Half-Inch Same features as Mark II-2.

7. MX-7800 One-Inch Eight-Track First *full-function* one-inch eight-track • 100% remote controlled • Remote LED tape timer, return-to-zero • 30/15 ips • Dc capstan servo.

Call or write for full specifications and pricing.

OTARI

8. ARS-1000 Automated Radio Station Reproducer Two speeds 7½ & 3¾ ips • Two channel stereo • Ruggedized for continuous operation.

9. DP-4050 8:1 In-Cassette Duplicator Easily operated • Open-reel master (7½ or 3¾) and six slaves • Six C30's in under two minutes.

All Otari recorders feature:

- Professional quality and reliability
- Selective reproduce on all channels
- 600 ohm +4 dBm outputs
- XLR connectors • 19 dBm headroom
- Motion sensing • Edit and cue
- Built in test tones • Portable, rack, or console mounting

Solid State at Tube Prices.

And when we say solid state, we mean 100% solid state. So you get all the energy savings and improved reliability that solid state technology implies. But price isn't the only thing that's exciting and important about the new Sintronic SI-A-1S 1 kW AM transmitter. It's also loaded with features that save downtime and reduce maintenance.

Most of the circuitry is on 26 computer-type plug-in cards, even the power amplifier. Circuit monitoring and maintenance is a cinch. Panel indicators and a direct reading digital multimeter monitor all critical circuitry. Card extenders allow easy access to components for in-service maintenance. The operating frequency is precisely maintained by a synthesizer referenced to a high stability crystal requiring no oven. It has 125% positive peak modulation capability, but does not use a modulation transformer which can cause phase shift distortion.

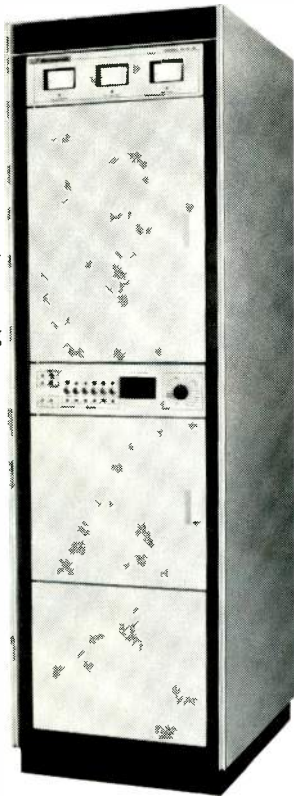
Multiple muffin fans move a column of air *slowly* and *evenly* through the transmitter, reducing filter cleaning and eliminating the worry of catastrophic failure as when a single, high-speed blower suddenly quits. The output power is monitored and automatically adjusted to maintain the correct output power... precisely and continuously. The RF drive and modulation are constantly compared and the drive is automatically regulated for the optimum level *throughout each audio cycle*.

A strappable 7.5 khz low pass filter is standard so you can use your audio energy where it will do the most good. We have added a switchable peak-riding audio clipper too, removing those sharp, low energy peaks causing the modulation meter to flash prematurely.

Remote control facilities are standard.

Of course Sintronic makes transmitters other than the SI-A-1S. They can provide you with the transmitter you need from 10 Watts to 55kW FM, or to 50kW AM.

There are many more impressive facts about this transmitter we would like to tell you about. Contact Tom Humphrey at Sintronic Corporation, 212 Welsh Pool Road, Lionville, PA 19353. Telephone: (215) 363-0444.



Sintronic Model SI-A-1S
1kW AM Transmitter

Sintronic CORPORATION
Sintronic is a subsidiary of Singer Products Co., Inc.

Circle 218 on Reader Service Card

Reps/Dists

LISTEC TELEVISION EQUIPMENT CORP

35 Cain Drive
Plainview 11803
516 694-8963
Line: video equip
B'cast Video Systems see ad pg 86
Electro & Optical Systems see ad pg 148

MARTIN AUDIO/VIDEO CORP

320 W 46th St
New York 10036
212 541-5900
Line: audio components, equip,
recording accessories
Clear-Com see ad pg 164
ESE see ad pg 180
Ramko see ad pg 118-119
Stanton see ad pg 100

PAUL MILAZZO

230 Mineola Blvd
Mineola 11501
516 248-4858
Line: video equip
Leitch Video see ad pg 131

NET SALES INC

Box 7485 W Ridge Station
Rochester 14615
716 467-4538
Line: audio components
Tech Labs see ad pg 182

NORTHEAST BROADCAST LABS

15 Charles St
South Glen Falls 12801
518 793-2181
Line: audio equip
QEI see ad pg 187

PENTAX CORP

Atrium Bldg
98 Cutter Mill Rd
Great Neck 11021
516 487-9800
Line: video equip
Cosmicar see ad pg 194

PROFESSIONAL ELECTRONICS CO

2820 Curry Rd
Schenectady 12303
518 355-3120
Line: audio/video products, lighting
equip
Dynamics see ad pg 45
Strand Century see ad pg 88

ALAN SARFATY & ASSOC

83-15 98th St
Woodhaven 11421
212 846-1952
Line: audio equip
Telex see ad pg 44, 92

SAVAGE SALES

PO Box 95
Fayetteville 13066
315 682-2131
Line: test instruments, equip
Marconi see ad pg 69

SBM REP SALES GROUP

4515 Culver Rd
Rochester 14622
716 266-1400
Line: test & monitoring instruments
Fluke see ad pg 159

F EDWIN SCHMITT CO INC

311 Meacham Avenue
Elmont 11003
516 437-8150
Line: full line radio equip
Shure see ad pg 141

SCIENTIFIC DEVICES

122 Amsden Dr
Rochester 14623
716 334-2445
Line: audio & video equip
Boonton Electronics see ad pg 51

SENECA COMMUNICATIONS

112 Killewald St

Tonawanda 14150
716 693-8446
Line: audio & video products
3M Mincom see ad pg 52, 168, 170

SINGER PRODUCTS CO

One World Trade Center
Suite 2365
New York 10048
212 432-1400
Line: audio components
Sintronic see ad pg 174

SONOCRAFT CORP

29 W 36th St
New York 10018
212 760-9300
Line: audio & video equip
Conrac see ad pg 115
3M Mincom see ad pg 52, 168, 170

SOUND SYSTEMS INC

42-12 28th St
Long Island City 11101
212 786-4474
Line: audio & video equip
Amtron see ad pg 87
3M Mincom see ad pg 52, 168, 170
NEC see ad pg 136, 137, 171
Stanton see ad pg 100

KEN STARRETT

7723 Third Ave
Brooklyn 11209
212 499-8300
Line: audio & electrical equip
Transtector see ad pg 19

SYRACUSE SCENERY

212 Walton St
Syracuse 13202
315 424-2474
Line: full line of theatrical equip
Strand Century see ad pg 88

TECHNISPHERE

215 E 27 St
New York 10016
212 889-9170
Line: full line video equip
Microtime see ad pg 33

TELESCO INT'L SALES CO

#1 Dupont St S
Plainview 11803
516 433-6210
Line: audio components, video equip,
test equip
Video Aids see ad pg 166

TELEVISION EQUIPMENT ASSOCIATES

Box 260
South Salem 10590
914 763-8893
Line: full line radio & TV production
equip
TEA see ad pg 104

THEATRICAL SERVICES & SUPPLIES INC

205C Brook Ave
Deer Park 11729
516 242-5454
Line: audio & stage equip
Stanton see ad pg 100

UNISTAGE

330 Genessee St
Buffalo 14204
716 853-6500
Line: full line of theatrical equip
Strand Century see ad pg 88

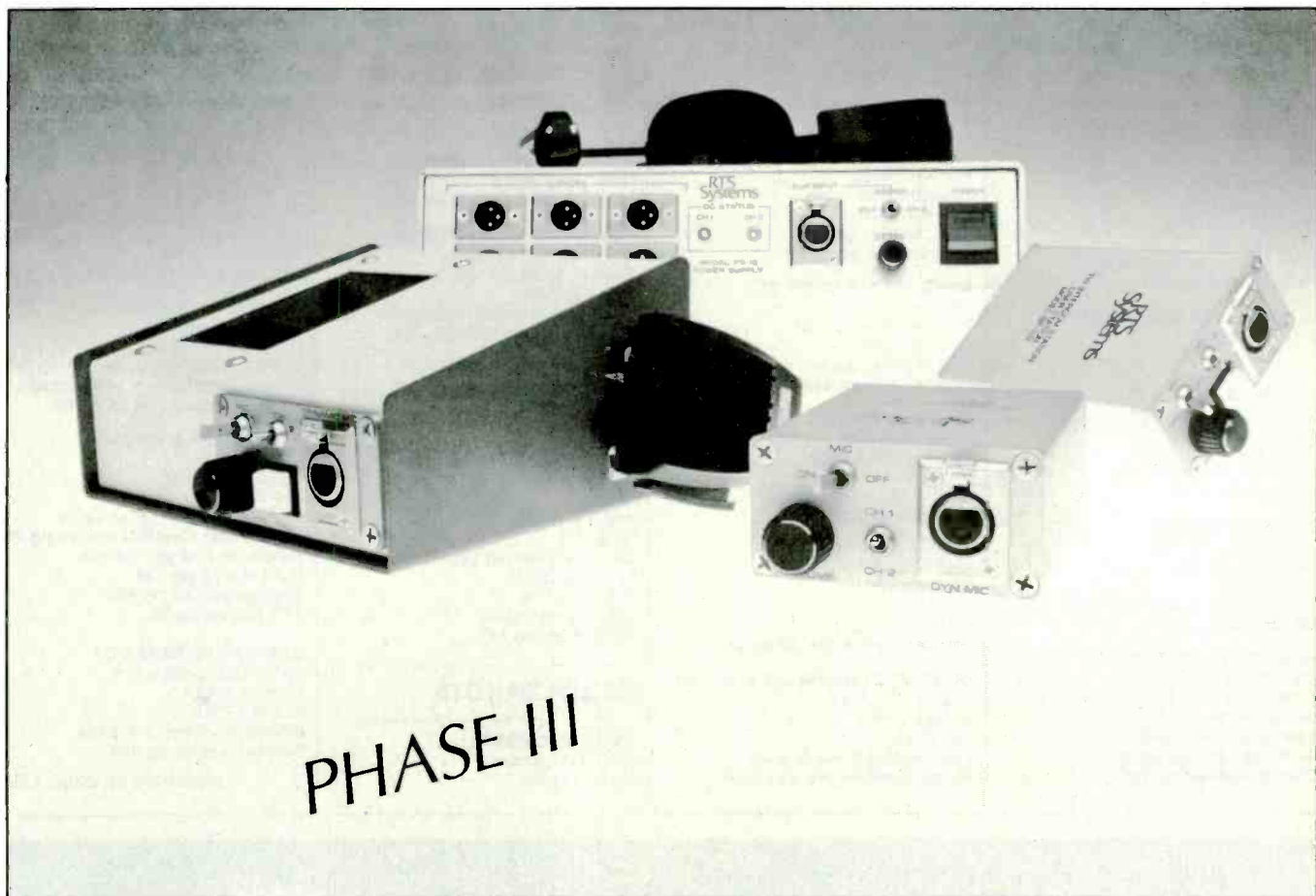
VIDEO COMPONENTS INC

610 S Main St
Spring Valley 10977
914 356-3700
Line: full line video equip
Fujinon see ad pg 90-91
Gruber products see ad pg 204
Video Aids see ad pg 166

VSM LEASING CORP

10815 Bodine Rd
Clarence 14031
716 759-2600
Line: audio equip
Stanton see ad pg 100

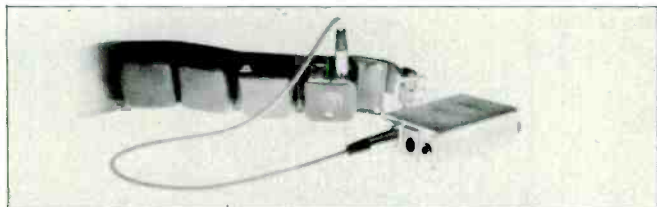
THE SUPER SYSTEM



PHASE III

Three years ago, we developed the *TW Intercom System*—high performance intercommunications for teleproduction, studio and field. Today, with thousands of units in operation across the country, the *TW* system has established itself as an industry standard.

With the introduction of *Super System Phase III*, we've incorporated a number of advances that only our field-proven expertise in communications can provide. In the new design we've added the portability of 12 volt battery power, the convenience of dry-line operation, and many other new features. With improved circuitry, increased flexibility, and greater reliability, our *Super System* represents a significant advance in product versatility.



To best meet each user's needs, *Phase III* can be arranged from a variety of stations: belt packs; speaker stations; rack-mount, wall-mount, or console-mount stations; and various special stations. Power supplies are available in three packages—10 station portable, 10 station rack-mount, and 50 station rack-mount.

Each user station features an array of outstanding capabilities, including powerful headphone amplifier; two (or more) channel operation; microphone level limiting; and stable sidetone level. Additionally, carbon and dynamic mic headsets are interchangeable. Fifty units may be connected on line without loading or serious signal degradation. Each unit is handsomely packaged and completely field serviceable for super performance under the toughest conditions.



To permit easy coupling to existing communications systems, a variety of new RTS interface devices are now available. Each unit is configured to accommodate specific requirements for combinations of various levels and impedances, two-wire or four-wire. We can assist in selection of a unit that's correct for your application.

Many of our intercom systems are customer-specified. We offer consultation in designing a system that meets your special needs. Complete technical information and diagrams are included in our comprehensive, illustrated brochure. Contact:

RTS
Systems INC.

4167 Fair Ave., North Hollywood, CA 91602 (213) 980-0511

Reps/Dists

WESTEC AUDIO/VIDEO
100 Riverside Dr #5B
New York 10024
122 873-1166
Line: audio components
Ampro see ad pg 10
ESE see ad pg 180

NORTH CAROLINA

BCS ASSOCS
1310 Beamon Pl
Greensboro 27408
919 273-1918
Line: video & test products
Fluke see ad pg 159

ELECTRONICS MERCHANDISING ENTERPRISE
112 Buena Vista
High Point 27260
919 869-3335
Line: SCA & test equip
Ampro see ad pg 10
Cohu see ad pg 162
Knox Ltd see ad pg 183
TFT see ad pg 65

A W GREESON JR
219 Homewood Ave
Greensboro 27403
919 292-1791
Line: full line audio & video equip
QEI see ad pg 187

HAMMOND ELECTRONICS
2923 Pacific Ave
Greensboro 27428
919 275-6391
Line: audio components
Aristocart see ad pg 42
Stanton see ad pg 100

JAMES L HIGHSMITH CO
3733 Monroe Rd
Charlotte 28205
704 333-7743
Line: audio & video equip
Boonton Electronics see ad pg 51

KIRKMAN ELECTRONICS
901 W Second St
Winston-Salem 27108
919 722-9131
Line: video equip
3M Mincom see ad pg 52, 168, 170
Strand Century see ad pg 88

LEE ASSOC
PO Box 18833
Raleigh 27609
919 787-5818
Line: test equip
Marconi see ad pg 69

LONG ENGINEERING CO
961 Burke St
Winston-Salem 27101
919 725-2306
Line: lighting equip
Strand Century see ad pg 88

CARROLL G OGLE
12345 Research Triangle Pk
Research Pk 27709
919 544-1140
Line: audio equip
CCA see ad pg 117

MAITLAND K SMITH INC
5500 Carmel Rd
Charlotte 28211
704 542-1352
Line: audio equip
HM Electronics see ad pg 202

SOUTHEASTERN SIGHT & SOUND
1717 S Sanders St
Raleigh 27603
919 828-2311
Line: lighting & video equip
Strand Century see ad pg 88

SOUTHERN COASTAL MARKETING SERVICES
3844 Wellington Ct
Charlotte 28211
704 366-7727
Line: audio & video equip
Automated Broadcast Controls see ad pg 98
QEI see ad pg 187
Ramko see ad pg 118-119
Stanton see ad pg 100

GENE SUDDUTH
PO Box 15263
Charlotte 28210
704 527-2489
Line: video equip
Duca-Richardson see ad pg 169

TECHNICAL VIDEO SYSTEMS
245 Executive Pk Blvd
Winston-Salem 27103
919 768-9536
Line: full line audio/video equip
NEC see ad pg 136-137, 171
CEI see ad pg 195

P D THOMPSON
2550 Weymouth Rd
Winston-Salem 27103
919 765-3157
Line: full line broadcast equip (audio & video)

UNITED ASSOCIATES
Suite 250
One Charlottetown Center
Charlotte 28204
704 334-4776
Line: lighting equip
QEI see ad pg 187

NORTH DAKOTA

OMF AUDIOVISUAL
1818 E Broadway
Bismark 58501

701 258-6360
Line: video equip

OHIO

A/V MEDIA INC
3344 W Broad St
Columbus 43204
614 846-9222
Line: full line video/audio products
NEC see ad pg 136-137, 171
Videotek see ad pg 196

CARRIGHT COMMUNICATIONS
11180 Deerfield Rd
Cincinnati 45242
513 984-4220
Line: video equip
Alexander see ad pg 195

CAVALIER AUDIO VIDEO
6580 Corporate Dr
Cincinnati 45242
513 984-3000
Line: full line audio & video equip
Strand Century see ad pg 88

DOUG COOK & ASSOCS
2185 Trent Rd
Columbus 43229
614 471-4114
Line: full line broadcast equip
Auto B'cast Controls see ad pg 98
Ramko see ad pg 118-119
ROH see ad pg 134
Stanton see ad pg 100
TFT see ad pg 65

GRINNAN FIXTURE CO
16041 Georgetown St
Minerva 44657
216 862-2323
Line: audio equip & fixtures
Stanton see ad pg 100

continued on page 178

A Winning Combination In Routing Switchers

SEE US AT
IBC
STAND H 37
(Granet
Communication)

Best Performance

Whether you're looking at published specs or as-installed performance, you'll see us best our competitors—all of them—hands down.

