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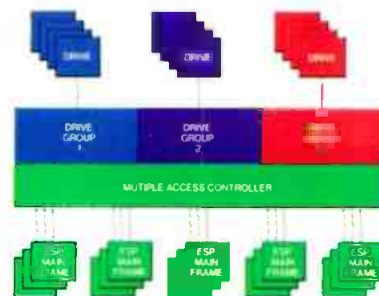


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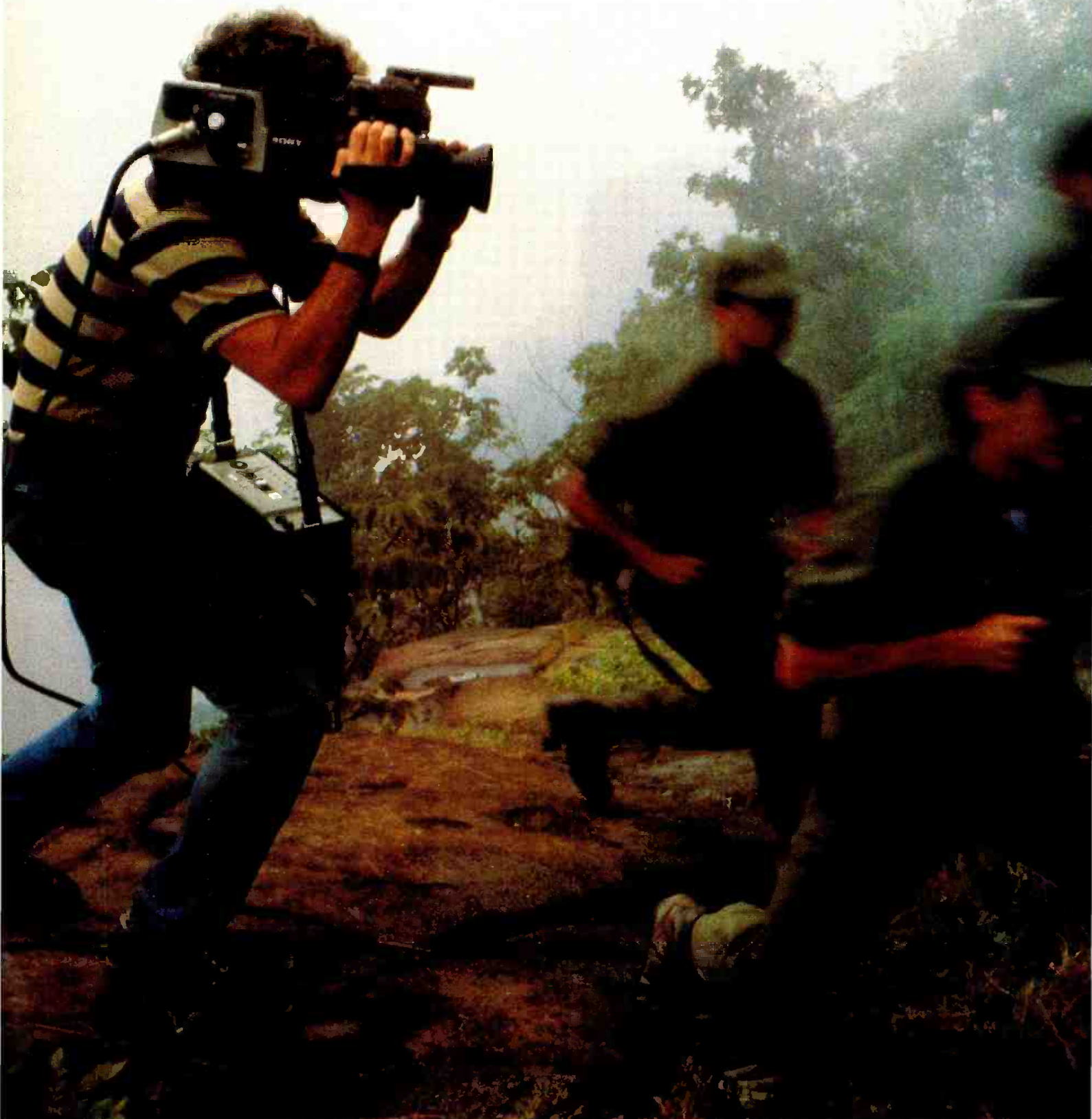
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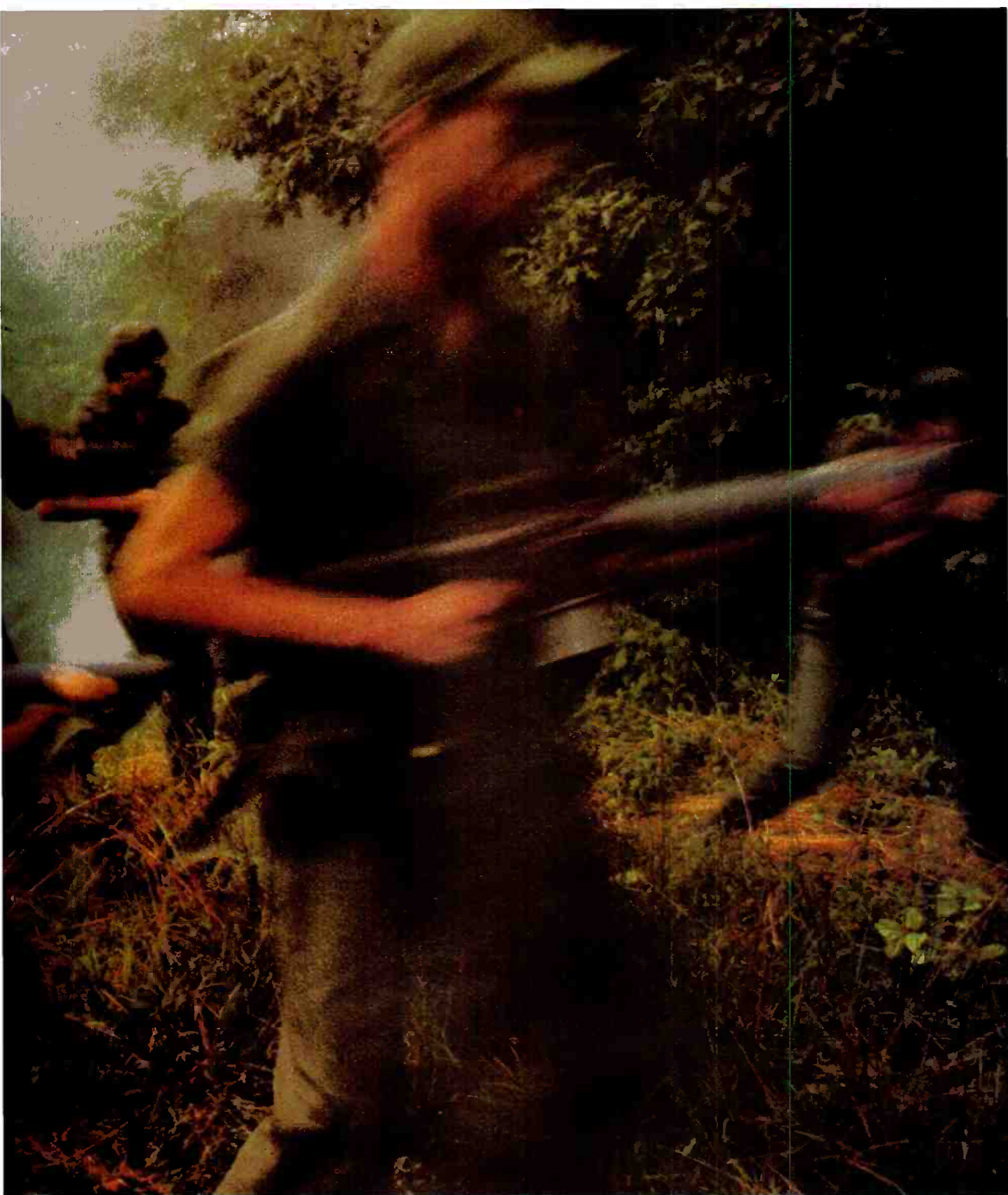
one network actually strapped it to a sky diver's helmet, while another fastened it to a snow skier traveling at 70 mph, with the results of both being super video.)

The Sony BVP-110 offers distinct advantages beyond compactness. Because it's a one-tube, you're free of the single most difficult and aggravating problem associated with three-tubes: registration error.

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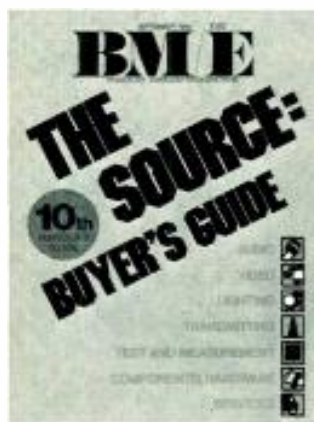
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Broadcast



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BROADCAST MANAGEMENT/ENGINEERING

SEPTEMBER 1982/VOLUME 18/NUMBER 9



- 6 Editorial
Can benign neglect aid UHF?
- 10 Broadcast Industry News
Transponder sales OK, but still subject to veto; DBS licenses imminent, SSS enters DBS arena; FCC finds UHF healthy, seeks lower noise figure
- 25 Radio Programming & Production
WGN defies narrow audience orthodoxy
- 33 Television Programming & Production
Magazine shows seek production alternatives

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THE SOURCE

43
Instant Source Locator Index

61
Alphabetical Listing of Manufacturers

153
Reps/Distributors Section

- 199 FCC Rules and Regulations
DBS and the Fowler commission
- 205 Tax Tips for Stations
An overlooked tax credit
- 211 Great Ideas Contest
Enter next month's contest—win \$50
- 219 Broadcast Industry Products
BM/E's survey of new products

Coming in October . . .

Special Report: Live Broadcasting, plus full SMPTE show preview.

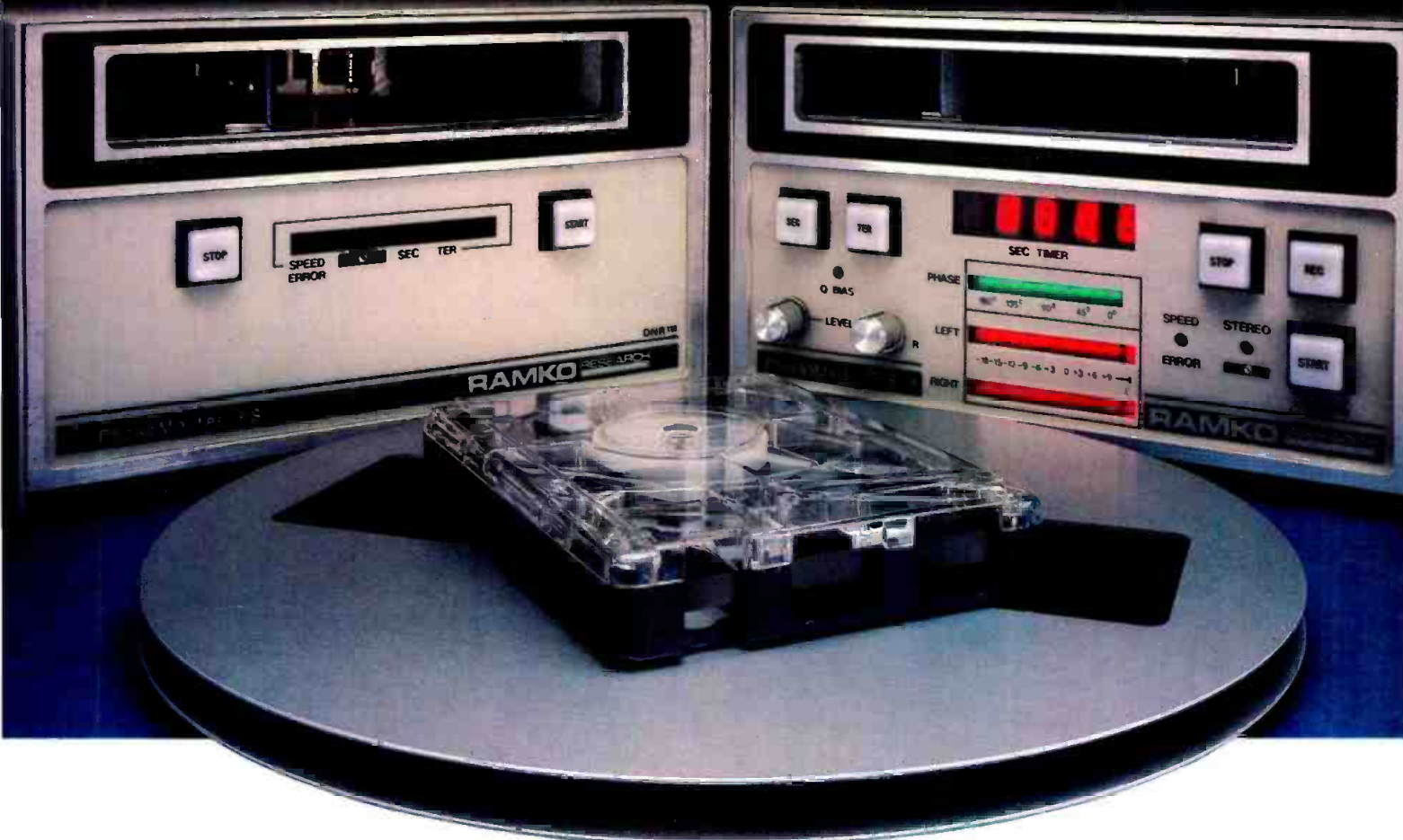
The NEW GREAT IDEA CONTEST has EVEN BIGGER PRIZES! Details on p. 211.