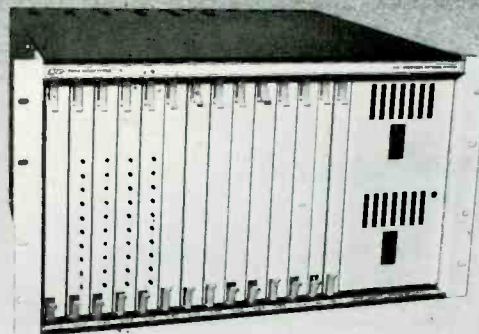
Our Diff \emptyset , Diff Gain, Video Noise, Audio Distortion, Audio Output Level and Audio Hum and Noise specs are the industry's best . . . and any of you that saw our demonstrations at the Las Vegas NAB show know that we can beat our own specs by wide margins.

Broadest Product Line

With 15 separate matrix designs and 21 different control panels, we can offer the most efficient package to fit your needs for any size switching system.

Lowest Prices

Ask us for a quote and see if you don't agree.

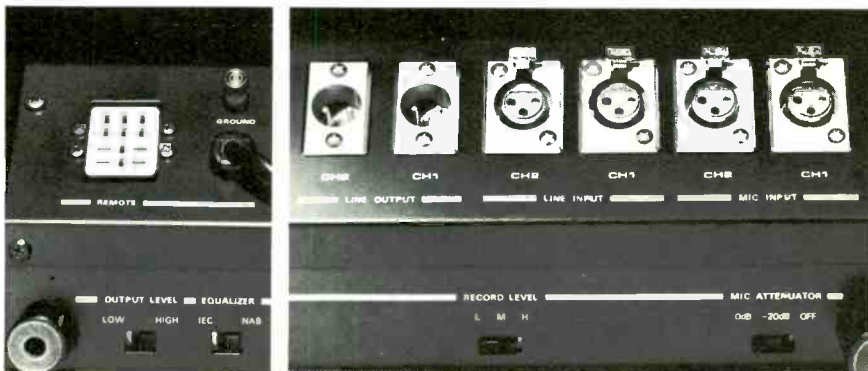


US UTAH SCIENTIFIC
2276 SOUTH 2700 WEST
SALT LAKE CITY, UTAH 84119
PHONE (801) 973-6840

Birth of the two-track masterpiece. Otari MX5050-B2.

The new Otari two-track machine is designed for discriminating recordists. Built with inside-out improvements over our long succession of compact professional recorders. With built-in operation ease and better serviceability. With fidelity, reliability and professional functions indispensable for every critical application you have in mind.

DC-servo direct drive for minimum wow/flutter and speed deviation. With $\pm 7\%$ pitch control and foolproof IC motion-sensing control logic. Optional remote control for all transport and mode functions. Maximum 30dBm input and 600 ohm +4dBm or -10dBm switch-over output with XLR connectors. Front-panel edit and cue, test oscillator, stepless bias and NAB or IEC equalization. Full professional four heads with extra quarter-track playback. And it's designed for both vertical and horizontal operation.



Resultant performance: smooth punch-in/punch-out mastering at 63dB S/N, 55dB crosstalk and 70dB erase with 30Hz - 20kHz (± 2 dB) response. It's the latest and wisest choice for your quality 15/7-1/2 or 7-1/2/3-3/4 ips masters. For the full story about the new generation recorder/reproducer, contact your nearest Otari dealer and see why we call it the masterpiece.

OTARI

U.S.A.: Otari Corporation, San Carlos
Phone: (415) 593-1648

Canada: Noresco Manufacturing Co., Ltd., Toronto
Phone: (416) 249-7316

Japan: Otari Electric Co., Ltd.,
4-29-18 Minami Ogikubo, Suginami-ku, Tokyo 167, Japan

Circle 222 on Reader Service Card

Reps/Dists

ELECTRONIC PRODUCTS CORP

16006 Waterloo
Cleveland 44110
216 692-3050
Line: audio & video equip
Dynasciences see ad pg 45

IMTECH INC

6862 Engle Rd
Cleveland 44130
216 826-3400
Line: audio equip
Telex see ad pg 44, 92

KLOPF A/V CO

3381 Successful Way
Dayton 45414
513 236-5500
Suite 201 6659 Pearl Rd
Cleveland 44130
Line: full line A/V equip
Conrac see ad pg 115
ESE see ad pg 180
Microtime see ad pg 33
3M Mincom see ad pg 52, 168, 170
QEI see ad pg 187
Rohde & Schwarz see ad pg 121
Stanton see ad pg 100
Videotek see ad pg 196

MARLOW ASSOC INC

3645 Warrensville Center Rd
Cleveland 44118
216 881-6500
Line: power supplies
Yardney see ad pg 183

McFADDEN SALES INC

150 E Broad St
Columbus 43215
614 221-3363
Line: audio components, equip
Shure see ad pg 141

MICRO SALES CORP

34 Virginia Ave
Centerville 45459
513 433-8171
21300 Lorain Rd
Cleveland 44126
216 331-0900
Line: audio & video equip
Boonton Electronics see ad pg 51

MIDWEST TELECOMMUNICATIONS

1516 Northland Blvd
Cincinnati 45250
513 742-2300
Line: audio components, equip
Amtron see ad pg 87

T R MOORE ASSOC

8513 Springboro Pike
Miamisburg 45342
513 433-0762
Line: test equip
Sound Technology see ad pg 79

OHIO INSTRUMENTS

7180 Brundage Road
Waldo 43356
614 726-2828
Line: test instruments
Marconi see ad pg 69

J B PARENT CO

4986 Gateway Dr
Medina 44256
216 725-8871
Line: audio equip
Otarl see ad pg 173
UREI see ad pg 145

UNITED TRANSFER

PO Box 42272
8095 Village Dr
Cincinnati 45242
513 793-3426
Line: video equip
Video Aids see ad pg 166

A C WAHL & ASSOCS

135 Williams St
Cincinnati 45215

513 761-5500

Line: audio components
Tech Labs see ad pg 182

WELLER ELECTRONIC SALES

5274 Sinclair Rd
Columbus 43229
614 885-7819
Line: audio equip
HM Electronics see ad pg 202

WKM ASSOC INC

16141 Puritas Ave
Cleveland 44135
216 267-0445
7913 S Suburban Rd
Dayton 45459
513 434-7500
Line: lighting & test equip
Fluke see ad pg 159

OKLAHOMA

DELCOM CORP

6106 E 32nd St
Tulsa 74135
918 663-9416
Line: video & lighting equip
Conrac see ad pg 115
3M Mincom see ad pg 52, 168, 170
Strand Century see ad pg 88

DOUG BROWN ENTERPRISES

Box 7494
Tulsa 74105
918 747-5045
Line: audio components
Stanton see ad pg 100

HILL RADIO EQUIPMENT

PO Box 622
Claremore 74017
918 341-5240
Line: broadcast equip
QEI see ad pg 187
Stanton see ad pg 100

SYSTEMATICS

510 N Sheridan
Tulsa 74115
Line: video equip
Dynasciences see ad pg 45

OREGON

BCD

7100 SW Hampton St Suite 121
Tigard 97223
503 639-8223
Line: video equip
CCA see ad pg 117
TFT see ad pg 65

COLUMBIA TELECOMMUNICATIONS

8656 SE Canyon Rd
Portland 97225
Line: full line audio & video equip
Strand Century see ad pg 88

NORTHWESTERN VIDEO INC

237 NE Front Ave
Portland 97204
503 232-4632
Line: full line video equip
Strand Century see ad pg 88

JOHN ODGERS

7150 SW Hampton St Ste 131
Tigard 97223
503 639-8223
Line: video equip
Ampro Broadcasting see ad pg 10

OREGON A/V SYSTEMS INC

117 SW Front Ave
Portland 97204
503 224-4313
Line: audio & video products
3M Mincom see ad pg 52, 168, 170

continued on page 180

A NEW APPROACH TO TELECINE LIGHT CONTROL THAT IS . . .

FASTER

QUIETER

SMOOTHER

and MORE EFFECTIVE.

FROM THE WORLD'S LARGEST SUPPLIER OF TELECINE EQUIPMENT.



LAIRD TELEMEDIA INC.

2125 SOUTH WEST TEMPLE • 801 487 6251
SALT LAKE CITY, UTAH 84115



MODEL 5050
AUTOMATIC LIGHT
CONTROL

BROADCAST QUALITY WEATHER RECEIVER

Mod. CRW; 162.40, 162.475, 162.55 mhz.



Take advantage of the expanding network of National Weather Service VHF weather stations. This sensitive, selective (and reasonably priced) receiver can bring you accurate local weather, national weather, weather radar data, emergency alert messages, plus farming and marine information where applicable. Its capability for unattended recording of emergency alert messages and updated forecasts can save time and money. Rebroadcast is FCC authorized.

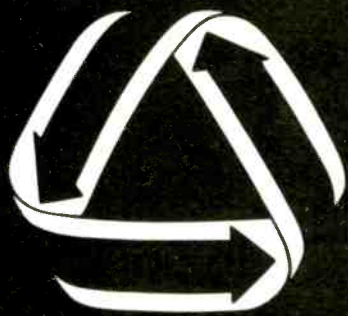
Receiver is rack mountable, remoteable, with an attractive black anodized panel. Demuting and remote alarm are initiated by 1050 "Alert" tone. A relay closure is initiated by either the 1050 tone or a 1650 hz. forecast update signal tone. These are the only tone signals NWS uses.

Crystal and ceramic IF Filters, plus double tuned dual gate MOSFET RF stage, give excellent interference rejection and high sensitivity (.28 microvolts for 12 db. (S+N)/N.). Whip antenna, jack and terminals for external antennas. One year Warranty.

GORMAN-REDLICH • 6 Curtis St. • Athens, OH • 45701
Phone (614) 593-3150

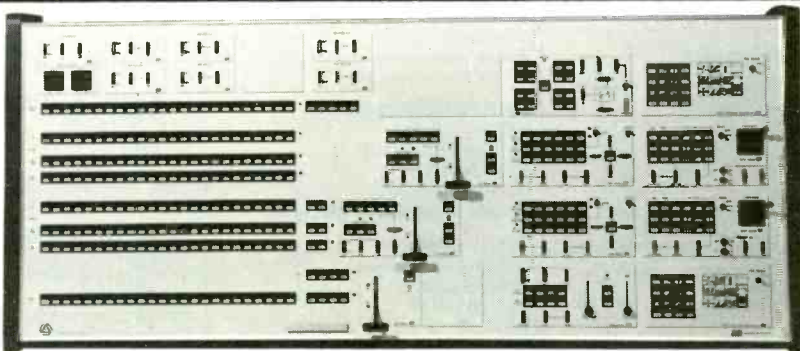
Circle 223 on Reader Service Card

Circle 224 on Reader Service Card



Central Dynamics Creator of "the Smart Switcher"

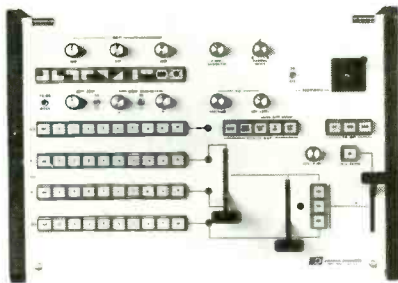
The super powerful CD-480 Video Switcher



Revolutionary modular switchers with unprecedented production power. They outperform the largest conventional switchers, yet are extremely simple to operate. Their power and ease of operation are due to CDL's new Sequential Effects (SFX) Amplifier, which can cut, mix or wipe between background sources and two separate key

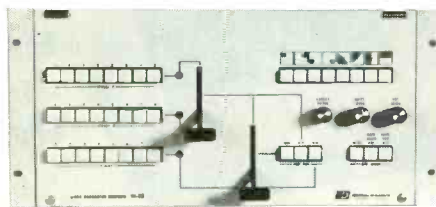
sources either individually or in any combination. Models with one or two SFX Amplifiers provide all the standard and optional features you need. A variety of modular accessories will continue to keep your switchers smarter than the rest as new technology develops.

The sophisticated VS-14



Sophisticated enough for large studio production, yet compact and inexpensive enough for small mobiles. Soft wipes and keys—even a Downstreamer keyer are standard. Self-contained and remote versions available.

The inexpensive VS-10



An inexpensive broadcast quality 8-input switcher that features flexibility and ease of operation. Self-contained electronics for rapid installation in ENG and other small mobiles.

Request our Short Form Catalog for a description of a complete line of video products.
Master Control Switchers • Video Tape Editors • System 100 Automation • SMPTE Time Code Generators and Readers • Video and Pulse Distribution Amplifiers • Chroma Keyers: RGB and Encoded • Processing Amplifiers • Audio/Video Routing Switchers • Pulse Assignment Systems • Machine Control Systems •



CENTRAL DYNAMICS LTD

U.S.A.
Chicago
331 West Northwest Highway,
Palatine, IL 60067
Phone—312-991-4720
TWX—910 693 4805

New York City
230 Livingston Street,
Northvale, NJ 07647
Phone—201-767-1300
TWX—710 991 9753

Los Angeles
15130 Ventura Blvd.—Suite 307,
Sherman Oaks, CA 91403
Phone—213-789-0574
TWX—910 495 1713

CANADA
Montreal
147 Hymus Blvd.,
Montreal, Quebec H9R 1G1
Phone—514-697-0811
TWX—610 422 3906

Circle 225 on Reader Service Card

Reps/Dists

SPS ELECTRONICS

12025 NW Thompson Rd
Portland
503 297-6919
Line: audio components
Tech Labs see ad pg 182

VIDEO SONICS

1412 SE Morrison St
Portland 97214
503 232-4632
Line: video/audio, lighting equip
Strand Century see ad pg 88

PENNSYLVANIA

AB&T SALES CORP

1000 Valley Forge Rd
King of Prussia 19406
215 265-2028
Line: audio equip
HM Electronics see ad pg 202

ALPHA VIDEO & ELECTRONICS CO

8 E Mall Plaza
Carnegie 15106
412 279-6169
Line: video equip
NEC see ad pg 136, 137, 171

BARTLETT ASSOCIATES INC

130 West Lancaster Ave
Box 72
Wayne 19087
215 688-7325
Line: video equip, switchers
Cohu see ad pg 162

BROADCOM

Tilgham at Jefferson
Allentown 18102
215 437-0607

Line: audio & video equip

ROH see ad pg 134

Stanton see ad pg 100

SAM CERCON

30 Sigrid Dr
Carnegie 15106
412 276-7723
Line: video & lighting equip
Strand Century see ad pg 88

GEORGE M CONNEEN CO INC

24 S Newtown St Rd
Newtown Square 19073
215 353-2241
Line: audio equip
Telex see ad pg 44, 92

CONTROL ASSEMBLY CORP

1339 Sylvan Dell Dr
Pittsburgh 15243
Line: video equip
Knox see ad pg 183

D&H DISTRIBUTING

2525 N 7th St
Philadelphia 19133
717 236-8001
Line: lighting equip
Strand Century see ad pg 88

FITE-PETRO INC

400 Bethlehem Pike
Philadelphia 19118
215 248-3171
Line: power supplies
Yardney see ad pg 183

KADET PHOTO

1004 Fifth Ave
Pittsburgh 19147
412 261-7258
Line: full line photo equip
Strand Century see ad pg 88

LERRO ELECTRICAL CORP

3125 N Broad St
Philadelphia 19132
215 223-8200
Line: full line video equip
Conrac see ad pg 115

L&M ASSOCS

965 A Brostol Pike
Andalusia 19020
215 639-3100
Line: test instruments
Marconi see ad pg 69

LOFSTRUM ELECTRONICS

Empire Bldg
Glassport 15045
412 461-2116
Line: video equip
Strand Century see ad pg 88
Videotek see ad pg 196

LPB INC

520 Lincoln Highway
Frazer 19355
215 644-1120
Line: audio & video equip
Stanton see ad pg 100

SAMUEL K MacDONALD INC

1531 Spruce St
Philadelphia 19102
215 545-1205
Line: audio products
Shure see ad pg 141

McMANUS ENTERPRISES

139 Montgomery Ave
Bala Cynwyd 19004
215 664-8600
Line: lighting equip
Grt American Mkt see ad pg 20

ROBERT MEYERS ASSOC

613 W Cheltenham
Melrose Park 19126
215 224-1663
Line: audio & video equip
Boonton Electronics see ad pg 51

MID-ATLANTIC SALES GROUP

1010 W 8 Ave Ste H
King of Prussia 19406
215 265-4040
Line: test & monitoring instruments
Fluke see ad pg 159

CHARLES M NILES & ASSOC

463 W Harvey St
Philadelphia 19177
215 843-4051
Line: power supplies
Yardney see ad pg 183

PEIRCE PHELPS INC

2000 N 59 St
Philadelphia 19131
215 879-7000
Line: fullline TV production equip
Amtron see ad pg 87
CEI see ad pg 195
Conrac see ad pg 115
3M Mincom see ad pg 52, 168, 170
Strand Century see ad pg 88
Videotek see ad pg 196

MARK PITKOW COMPANY

1580 Buck Hill Dr
Huntington Valley 19006
215 464-8921
Line: audio equip, components
Sound Technology see ad pg 79

RO-CEL ELECTRONICS INC

731 Voice of the Theatre Bldg
Rt 8 North
Pittsburgh 15223
412 781-2326
Line: audio components
ESE see ad pg 180

RPC ELECTRONICS

620 Alpha Drive
Pittsburgh 15238
412 782-3770
Line: full line of audio/video equip,
lighting equip
Amtron see ad pg 87
3M Mincom see ad pg 52, 168, 170
Strand Century see ad pg 88

S&S ASSOC

Boro Line Rd
King of Prussia 19406
215 265-3450
Line: test equip
Marconi see ad pg 69

MODEL 1107 VIDEO SWITCHER

ENG?



HAVE
A
LOOK!

- 3 INPUTS, 2 BUSSES, VERT. INT. SWITCHING
- FULL COLOUR DELAY COMPENSATION
- MIX, WIPE, MIX OF EFFECTS, KEY, MATTE, WIPE OF KEY
- 22 STANDARD EFFECTS PATTERNS
- \$995

INCREDIBLE...
AND... OFF THE SHELF

**DISCOUNT
INDUSTRIES Ltd**

105 EAST 69th AVE., VANCOUVER, B.C.,
CANADA V5X 2W9 - PHONE (604) 327-9446 TELEX 04-508605

CALL OR WRITE FOR FULL DETAILS

Circle 226 on Reader Service Card

Perfect Timing



Presettable tape timer

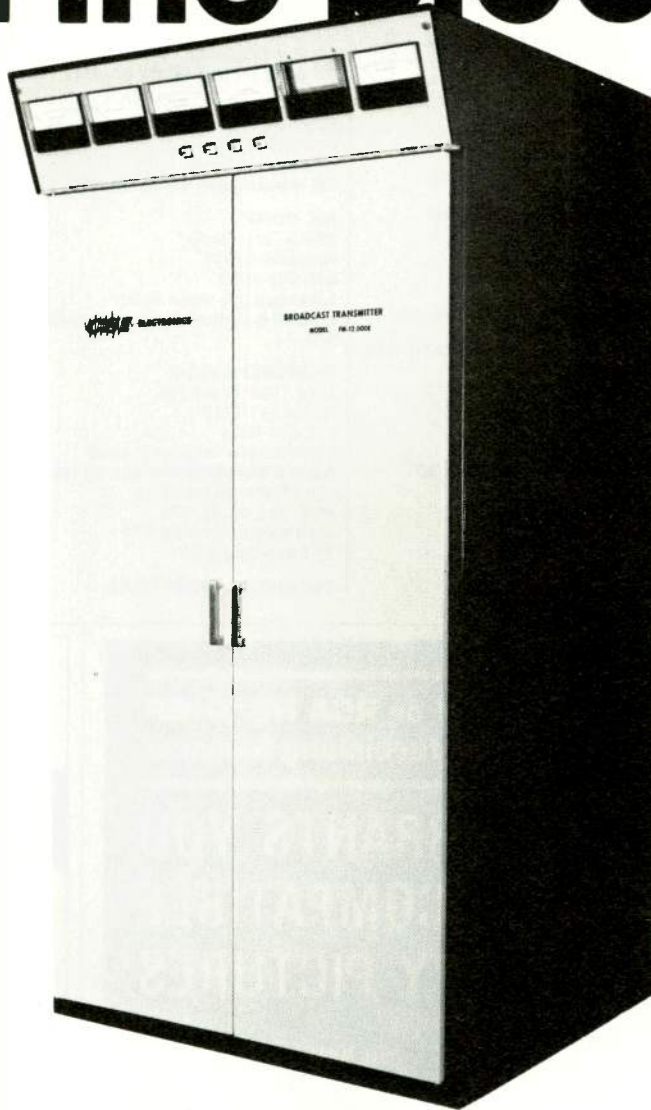
If you do OFF-AIR taping, or if you want to start your recorder when you'd rather be elsewhere, ES 1296 is for you! Presettable up to 96 hours in advance, starts any machine you want, turns it off after an hour, and for only \$156. For \$26 more, you get an option to turn off your equipment in 16, 33, 66 or 138 minutes, or 33, 66, 138 or 250 minutes. And for another \$26, we'll give you Sequential Turn-On, for solenoid operated recorders.

ESE

Write, Wire or Call: (213) 674-3021
505½ CENTINELA AVENUE • INGLEWOOD, CALIFORNIA 90302

Circle 227 on Reader Service Card

The toughest three-year-old on the block!



Three years ago, CSI announced a new line of AM and FM transmitters at the NAB convention in Las Vegas.

In 1978 — three years and 271 installations later we were back in Las Vegas with the NAB and a full line of broadcast transmitters.

Now we're at NRBA in San Francisco. Be sure to stop by Booth #147, and say hello . . . to the toughest three-year-old on the block.

CSI ELECTRONICS INC.

3800 South Congress Street • Boynton Beach, Florida • Phone 305/732-0300 • Telex 513458

IN CANADA, contact Peter MacFarlane, CSI Electronics, Pointe Claire P. Q. Phone 514-695-8130 or 514-484-6601.

Circle 228 on Reader Service Card

Reps/Dists

VAL-TRONICS INC

10 Park Bldg
Pittston 18640
717 655-5937
Line: audio & video equip
CCA see ad pg 117
Stanton see ad pg 100

VIDEO PRODUCTS

2000 N 59 St
Philadelphia 19131
215 879-7000
Line: video equip
Electro & Optical Systems see ad pg 148

WAGGONER-VERHILL ASSOCS

3550 Laketon Rd
Pittsburgh 15235
412 241-5205
Line: audio components
Tech Labs see ad pg 182

WKM ASSOC INC

90 Clairton Blvd
Pittsburgh 15236
412 892-2953
Line: monitoring & test instruments
Fluke see ad pg 159

RHODE ISLAND

WRH PRODUCTIONS

5 Industrial Way
Riverside 02915
401 333-2070
Line: full line audio components
Stanton see ad pg 100

SOUTH CAROLINA

CALHOUN A/V CO

1234 St Andrews Rd
Columbia 29210
803 772-9130
Line: audio & video products, lighting equip
Strand Century see ad pg 88

TENNESSEE

ALLIED SOUND-VISUAL

EDUCATION DIV
2741 Nonconnah Blvd S Suite 320
Memphis 38132
901 396-4747
401 Spence Lane
Nashville 37210
615 254-6473
Line: audio 9 video equip
Dynasciences see ad pg 45

AUDIO CONSULTANTS INC

1200 Beechwood Ave
Nashville 37212
615 256-6900
Line: audio equip
Audio & Designs see ad pg 202

BAKER & TAYLOR EDUCATIONAL PRODUCTS

2910 Craft Dr
Nashville
800 251-8575
Line: video equip
Strand Century see ad pg 88

BARRY TRADING CO

105 W Market St
Lebanon 37087
Line: audio components
CCA see ad pg 117

BROADCAST DISTRIBUTORS

Bible Place
Cleveland 37311
615 472-8200
Line: audio components and equip
CCA see ad pg 117

BROADCAST EQUIPMENT & SUPPLY CO

Rt 1 Weaver Pike
Bluff City 37620
615 878-2531
Line: full line audio equip
CCA see ad pg 117
Stanton see ad pg 100

CENTELE SYSTEMS

1444 Shelby Dr
Suite 107
Memphis 38116
901 346-1043
Line: video equip
3M Mincom see ad pg 52, 168, 170

W R GRACE

Nashville
615 244-5566
Line: video equip
3M Mincom see ad pg 52, 168, 170

ICC CORP

333-S Troy Circle
Knoxville 37819
615 584-4696
Line: audio & video equip
Electro & Optical Systems see ad pg 148

RADFORD ASSOC

1331 Otter Creek Rd
Nashville 37215
615 373-0231
Line: full line broadcast equip
Ampro Broadcasting see ad pg 10
Nurad see ad pg 49
ROH see ad pg 134
Sintronic see ad pg 174
TFT see ad pg 65

TECHNICAL INDUSTRIES

274 Moncannah Blvd
Memphis 38131
901 354-5284
401 Spence I
Nashville 37210
615 256-0800
Line: video & lighting equip
Amtron see ad pg 87
Strand Century see ad pg 88

TEXAS

ABADON/SUN INC

PO Box 6520
San Antonio 78209
512 824-8781
Line: audio equip
Audio & Designs see ad pg 202

ADVANCED SYSTEMS TECHNOLOGY

110 S Collins
Arlington 76010
817 461-4574
Line: audio & video equip
Clear-Com see ad pg 164

AIREP ELECTRONICS INC

10155 Plano Rd
Dallas 75238
214 349-4360
Line: audio & video equip
Boonton Electronics see ad pg 51

BOB AMOS & ASSOCS

PO Box 3247
Irving 75061
214 823-7820
Line: full line broadcast equip
Sintronic see ad pg 174
UREI see ad pg 145

BADEAUX SALES CO

5223 Chantilly Lane
Houston 77092
713 681-9857
Line: power supplies
Yardney see ad pg 183

**Mark X or Mark XV or RCA HB/SHBP
Quad Video Head Refurbishing Service:**

**SPIN PHYSICS WARRANTS YOU
1000 HOURS OF COMPATIBLE
BROADCAST QUALITY PICTURES**

LET SPIN PHYSICS PROVE to you how and why our refurbishing service with hot-pressed ferrite video heads not only saves you money but also provides superior performance.

SP SPIN PHYSICS, INC.
A KODAK COMPANY

11633 Sorrento Valley Road, San Diego, California 92121

Telephone: 714-453-5410 Cable: SPINEX SANDIEGO TWX: 910-322-1737

EASTERN REGION Kent White 301-839-3218 NORTHEAST Ben Everett 301-730-6855

SOUTHEAST Knowlton Harrell 205-582-6572 MIDWEST Ray Kundrot 312-325-1009

CENTRAL Leroy Koonsman 214-245-1816 PACIFIC Ken Thompson 415-961-7794

SOUTHWEST Ed Gehle 805-964-3316 NORTHWEST Dave Franssens 916-332-0885

EUROPE Bill Kroon, Putten, The Netherlands (03418) 3689 or Telex (844) 47589

Circle 229 on Reader Service Card

**FREE
FROM**

**Tech
Labs**



**INDUSTRY'S MOST COMPLETE
TECHNICAL INFORMATION ON**

- ROTARY SWITCHES
- PROGRAMMING SWITCHES
- THUMBWHEEL SWITCHES
- ATTENUATORS

Call or Write For Free Catalog

TECH LABORATORIES, INC

Bergen & Edsall Bldgs., Palisades Park, N.J. 07650
Tel. (201) 944-2221

Circle 230 on Reader Service Card

ARNOLD BARNES ASSOCS INC
 PO Box 9748
 Austin 78766
 512 454-4371
 7616 LBJ Freeway Ste 401
 Dallas 75240
 214 233-5535
 1275 Space Pk Dr
 Houston 77048
 713 488-0814
 1300 E Arapaho Rd Ste 107
 Richardson 75081
 214 235-4543
Line: audio, video, broadcast products
CEI see ad pg 195
Cohu see ad pg 162

AUSTIN PROFESSIONAL AUDIO INC
 308 W 6 St
 Austin 78701
 512 477-3706
Line: audio equip
MCI see ad pg 37

BARNHILL TWO INC
 111 W Anderson Lane Ste 221
 Austin 78752
 512 451-0217
 1101 Executive Dr E Ste 110
 Richardson 75081
 217 231-9012
 10606 Hempstead Hwy Ste 132
 Houston 77092
 713 688-9971
Line: test instruments
Fluke see ad pg 159

BESCO INTERNATIONAL
 3523 Whitehall Dr
 Dallas 75229
 217 630-3600
Line: broadcast equip
Ampro Broadcasting see ad pg 10

BRADENCO
 11500 Stemmons
 Dallas 75229
 214 243-7261

Line: test instruments
Marconi see ad pg 69

CAMPION SALES CO
 PO Box 88
 Richardson 75080
 214 238-8145
Line: audio equip
Shure see ad pg 141

LEE CAPUT
 13620 Littlecrest Dr
 Dallas 75234
 214 241-0976
Line: video & CATV equip
Lenco Inc see ad pg 105

COLLINS RADIO GROUP
 1225 North Alma
 Richardson 75080
 214 690-5000
Line: full line broadcast equip
Aristocart see ad pg 42
Stanton see ad pg 100

COLLINS CO
 10155 Plano Dr Ste 10
 Dallas 75228
 214 341-7866
 3815 Richmond Ave Ste 112
 Houston 77027
 713 626-1293
Line: audio equip
HM Electronics see ad pg 202

CROUSE-KIMZEY CO
 3507 W Vickery Box 9830
 Ft Worth 76107
 817 737-9911
Line: audio components
CCA see ad pg 117
Stanton see ad pg 100

B CULBERTSON
 Suite 1 at the Registry
 6350 LBJ Fwy
 Dallas 75240
 214 387-1389
Line: video equip

Telemet see ad pg 143

VICTOR DUNCAN INC
 2659 Fondren Ave
 Dallas 75206
 214 369-1165
Line: full line TV production equip
Strand Century see ad pg 88

TOM FOLSOM
 PO Box 16-CC
 San Antonio 78201
 512 736-1763
Line: video & lighting equip
Strand Century see ad pg 88

HOOVER BROS INC
 2920 Canton St
 Dallas 75226
 214 741-4527
Line: video equip
Amtron see ad pg 87

INDUSTRIAL AV INC
 2617 Bissonnet
 Houston 77005
 713 524-1956
Line: video equip
Conrac see ad pg 115
3M Mincom see ad pg 52, 168, 170

LITTLE STAGE LIGHTING
 10507 Harry Hines Blvd
 Dallas 75220
 214 352-1659
Line: lighting equip
Grt American Mkt see ad pg 20

CHARLES LUCAS SALES CO
 PO Box 24632
 Dallas 75224
 4424 Mint Way
 Dallas 75236
 214 330-8181
Line: audio equip, test equip
Sound Technology see ad pg 79

LYKES ELECTRONICS
 PO Box 26816

Houston 77207
Line: audio & video equip
Dynasciences see ad pg 45

MARTIN ZIENKOSKY BROWNE & ASSOCS
 3801 Kirby, Suite 834
 Houston 77006
 713 523-4333
 13731 Omega Rd
 Dallas 75240
 214 233-5535
 PO Box 9748
 Austin 78766
 512 454-4371
Line: full line of audio & video equip
IGM/NTI see ad pg 18
Ramko see ad pg 118-119
TFT see ad pg 65

D McLANE
 6704 Talmadge Ln
 Dallas 75230
 214 387-3777
Line: audio equip
Ward-Beck see ad Cov 4

MIDWEST TELE COMMUNICATIONS
 3000 Carlisle Plaza
 Dallas 75235
 214 278-4400
Line: audio lighting & video equip
Amtron see ad pg 87
Conrac see ad pg 115
3M Mincom see ad pg 52, 168, 170
Strand Century see ad pg 88
Videotek see ad pg 196

DARRYL PARKER
 13731 Omega Rd
 Dallas 75240
 214 233-5535
Line: radio equip
IGM see ad pg 18

PROFESSIONAL AUDIO SERVICES
 PO Box 1953
 Ft Worth 76101
 817 536-6254

This titler costs less than a K50.