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Can Benign Neglect Aid UHF?

THE UN-REGULATION PHILOSOPHY applied by the FCC in recent actions concerning UHF television once again gives us cause for ambivalence. On the one hand, the Commission's statements sound encouraging to UHF and consistent with a desire to "get off the backs" of the industry. But on the other hand, we wonder if adhering to a philosophy that has gut-level popularity with broadcasters is in reality turning out to be a mixed blessing.

The Commission notes that the Us have become profitable and that in the 50 top markets almost all of the commercial channels are either occupied, under construction, or have applications pending. Profitability compares well with other broadcast media. Therefore, rules regarding UHF reception are adequate to the task of fostering UHF TV, the FCC says.

The FCC therefore declined to make any new rules in six areas involving receiver tuners and antennas. That is good news for the receiver makers who have generally resisted previous FCC requirements aimed at providing UHF comparability. But what about the UHF TV broadcasters?

Comparable profitability is certainly in the eye of the beholder. The percentage of UHF stations reporting profits compares well with *radio*—not with VHF stations. UHF stations reporting profits have consistently exceeded the percentage of FM stations since 1971. Since the mid-1970s the percentage of UHF stations in the black has equalled or exceeded the proportion of AM stations. The only exception was in 1980 when all three services were virtually equal with 58 percent of UHF TV stations profitable, 59 percent of AM stations, and 55 percent of FM stations.

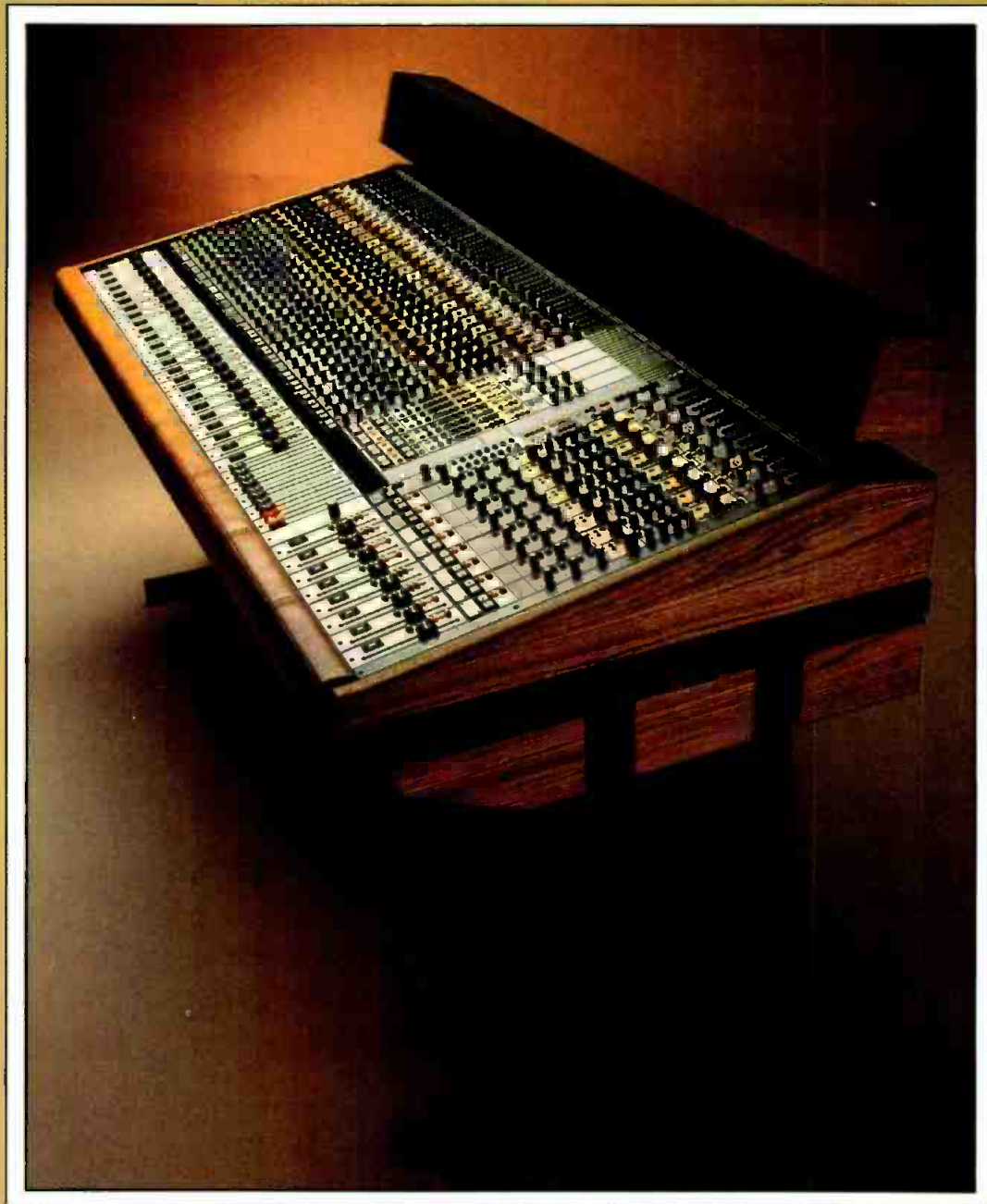
None of the three has approached the percentage of profit-making VHF stations. Figures for the Vs are awesome—from 81 percent in 1971 to a high of 92 percent in 1977 and 1978 and back to a still-astronomical 88 percent in 1980.

That is not exactly comparable. The FCC's UHF Comparability Task Force has come up with a way out, however. Exact equality between UHF and VHF is not needed to achieve a diverse and competitive UHF service, the task force reports. VHF probably will remain superior because of the propagation characteristics of UHF which would require greater power for equivalent coverage and would entail much higher operating costs, the group adds.

A UHF service should be judged on its own merits, the task force concludes. In other words, there is no parity financially or technically. Therefore, it may be premature to decide that the future of UHF depends entirely on the marketplace.

The Commissioners seemed to be saying as much when they took up the issue of weak signal performance. Apparently against the recommendations of the Office of Plans and Policy, five commissioners voted to instruct the FCC staff to draft a Notice of Proposed Rulemaking that would reimpose a limit of 12 decibels on the UHF "noise figure," as a measure of a TV receiver's performance in weak signal areas. This proposal would reinstate a regulation vacated by the U.S. Court of Appeals for the District of Columbia Circuit when the FCC sought to change the noise figure in 1982 model TV sets from 14 dB to 12 dB.

If there is any message among these mixed signals it seems to be that the regulators have to be ready to separate the marketplace theory from issues, usually technical, that cannot be handled by the marketplace. Otherwise the theory may become a means of avoiding controversial problems.



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If your sound goes with pictures, we have what you need.

If you're ready to move up to a specialized mixer, you're ready for Ramsa.

The Sound Reinforcement Specialist: Ramsa WR-8716

When your sound says you're professional but your mixer doesn't. When you're wasting your subtlety and style on "make-do" boards. When you're creating compromises instead of clear-cut distinctions. Then you're ready for Ramsa—the mixers that are specialized so you won't have to compromise.

The WR-8716 is a fully modular sound reinforcement console with 16 input

modules, 4 group modules, and 2 masters. It features 16 input pre-fader solo buttons. 4 group modules with pre-fader insertion patch points, and lockable post-fader solo buttons. There are 6 illuminated VU meters with peak LED's for easy outdoor

reading and a separate stereo variable frequency EQ for monitor sends. Pan pot controls allow panning to the left or right masters while level controls permit 16 x 6 board operation. The left and right direct channel assign function lets you bypass the group modules for individual sources. Portable operation is a snap with easy access connectors.

And the WR-8716 features plastic conductive faders for greater reliability and smooth, low-noise operation; external power supply for light weight, and switchable 48V DC phantom power for condenser mics.



RAMSA

The Recording Specialist: Ramsa WR-8816

The WR-8816 recording console includes the same modular construction, input modules, power supplies, and faders as the WR-8716 plus many important recording advantages. Like direct outputs for 4, 8, or 16 track recording and peak-reading LED meters that let you monitor any 4 out of 24 signals with clear, quick response.

You'll command a variable frequency EQ section with 3 frequency settings for the high and low frequencies plus continuously variable

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like low noise electronically balanced mic inputs with high-speed IC's, 16 switchable post-fader solo controls and XLR-type mic connectors.

Ramsa offers a full line of specialty mixers including the more compact WR-8210 recording mixer and WR-130 sound reinforcement mixer. So don't hold down your professional sound, call (201) 348-7470, because you're ready for Ramsa.



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Transponder Sales OK, But Still Subject to Veto

Outright sale of transponders by satellite carriers has been given the official FCC seal of approval. In a six-to-one vote (with Joseph Fogarty dissenting), the commissioners granted requests by several of the major satellite companies that they be allowed this alternative to first-come, first-served transponder leasing.

At the same time, the FCC went out of its way to emphasize that it would review each request for non-common-carrier status on a case-by-case basis. The Commission accepted the view of its Common Carrier Bureau that "any shortage [of transponder space] is in its final stages," as spokesperson Robert Mazer put it. Nevertheless, it yielded to the urging of Commissioner Abbott Washburn in insisting that it would closely monitor the satellite market to insure that it remained competitive.

Dissenter Fogarty expressed dissatisfaction with the majority view, asserting that transponder space "continues to be a scarce commodity" and arguing that the Commission was abdicating its public interest responsibilities by leaving transponder sales to the marketplace. Commissioner Anne Jones, while concurring in the decision, also expressed some concern that

the Commission could be sidestepping its duties.

Simultaneously with issuing the decision, the FCC authorized several carriers to sell transponders on their birds. They were: RCA Americom (five transponders on Satcom 4); Western Union (Westar 4 and 5); and Hughes Communications (Galaxy 1 and 2).

DBS Licenses Imminent; SSS Enters DBS Arena

FCC authorization of construction permits for interim direct broadcast satellite operators was widely expected to take place before September 1. CPs will be issued to applicants in the order they applied for the service, observers believe. This puts Comsat's subsidiary, Satellite Television Corp., first on the list for consideration, followed by RCA, DBS Corp., CBS, U.S. Satellite Broadcasting (a subsidiary of Hubbard Broadcasting), Western Union, Graphic Scanning Corp., and Video Satellite Systems.

Meanwhile, Satellite Syndicated Systems has thrown its hat into the DBS ring, asking FCC authorization for a five-satellite system that would offer four channels of pay programming. SSS's plan calls for bringing cable companies in, either as full equity part-

ners or in a joint venture. The move comes too late to be considered with the first round of applicants, however, and it appears likely the FCC will not consider the SSS application until after next year's RARC.

Comsat, once it has its CP in hand, is expected to grant RCA Astro-Electronics the contract for construction of two satellites. The system could be launched as early as 1985. RCA Americom, predicted by some to become the second working DBS operator, could be in orbit by late 1986 or early 1987.

FCC Finds UHF Healthy; Seeks Lower Noise Figure

UHF television, while not directly comparable to its VHF counterpart, is a healthy, viable medium that can thrive under present regulations. So determined the FCC in its latest look at UHF, embodied in a recent policy statement (see Editorial, p. 6).

The statement asserted that, except for some "fine-tuning," the current UHF rules are sufficient to insure continued growth. It noted that UHF's profitability is comparable to that of AM and FM radio, although lower than the figures for VHF, and that no UHF station has gone off the air for good since 1976.

The most important factor in increasing the reception quality of UHF is the viewers' choice of receiving antennas, the Commission claimed, arguing that further regulation of receivers or signal transmission would have little effect.

In addition to issuing the policy statement, the FCC took several actions. It declined to propose a system of grading or labeling TV receivers and antennas; decided against a biennial program of measuring receiving antennas, but authorized the Office of Public Affairs to conduct an information program; dropped proposals for an integrated UHF-VHF channel selector; and eliminated the requirement that TV sets be able to receive channels 70-83, now allocated to the land mobile service.

In addition, the Commission dropped a suggested requirement for greater channel capacity on pushbutton-type channel selectors and decided not to pursue a recommendation for rules requiring equality between reception aids provided for VHF and UHF.

The Commission overruled the objections of Chairman Mark Fowler in instructing the staff to draft a notice of proposed rulemaking to reimpose a UHF noise figure limit of 12 dB. The 12 dB figure originally had been de-

Fritts to Head NAB; Assumes Presidency October 1

The Joint Board of Directors of the NAB, acting at a special August 9 meeting, elected Edward O. Fritts the next president of the association. Fritts succeeds longtime NAB leader Vincent Wasilewski, who is retiring to become a partner in the Washington law firm of Dow, Lohnes & Albertson.

Just a few weeks before the election, Fritts stepped down temporarily from his post as chairman of the Joint Board to become a candidate. His move generated controversy, especially since he had also headed the special search committee seeking to replace Wasilewski. After Fritts's departure, however, the commit-



The winner: Eddie Fritts.

tee surprised many observers—and itself, it was reported—by voting to nominate a single candidate for the NAB presidency. The man it picked was Donald A. Thurston, former Joint Board chairman and president of Berkshire Broadcasting Co. of North Adams, MA.