- BUT THE K50 HAS 4 PAGES OF MEMORY.

And that's not all it has. If you want to write on your screen, but you don't have a lot to spend, Do it the right way. Do it with a Knox K50 Titler.



It's still a Knox. And it's still \$995.



16021 Industrial Drive, Gaithersburg, Md. 20760
 (301)840-1930

Circle 231 on Reader Service Card

SEPTEMBER, 1978—BM/E

How About That!

A Back Pack TV Camera Battery With 250% More Power Output

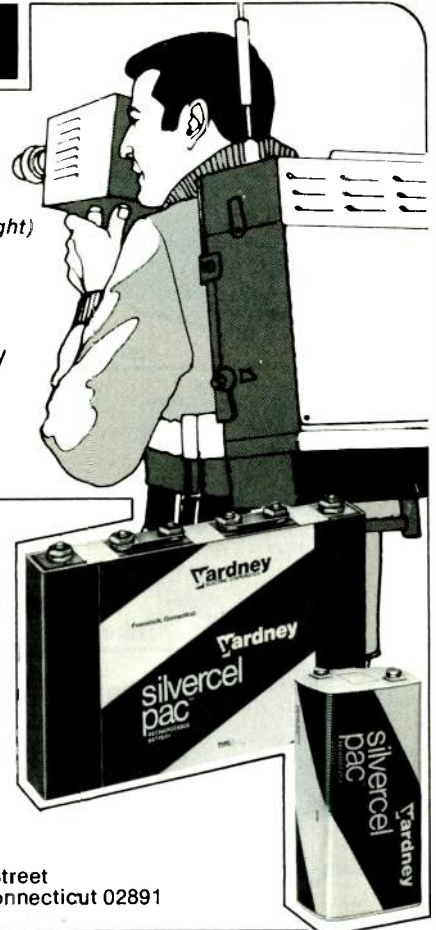
(At No Increase In Weight)

Specify **silvercel**
 By Yardney

Or, If Your Present Battery Is As Powerful As You Want It . . . How Would You Like To Have It At 1/3rd Its Present Weight?

Silvercel rechargeable batteries pack the most useable power into the smallest and the lightest modular package. Used by all major manufacturers of TV Back Pack Cameras as original equipment, they offer the added advantage of a QUICK CHARGE without battery damage by the use of a quick pulse charge.

Silvercel (silver/zinc) rechargeable batteries — the recognized standard of excellence in power output for back pack TV cameras. Our technical assistance and catalog are yours for the asking.



Yardney
 ELECTRIC CORPORATION

82 Mechanic Street
 Pawcatuck, Connecticut 02891

Circle 232 on Reader Service Card

Reps/Dists

Line: audio components
Aristocart see ad pg 42
Stanton see ad pg 100

SAVCO
 PO Box 427
 Richardson 75080
 214 234-1841
 Line: radio & TV equip
Automated Broadcast Control see ad pg 98
Gorman-Redlich see ad pg 178

JY SCHOONMAKER CO
 10710 Sand Hill Rd
 Dallas 75238
 214 349-1650
 Line: tape recorders, audio equip
Telex see ad pg 44,92

SOUND IDEAS ASSOCS
 6123 Spruce Forest
 Houston 77018
 713 686-4838
 5641 Yale Blvd
 Dallas
 Line: video equip
Video Aids see ad pg 166

SOUTHWEST AUDIO CONSULTANTS
 1903 Apollo
 Richardson 75081
 Line: audio/video equip
MCI see ad pg 37

SOUTHWEST ELECT
 9226 Markville Dr
 Dallas 75231
 214 690-9881
 Line: audio components
Tech Labs see ad pg 182

GENE SUDDUTH
 845 39th SE

Paris 75460
 214 785-5764
 Line: full line video equip
Asaca see ad pg 11,135
Dataitek see ad pg 99
Electro & Optical Systems see ad pg 148
Knox see ad pg 183
TEA see ad pg 104
V J SYKES ASSOC
 1115 S Broadway
 Carrollton 75006
 214 242-0511
 Line: audio & video equip
Monroe see ad pg 205

TEXAS VIDEO SYSTEMS
 10209 Plano Rd #3
 Dallas 75238
 214 341-1771
 Line: video equip
3M Mincom see ad pg 52, 168, 170

TOAL ASSOC
 2501 Evergreen
 Plano 75075
 214 596-1315
Videotek see ad pg 196

TOTAL ASSOC
 8706 La Brom St
 Dallas 75209
 214 351-3664
 Line: monitors
Videotek see ad pg 196

VIDEO ASSOC
 5555 Lamar J 115
 Austin 78751
 512 451-0138
 211 Seventh
 Suite 1121 Austin 78701
 Line: full line video & lighting equip
Strand Century see ad pg 88

VIDEO SYSTEMS
 2123 W Governors Circle
 Houston 77092

2741 34 St Lubbock 79400
 806 792-2325
 3817 Ross Ave
 Dallas 75204
 8801 Tradeway St
 San Antonio 78217
 Line: full line TV production equip
Dynasciences see ad pg 45
3M Mincom see ad pg 52, 168, 170
NEC see ad pg 136, 137, 171
Strand Century see ad pg 88

WHALIN'S PRO AUDIO SALES
 2910 Buena Vista
 Arlington 76010
 817 261-8197
 Line: full line audio & recording equip
Stanton see ad pg 100

WYBORN SALES CO
 9450 Skillman #115
 Dallas 75243
 214 348-9657
 Suite #108
 7315 Ashcraft
 Houston 77036
 713 772-0961
 Line: audio components, equip
AKG Acoustics see ad pg 134

UTAH

BARNHILL THREE INC
 54 W 2100 S Ste 3
 Salt Lake City 84115
 801 485-8121
 Line: audio & video test instruments
Fluke see ad pg 159

JE HALL COMPANY
 2330 So Main #8
 Salt Lake City 84115
 801 466-6105
 Line: audio equip
UREI see ad pg 145

INTERMOUNTAIN VIDEO SYSTEM
 658 Wilmington Ave
 Salt Lake City 84106
 801 486-8417
 Line: full line lighting & video equip
Strand Century see ad pg 88

MEDIA WEST INC
 187 West 3100 South Box 458
 Bountiful 84010
 801 295-3308
 Line: audio components & radio equip
Aristocart see ad pg 42
Stanton see ad pg 100

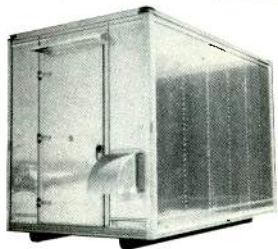
PARTRIDGE ELECTRONIC SALES
 PO Box 21205
 Salt Lake City 84121
 801 943-0127
 Line: audio test equip, generators
Sound Technology see ad pg 79

RIA CORP
 50 East Malvern Ave
 Salt Lake City 84115
 801 486-8822
 Line: TV and microwave equip
Amtron see ad pg 87
NEC see ad pg 136-137, 171
Nurad see ad pg 49

SOUND ELECTRONICS SERVICES INC
 430 S State St
 Salt Lake City 84111
 801 363-3976
 Line: audio equip
Clear-Com see ad pg 164

TV SPECIALISTS
 170 E 21st S
 Salt Lake City 84115
 801 485-8171
 Line: TV production equip
Microtime see ad pg 33

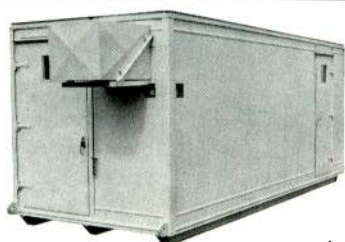
ADVANCE INDUSTRIES



aluminum



fiberglass



steel

factory-made
 completely equipped
PREASSEMBLED BUILDINGS
 to your specifications.

- fiberglass
- aluminum
- steel

All three types of electronic equipment buildings are available with whatever electrical or plumbing needs you may have, installed at the factory.

Other Products:
 CATV, FM, AM and
 Microwave Towers

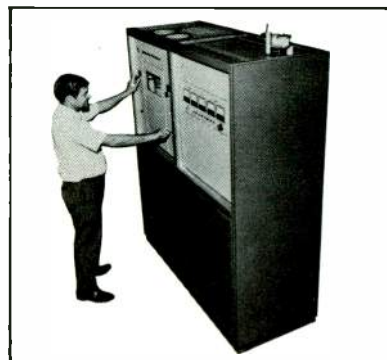
Call FREE...800/831-0974, in
 Iowa call collect...712/252-4101

ADVANCE INDUSTRIES

2307 Bridgeport Drive
 Sioux City, Iowa 51102

QUALITY TALKS FOR KPAC

Port Arthur, Texas



Continental's new 5/10 kW AM transmitter is setting records for acceptance. It has performance and efficiency, with the cleanest sound around. Listen to Continental: quality talks.

Write for brochure: Continental Electronics Mfg. Co. Box 270879 Dallas, Texas 75227 (214) 381-7161

Continental Electronics

VIRGINIA

AVEC ELECTRONICS

2002 Staples Mill Rd
Richmond 23230
804 359-6071
2009 Williamson Rd
Roanoke 24012
703 344-6288
711 Granby St
Norfolk 23510
804 627-3502
Line: video equip
3M Mincom see ad pg 52, 168, 170

DAVID GREEN

21 N Wirt
Leesburg 22075
703 777-8660
Line: audio components & equip
Aristocrat see ad pg 42
ESE see ad pg 180
Stanton see ad pg 100

GENE HANNA

4618 Cromwell Dr
Annandale 22003
713 941-9025
Line: video & lighting equip
Strand Century see ad pg 88

MIDWEST CORP

1395 Air Rail Ave
Virginia Beach 23455
804 855-1056
Line: audio video & lighting equip
Videotek see ad pg 196

MIDWEST TELECOMMUNICATIONS

1395 Air Rail Ave
Virginia Beach 23455
804 464-6256
Line: audio, video, lighting equip
Amtron see ad pg 87
Conrac see ad pg 115
3M Mincom see ad pg 52, 168, 170
Strand Century see ad pg 88
Videotek see ad pg 196

QT ELECTRONICS

7127 Little River Turnpike
Annandale 22003
703 941-4242
Line: video, transmitting & measuring equip
Rohde & Schwarz see ad pg 121

ROBERT SLYE ELECTRONICS

3415 N Washington Blvd
Arlington 22201
703 525-7272
Line: video equip, lighting equip
Conrac see ad pg 115
Strand Century see ad pg 88

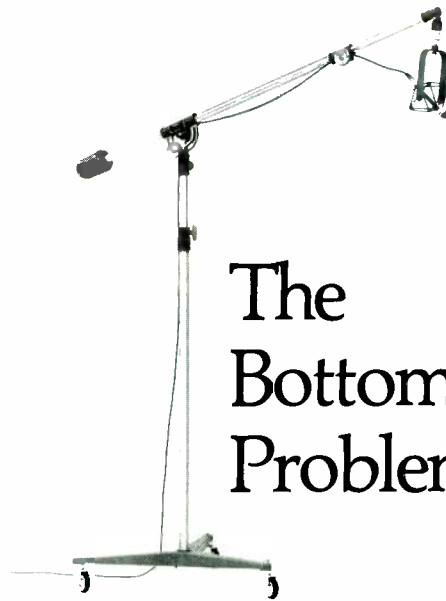
WASHINGTON

BENNETT ENGINEERING CO

Box 76
Mercer Island 98040
206 232-3550
Line: full line TV production equip
Cohu see ad pg 162
Microwave Assoc see ad pg 81
Nurad see ad pg 49
Stanton see ad pg 100
Strand Century see ad pg 88
TFT see ad pg 65

BROADCAST SUPPLY WEST

2607 Bridgeport Way W Ste 20
Tacoma 98466
206 565-2301
Line: broadcast products
Aristocart see ad pg 42
ESE see ad pg 180
Stanton see ad pg 100



The Bottom Line Problem-Solver

The Bottom Line

We're Audio Consultants. We solve problems; and there is no greater problem than that of high quality at low cost. In our industry, that's the "bottom line".

When a client needs a certain sound, we respond with more than just equipment. We respond with a system that's a problem-solver. And, our equipment must do the same.

That's why everything we produce functions within an area greater than its own . . . within the total system, the total solution to the problem.

Like our systems, our equipment must solve problems at the bottom line, delivering excellence at low cost.

The Problem-Solver

One of our problem-solvers is the Starbird Microphone Boom.

The standard of quality for the industry, the Starbird reduces costly set-up time dramatically and assures maximum safety for studio personnel.

Its design permits quick and precise "spotting", with maximum extension and height flexibility. The swivel clevis provides 360-degree facing, while the adapters accommodate any microphone you select. The counterweight balances the microphone properly; and ball bearing, rubber-tired casters assure easy and noiseless movement.

The Starbird is simply the best. Ask the countless studios where it is solving problems every day . . . at the bottom line. Or, ask us. We'd like to tell you more.



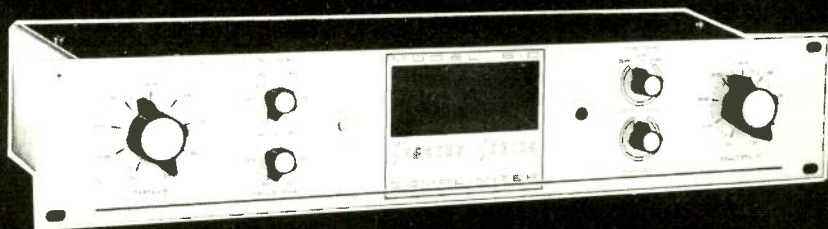
Accurate Sound Corporation

114 Fifth Avenue / Redwood City, California 94063 / (415) 365-2843 / TELEX: ASCO 34-8327

"Because Sound Comes From A System"

Circle 235 on Reader Service Card

COMPLIMITER™



MODEL 610

Used in recording studios; disc mastering studios; sound reinforcement systems; TV, AM, FM broadcast stations to maintain a sustained average signal at a level significantly higher than that possible in conventional limiters, and with performance that is seldom attained by most linear amplifiers.

Rack mounted, solid state, new functional styling, the Model 610 is in stock for immediate shipment.

Specifications are available from:

SPECTRA SONICS

770 WALL AVENUE, OGDEN, UTAH 84404
(801) 392-7531



Circle 236 on Reader Service Card

Change
Sound to
Silence
with a

TABERASER



This rugged, heavy duty bulk tape eraser wipes sound from all magnetic tapes, cartridges, cassettes and magnetic film stock; handling up to 2".

It erases with minimum residual noise because the field automatically diminishes at the end of each 30-second cycle. A thermal control and blower keeps the unit below 71° C.

Available for 60Hz or 50Hz operation.

For the distributor in your area—Call or write:

TABER Manufacturing & Engineering Company
2081 Edison Ave. • San Leandro, Ca. 94577 • (415) 635-3831

Circle 237 on Reader Service Card

Reps/Dists

CAPITAL COMMUNICATION IND
PO Box 481
Olympia 98507
206 843-5378
Line: audio equip
HM Electronics see ad pg 202

CENTRAL VIDEO
3806 Woodland Pk Ave N
Seattle 98103
206 632-8900
Line: video equip
Clear-Com see ad pg 164

CUSTOM VIDEO SYSTEMS
8320 Lake City Way NE
Seattle 98115
206 524-1026
Line: video & lighting equip
Amtron see ad pg 87
3M Mincom see ad pg 52, 168, 170
Strand Century see ad pg 88

EARL & BROWN CO INC
PO Box 9285
Seattle 98109
206 284-1121
Line: audio equip
AKG Acoustics see ad pg 134
Otari see ad pg 173

FLEEHART & SULLIVAN INC
10109 Aurora Ave N
Seattle 98133
206 522-1533
Line: audio equip
Knox see ad pg 183
Shure see ad pg 141
Telex see ad pg 44, 92

IGM/NTI
PO Box 943
Bellingham 98225
206 733-4567
Line: full line audio equip
Aristocart see ad pg 42

INSTRUMENT SPECIALIST SALES GROUP
691 Strander Blvd
Seattle 98188
206 575-3765
Line: full line test & monitoring instruments
Fluke see ad pg 159

HENRY JONCAS CO
12058 Lake City Way NE
Seattle 98125
206 363-9200
Line: audio equip, test equip
Sound Technology see ad pg 79

NORTHSHORE MARKETING (NOR/MARK)
PO Box 865
Belleview 98007
206 641-5687
Line: audio equip
UREI see ad pg 145

NORTHWEST INDUSTRIES
5518 Empire Way-S
Seattle 98118
206 725-1400
Line: full line video equip
Conrac see ad pg 115

NUCOM ASSOCIATES
PO Box 243
Edmonds 98020
206 364-9911
Line: video & audio equip
CEI see ad pg 195
ROH see ad pg 134
TEA see ad pg 104
VIDEO Aids see ad pg 166

SCIENTIFIC DEVICES
10843 NE 8 St
Bellevue 98004
206 454-0900
Line: audio & video equip
Boonton Electronics see ad pg 51

SCIENTIFIC INSTRUMENTS INC
 326 N 100th St
 Seattle 98133
 206 783-6888
 Line: video equip
 Cohu see ad pg 162

TASCO
 12835 Bellevue-Redmond Rd
 Bellevue 98005
 206 453-1414
 Line: test equip, broadcast equip
 Marconi see ad pg 69

TA TRACK AUDIO
 33753 9th Ave So
 Federal Way 98003
 206 941-2233
 Line: audio components
 Aristocart see ad pg 42

WM J WOLFENBARGER
 1100 SW Florida St
 Seattle 98134
 205 522-2522
 Line: audio equip
 QEI see ad pg 187
 Stanton see ad pg 100

WEST VIRGINIA

MIDWEST TELE COMMUNICATIONS
 300 First Ave
 Nitro 25143
 304 722-2921
 Line: full line TV production equip
 Amtron see ad pg 87
 Conrac see ad pg 115
 3M Mincom see ad pg 52, 168, 170
 Strand Century see ad pg 88

WISCONSIN

CAMERA CORNER
 525 S Military Ave
 Green Bay 54303
 414 494-1151
 Line: video, film, lighting equip
 Strand Century see ad pg 88

ELECTRONIC INDUSTRIES INC
 19 E Irving Ave
 PO Box 266
 Oshkosh 54901
 414 235-8930
 Line: audio equip
 Automated Broadcast Controls see ad pg 98
 QEI see ad pg 187

K&M ELECTRONICS OF TODD COMM
 Professional Bldg Suite 202A
 310 N Midvale Rd
 Madison 53705
 608 238-0271
 Line: video equip
 3M Mincom see ad pg 52, 168, 170

KENNETH W MEYERS CO
 3055 N Brookfield
 Brookfield 53005
 414 784-3790
 Line: audio & video equip
 Marconi see ad pg 69

ROBERT SHULT
 PO Box 115
 Ashippun 53003
 414 474-4112
 Line: audio & video equip
 Asaca see ad pg 11, 35

VIDEO IMAGES
 12200 W Adler Lane
 W Allis 53214
 414 475-0111
 811 Mayfair Ave
 Madison 53714
 Line: full line video equip
 Conrac see ad pg 115
 Microtime see ad pg 33
 3M Mincom see ad pg 52, 168, 170



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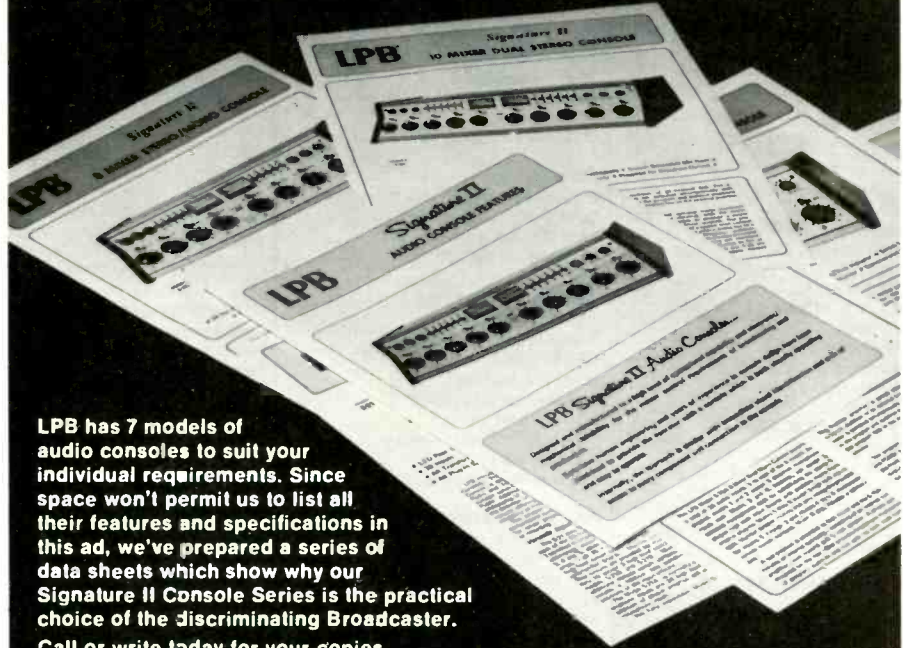
CORPORATION

Route 73 Kresson, NJ 08053 (609) 767-8052

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Circle 238 on Reader Service Card

**4, 5, 8, 10-
 Mono, Stereo!**



LPB has 7 models of audio consoles to suit your individual requirements. Since space won't permit us to list all their features and specifications in this ad, we've prepared a series of data sheets which show why our Signature II Console Series is the practical choice of the discriminating broadcaster. Call or write today for your copies.

LPB®

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Line: video equip
Amtron see ad pg 87

CANADA

ADCOM ELECTRONICS LTD

29-16 Connell Court
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Line: audio & video equip
Amtron see ad pg 87

APPLIED ELECTRONICS

299 Evans Ave
Toronto M8Z 1K2
416 252-3761
Bay No 1
4519 12th St NE
Calgary, Alberta
403 277-8600
Line: full line radio & TV equip
NEC see ad pg 136-137, 171

AUVINIC LTD

1280 Lachaine St
St Vincent De Paul Que H7C 2N7
514 661-5120
Line: audio & video equip
Conrac see ad pg 115

CALDWELL A/V EQUIP CO

1080 Bellamy Rd N
Scarborough Ontario
416 438-6230
Line: full line audio & video equip
Ampro Broadcasting see ad pg 170
ROH see ad pg 134
TFT see ad pg 65
Video Aids see ad pg 166

CANADIAN MARCONI CO

2442 Trenton Ave
Montreal H3P 1Y9 Que
514 341-7630
Line: audio & video equip
Boonton Electronics see ad pg 51

COMAD COMMUNICATIONS LTD

91 Kelfield SF Unit 5
Rexdale Ont M9W 5A3
416 245-1734
Line: audio components & video equip
ESE see ad pg 180

ALAN CRAWFORD ASSOC

800 Windmill Rd
Dartmouth Nova Scotia B3B 1L2
902 469-7865
1330 Marie Victoria Blvd
Longueuil Quebec J4L 1A2
514 670-1212
1299 Richmond Rd
Ottawa Ont K2B 7Y4
613 829-9651
6503 Northam Dr
Mississauga Ont L4V 1J5
416 678-1500
3829 12th St NE
Calgary Alberta T2E 6M5
403 276-9658
116 E 3rd St
N Vancouver BC
604 980-4831
Line: audio components & test equip
Fluke see ad pg 159

CREATIVE HOUSE LTD

Vancouver BC
604 873-5107
Line: audio equip
Tentel see ad pg 201

KELLY DeYONG/STEINTORM

2145 W Broadway
Vancouver BC V6J 1L9

Line: audio & video equip
Clear-Com see ad pg 164

ESTRON INDUSTRIES LTD

Calgary Abta
403 276-9621
Line: measuring & test equip
Tentel see ad pg 201

GLENTRONIX LTD

160 Duncan Mills Rd
Don Mills Ont
416 444-8497
Line: full line audio & video equip
Conrac see ad pg 115
Ross Video see ad pg 83

GORDON ENGLISH WESTRONICS

7 W 74th Ave
Vancouver BC
604 872-0636
Line: radio equip
IGM see ad pg 18

J-MAR ELECTRONICS LTD

6 Banigan Drive
Toronto 17 Ont
416 421-9080
Line: audio equip
UREI see ad pg 145

LASALLE AUDIO

2500 Bates Ste 102
Montreal Que H3S 1A6
514 342-2511
Line: audio equip
Clear-Com see ad pg 164

LUMIVEC

1600 Est Rue Marie-Anne
Montreal Que H2J 2C8
514 525-0616
Line: lighting equip
Grt American Mkt see ad pg 20

MCCURDY RADIO

108 Carnfurth Rd
Toronto Ont M4A 2L4
416 751-6262
Line: audio tape & accessories
Aristocart see ad pg 42

MERITRON LTD

514 Champagne Drive
Downsview Ontario M3J 2T9
416 635-9456
Line: audio video equip, components
Conrac see ad pg 115

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254 Wildcat Rd
Downsview Ont M3J 2N5
416 661-4180
26 Oakview Place SW
Calgary T2V 3Z9
PO Box 104
Brookfield Nova Scotia BONICO
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LPB see ad pg 187
QEI see ad pg 187

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325 W 5th Ave
Vancouver BC V5Y 1J6
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7056 A Farrell Rd
Calgary Abta T2H 0T2
403 252-8141
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CEI see ad pg 195
Conrac see ad pg 115

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403 424-2186
12-1638 Pandosy St
Kelowna BC V1Y 1P5
604 763-5222
654 King Edward St
Winnipeg Manitoba R3H 0P2
204 775-8231
Line: audio equip
Ramko see ad pg 118-119

A C SIMMONDS & SONS LTD

975 Dillingham Rd
Pickering Ont L1W 3B2
416 839-8041
Line: audio equip
Shure see ad pg 141

SMYTH SOUND EQUIP

595 Industrial Park Rd
Longueuil Quebec
514 679-5490
Line: audio equip
UREI see ad pg 145

SOLID STATE ENGINEERING

Box 355 Sta NDG
Montreal
514 481-3313
Line: audio, test & equip
Tech Labs see ad pg 182

SONO-VIDEO INC

134 Blvd Des Laurentides
Pont-Vian Ville de Laval
Quebec H7G 2T3
Line: video equip
Microtime see ad pg 33

TELAK ELECTRONICS LTD

690 Progress Ave Unit 3
Scarborough Ont M1H 3A6
416 438-3804
Line: audio equip
Telex see ad pg 44, 92

TURNELLE ASSOC LTD

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416 677-9040
MacAdoo Pk Hwy 38
Kingston Ont K7L 4V6
613 546-6326
Line: video equip
Microtime see ad pg 33

L A VARAH LTD

2077 Alberta St
Vancouver BC
604 873-3211
Line: audio equipment
Aristocart see ad pg 42

WATKINS ASSOC

801 York Mills Rd
Don Mills Ont M3B 1X7
416 444-2913
Line: audio & video equip
Monroe see ad pg 205

WILLIAM F WHITE LTD

356 Munster Ave
Toronto M8Z 3C7
416 231-9295
Line: lighting equip
Grt American Mkt see ad pg 20

MEXICO

C J CHRISTENSEN SA de CV

Instrumentos Electronicos de Medicion
Melchor Ocampo 150-8
Mexico 4, DF
905 535-2258
Line: full line test & monitoring
instruments
Fluke see ad pg 159

CIRCUITO CERRADO de TELEVISION

Durango No 243 Desp 202
Mexico 7 DF
514 49-41
Line: video equip
Microtime see ad pg 33

COLOR CASSETTES

Calle America 173
Mexico 21 DF
905 549-3100
Line: video equip
CEI see ad pg 195

PUERTO RICO

BESCO INTERNATIONAL

PO Box 1
Ramey 00604
809 891-1510
Line: test & monitoring equip
TFT see ad pg 65

HOPE, BENNET & BLACKBURN

18 La Roas
Isla Verde 00913
809 725-8668
Line: full line of radio equip
TFT see ad pg 65

SAN JUAN ELECTRONICS

154 Ponce DeLeon Ave
San Juan 00906
809 725-3342
Line: lighting equip
Strand Century see ad pg 88

JESUS SOTO

PO Box 487
Cagaus 00625
Line: radio broadcast equip
McMartin see ad pg 26

Next Month In BM/E

Digital Technology For Broadcasters—Part 5

• In October, we continue our award-winning coverage of Digital Technology. We'll look at digital noise reduction, digital transmission; update our continuing coverage of digital audio; and publish the sixth part of "An Introduction To Digital Television."

Special Report: Trends In Transmission

• An up-to-date report on the latest techniques and technology for getting broadcast signals from here to there. We'll take a look at "NPR's Super Satellite Network," a "Progress Report on CP For TV," and the first part of a series on AM transmitter improvements. We'll also try to answer the question, "Can UHF TV Be First Class?"