The nomination failed to assure Thurston's election, however, and Fritts will begin his tenure as NAB president October 1. Fritts is president of the family business, Fritts Broadcasting, Inc., of Indianola, MS, which owns radio stations in Mississippi, Louisiana, and Arkansas; he and his father, Edward B. Fritts, jointly own WPAD and WDDJ, Paducah, KY.

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clared in 1980, but was vacated by court action. The current limit of 14 dB will be retained during the proceeding.

Panel Reports on Funding for PBS; FCC Eyes STV

Taking its cue from the initial report to Congress of the Temporary Commission on Alternative Financing for Public Telecommunications, the FCC has issued a rulemaking that seeks to allow public broadcasters to raise funds through subscription television operations.

STV for noncommercial TV operators was just one of the recommendations of the Temporary Commission, created by Congress last year and chaired by FCC Commissioner James H. Quello. The panel also urged the Commission to authorize public radio stations to offer commercial, non-broadcast SCA subchannel services; to examine its restrictions on commercial use of public radio and TV licensees' satellite facilities; to work at resolving UHF comparability problems; to allow public TV stations to offer teletext ser-

vices with no restrictions on payment mechanisms; to maintain sufficient instructional TV fixed service channels for public broadcasters; and to review its policies on on-air fundraising and promotional identification.

The Temporary Commission declared that no reasonable short-term alternative to federal financing existed for public broadcasting, and that even over the long term, federal funding was the preferred method of maintaining the system. Serious reductions in the level of government support would lead to reductions in service, the group stated. In that spirit, it encouraged Congress to continue adequate funding for the public broadcasting system, to study repeal of the unrelated business income refund provisions of the Public Broadcasting Amendments Act of 1981, and to increase tax incentives for individual and corporate contributions.

The panel itself plans to study the possibility of a special trust fund for public broadcasting and to analyze and report on the current PTV advertising experiment (see *BM/E*, March 1982, p. 15).

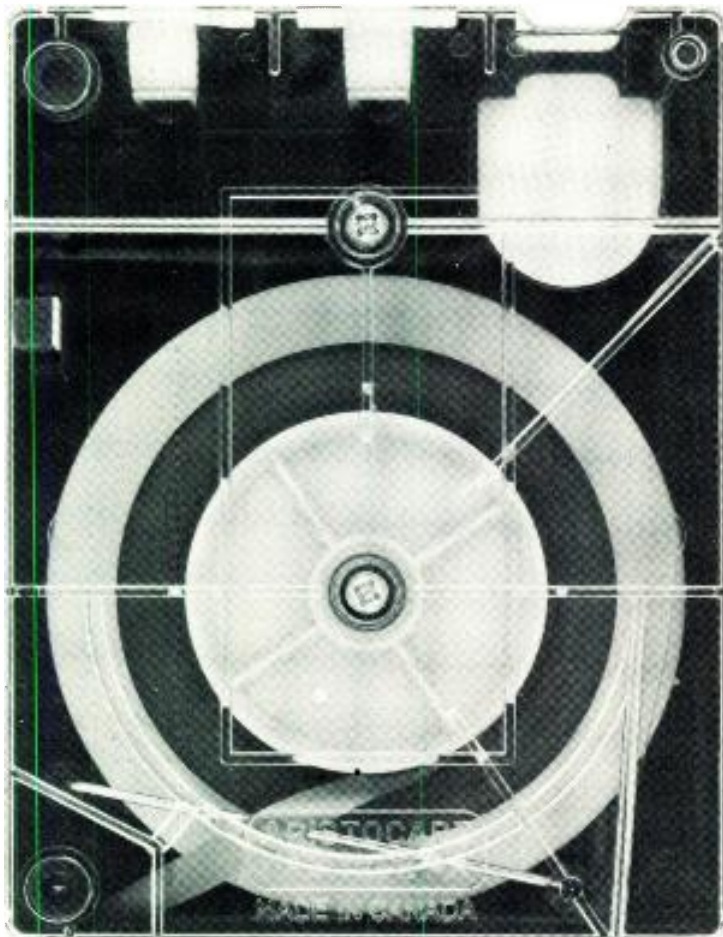
The STV rulemaking outlined several possible structures for subscription operations. The suggested alternatives were: unlimited STV with no functional restrictions; functional restrictions on STV offerings (allowing, for example, only instructional programs); time limitations; or allowing STV full-time on one public channel in a market with two or more. In this last scenario, revenues from the STV operation would provide funds for conventional non-commercial programming on the other station(s).

In issuing the rulemaking, the FCC noted that the Omnibus Reconciliation Act of 1981 may, in fact, outlaw public STV operations. The act, while allowing public stations to seek payment for "services, facilities, or products," specifically states that such activities must not interfere with the stations' public offerings.

The Commission also asked the public to comment on whether STV was in line with public broadcasting's non-commercial nature.

Meanwhile, public broadcasting continues its search for financial viability. A recent victory was Congress's restoration of \$24.4 million that had been cut from the Corporation for Public Broadcasting's 1984 budget; the total appropriation now stands at \$130 million. In addition, the FCC has ruled that public stations are free to air paid promotional announcements for non-profit groups.

Looking to the private sector, National Public Radio recently announced



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no other NAB cartridge meets these exacting standards

We designed the ARISTOCART cartridge 10 years ago. Its features have been widely copied but it continues to outperform competing products because we alone take the trouble to check each unit we ship for phase stability and frequency response in conformity with NAB specifications.

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The new MARK III/4, 1/2" four channel production recorder and its companion eight channel version are the embodiment of this philosophy.

Both compact recorders are designed with microprocessor circuitry for smooth, responsive transport control and precise electronic counting with an L.E.D. display. True, three head design, selectable +4 or -10dBm input and output levels, 15/7.5 ips with continuously variable speed control, 10-1/2" reel capacity, cue control, and dump edit deliver flexibility that makes your production work move faster. Both models feature selectable headphone monitoring for all channels, a multiple frequency test oscillator and positive-locking NAB reel hub adapters. To achieve every last dB of performance, you won't find a competitive machine that lets you get your hands on a full complement of adjustments as easily.

Add to all this, mastering quality sound and the specs that guarantee it. And, the ability to interface to SMPTE time code synchronizers.

Built with the reliability and craftsmanship that have become the hallmark of our reputation with our 5050 Series two channel machines, we've once again advanced the broadcast industry's most advanced and affordable professional recorders.

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it had joined with Mobile Communications Corp. of America to form National Satellite Paging, Inc., which will offer a comprehensive satellite-interconnected paging system to individuals and businesses. Some of the revenues from the new company will help public radio stations meet the current budget crisis. The Public Broadcasting Service's fundraising ventures have also borne fruit: over the past year, the group has raised \$4 million from private sources. In addition, it said, it has agreed to sublease a satellite trans-

ponder to Bonneville Satellite Corp. for \$1 million.

Kahn AM Stereo System First to Hit Airwaves

Kahn Communications scored the first point in the AM stereo competition when two stations, KDKA, Pittsburgh, and KTSA, San Antonio, went on-air almost simultaneously with the Kahn system. Veteran KDKA, an NBC affiliate, will air its MOR format in stereo intermittently; KTSA's top 40 pro-

gramming went to full-time stereo right away.

Quickly joining the two premier stations were KHJ, Los Angeles; KFRC, San Francisco; KMBZ, Kansas City, MO; WLS, Chicago; and WMAL, Washington. All had previously installed the Kahn exciter and went on-air in stereo shortly after the FCC announced type-acceptance of the equipment.

At press time Harris Corp., the other strong contender in what started out as a five-way contest, was awaiting type acceptance for its own AM stereo system. The company said that as many as 15 stations were ready to go on-air with the Harris AM stereo system, with WQXI, Atlanta, scheduled to be the first. More than 100 AM stations have ordered Harris AM stereo equipment, according to the company.

Several other stations, including WBZ, Boston; WOWO, Fort Wayne, IN; WOW, Omaha; WFIL, Philadelphia; KSL, Salt Lake City; and WNBC, New York, were also lined up to begin broadcasts with the Kahn stereo exciter.

One problem remains for all the AM stereo pioneers—no AM stereo receivers are presently available. A short-term solution may be adapters to convert AM/FM stereo receivers to AM stereo/FM stereo operation. Such adapters are expected to be available soon for both Kahn and Harris systems. In addition, Kahn is expecting Mura Corp. of Westbury, NY, to begin manufacturing portable AM stereo receivers for its system when semiconductor chips become available.

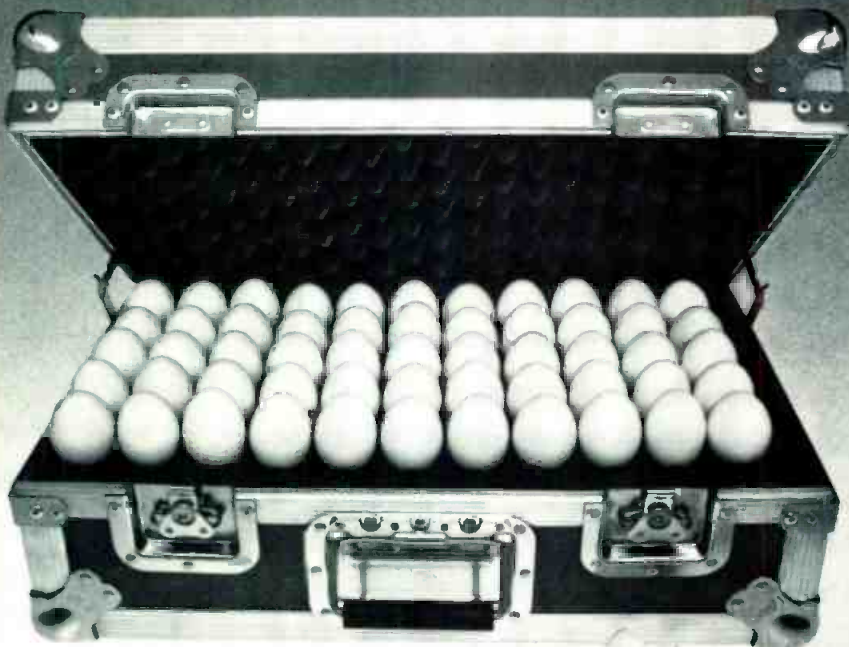
Cable Crossownership Rules Unnecessary: FCC

Claiming that program diversity is in no danger, the FCC has proposed deletion of 1970 rules prohibiting common ownership of cable television systems and broadcast networks.

The notice of proposed rulemaking followed a study by the FCC's Office of Plans and Policy that concluded that the present rules block possible benefits that could arise from such crossownership, such as increased efficiency and lowered costs. Current realities, the OPP study concluded, do not support the original reasons for the rules.

The crossownership prohibition was enacted originally to insure program diversity (thought to be threatened by common ownership of networks and cable systems) and to promote the development of new cable networks, which, it was thought, could be hindered if the powerful networks got into the act.

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by many of today's production companies, sound contractors and radio/television crews whose living depends on getting their gear to the job in perfect working order.

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Since that time, the Commission noted, the entry of new video delivery systems, such as STV and MDS, has increased the competitiveness of the video marketplace, making the cross-ownership restrictions less vital. The Commission also concluded that network dominance of the cable industry was unlikely for several reasons, including the large number of already established cable networks. Network entry into CATV would be more likely to increase competition than to decrease it, the Commission said.

Commissioner Mimi Dawson, while concurring in the action, expressed some concern that there was no clear framework for determining when a single system owner's concentration had become excessive. In a separate statement issued with the rulemaking, she asked for comment on several issues related to this.

Multiple ownership rules for cable came under FCC scrutiny just a few days after its crossownership rulemaking. At that time, the Commission decided against adopting any multiple

ownership rules for the CATV industry, claiming that present there is no threat to diversity from overconcentration of ownership, and that system operators and subscribers should be permitted to realize the benefits of multiple system ownership.

FCC Initiates Inquiry on Equal Time Requirements

A reinterpretation of the Communications Act requirement that broadcasters provide equal opportunities for political candidates has been proposed by the FCC, which has asked for comment on several suggestions.

Currently, a political debate is exempted from the equal time rules only if it is arranged and sponsored by a nonbroadcast party, broadcast in its entirety either live or no later than the day following the event, and covered because of its newsworthy nature. The FCC requested comment on allowing broadcaster-sponsored debates between legally qualified candidates to be considered "on-the-spot coverage of bona fide news events" and therefore exempt from the equal time restrictions.

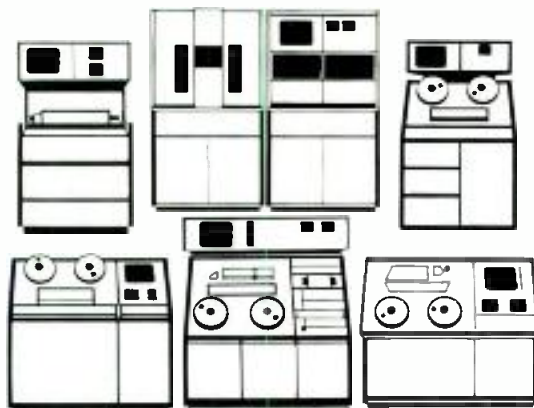
In addition, the Commission asked whether the time limitation should be lifted to exempt broadcasts later than the day after the event from the rules. The Commission also asked commenters if it should establish a new time period or rely instead on a good faith standard.