**TELEVISION
PRODUCTS
COMPANY**

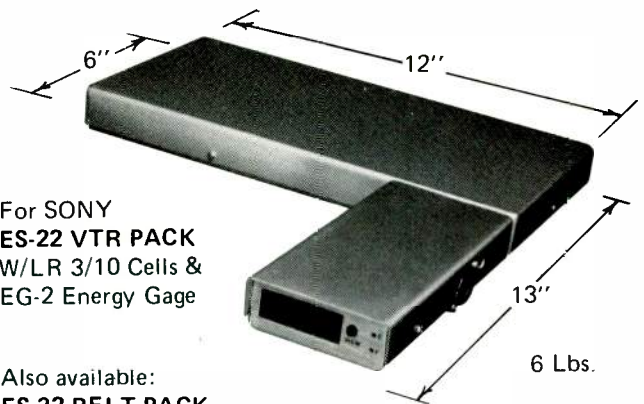
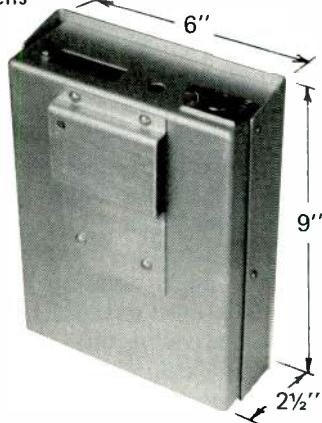
**new
products
technical
bulletin**

High Capacity Long Life Battery Packs

ES-31 CAMERA BATTERY PACK

W/LR 3/10 Silver Cells
10 Ampere Hr. Cap.
0.8 LED Readout

Belt Mounting
5½ Lbs.



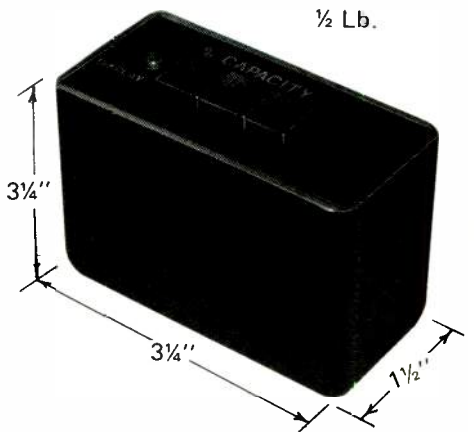
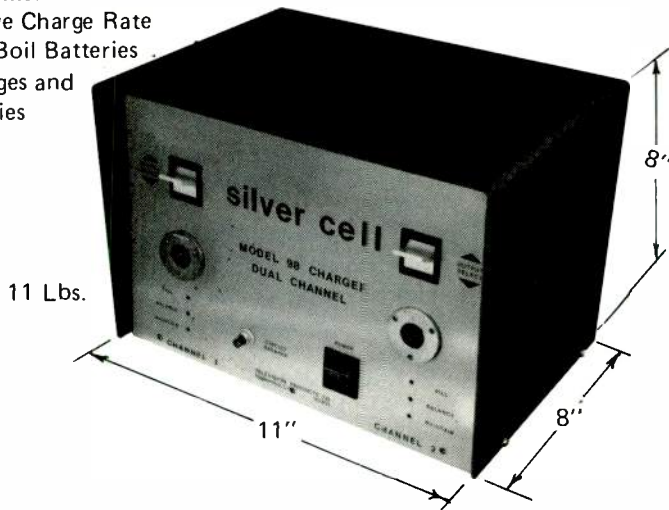
For SONY
ES-22 VTR PACK
W/LR 3/10 Cells &
EG-2 Energy Gauge

Also available:
ES-32 BELT PACK
W/Energy Gauge & LR 2/10 Cells

Accessory Items

**MODEL 98
SILVER CELL CHARGER—
Dual Channel**

Progressive Charge Rate
Will Not Boil Batteries
All Voltages and
Frequencies



EG-1 & 2 ENERGY GAUGE
Reads in Ampere Hours of
Capacity Remaining
0.8 LED Readout
Available for any Ampere
Hour Capacity

KDKA Radio's "Incredible Rainbow Machine"

By Dave Graves

This fully-equipped mobile studio proves remote programming can be as creatively integrated as music or spots.



KDKA's 26-foot, GMC "Incredible Rainbow Machine"

WHAT MAKES "SATURDAY NIGHT LIVE" better than "Saturday Night Taped?"

According to Rick Starr, executive producer of Pittsburgh's premiere radio station, KDKA, "It's that element of spontaneity, the chance that something unexpected and interesting will happen. And that's what you have in the Incredible Rainbow Machine that you don't have in the studio."

The "Incredible Rainbow Machine" is a 26-foot GMC mobile van, custom-fitted with a radio studio. It uses a Marti 450 link to transmit remote programming, including music and commercials, back from remote broadcast locations to the station. The machine has frequently been called on to broadcast while moving from one location to another, and it's done so without a problem.

Telephone talk programming is as easy to program as music, and the station added a touch-tone encoder/decoder system so that talk show hosts could switch their own calls onto the air. A "take" button on the console sends a touch-tone number through the RDA 450 two-way radio, and that activates the phone system. Another button transmits a tone that operates the "edit" function of the tape delay system.

The Rainbow Machine also carries two Comrex one watt wireless mics on different VHF frequencies for maximum flexibility at a remote site. Using the Comrex, KDKA talk show hosts have even taken phone calls while walking through the streets. So, in addition to a "radio station on wheels," the station often has been a "radio station on foot."

The dependability and range of the Rainbow Machine was enhanced with the installation of a telescoping 30-foot antenna mast, similar to those used in television ENG vans. The station uses two receive points now, and plans to add more.

Inside the studio, the Rainbow Machine has two boards, a UREI Mod One and a custom-built panel interwired with the UREI. The talent has a mic switch, a guest mic switch

continued on page 192

Dave Graves is program manager of WIND, Chicago. He was formerly program manager with KDKA.

NOW HEAR THIS! IT'S NEW! IT'S FABULOUS!

Listen to what's missing from TerraCom's new digital program channels.

The noise is missing. Now, with TerraCom's THP-2T20 you can send high fidelity digital program channels without the noise and crosstalk of analog systems. And none of the "sizzling" sound caused by digital companding (because the THP-2T20 uses analog companding).

Send stereo or up to four highest quality channels simplex — or four channels duplex. They can go on either a T1 line or can be multiplexed above video baseband in a microwave link — such as our TCM-6 series all-bands tunable microwave radio.

These four channels are provided in a 1.544 Mbps digital data stream. They have a signal-to-noise ratio of better than 75dB at full output. Interface options are available to meet individual requirements. And for portable or restoration uses we offer a weatherproof enclosure.

Another version, the THP-2T25 provides six simplex channels, or four duplex channels, at a 2.048 Mbps data rate . . . with the same high quality performance.

So hear what you've been missing with your own ears. Call us at TerraCom (714) 278-4100, or write 9020 Balboa Avenue, San Diego, CA 92123



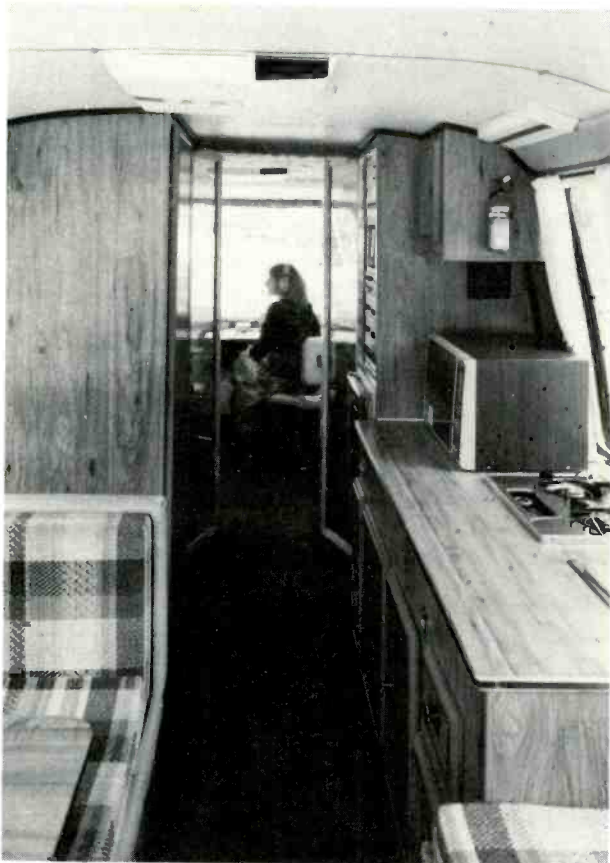
LORAL Corporation

**DIGITAL
PROGRAM SYSTEM**



the noiseless revolution

Incredible Rainbow Machine



View from the front of the Rainbow Machine looking towards the studio. Six kW generator is under the bench seat at bottom right of picture



Technical assistant Jeff Weissert (left) and chief engineer Tom Monahan shown at the equipment rack adjusting the 450 MHz Marti RPU



View showing the UFEI board at the engineer's operating position

(also used to bring in a wireless mic), and six start switches and pots for the six bays of the ITC Triple Spots. Mics are Astrolite headset mics.

The Rainbow Machine required the installation of a special heavy-duty kilowatt generator, primarily for the air conditioners. Although the shower had to be sacrificed, the unit retains a bathroom and full cooking facilities in the living room/kitchen area up front, including a microwave oven.

The "Incredible Rainbow Machine" was actually named in Dallas by Tom Merriman of TM Productions when he was asked to write a jingle for the new mobile studio. The machine not only has its own jingle, it has its own TV commercial as well. The station is even planning cardboard cut-outs of the Machine as giveaways for kids.

The "Rainbow" refers to the station's logo for its highly successful "Pittsburgh Someplace Special" campaign,

begun five years ago. The campaign's logo is a rainbow over the city, and it's widely known by Pittsburghers.

"'Pittsburgh Someplace Special' is an effective campaign because we show we mean it," says general manager Bill Hartman. "We go everywhere, broadcasting from the places that really make Pittsburgh a special city. It wouldn't be enough just to talk about it."

Why a remote van?

That's the "what" and "how" of an Incredible Rainbow Machine, but not the "why." After all, remote

continued on page 194

Studio quality microphones that don't need a studio to survive.

The CS15P condenser cardioid

microphone is equally at home in a recording environment or broadcast studio. When hand-held it puts sex appeal in a voice with its bass-boosting proximity effect. With shaped high-frequency response and its ability to handle high sound pressure levels (140dB with 1% THD at 1kHz), the CS15P is ideal for close-up vocal or solo instrument miking applications.

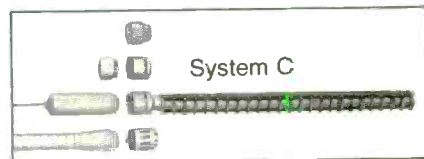
When boom mounted, the CS15P has better gain-before-feedback and a better signal-to-noise ratio than most shot-guns. It's phantom powered and it's rugged.

The CO15P condenser omni extends frequency response to the very limits of audibility, 20 to 20,000 Hz. Unlike other "omni's," the CO15P maintains its omnidirectional polar pattern at the very highest frequencies. Perfect for the distant miking of an entire orchestra as well as up close on individual instruments. And like the CS15P, it's phantom powered and it's rugged.

The Electro-Voice warranty
Electro-Voice backs up these two microphones with the only unconditional warranty in the business: for two years we will replace or

repair your CS15P or CO15P microphone when returned to Electro-Voice for service, at no charge — no matter what caused the damage!

We can do this because we build these microphones to meet our standards for performance, ruggedness and durability. We accept nothing less, and if you're a professional, buying a professional quality microphone, you shouldn't either.



EV **Electro-Voice**[®]
a gulton company

600 Cecil Street, Buchanan, Michigan 49107

Circle 242 on Reader Service Card

Incredible Rainbow Machine



Studio area showing talent operating position to right and guest position to the left. Operating controls for the talent are directly in front, with the ITC cart machines to the right

broadcasting is nothing new; it's been going on for years. So why an Incredible Rainbow Machine? The answer is equal parts of programming and promotion, with more than a dash of community service.

Experts agree that one of radio's unique capabilities is its flexibility and a capacity for tremendous mobility. That represents an opportunity that few stations really capitalize

on. The Rainbow Machine began as an experiment to see if remote broadcasting could be integrated into the format in a way that would expand the regular programming rather than detract from it.

Even though there are frequent remotes, they do not disrupt the programming format. The station does not significantly alter its format while on the road and the "real life" aspect becomes a programming element, like records and jingles. The station feels there is no particular advantage to being in the studio if there's someplace better to be.

Before the Rainbow Machine, the station did one or two remotes a month. Now, it's a continuing program feature. In May, the station was on remote for some portion of 15 days. Because it has no hard wire connections of any type, the machine can easily broadcast from three locations in a day.

On the road with radio

One of the first Rainbow Machine broadcasts took morning man Jack Bogut on the road looking for the worst potholes in town. He found them. Talk show host John Cigna commandeered the Rainbow Machine to help late-filers mail their income tax returns in front of the post office. As 100,000 returns flowed in, Cigna took phone calls while standing in the middle of the street collecting returns and directing traffic.

Beside being an impressive billboard, the Rainbow Machine is an important and effective programming tool for the station. It establishes the station's extensive involvement in the community, both on and off the air. It frequently highlights charity events and other public service efforts. And, besides, it's fun. **BM/E**

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with COSMICAR Lenses

COSMICAR ES SERIES LENSES

12.5~75mm	f/1.8-ES for 2/3" cameras
8.5mm	f/1.5-ES for 2/3" cameras
12.5mm	f/1.4-ES for 2/3" & 1" cameras
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Motorized Focusing and Zooming

Ideal for surveillance in security system.

Manual Focusing and Zooming

Suitable for portable cameras, but can be used also at any fixed focusing within the range of 12.5~75mm.

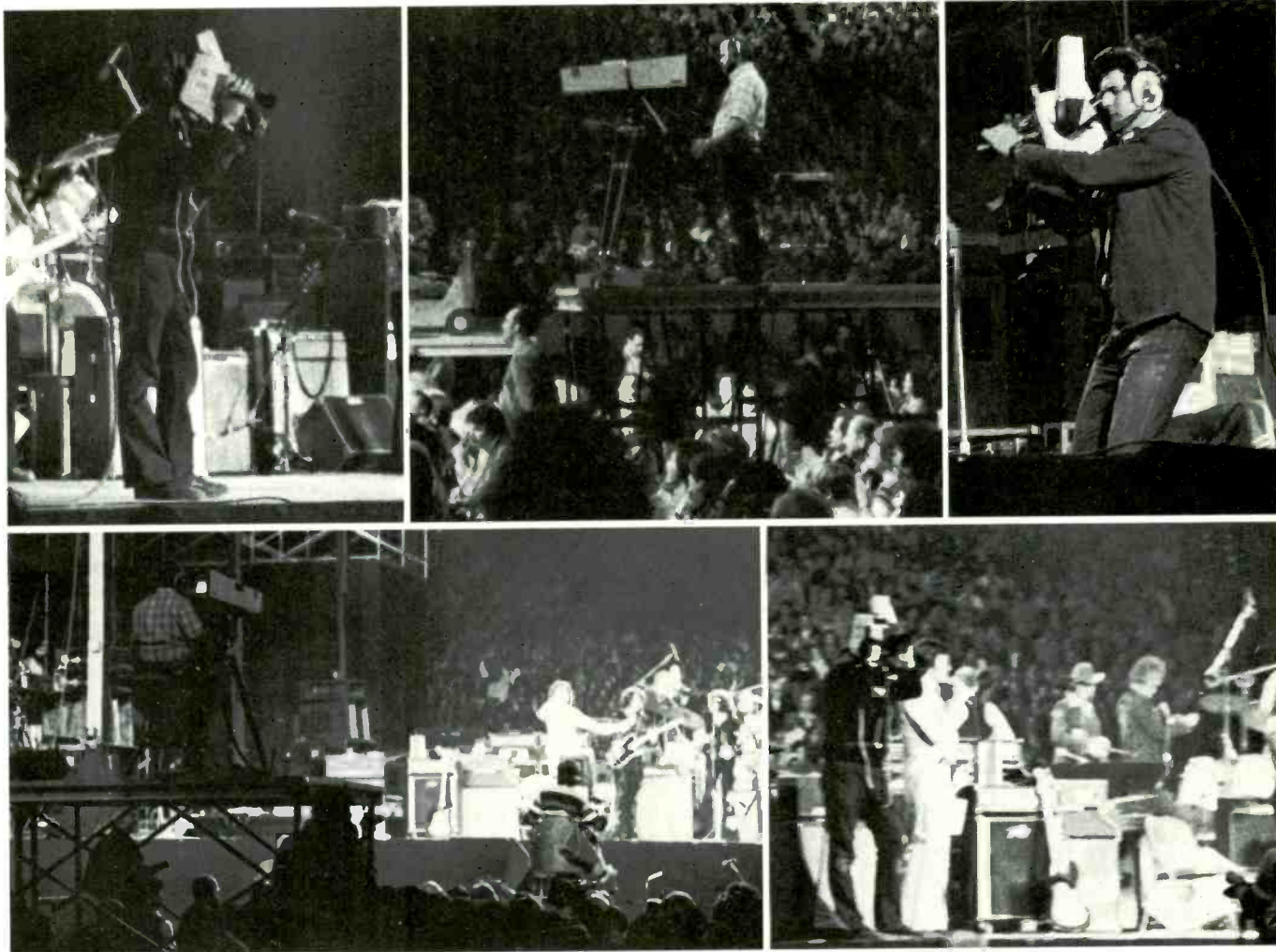
Smallest in sizes, Economically priced and provide Very Wide Applications.

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Atrium Building, 98 Cutter Mill Road, Great Neck, New York 11021
(516) 487-9800



“Shooting a 2-hour network special with CEI-310 cameras was a real experience.”

Says the well-known director Vincent Scarza: “I’d heard about CEI-310 cameras, but I’d never worked with them.”

Scarza had the opportunity to work with them at ‘The World’s Largest Indoor Country Music Show,’ a 2-hour NBC prime time special edited from 4½ hours of videotape, shot at the Silverdome in Pontiac, Michigan in front of a live audience of 65,000.

Besides directing, Scarza co-produced with executive producer Jim Fitzgerald of Rudy Callicutt Productions. Complete video production facilities and crew were provided by Northwest Teleproductions.

The production involved seven cameras. Four were versions of the CEI-310—two hand-held portables, one portable in a mobile cart, and one studio version.

“I was amazed,” says Scarza, “at the absolutely marvelous pictures



produced by the CEI cameras—even under difficult lighting conditions.

“Maneuverability of the portable units was incredible. My cameramen were able to get fantastic hand-held shots. Since they had 4½ hours of non-stop shooting, light weight was really important.

“All in all, it was a dynamite performance. Anybody who hasn’t worked with the CEI-310 really doesn’t know what they’re missing.”

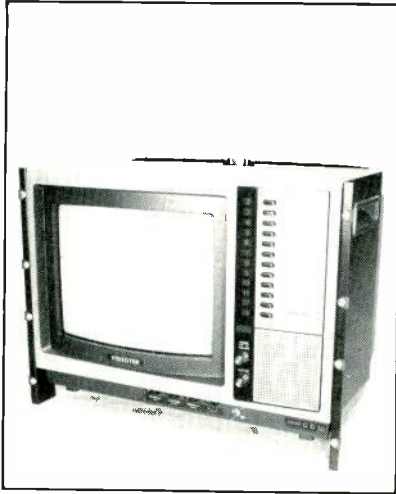
Isn’t it time you looked at the CEI-310? Call your local CEI dealer now. Or get in touch with Commercial Electronics, Inc., 880 Maude Avenue, Mountain View, California 94043, (415) 969-1910.

Changing the look of field production.

CEI

MOUNT UP!

Videotek puts the 12-inch Rackmount Receiver/Monitor **BACK-IN-THE-RACK** again. Videotek's 12-inch Rackmount Receiver/Monitor fits in a standard 19-inch rack and requires only 14 inches of rack height.



Features of the RM-12R include DC restoration, 8 pin VTR Connector, E to E, Express Tuning and improved Trinitron Plus® phosphors. Also available is Videotek's 12-inch Rackmount Video/Monitor, Model VM-12R. Both the RM-12R and the VM-12R are in stock for immediate delivery from either the Pottstown center or the new Phoenix branch.

MOVE OUT!

Westward Ho! ... to Phoenix. Service and distribution of Videotek's complete line of closed circuit and professional color monitors will be provided to its West-of-the-Rockies accounts from Videotek's new branch office and distribution center in Phoenix, Arizona.



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125 North York Street
Pottstown, Pennsylvania 19464
Telephone (215) 327-2292

2115 West Mountain View Road, Suite 1
Phoenix, Arizona 85021
Telephone (602) 997-7523

Circle 259 on Reader Service Card

SPEAK OUT:

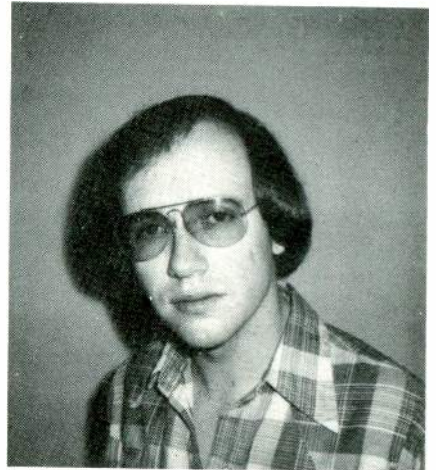
"The Industry Needs A Common Dialogue Among Post Production Computers," Says Bernie Laramie

COMPUTER TECHNOLOGY has been perhaps the most important contribution to electronic photography, allowing for increased ease, flexibility and creativity in electronic photography and news gathering. Computers, when properly designed and programmed, allow us to run whole broadcast operations, monitor transmitters, set up cameras, control difficult lighting and edit our tapes into finished shows.

The economics of videotape editing forced us long ago to develop sophisticated workprint editing systems. These systems allowed us to edit and re-edit shows, commercials and specials, refining these projects to a level of sophistication not possible before the video cassette workprint and computer-controlled editing system.

The key to proper execution of this type of sophisticated post production process is the computer's edit decision list, printed out in hard copy for the editor, and punchtape, used for subsequent loading into other computers during assemblies and re-editing sessions. This edit decision list printout and punchtape allows workprints to be assembled piecemeal, or on location far away from larger format super-sophisticated editing systems. This makes editing more convenient, more versatile and more creative. Additionally, the punchtape allows for more of the smaller editing systems in the field, and allows more people to experience tape post production through off-line editing systems.

A number of manufacturers are developing computerized off-line and on-line editing systems to supply this expanding market. Also, new technologies in tape equipment and editorial functions are increasing. The increased sophistication of off-line editorial devices places an increased burden on the decision list. It is imperative that the computer listing represent all possibilities available in off-line editing, including learn mode switching functions, color corrections, editorial notes and special effects. These functions must be notated in such a way as to allow the creative editing session



Bernie Laramie is vice president and general manager of Reeves/Milestone Productions, Inc. He is also an acting consultant to Convergence Corp.

complete flexibility to use other editing systems of increased sophistication and different manufacturers.

To date, the industry has had a de facto system for edit decision lists. This list may be fine as far as it goes, but it is necessary to start now to develop a common SMPTE decision list format to carry us to the future with speed and control.

A common notation system used by all manufacturers and facilities will ultimately benefit not only the industry but, most importantly, the client. As the end user moves from one piece of equipment or one facility to another, he must have at his disposal a common language to ease his technical burden. A director and editor should have the ability to make a creative decision once and execute all the technical features required with maximum ease and control.

Television broadcasting to date has used highly involved technical effects only rarely, when time and large budgets allowed. The common decision format for post production processes will aid the manufacturers, facilities and the end user in a greatly expanded capability to use more sophistication with greater ease and economy. **BM/E**



OPENING TUBE ON GLASS LATHE

Econco

SAVINGS AND TUBES
ARE GETTING
BIGGER

NEW 4000 HOUR WARRANTY

Econco's staff of engineers is continually working to improve test methods, pump schedules and fabrication techniques to improve the reliability and life of our products. We are proud of our continuous improvements in this area. Since some manufacturers have matched our 3000 hour warranty (which Econco was the first to offer), Econco is announcing a new 4000 hour pro rata warranty. Our unconditional guarantee period has been extended to 400 hours.



CHECKING ALIGNMENT

SAVINGS — BIGGER THAN EVER

TUBE TYPE	REPAIR PRICE	NEW TUBE PRICE
3CX2500F3	\$ 135.00	\$ 265.00
4CX5000A	335.00	705.00
4CX15,000A	490.00	975.00
5762	250.00	480.00
5681	2500.00	4935.00

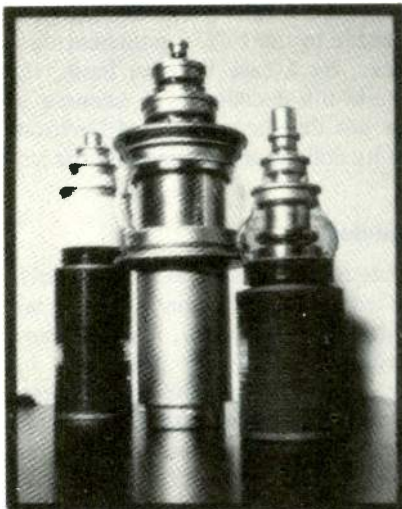
The repair prices do not include the stations cost to send their used tubes to us. The New Tube prices do not include state sales taxes or any freight charges added. As you can expect new tube life on your rebuilt tube, your cost per hour is reduced about in half. Average savings per tube is 50%.

APPLICATIONS ENGINEERING

Station Chief Engineers who have questions concerning the operation of our tubes, or tubes in general, should feel free to contact one of our applications engineers.

JEAN BAKER has been with Econco for two years in charge of high power Broadcast and Industrial tube Engineering. Jean has over 20 years experience with Eimac Div. of Varian. Jean's experience was in the testing department as well as production engineering. Jean should be contacted on tube types such as 6697A & 5681.

BUD BUTTERFIELD has over 20 years electronic experience at IIT previous to joining Econco. Bud has 5 years experience at Econco supervising repair and testing of medium power tubes. Bud should be contacted on all tubes up to and including the 4CX15,000A.



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INTERPRETING THE **FCC** RULES & REGULATIONS

Election '78: "Reasonable Access" Rule

By Frederick W. Ford and Lee G. Lovett,
Pittman, Lovett, Ford and Hennessey, Washington, D.C.

LAST MONTH THIS COLUMN REVIEWED various broadcasting regulations established both by the Federal Communications Commission and by the Federal Election Commission. The article outlined broadcaster responsibilities with respect to the broadcast of sponsorship identification and candidate authorization notices.

The Federal Communications Commission's recent flurry of interest in political broadcasting stems in part from this being an election year, and in part from a desire to define more adequately the rights and responsibilities of broadcasters as mandated by the Campaign Communications Reform Act of 1972.

One significant provision of the Reform Act (and, therefore, of the Communications Act) is the "reasonable access" rule, which directly affects you, the broadcaster. The parameters of the "reasonable access" rule, as conceived by Congress in 1972 and as interpreted by the Commission throughout the succeeding years, are discussed this month.

The rule

The rule states that "The Commission may revoke any license or construction permit for willful or repeated failure to allow reasonable access to or to permit purchase of reasonable amounts of time for the use of a broadcasting station by a legally qualified candidate for Federal elective office on behalf of his candidacy."¹

The "reasonable access" rule makes clear the intent of Congress to codify the right of a political candidate to inform the general electorate of his or her candidacy. In his statement of sponsorship of the Reform Act, Senator Pastore provided the philosophical underpinnings of this legislation: "It attempts to give candidates for public office greater access to the media so that they may better explain their stand on the issues, and thereby more fully and completely inform the voters."²

Although such a statement seems to tip the scale in favor of the politician seeking programming time, the Commission has consistently upheld the discretionary privilege of broadcasters concerning *overall* program material. The Commission has emphatically declared

that political broadcasting is but one of the many important informational ingredients of program scheduling:

"Congress clearly did not intend, to take the extreme case, that during the closing days of a campaign stations should be required to accommodate requests for political time to the exclusion of all or most other types of programming or advertising. Important as an informed electorate is in our society, there are other elements in the public interest standard, and the public is entitled to other kinds of programming than political. It was not intended that all or most time be pre-empted for political broadcasting."³

The Commission intends to balance the rights of federal candidates with the general obligations of licensees to present political views. This objective has solidified into a continuing policy at the Commission.

When interpreting the "reasonable access" rule, the FCC will "defer to the reasonable, good faith judgment of licensees, subject to Commission review in determining what constitutes reasonable access for a particular candidate or groups of candidates."⁴ The Commission will not subject a licensee to the FCC's judgment on a particular issue. Rather, on a case by case basis, the Commission will review the decision of a licensee to determine whether or not that licensee acted "reasonably" while fulfilling its obligations outlined by the statute.

Notable cases and guidelines

The Commission has reviewed several cases involving disputes among licensees and politicians seeking access to the media. Subsequent to review, some of these cases have developed into continuing guidelines by which the Commission will interpret the requirements of the rule. Three important guidelines are those involving access (1) to prime time, (2) to free or purchased time, and (3) to the particular length or placement of paid political advertisement.

¹Communications Act of 1934, as amended, 47 U.S.C. Section 312(a)(7).

²Concerning Licensees Responsibility Under Amendments to the Communications Act Made by the Federal Election Campaign Act of 1971, 47 FCC 2d 516 (1974).

³Use of Broadcast and Cablecast Facilities by Candidates for Public Office, 34 FCC 2d 510 (1972).

⁴Commission Policy in Enforcing Section 312 (a)(7) of the Communications Act, FCC 78-102.

Access to Prime Time. Because greatest audience participation in the radio and TV media usually occurs during the prime time hours of the broadcast day, the Commission has declared its intention to allow candidates access to these most coveted positions.

“Such a refusal would deny candidates access to the time periods with the greatest audience potential, and would be inconsistent with Congressional intent to give . . . candidates for public office greatest access to the media so that they may better explain their stand on the issues, and thereby more fully and completely inform the voters . . .”⁵

Normally, only an inordinate number of federal office candidates would preclude a broadcaster from providing access to prime time programming. Under these circumstances, the Commission has suggested that broadcasters may *substitute spot announcements for program time*:

It should be noted that the principle of access to prime time by Federal candidates includes the opportunity to purchase or otherwise receive program time in the absence of countervailing circumstances such as a multiplicity of candidates. If such circumstances are present, then spot announcements in lieu of program time may be appropriate.⁶

Free Time vs. Purchasable Time. The “reasonable access” rule does not require commercial stations to give *free* time to federal political candidates. In the event that a broadcaster does *not* afford a candidate the opportunity to purchase a reasonable amount of time, then that broadcaster is *required* to give a candidate access to reasonable amounts of free time:

A commercial station is required either to provide

reasonable amounts of free time or permit purchase of reasonable amounts of time. It is not required to do both.⁷

Length of Time and Placement of Advertising. The Commission has clearly refrained from establishing limits upon the *length* of advertising time or *placement* of advertising time sought by candidates for federal office. The Commission has refused to let candidates dictate such limits and has, once again, deferred to the judgment of its licensees:

Thus, although we recognized a right of access to prime time programming, we declined to recognize any right, by a Federal candidate, to program time of any particular or minimum duration. Nor did we recognize any right, by a Federal candidate, to have his programming or announcements given any particular placement — in terms of a specific date and/or specific time — during prime time, or during any other portion of the broadcast day.⁸

A final comment

A broadcaster must provide “reasonable access” to political broadcast time to candidates for federal office at least 45 days before a primary election and 60 days before a general or special election. It is within these time frames that the “reasonable access” rule directly affects the broadcaster. Station personnel should, however, carefully review the “reasonable access” rule well in advance.

⁵Concerning Licensee Responsibility Under Amendments to the Communications Act Made by the Federal Election Campaign Act of 1971, 47 FCC 2d 517 (1974).

⁶Id.

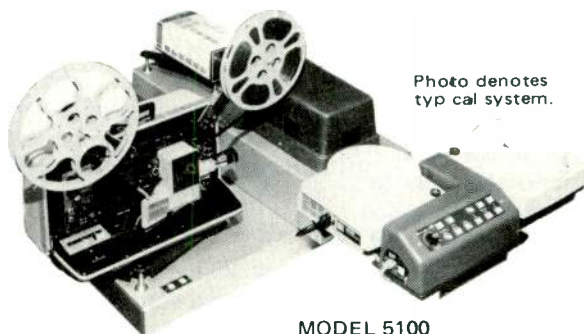
⁷Use of Broadcast and Cablecast Facilities by Candidates for Public Office, 34 FCC 2d (1972).