Comments were also requested on the interpretation of the "bona fide news documentary" exemption, which exempts such documentaries if the appearance of the candidate is incidental to the show's topic.

Hawaii

Our story on the NATPE Iris Awards (*BME*, May 1982, p. 29) announced that this was the first year Honolulu stations had won the award—both KITV and KGMB. John A. Wray, associate program director at KGMB, writes, however, that his station first won the award three years ago for his production of "Homegrown III," whose concept was expanded into the 1982 award-winner "Homegrown IV" (small market/entertainment category).

"That particular program and the 1979 award marked the beginning of some genuine trailblazing in local production here in Hawaii," continues Wray. "Now all commercial stations have greatly expanded their interest and production capabilities. In fact, the viewing public here in the Islands can't get enough local production, whether sports, documentaries, or specials."



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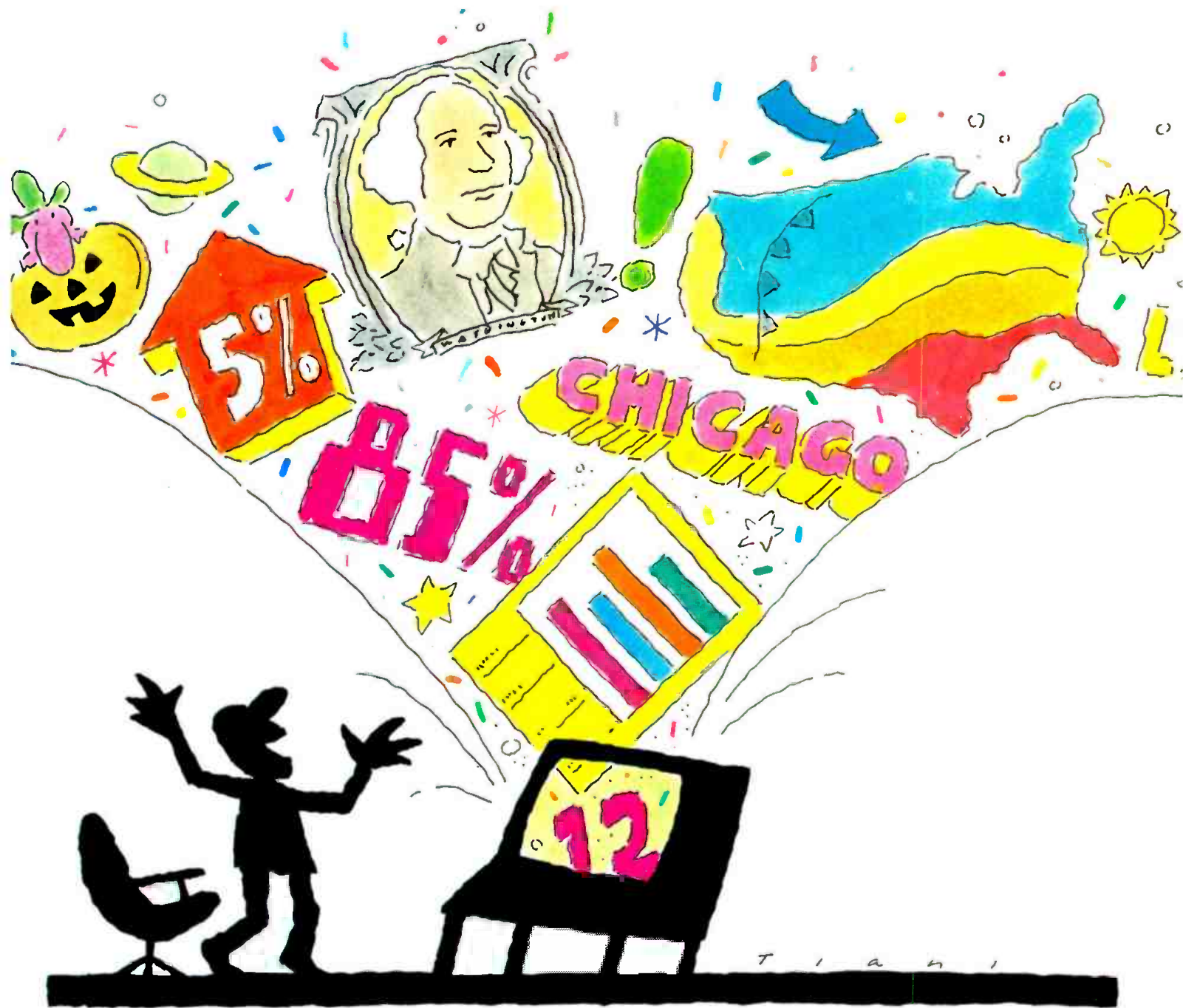
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NEWS BRIEFS

CBS, Inc., has requested permission to establish **over-the-air MDS services** in each of the five markets in which it owns television stations. The four- to eight-channel systems, if approved, would continue CBS's march into the new technologies The FCC has cleared the way for ABC-TV to offer its Home View Network, a scrambled, over-the-air **late-night movie service** aimed at viewers with VCRs.

Broadcasters, led by Palmer Communications, continued their **opposition to Radio Marti** in recent hearings

before the Senate Foreign Relations Committee, considering authorizing the service under S. 1853. Palmer is licensee of WHO, Des Moines, which operates on the 1040 kHz frequency proposed for Radio Marti and fears severe interference from Cuba as retaliation. The House Committee on Energy and Commerce had previously approved its Radio Marti authorization bill, H.R. 5427 A controversial amendment to a Senate tax bill would grant an automatic **five-year license renewal** to any commercial VHF sta-

tion willing to move to a VHF-less state (i.e., New Jersey or Delaware). House Communications Subcommittee chairman Timothy E. Wirth (D-CO) is a staunch opponent of the measure

The Senate has approved a measure to **reduce the FCC** to five commissioners from the current seven.

While **radio station profits rose** in 1981, profit margins dropped from 4.13 percent to 3.46 percent, according to an NAB survey. Gross time sales and net revenues rose an average of 19.9 percent and 21.5 percent, respectively, for the 1700 AM and FM survey respondents Ziff Corp. has agreed to sell its four remaining TV stations to I. Martin Pompadur, who resigned as the company's president. The stations are **WRDW-TV**, Augusta, GA; **WEYI-TV**, Saginaw, MI; **WROC-TV**, Rochester, NY; and **WTOV-TV**, Steubenville, OH Outlet Co. has completed its sale of **WDBO-AM/FM**, Orlando, FL, to Katz Broadcasting of Florida, Inc., subsidiary of Katz Communications. Sale price was \$9.5 million.

Turner Broadcasting's CNN2 headline service has reported **76 broadcast station affiliates**, including WFLD-TV, Chicago. WRNG Radio of Atlanta has taken the call letters WCNN after going all-news as a CNNRadio affiliate

KPRZ-AM, Los Angeles, has joined the Mutual Broadcasting System as primary affiliate for its market

KRBJ-FM, Monte Rio, CA, has become the first affiliate of the San Francisco-Based National Gay Network (NGN). NGN's newscasts will also be heard in Australia on station 2XX's *Gay Viewpoint* program; *Gay Viewpoint's* producers will also share their material with NGN

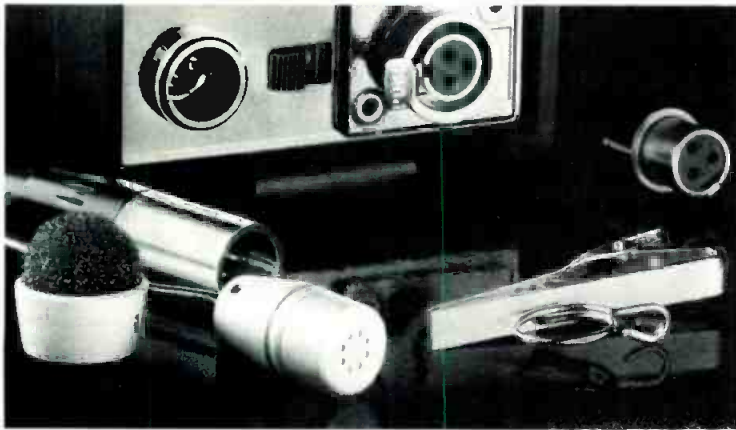
WELI-AM, New Haven, CT, will produce hourly, live 60-second local newscasts for Storer Cable TV of Connecticut, Inc.

IEEE's thirty-second **Annual Broadcast Symposium** will meet September 15 through 17 at the Washington Hotel, Washington, DC

FOC '82, the sixth International Fiber Optics and Communications Exposition, will take place at the Los Angeles Marriott Hotel September 15 through 17

George Washington University of Washington, DC, is **sponsoring a conference** on "Radio Spectrum Management in a Period of Rapid Technological Change: The Government's Role," September 29 through October 1. Call Brent Weingardt at (202) 676-8262 for details Deadline is October 1 for applying for the Society of Broadcast Engineers' latest round of **certification exams**, to be held November 12 through 20.

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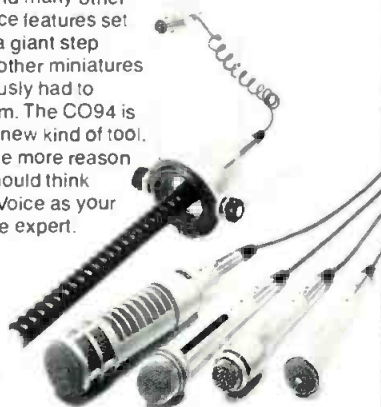
The CO94 also offers exceptional powering flexibility. It can be powered by a standard 9-volt radio-type battery. Or it can be phantom powered from a mixing board, recorder, or in-line supply. The 9-volt battery can even be used as a redundant

power source to "back-up" the phantom power. Plus, the CO94's advanced electronic design permits powering from virtually any DC power supply, capable of delivering between 8 and 50 volts. The internal regulation and filtering will make the CO94's impedance converter swear it's being powered by an over-priced import supply.

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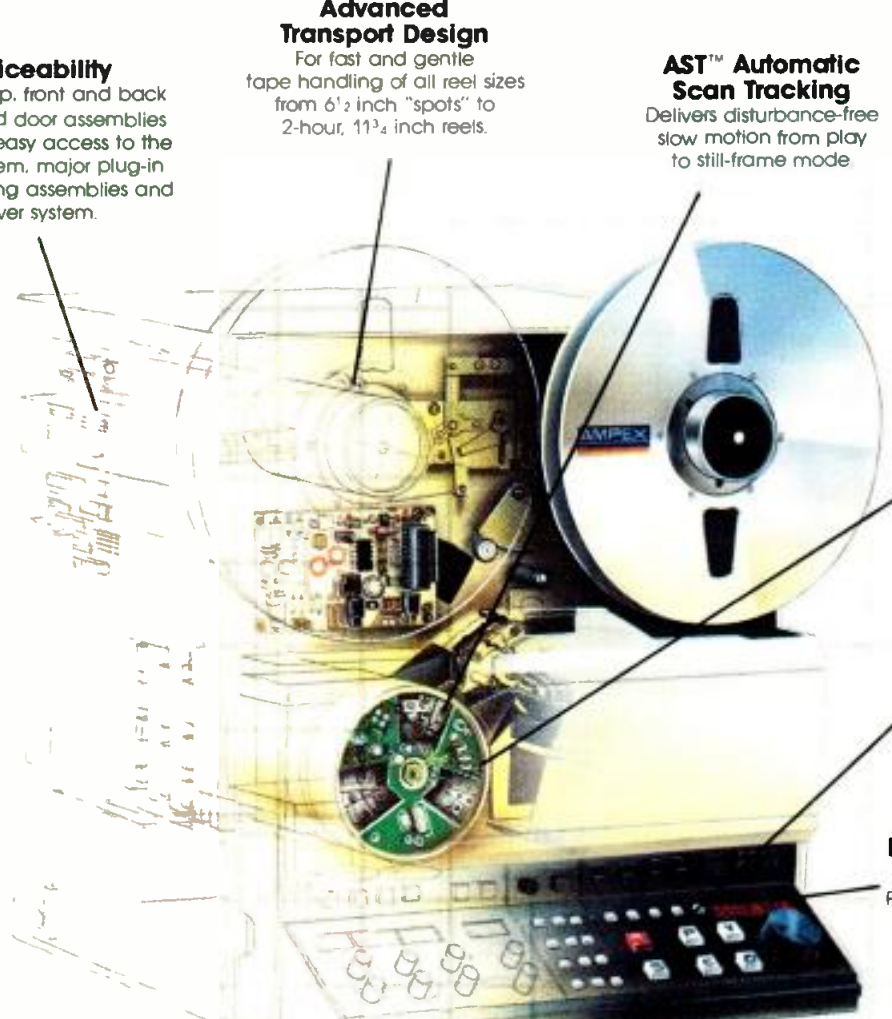
You also get as standard the Ampex exclusive AST™ automatic scan tracking for perfect slow motion and still

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BUSINESS BRIEFS

JVC Company of America is the new name of the restructured sales and service division of US JVC Corp. . . . Channel 9 in Australia started its Los Angeles production studios, ENG operation, and satellite broadcasting center with the purchase of three Sony BVP-330 cameras, two BVU-110, two BVU-800 VTRs, and three BVH-1100A VTRs. Sony also announced the sale of four BVP-250 video cameras to KTVT in Fort Worth, TX. Four BVU-50 VTRs and seven BVE-800 editors were also sold totalling over \$200,000. . . . KVVU-TV in Las Vegas has purchased four new Sony VTRs. . . . and Sun Television acquired four BVH-2000 VTRs.

EMCEE has acquired an in-house tower construction firm for complete construction, engineering, and maintenance operations. . . . Otari has established a new research and development division to create a testing and listening environment for future products. . . . Swedish Radio has purchased more than 20 MCI JH-600 Series audio mixing consoles with more on order, including the top-of-the-line JH-652. . . . Valley People, Inc. has established a new division for retail sales, to be housed in its own building, taking effect June 1982.

Microwave Associates-Land Mobile Communications Division has changed its name and is now called M/A-COM Land Mobile Communications, Inc. M/A-COM also announced that its Video Satellites Company has signed a contract for equipment with the Catholic Telecommunications Network.

Altec Lansing has installed the complete sound system in the Hubert Humphrey Metrodome which houses the Minnesota Twins and Minnesota Vikings; the system includes power mainframes and input and driver cards, constituting over 7,000 watts of power.

In other developments in personnel, Scientific Atlanta appointed Paul Hansil to sales manager for the satellite communications division, and Mike Kelly to manager for the satellite radio product line. . . . RCA has named W. Arnold Taylor to VP marketing, and Keith G. Johnson to director, international product planning.

Rodney K. Madsen has joined the Cetec Corp. as corporate VP. . . . Moseley Associates, Inc. announced that Kinsley Jones is now manager of US sales; the company has also named Fred Zimmerman president. . . . Robert Auguste has been appointed to VP engineering for Cinema Products. . . . the new VP of marketing and planning for Altec Lansing is William Chambers.

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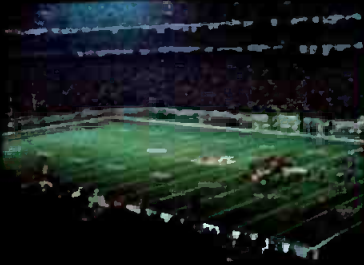
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RADIO

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WGN Defies Narrow Audience Orthodoxy

IN A DAY when a narrowly defined program format designed to reach a narrowly defined audience segment is the rule of thumb for most radio stations, WGN-AM, Chicago, flagship radio station of the Tribune Broadcasting Company, remains defiantly unconventional. A versatile and innovative outlet for news, talk, and personalities as well as music—without narrow targeting—WGN has also become a phenomenal success.

"It's the chicken and the egg theory," explains program manager Dan Fabian cryptically. "It works because it's the way it is, and it's the way it is because it works."

The station has been a success almost since its founding in the 1920s. The Chicago Tribune purchased station WDAP in 1924 after it had gone on the air in 1922 as an O&O of Midwest Central. Under the call letters WGN (for "World's Greatest Newspaper") the station began its growth from one of

many 1000-watt local operations to a 50,000-watt clear channel in 1934.

Even from the early days, the station instituted its emphasis on the presentation of pertinent news and its willingness to seek it out and prepare it. This laid the groundwork for the amalgam of program material which included live sports, remote news with live feeds from the scene, and a mixture of comedy, drama, and music supported by a broad range of on-air talent.

WGN's current news department, run by Paul Davis, is a combined operation with the Tribune's TV operation. The talents of seven reporters are split, as are those of 10 writers who share the air work with three core newsmen.

The station has gone from a heavy rewrite operation to an almost exclusively performance/reportage staff. Six vans and two small Enstrom helicopters are employed. The latter are primarily for traffic reporting but are pulled into live coverage if necessary.



Ray Leonard interviews Chicago Mayor Jane Byrne during WGN remote broadcast.

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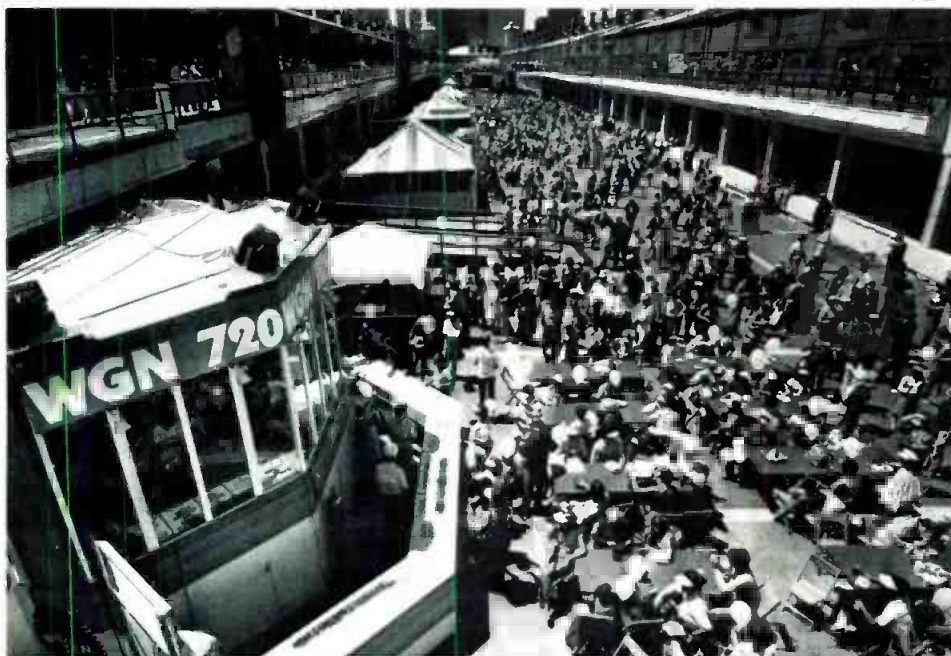
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RADIO PROGRAMMING



WGN broadcasts from its remote studio at the Lakefront Festival.

The on-air staff is organized similarly so that journalist/reporters are also entertainers, getting the same audience interest in their talk and information shows from a "personality" standpoint as they do from their investigative endeavors. It is not uncommon, for

instance, for the two drive-time announcers to come up with important information from their own sources long before other news staffs are able to gather the same facts.

An additional factor in the regular news presentations is the farm report-

ing, including coverage of the many auctions, fairs, and exhibitions for livestock in the Chicago area. In fact, the coverage of agricultural and business issues is so extensive, the two news editors log more than 100,000 air miles per year. As Fabian says, "We are essentially a news/entertainment station, a reflection of our listeners."

In order to maintain this kind of profile, the station tries to keep the on-air personalities in descending age, with the AM drive host in his 40s, the evening talent in its 20s, and other personalities in between. This helps with audience attraction, provides for greater programming variety, and capitalizes on the specific individual talents of each host.

In this respect, each host uses the available tools to reinforce further those elements of his show with which the listeners strongly identify. Bob Collins, the afternoon drive host, uses music as a comedic tool and also plays rock and roll trivia. Wally Phillips handles the morning drive and gears his programs toward news, community involvement, and listener communication by telephone. Still other time slots have live remotes or studio music, reflecting what is going on musically in

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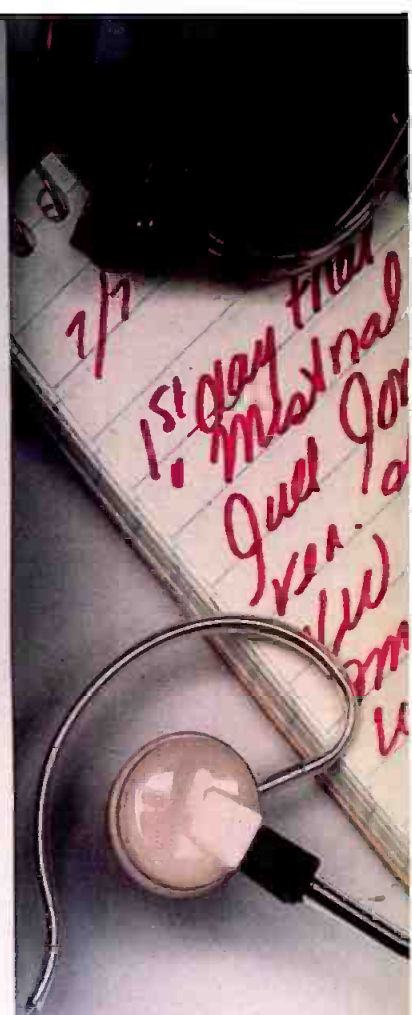
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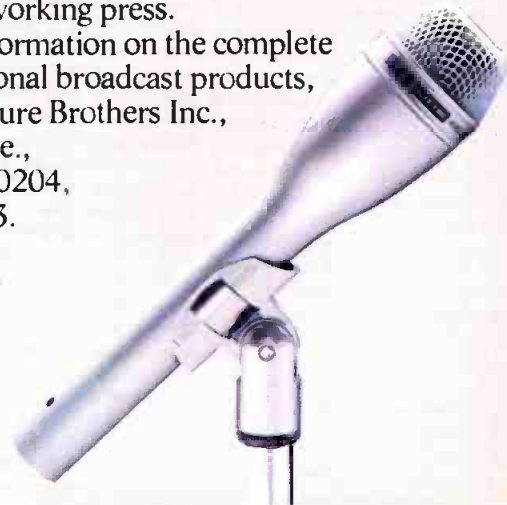
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Agricultural reporter Oriason Samuelson covers an auction during remote broadcast.

the city at that time. The themes in all of this programming are strength and listener appeal through diversity.

Another key aspect of the station's programming is sports. The first play-by-play broadcast of the Chicago Cubs was done in 1922 by the station. The

tradition continues with the entire Cubs schedule being aired along with 16 exhibition games, plus Big Ten football and major college basketball games. As in news coverage, WGN's sports department goes to the events wherever they occur if they are deemed worthy of

coverage—such as the longest baseball game in history (22 innings) which took place at a minor league park in Pawtucket, RI in 1981. Upon discovering the date and place the game was to resume play, WGN dispatched a crew.

Recently, after a 20-year hiatus, WGN has once again become a partial affiliate of the Mutual Radio Network. WGN takes the entire sports package and emergency news service offered by Mutual because it has what management considers great strength of local interest. This includes the entire Notre Dame schedule.

Also in the success formula is WGN's willingness to try advanced technology and new systems. The station is presently AM stereo capable, with equipment on order from both Harris and Kahn, awaiting final type approval from the FCC.

It is clear that WGN's willingness to diversify, to reinforce personalities with individualized programming, to travel to faraway places such as Austria, Poland, and Israel in search of news, and to take risks that go against the usual practice of modern radio programming—all these things combine to make WGN an innovative, if unconventional, leader. **BM/E**