⁸Hon. Pete Flaherty, 31 RR 2d 260, 272 (1974).

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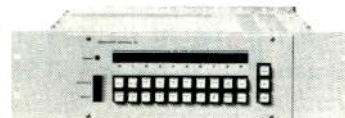
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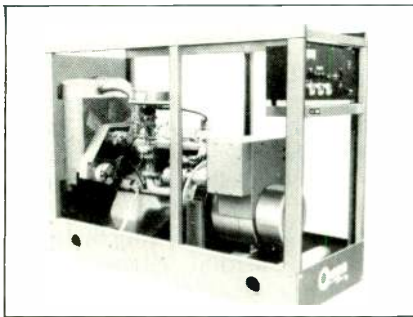
BROADCAST EQUIPMENT

Digital Metering for RC 300

The TEL 171 is designed as a quick retrofit to existing Moseley TRC 15AW and AR transmitter remote control systems. The system uses digital transmission from the transmitter site. New circuit boards use the existing wiring harness for connection, and the conversion takes three to four hours. The system is self-calibrating and updates readings 120 times a minute. It can display all parameters, including phase angles on the 15 position TRC. HALLIKAINEN & FRIENDS.

30 kW Emergency Generator 301

Model 30.OSK is a new emergency electric generating set rated at 30 kW when operated on gasoline or propane fuel (25 kW on natural gas). The engine is a 4-cycle, overhead valve, six



cylinder inline engine, and develops a minimum 55 bhp at 1800 RPM. The engine powers a revolving field, brushless generator designed for minimum reactance, low voltage waveform distortion, and maximum efficiency. The unit is engineered for operation in 110 degrees F ambient conditions. ONAN.

EIA Registered Broadcast Tubes 303

Four EIA registered, forced-air cooled transmitting tubes designed for broadcast service at the 55 kW, 25 kW, 15 kW, and seven kW levels have been announced. Type 8994 (formerly RCA type 4690) is the largest air-cooled tetrode; it delivers 55 kW peak sync or CW at 16dB gain in VHF-TV or FM service. Offers cost effective

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approach to 50 kW transmitters, since combiners are eliminated and single tube transmitter for circularly polarized antennas is possible. Types 8995 and 8996 deliver 25 kW and 15kW respectively at 20dB gain in FM service. Type 8988 delivers seven kW peak sync output at 16dB gain in VHF-TV service. Type 8984, \$4,000; Type 8985, \$900; Type 8996, \$800; 8988, \$1398.60. RCA.

Record Cleaning System 302

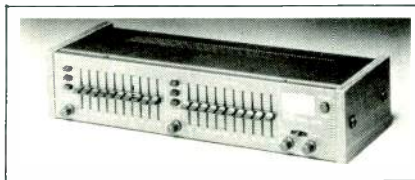
"Disco Film" is a water-soluble solution that is harmless to vinyl and is to be sponged over the record surface



with a built-in applicator. When dry, a flexible film is formed which is easily peeled from the record surface. Dirt, grime, and other foreign matter on the record surface are removed with the film. \$29.95 EMPIRE SCIENTIFIC CORP.

Two-Channel, 10 Band Equalizer 304

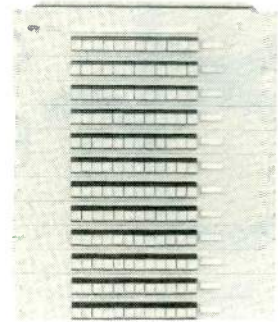
The GE-20 is a two-channel, 10-band equalizer, rack mountable and designed for multi-track recording. The



unit's specifications include: frequency response of 20 to 30,000 Hz, ± 0.5 dB; THD, 0.03 percent; S/N ratio, 85dB; input level, -10dB (0.3V), unbalanced; input impedance, greater than 100,000 ohms, unbalanced; headroom, 28dB; maximum boost/cut, 12dB. The unit has a high filter (12 dB/octave) at 31.5 Hz and a

continued on page 202

Pushbutton Patch Panel



SERIES-X SWITCHING

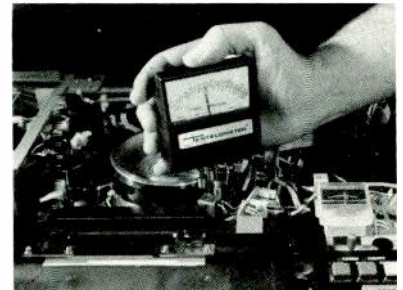
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Broadcast Equipment

low pass filter at 16 Hz. Filters can be initiated after completing equalization. GE-20 has input LEDs, input level controls, and output level controls and switchable meter to prevent overloading the next unit in the audio chain. Operational amplifiers, rather than coils, are used to reduce RF and hum interference. TEAC CORP. OF AMERICA.

Earth Station Antenna Positioner 305

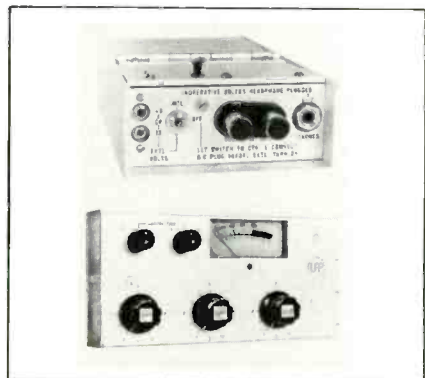
Model 8041 Three Axis Positioner permits automatic positioning of the satellite earth station antenna and feed polarization for up to eight satellite-polarization combinations. Control of the unit is by means of a panel selector switch or by remote control over



wire-line or radio link. The unit includes a direct readout of the actual azimuth, elevation, and polarization angles. The position information may be remoted if required. The unit is used on earth station antennas equipped with motor drives and potentiometer position sensors. It is calibrated after the antenna has been aimed at the desired satellite and the polarization has been optimized. Once calibrated, the antenna will return to the desired position whenever that combination is selected. Jogging switchers are provided for local or remote control to compensate for the very small position changes required due to satellite drift. SCIENTIFIC-ATLANTA.

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Broadcast Equipment

no tool for connection to telephone line and has protection against over-voltage and inadvertent battery drain. An aluminum u-channel renders the unit virtually damage proof and allows it to be hung from the user's belt. ARM31 is a companion three-mic mixer which includes preamplifiers, VU meter for compression indications and +4 or +8 VU line outputs. ARA-1, \$199. ARM31, \$159. ULTRA AUDIO PIXTEC.

Fixed Frequency FM Tuner For EBS 307

The FMR-1D incorporates a new concept in tuner design, providing technology that allows the tuner to actually track the modulated signal from the transmitter. The Precise Tracking Decoder (PTD) will lock on and accurately recover the main channel signal identical to those originally transmitted. Other features are improved sensitivity, 50dB linear AGC, balanced 500 ohm output at a +8 dBm level, adjustable noise squelch control, and rear panel contacts normally open or normally closed. The FMR-1D utilizes only 1 3/4 inches of vertical rack space. MC MARTIN.

Wireless Mic Diversity Receiver 308

Model 67 Portable Diversity Receiving System includes four self-contained nine V batteries, diversity/



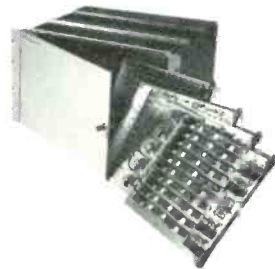
single-receiver toggle switch, LED indicators for RF presence and active receiver indication, a switchable RF/VU level indicator which also indicates battery power, a headphone jack with volume control, BATT/ON/OFF/EXT ON toggle switch, accessory power jack, balanced KLR audio output connector, internally switchable for mic level or line level, and two coaxial antenna connectors. Nearly all functions and connectors are front-panel mounted. Will operate with Vega or other V.H.G. wireless microphones. VEGA.

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Model 6220 In-Line Image Enhancer/Decoder accepts composite NTSC color video signals and provides both vertical and horizontal en-

continued on page 204

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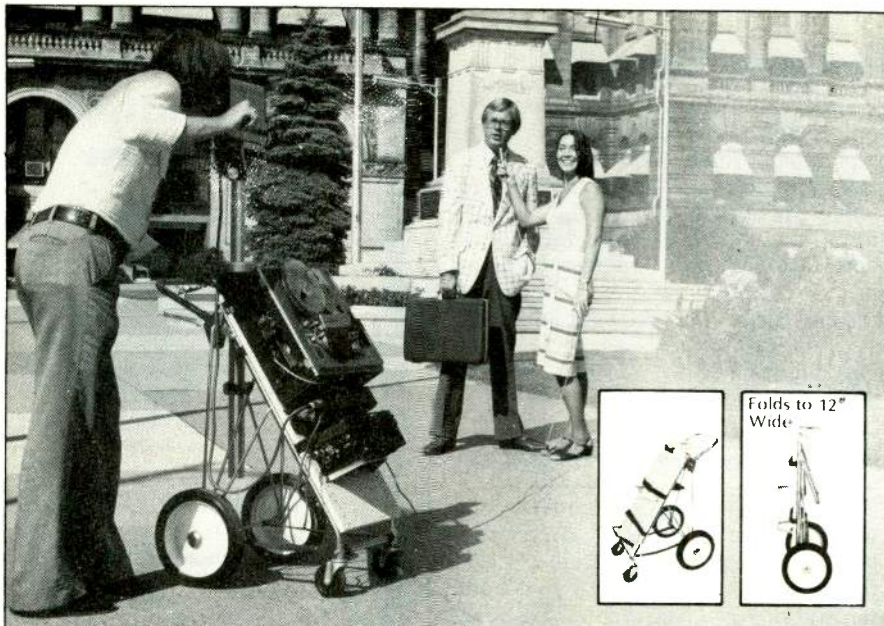
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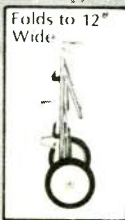
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Broadcast Equipment

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hancement. For chroma-key operation, an auxiliary output provides RGB keying signals which may be applied to the RGB chroma-key input of a switcher for chroma-key effects.



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Digital RF Calorimeter

310

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Headsets for TV Production

311

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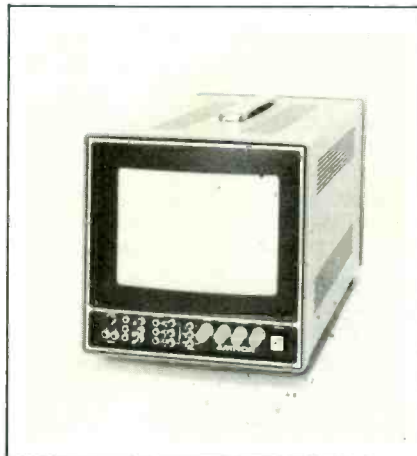
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Broadcast Equipment

ENG/EFP Color Monitor 312

AM-8 is a new eight-inch single gun color video monitor which uses the Trinitron™ tube with black guard aperture grille, coupled with advanced circuitry. It is equipped with professional features such as switchable A/B



inputs, internal/external sync, separate RGB gun switches, and individual background and gain controls. Horizontal and vertical scan delay display is optional. Unit can be rack mounted; is identical in size to the Tektronix 1485 waveform monitor. Available in NTSC, PAL and other standards. AMTRON.

Audio Digital Delay System 313

Audio Digital Delay System, ADDS, is designed to replace conventional seven second tape delay systems. ADDS offers 6.5 seconds audio delay with lower distortion, greater dynamic range, and superior sound quality than tape delay systems. Wideband signals are converted into digital impulses, stored in memory, and read out in real time. AMPRO.

Long-life Quad Video Heads 314

A new long-life tip material is being used on the XM series quadraplex video heads. This new material, a polycrystalline ferromagnetic spinel, has been developed with all the physics, chemistry, and operating parameters of broadcast video magnetic recording in mind. The video tips are unaffected by varying tape chemistry, incredibly resistant to noise-generating microfractures, thermodynamically stable, and electro-magnetically optimized for quad videotape recorders. Currently available in RCA low-band, high-band, and super high-band configurations. VIDEOMAX.

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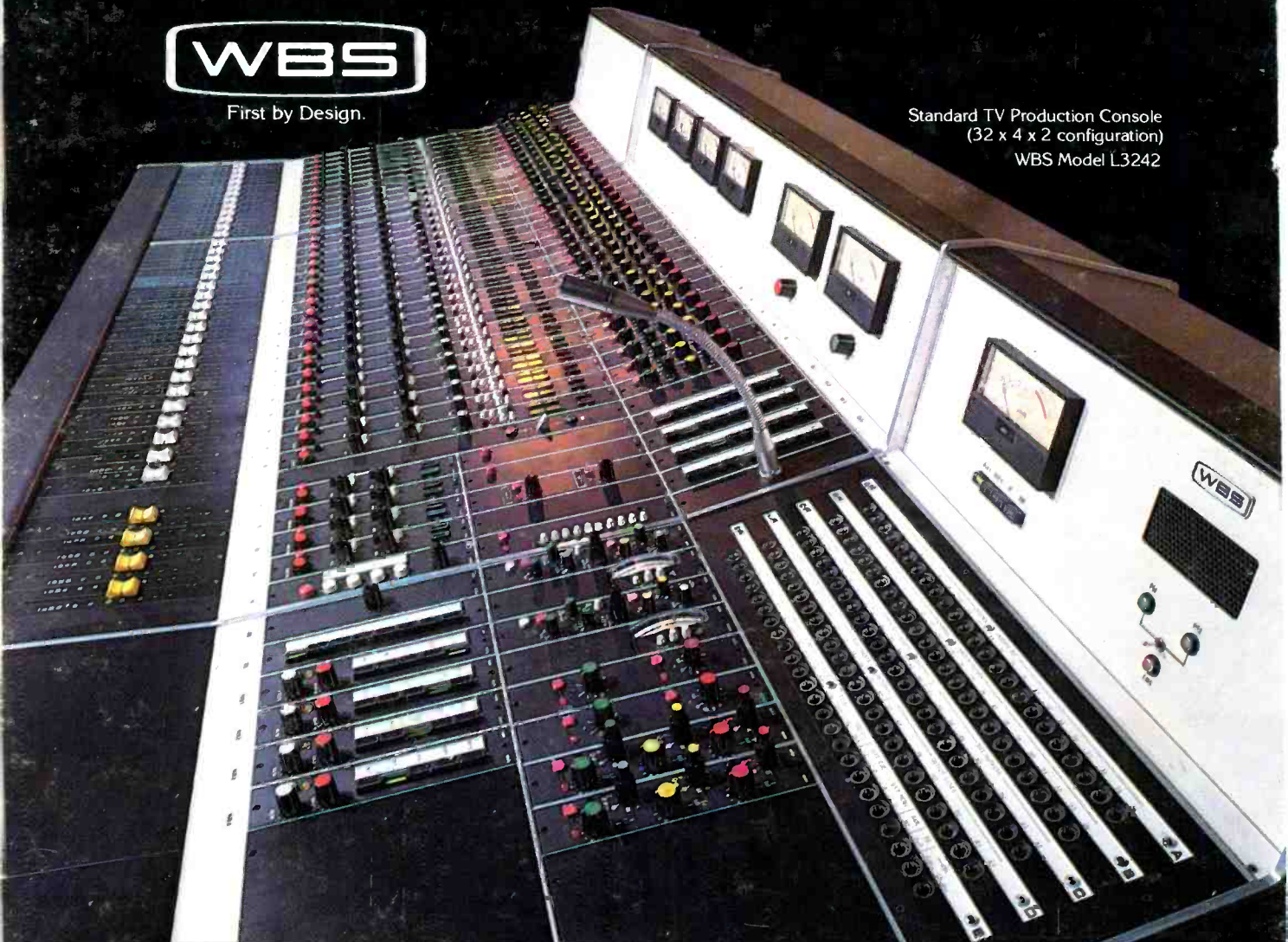
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