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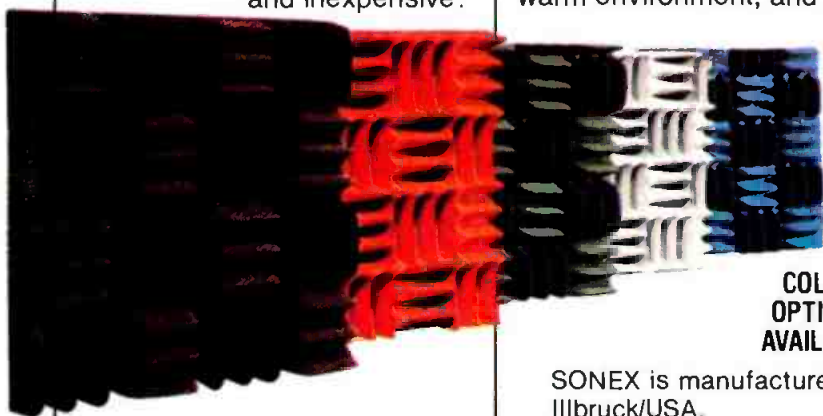
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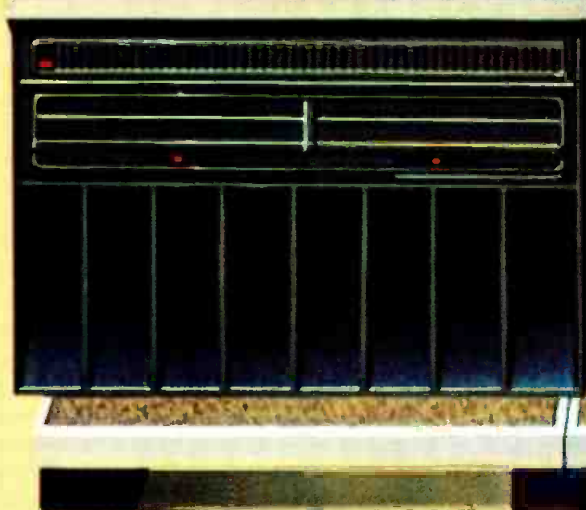
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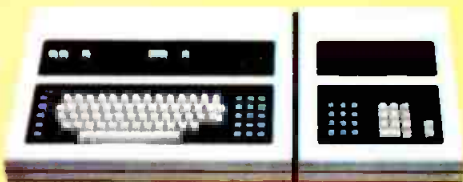
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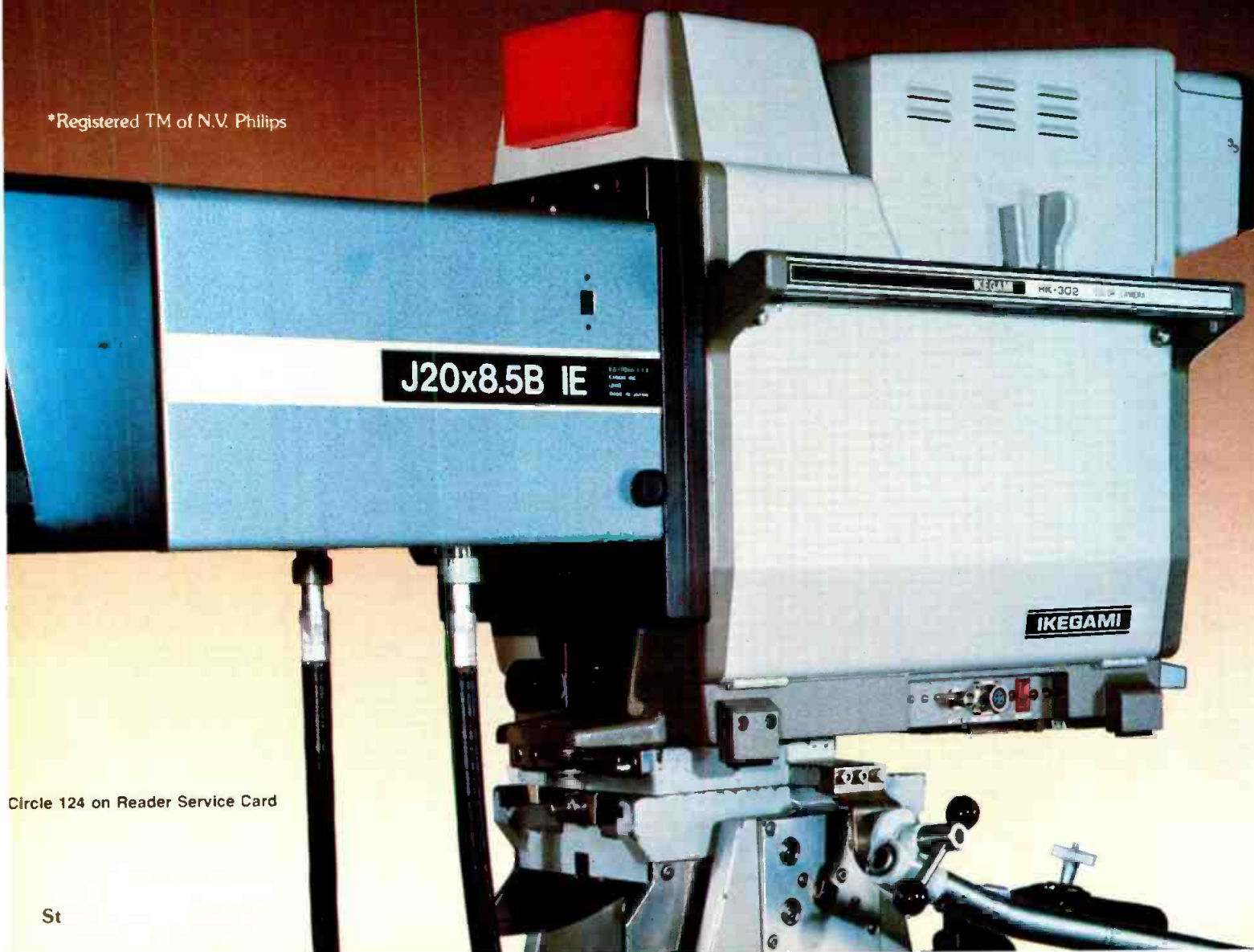
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St

TELEVISION

programming & production

Magazine Shows Seek 3/4-Inch EFP Alternatives

EVEN THOUGH the economic recession may be affecting broadcast media more slowly than other segments of the economy, broadcasters and program producers are wisely seeking to reduce their budgets without hurting quality. This prudence is leading more and more of them to opt for 3/4-inch production and post-production as a cost-effective alternative to one-inch EFP.

Three-quarter-inch recorders are widely used for ENG work, of course, but network-quality productions have relied more on the higher production value of one-inch. The increasing quality of 3/4-inch equipment, though, is starting to take it out of ENG and into more exacting EFP work.

This trend was noted last April in a story on *Real People*, the syndicated magazine-style show that does all its field production on 3/4-inch (*BM/E*, April 1982, p. 33). Also making extensive use of 3/4-inch production and editing is *You Asked for It*, which has had great success with Sony's state-of-the-3/4-inch-art BVU-800 (see *BM/E*, July 1982, p. 23).

Further evidence of the trend is San

Francisco production house Varitel Video. Varitel's year-old facility was built especially for network-quality 3/4-inch work, and the company's client roster includes *PM Magazine*, *Entertainment Tonight*, and other widely viewed magazine programs. According to Varitel's general manager, Jack Schaeffer, it is only natural that Varitel should attract so much work from magazine shows.

"We have a lot of experience in magazine-format work," Schaeffer explains. "Most of us come from *Evening Magazine* at KPIX, which was the first of those shows to be produced entirely on 3/4-inch tape. At that time it was unique, and we all learned to shoot and edit on 3/4-inch, not tying up an entire control room and being able to edit stories or segments in a very intimate situation."

Moving in

The arrangement works so well, Schaeffer says, that one independent network magazine show has actually made a home-away-from-home at Varitel, taking over 1000 square feet of



Equipment in the second of Varitel's two 3/4-inch edit suites includes (left to right): three BVU-200s, Microgen character generator, Convergence 103B editor, Texas Instruments printer, Gray time code generator and reader, UREI 565 notch filter and 535 graphic equalizer, Adda VW1 remotes, Yamaha power amp, JBL and Auratone monitor speakers, Otari MX 5050 ATR, Yamaha 12 x 2 audio console, and Technics turntable.

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BM/E SEPTEMBER, 1982 33

TELEVISION PROGRAMMING



One-inch mastering suite offers Quantafont character generator (not shown), Convergence 104 editor, Sony time code generator/reader, and Thomson color corrector. Video monitors are by Ikegami and Videotek, and a Grass Valley 16001L switcher will be added soon.

primarily with Sony BVP-330 cameras (Ikegami HL-79s are also used) and taped on Sony BVU-110s. Time code is recorded in the field using the BVU-110's built-in generator. Back at Varitel, the producers have a screening station that reads the time code, allowing them to plan out the edits for each field segment in advance.

After carefully planning the edit, the producer takes the segment into the editing room permanently booked for the show. According to Schaeffer, the producers work on a schedule that requires them to edit and complete a story in one day. They rotate through the edit suite, preparing their segments to go to the network headquarters, where they are dubbed up to one-inch and incorporated into the final program.

Another frequent user of Varitel's edit suites is Group W's *PM Magazine*, which takes advantage of the 3/4-inch-to-one-inch mastering system in Edit

the new 7200-square-foot facility. Half-a-dozen show personnel are permanently stationed at Varitel. They supervise the field shoots, with all recording done on 3/4-inch.

"Actually, they used to do about half in one-inch and half in 3/4," Schaeffer comments, "but they slowly switched over to 3/4 because of the economy of the situation." Field segments are shot

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John Beedle was one of the first staff members of the Moving Picture Company in London and is currently an editor, engineer and is on the Board of Directors. Fifteen years ago he started in the business with PayTelevision, an experimental pay TV company in London. He got his first taste of editing doing "The Breakfast Show" for Television International and later set up and ran a video suite for Ewart Television, London, before joining MPC.



"Two years ago when we at MPC decided to expand our video editing facilities, our goal was to have the most efficient suite in London, marrying the new one-inch 'C' format technology with a flexible, reliable editing system. After much investigation, including a visit to the U.S., we chose the CMX 340X.

"This system has brought a new dimension to our editing capabilities and has been a winner with both our clients and editors. The system has most options fitted and is interfaced fully to the video switcher and by GPI to many peripherals such as additional SFX banks of the switcher, 1/4-inch tape, telecines, and our multi-channel Quantel. Our sophisticated special effects work demands the kind of flexibility available with the 340X including the ability to delegate record and playback

machines without repatching control cables.

"After a year of operation, due to growing business demands, we decided to install another edit suite. Again, we carefully examined the available editing system to see what was new. We bought another CMX. This second system enabled us to exploit another facet of 340X flexibility. We were now able to delegate machines from one system to the

other as the specific job dictated. System one has three format 'C' VTR's and one quad interfaced. System two has three format 'C' and one format 'B' interfaced. With this mix and the ability to delegate, we haven't yet been caught out by the proliferation of formats, we just 'switch and mix' machines as required.

"Shortly we shall be looking to update our quad edit suites with 'the new technology.' Although we will again look carefully at the market place, it's reassuring to know that so far we have made the right choices with CMX."



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TELEVISION PROGRAMMING

Suite 3 to package its weekly national reel.

"Each week they send out a national reel that represents the best stories from all the participating stations," Schaeffer says, describing the *PM Magazine* operation. "That's all packaged here in San Francisco. They also use the Varitel editing suite for cutting their promotionals and for putting together some of the stories they originate in the national office." The 3/4-to-one-inch edit suite lets the *PM* crew take 3/4-inch edited master stories, plus visuals and other elements for the promo reel, and edit them all together directly to one-inch.

Convergence editing

The edit suite used by *PM Magazine* is built around a Convergence ECS-104 computer editor with programmable dissolves, wipes, fades, plus color correction, freeze frame, and downstream key. The editor, which prints out a CMX-compatible edit decision list, controls two Sony BVU-200 3/4-inch VTRs and a BVH-1100.

The 3/4-inch edit suites, each with three BVU-200s, have Convergence ECS-103 computer editors, also with programmable dissolves, wipes, fades,

color correction, freeze frame, and downstream key with matte camera. The audio package includes a UREI graphic equalizer, notch filter, Otari reel-to-reel ATR, and Technics turntable (a similar audio package is found in the 3/4-to-one-inch suite).

"We first worked with Group W in December of '79 on a *PM* project because of our 3/4-inch editing capability," Schaeffer observes. "We've been able to maintain the relationship with them because our package of facilities meets their needs in a very efficient way."

Personnel savings

One of the major economies with 3/4-inch production and post-production is the savings in personnel, Schaeffer explains.

"In a traditional one-inch suite you have a tape operator—the tape machines might actually be located down the hall—plus you have the editor at the console. In the 3/4-inch suite, all you need is the editor. He loads his own tapes, his machines are right there, so it's more of a film-style edit, in a way." The personnel savings, along with the lower cost of renting or purchasing equipment and of tape stock, all add up

to a more cost-effective operation.

Broadcasters are not the only ones producing magazine-style programs on 3/4-inch tape, though. Industrial use of 3/4-inch is old news, but Schaeffer reports that Varitel, originally set up to do broadcast work, is getting an increasing amount of business from companies desiring to produce high-quality, magazine-format productions for their employees.

"A lot of companies are looking to do magazine-format newsletters for in-house information because they find that people are reading less of the written material," notes Schaeffer. On the more positive side, it seems likely that companies are simply recognizing the effectiveness of video as a communications medium and seeking to utilize it in the best way possible. Varitel currently is doing such a project for Shaklee Corp., the natural products company, and Schaeffer says Standard Oil is considering something similar.

As Varitel's magazine-show clients illustrate, network-quality production and post-production is now possible entirely on 3/4-inch equipment. (Local stations, take note.) Those 3/4-inch recorders don't have to be limited to *just* the news. **BM/E**

Tried and True

Broadcasters have always been able to rely on Barco CM series utility color monitors to show true colors and picture noise. Now these same monitors offer even more with the addition of pulse cross and preset controls.

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Suspect in police custody.
Taped by Frank Beacham and Warren Jones.



Dade County Police questioning teenagers.
Taped by Frank Beacham and Warren Jones.



NEWSMEN LONGER THE DARK.

conditions, and capture elusive footage like the examples shown here.

The BVP 330 is so versatile in low-light situations, newsmen are surprised to learn that the camera is lightweight and sturdy enough to be taken into the jungles of Nicaragua. Or that its performance is good enough to enable it to be used as a studio camera.

But it makes sense that the BVP 330 should be this good. After all, when a reporter risks his life getting a story, the last thing he should have to worry about is losing it to darkness.



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unheard-of ways. And this is where the theoretical limits come in. There are so many possible combinations, no one will ever know what they all look like.

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BM/E'S VERIFIED BUYER'S GUIDE THE SOURCE

HOW TO USE IT:

1. Instant Source Locator index p. 43

To find suppliers of the product or service you want, first turn to the **Instant Source Locator**—an index of over 200 product types arranged in seven major categories: Audio; Video, Imaging; Lighting, Power, Support, Set Design, Etc.; RF, Transmitting/Receiving Equipment, Antennas, Towers; Test & Measurement, Logging, Timing; Components, Hardware; and Services. Within each main product category (they're arranged logically), you'll find manufacturers listed alphabetically. The star (★) indicates that the listing is verified—that the product or service is currently available. The numbers after the manufacturer's name refer to the specific types of product offered.

2. Alphabetical Listing of Manufacturers p. 61

Once you've located the names of the manufacturers in the ISL, you can learn more details from the **Alphabetical Listing of Manufacturers**. Address and phone number are followed by a complete listing of the manufacturer's product line, plus, in some cases, the manufacturer's field offices. These listings are also verified.

3. Reps/Distributors Section p. 153

Advertisers' reps and distributors throughout the country are listed in the **Reps/Distributors Section**, arranged alphabetically within each state.

4. Reader Service Card p. 225

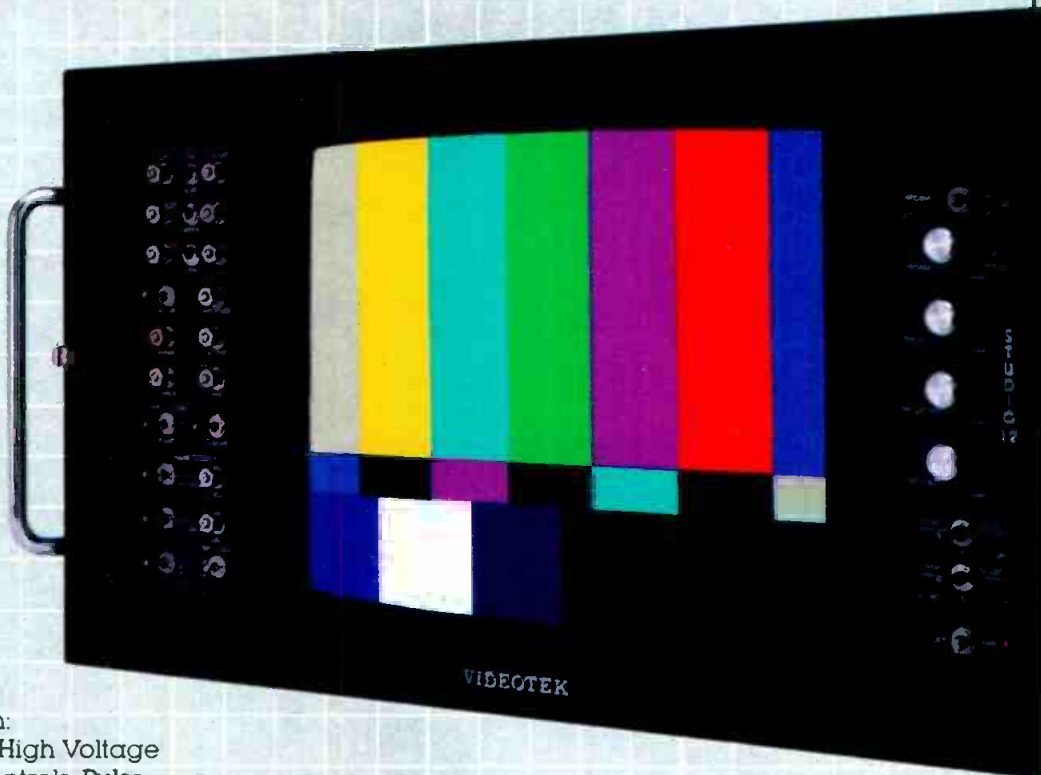
To get even more information about the products and services which are advertised in **THE SOURCE**, use the **Reader Service Card** inside the back cover. You can circle the Reader Service numbers for information on as many manufacturers as you like. And don't forget—the card is good for an entire year!

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Instant Source Locator Index



AUDIO

CONSOLES

TYPES: SUPPLIERS: ADM (3,4,6)*; Ampro/Scully mic mixers (1) (3,4)*; Arrakis (1-4,6); Atlantic Research portable consoles (2) (2-6); Audioarts (2,3,4)*; Audio Processing (2-5); Audio-Technica (6)*; Audio Techniques (2-5)*; Audisar (1,2)*; Auditratics (3-6)*; Autogram (3-6)*; Broadcast Audio (3,4,6)*; Broadcast Electronics (3,4)*; Broadcast Technology (1-4,6)*; BSM (2,3); Cetec Broadcast (2,3,4,6)*; Coherent (1,2)*; Comprehensive Vide (1)*; Comrex (2)*; Continental Electronics (4)*; Crosspoint Latch (1,5)*; Datatranix (2-6); Dyma (2,3,4,6)*; Ecor (1)*; Eela (1-4,6)*; Elcom Bauer (3)*; Electro-Voice (1,2,4)*; Farrtronics (2)*; Finnitek (1-4,6); Fostex (1,2,6)*; Gotham Audio (2,3,4,6); Gregg (3,4); Hallikainen (6)*; Harris Broadcast (1-5)*; Horrison (2-6)*; Howe (1,4,5,6)*; Image Devices (1); Industrial Research (1)*; Industrial Sciences (3)*; Integrated Sound (4)*; Interface Electronics (2); Listec (2)*; Logitek (2-6)*; Long; LPB (1,3,4,6)*; LTM (1)*; McCurdy (1,3,4,6)*; MCI/Sony (2-6)*; McMartin (1-4,6)*; Micro-Trak (1-4,6)*; Modular Audio (3,4,6)*; NEI (1-4)*; Neve (1-6)*; Nikko (3,4)*; Opamp (1-4,6)*; Pacific Recorders (4)*; Protech (3,4,6)*; Quad-Eight (3-6)*; Quantum (1-4,6)*; Ramko (1-4,6)*; Ramsa (2,3,4)*; Richmond Sound (1-4,6)*; RTS (1,2)*; Sescam (1)*; Shure (1,2)*; Solid State Logic (5)*; Sony (2)*; Soundcraft (2,4,5)*; Sound Dynamics (2); Spectra Sonics (1-4,6)*; Sphere (2-6)*; Studer Revox (1-4,6)*; Studiomaster (1-4,6)*; TEAC (3)*; Telfax (1)*; Transist-O-Sound (1)*; Trident (2-6)*; Tweed (1-6)*; Bayly (2)*; Ultra Audio (1,2,3,6)*; UMC (2,3,4)*; United Recording (2,4)*; Ward-Beck (2,3,4,6)*; Yamaha (1,2)*

CART PLAYERS/RECORDERS

TYPES: SUPPLIERS: AKG (4)*; Amilon (1-4)*; Ampro/ single deck (1) Scully (1,2,5)*; Audi-Card (1,2,4)*; Bell dual/triple deck (2) Audio (1); Broadcast Electronics (1-4)*; multideck (3) Deltamad (5)*; Elcom Bauer (1)*; IGM time delay (4) (1,2,3)*; International Tapetronics phase control (1,2,3)*; MacKenzie (1,2,3); Pacific Recorders (1,5)*; Ramko (1,2,5)*; Sono-Mag (1,3,4)*; Straight Wire (5)*; Telectra (1,2); Telex (1)*; UMC (1,2,3,5)*; Yamaha (4)*

CASSETTE PLAYER/RECORDERS

SUPPLIERS: Audiotronics*; Eumig*; Fostex*; Image Devices; Leader Broadcast*; Neal Ferragraph*; Nikko*; Odetics*; Pentagon*; Ramko*; Sonsui*; HH Scott; Sharp*; Studer Revax*; Studiomaster*; Superscope*; Tandberg*; TEAC*; Technics*; Telectra; Tiffen*

OPEN-REEL DECKS

TYPES: SUPPLIERS: Ampex (1,2,3)*; Ampro/Scully portable ATRs (1) (2,3)*; Cavax (1,2); Fostex (2,3,4)*; 2,4-track decks (2) Gotham Audio (1,2,3); International multitrack ATRs (3) Tapetronics (2)*; Leader Broadcast (1-4)*; time delay decks (4) MCI/Sony (2,3)*; Nagra (1,2)*; Otari (1,2,3)*; Ramko (2)*; Scully (2)*; Soundcraft (3)*; Sound Dynamics (2); Stephens (1,2,3)*; Studer Revox (1,2,3)*; Tandberg (1,2)*; TEAC (2)*; Technics (2)*; Telex (2)*; United Research (2)*

DIGITAL AUDIO RECORDERS

TYPES: SUPPLIERS: 3M (1)*; Mitsubishi (1,2)*; fixed head/ Odetics (1)*; Sonsui (3)*; Sony (1)* open reel (1) digital adaptor/ video recorder (2) cassette recorder (3)

TAPE DUPLICATORS

SUPPLIERS: Accurate Sound*; Audio/Tek*; Cetec Gauss; Dynacam; Electro Sound*; Garner*; Nagra; Odetics*; Otari*; Pentagon*; RKO Tape; Sharp*; Telectra; Telex*

SPROCKETED MAGNETIC FILM TRANSPORTS, DUBBERS

SUPPLIERS: Bach Auricon*; Leader Broadcast*; Magnasync/Moviola*; Magna-Tech*; Multi-Track*; Rangertone; Rank Precision*; Wide Range*

HEADS, ACCESSORIES

TYPES: SUPPLIERS: Ampex (1,2)*; Allsop (1,2)*; R.B. replacement heads (1) Annis (3)*; Audio Techniques (1,3,4)*; rebuilt heads (2) Broadcast Electronics (8,9)*; Electro Sound head cleaners, (1,4)*; Fidelipac (4)*; International ElectroMagnetics (1,2)*; JRF (1,2)*; degaussers (3) Lauderdale (4)*; Leader Broadcast alignment, (1,2,3,4)*; Marathon (3)*; Memorex (3)*; tension gauges (4) Microtran (3); Minneapolis Magnetics (1)*; Multi-Track (1,4)*; Nagra (1,3)*; Nartronics (1,3,4)*; Pentagon (4)*; Ramko (1)*; Rangertone (1); RE:dB (1,2)*; SMI (1)*; Sound Dynamics (2); Taber (1)*; TEAC (3)*; Tentel (4)*; Texwipe (3)*; UMC (1,4)*; United Research (1)*; Wide Range (3)*

AUDIO TAPE, ACCESSORIES

TYPES: SUPPLIERS: Agfa-Gevaert (1,3)*; Ampex open-reel tape (1) (1-4,6,7)*; R.B. Annis (10)*; Aristocart carts (2) (2,4,6)*; Audico (8,9)*; BASF (1,3,4)*; cassettes (3) Broadcast Cart (2,6)*; Calzone (6)*; Capitol (2)*; Deltamad (4)*; Dictaphone test tapes (4) (1,6)*; Electro Sound (3,4,8)*; Fidelipac sprocketed (2,4,6,10,12)*; Fluxcom (10)*; Garner magnetic film (5) (10)*; Gruver (3); Inovonics (13)*; International empty reels, carts (6) Tapetronics (2)*; Kozin (1,3,6,7)*; leader tape (7) Lauderdale (10,12); 3M (1,2,3,5-8)*; tape loaders (8) Magnasync/Moviola (10)*; Magnetic Reference (4)*; Marathon (2,4,12,13)*; tape timers, rewinders (9) Memorex (2,3)*; Microtran (10); Nagra bulk erasers (10) (4)*; Neumade (2,5,6,8,9); Nartronics convey erasers (11) (10,12)*; Odetics (3,10)*; PDM (3)*; Pentagan (9)*; Plastic Reel (6)*; Polyline (3,6); tape cleaners, evaluators (12) Procart (2)*; Ramka (2,8)*; Recortec (3,12)*; RKO Tape (1,3); Smith-Victor (3)*; other (13) Sonar (10)*; Standard Tape (4)*; Taber (10)*; Tapex (2,3,4)*; TDK (1,3,4)*; Telex (4)*; UMC (10, splice finder)*; Wallach (2,6)*; Wide Range (10)*

EDITING EQUIPMENT, ACCESSORIES

TYPES: SUPPLIERS: Adams-Smith (4)*; Audia Kinetics (2,4)*; Basch (2)*; BTX (2,4)*; Contral splicing blocks, (2,4)*; Datum (4,5)*; EECO (2,4)*; tape (1) Electro Sound (1)*; F&B/Ceco (1)*; Fidelipac (1)*; Harris Broadcast (2)*; Interactive electronic editors (2) (2,4)*; Jatex (2)*; Kalart Victor (1,5)*; digital audio editars (3) Lauderdale (1); Leader Broadcast (4)*; SMPTE time code Marathan (1)*; MCI/Sony (4)*; Multi-synchronizers (4) Track (4)*; Neve (3)*; Plastic Reel (1)*; other (5) Quad-Eight (3)*; Redding Radia (5); Solid State Logic (4)*; Stephens (1,4)*; Studer Revox (4)*; United Media (2,4, ADR controller)*; Videamedia (2)*; Xedit (1)*



DISC PLAYING EQUIPMENT

TYPES: SUPPLIERS: AKG (3)*; Allsop (6)*; Astatic turntables (1) (2,3); Audia Technologies (4)*; Audio-pickup arms (2) Technica (2,3,6)*; Audionics (4)*; Audisar (4)*; Broadcast Electronics (1,2,4)*; Cetec phana cartridges (3) Broadcast (1,2)*; Fidelipac (2,3)*; Gotham Audio (1,2,3,5); Gregg (4); Harris phana preamps (4) Broadcast (1)*; Integrated Sound (1,5)*; complete disc consoles (5) Lauderdale (6); Logitek (4)*; LPB (1,2)*; recard cleaning, care (6) McCurdy (1)*; Micro-Trak (1,2,4,5)*; Keith Manks (6)*; Nikka (1); Opamp (4)*; Radia Systems (4)*; Ramko (1,4)*; Richmond Sound (4)*; RTS (4)*; Sharp*; Shure (2,3)*; Stanton (3,4,6)*; Straight Wire (4)*; Studer Revox (1)*; Technics (1)*



PROGRAM, BUSINESS AUTOMATION

TYPES: relays sequencers (1) time insertion sequencers (2) computer consoles (3) complete program automation systems (4) auto time, weather announce (5) radio business automation systems (6) radio newsroom computers (7) (2,3,4,6,7)*; Jefferson Data (6,7)*; Jenel (4); Kaman (4,6,7)*; Libra (6); The Management (6)*; Marketron (6); Microprobe (2,3,6)*; Nidus (3,4,6)*; Quanta (7)*; Radiocom (6)*; Register Data (6)*; Sharepoint (3)*; Sono-Mag (3,4)*; Southwestern (6)*; Spectrum (6)*; Station Business (6)*; UMC (4)*; Valley People (4)*

SUPPLIERS: Applelog (6); Automated Broadcast (4,6); Automated Business Concepts (6)*; Basys (7)*; Broadcast Electronics (4)*; Coda (6)*; Cavox (1,2,4,5); Cetec Broadcast (2-6)*; Channelmatic (1,2,3); Clarcomputer (4); Columbine (4)*; Computer Business (6); Computer Concepts (4,6,7)*; Computer Management (4,6); Conex (4); Contral Technology (1-5); Cross (6); Custom Business (6)*; Data Comm. (6)*; Di-Tech (3)*; Generic (6); Grotan (4,6)*; Hallikainen (5)*; Harris Broadcast (2,4-7)*; Harrison (4); Hewlett-Packard (6)*; IGM (2-5)*; Interface Data (2,3,4,6,7)*; Jefferson Data (6,7)*; Jenel (4); Kaman (4,6,7)*; Libra (6); The Management (6)*; Marketron (6); Microprobe (2,3,6)*; Nidus (3,4,6)*; Quanta (7)*; Radiocom (6)*; Register Data (6)*; Sharepoint (3)*; Sono-Mag (3,4)*; Southwestern (6)*; Spectrum (6)*; Station Business (6)*; UMC (4)*; Valley People (4)*

AUDIO PROCESSING, EFFECTS

TYPES: ALC, AGC amps (1) AM compressor/limiters (2) FM compressor/limiters (3) parametric equalizers (4) graphic equalizers (5) digital special effects (6) digital delay, reverb (7) analog special effects, reverb (8) mechanical reverb (9) audio/video sync delay (10) time compression/expansion (11) noise reduction (12) music synthesizers (13) other (de-essers, etc.) (14)

SUPPLIERS: Advanced Music (6,7,8,10,11)*; Advancing Technology (1,2,3)*; AKG (7,8)*; Altec Lansing (5)*; Aphex (3,4,14)*; Ashly (3,4,12)*; Atlantic Research (2-5); Audio Technologies (1-4,12)*; Audio Technology (12); Audio Processing (4,5); Audionics (14)*; Audio + Design (1-5,8,12,14)*; Audioarts (3,4,5)*; Audisar (4,5); Broadcast Electronics (2,3)*; Broadcast Technology (5,7,8,10)*; Comex (7)*; Comrex (1)*; CRL (2,3,12); Datatronix (2-5); dbx (1-4,6,12)*; Delta Electronics (1,2)*; Deltamad (12)*; Dolby (12)*; Dymo (4,5,8)*; Elcom Bauer (1,2,3)*; Electro-Voice (5,8,9)*; ESC (14); Eventide (1,6,7,11,14)*; EXR (14)*; Fostex (4,5,8,12)*; Frequency Devices (4,5,12); Gotham Audio (2,3,7,8,9,12); Gregg (1,2,3,14); Harris Broadcast (1,2,3)*; Harrison (5)*; Howe (14)*; Industrial Research (6,10)*; Inovonics (1,2,3,12)*; Integrated Sound (5,11)*; International ElectroMagnetics (5)*; Ivie (5,7)*; Kahn (2)*; Lear Siegler (2,3,5); Lexicon (6,7,10,11)*; LPB (2,3)*; Marcom (2,3)*; McCurdy (2,4)*; MCI/Quantel (10)*; McMartin (1,2,3,5)*; MicMix (9,12)*; Klark-Teknik (5,6,8,9)*; Koss (7); Marti (1,2,3)*; Modular Audio (2,5)*; Moog (13)*; Moseley (1,2,3)*; MXR (3,5-8,14)*; NEI (4,5,8,9)*; Nikko (4,5); Opamp (1,5,9,13)*; Orban (2-5,14)*; Protech (1,2)*; Quad-Eight (2,4,5,7,8,9)*; Ramko (2)*; Richmond Sound (1,4,5)*; Sansui (5)*; Ken Schaffer (6,7,11)*; Sescorm (1,4)*; Shure (2,5)*; Spectra Sonics (1,2,3,5,8)*; Straight Wire (12)*; Superex (4); Symetrix (2,3,4)*; TEAC (5)*; Thomson-CSF (1,2,3, presence EQ)*; Trident (4,6,7,8,11)*; Tweed (2-5,12)*; United Recording (1-5,12)*; Ursa Major (6,7)*; Valley People (1-4,12)*; Word-Beck (1,4)*; Wavetek (5); White (5); Yamaha (5,8)*



AUDIO MONITORS

TYPES: speakers (1) headphones (2)

SUPPLIERS: Acoustic Research (1)*; AKG (2)*; Altec Lansing (1)*; Atlas Sound (1)*; Audio Techniques (1,2)*; Audio-Technica (2)*; Audisar (1); Auernheimer (1)*; Auratone (1)*; Beyer (2)*; Broadcast Technology (2)*; Cetec Gauss; David Clark (2); Clear-Com (2)*; Dorrrough (2,3); Electro-Voice (1)*; Fostex (1)*; Gotham Audio (1); Integrated Sound (1)*; Koss (1,2)*; Lansing (1)*; McKoy Dymek (1)*; Micro-Trak (1)*; Ramko (1)*; Sennheiser (2)*; Setcom (2); Sharp (1)*; Shure (1,2)*; Sony (2)*; Spectra Sonics (1)*; Stanton (2)*; Studer Revox (1)*; Superex (2); Tectro (1); TEA (2)*; Telex (2)*; United Recording (1)*; V.A.M.P. (1)*; Vidaire (2)*; Westlake (1)*; Yamaha (1)*

INTERCOM SYSTEMS

TYPES: RF (1) hardwired (2)

SUPPLIERS: Cetec Vego (1)*; David Clark (2); Clear-Com (2)*; Coherent Comm. (1)*; Comrex (1)*; Edcor (1)*; Farrtronics (2)*; Fisher Berkeley (2); HME (1)*; Lear Siegler

(2); Long; Marshall Elect. (6,7,8,10,11)*; McCurdy (2)*; McMartin (2)*; Minicom (2)*; Motorola (1)*; Nady (1)*; Protech (2)*; R-Columbia (1,2)*; ROH* (2)*; RTS (2)*; Ken Schaffer (1)*; Setcom (2); Swintek (1)*; TEA (2)*; Telex (2)*; Theatre Techniques (2)*; TVI (2); Tweed (2)*; Vidaire (1)*; Video Aids (2)*

MICROPHONES

TYPES: dynamic (1) electret/condenser (2) ribbon (3) PZM (4) RF (5) shotgun (6) lavalier (7) capsular, modular (8) mic stands, booms, dollies (9)

SUPPLIERS: AKG (1,2,6-9)*; Altec Lansing (1,2,7,9)*; Astatic (1,2,7,9); Atlas Sound (9)*; Audio-Technica (1,2,6,7)*; Beyer (1,2,3,5-9)*; Bruel & Kjaer (2)*; Calrec (2,8)*; Cetec Vega (5)*; Coherent (2,5,7)*; Comrex (5)*; Countryman (2,7,8)*; Dymo (1)*; Edcor (1,5,7)*; Electro-Voice (1,2,6-9)*; F&B/Ceco (9)*; Fidelipac (1,2,6,7,9)*; Alan Gordon (5)*; Gotham Audio (2,6,9); HME (5)*; Image Devices (2); Integrated Sound (1,2,6)*; Lauderdale (9); Leader Broadcast (1,2,3,5-9)*; LTM (9)*; Marti (1)*; Matthews (9)*; Micron (2,5,7)*; Keith Manks (9)*; Nady (5)*; Odetics (1,2,9)*; Ramso (1,2)*; R-Columbia (1,2)*; RMS (1); Ken Schaffer (5)*; Sennheiser (1,2,5-9)*; Shure (1,2,3,7,9)*; Sony (1,2,5-8)*; Superscope (2)*; Swintek (5,7)*; TEA (1,2)*; TEAC (1,2)*; Telex (1,2,7)*; Vidaire (1,2)*

TELCO INTERFACE EQUIPMENT

SUPPLIERS: Audio Acc.*; Audisar; Broadcast Electronics*; Comrex*; Gregg; Howe*; Monroe*; Old Dominion*; Redding Radio; RTS*; Sound Dynamics; Studer Revox*; Symetrix*; Telfax*

AUDIO AMPLIFIERS

TYPES: preamps (1) line amps (2) monitor, power amps (3) audio DAs (4) amp power supplies (5)

SUPPLIERS: ADM (4)*; Allied Bdcst. (1,4)*; Altec Lansing (1,2,3)*; Arrakis (1,3,4,5); Atlantic Research (1-4); Audio Technologies (1-5)*; Audionics (3)*; Audio + Design (1,4)*; Audisar (1-4); Audionics (1,2,4)*; AVL Digital (3,4)*; Bell Audio (1,2,4); BGW (3)*; Bonneville (2,4)*; Bosch (1,3,4)*; Broadcast Audio (3,4)*; Broadcast Electronics (1-4)*; Broadcast Technology (1-5)*; Bryston (1,3)*; BSM (4); Calrec (1)*; Central Dynamics (1-5)*; Channelmatic (4); Commerce Air (4); Conex (3,4); Datatek (1-4)*; Datatronix (1-5); Datum (2)*; Di-Tech (4)*; Dymo (1,2,3)*; Dynair (1,4)*; Edcor (1,2,3)*; Electro-Voice (2,3)*; Eumig (1,2,3,5)*; Frequency Devices (5)*; Graham-Patten (4)*; Heath (1,3); Hedco (2,4)*; Hewlett-Packard (1,2)*; IGM (4)*; Integrated Sound (3)*; International Nuclear (1,5); ITI (1,2,3,5)*; Ivie (1,3)*; Kahn (2)*; Lansing (2,3)*; Lauderdale (1,4); Lear Siegler (1,2,3); Logitek (1,3,4)*; Marti (2,3)*; McCurdy (2-5)*; McMartin (1,2,3)*; Micro-Trak (1-4)*; Milan (4)*; Modular Audio (1-5)*; Multidyne (1,2,4)*; MXR (1)*; Neve (2,4)*; Nikko (1,3); Opamp (1-5)*; Pacific Recorders (4)*; Protech (1-5)*; QSC (3)*; Quad-Eight (1,2)*; Radio Systems (3,4)*; Ramko (1-5)*; Ramsa (3)*; Rangertone (1,2); Richmond Sound (1,2,4,5)*; ROH (1-4)*; RTS (1-5)*; Russco (1,3,4)*; Scientific Syst. (4)*; Sescorm (1,2,3,5)*; Sharp (1,2,3)*; Shintron (4)*; Shure (1,3)*; Sigma (4)*; Spectra Sonics (1-5)*; Sphere (1,2,3)*; Stanton (1)*; Straight Wire (1-5)*; Studer Revox (3)*; Studiometer (3)*; Symetrix (3)*; Taber (1-4)*; Tandberg (1,3)*; TEAC (1,5)*; Telemet (3,4); TEA (4)*; Telfax (2)*; Thomson-CSF (4)*; TM Systems (2,5)*; Tweed (1-5)*; Bayly (1-4)*; Circuit Devel. (3)*; Ultra Audio (3,4)*; United Recording (1,3)*; Valley People (1,2)*; Vamco (4)*; Versa Count (4); Vital (4)*; Word-Beck (1-5)*; World Video (3)*; Yamaha (3)*

AUDIO CONTROLS

TYPES: rotary attenuators (1) slide attenuators (2)

SUPPLIERS: Atlantic Research (2); Datatronix (2); Duncan Electronics (2); Opamps (1,2)*; Penny & Giles (1,2)*; Protech (2)*; ROH* (2)*; Sescorm (1,2)*; Shallco (1,2)*; Spectra Sonics (1,2)*; Tech Labs (1,2)*; United Recording (2)*; Vidaire (1)*; Waters (1,2)*

AUDIO LEVEL INDICATORS

TYPES: VU (1) PPM (2) video monitor display (3) LED, other (4)

SUPPLIERS: ADM (2)*; Advancing Technology (1,2)*; Arrakis (1,4); Audio Technologies (1)*; Audio Technology (1,2,4)*; Audio Processing (1,2); Audio + Design (1,2,4)*; Broadcast Technology (1,2,4)*; Dorrrough (4); ESE (4)*; Gotham Audio (2,3,4); Harrison (1-4)*; Inovonics (2)*; Leader Bdcst. (1,2)*; Logitek (1,2,4)*; McCurdy (2)*; McMartin (1)*; Opamp (1)*; Quad Eight (4)*; Ramko (4)*; Rangertone (1); Real World (1,2,3)*; Scott (1,2); Spectra Sonics (1)*; Telemet (1); TM Systems (1)*; Word-Beck (1)*; Weston (1-4)*

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other features. The new, microprocessor assisted, Model 802 provides broad spectrum operational capabilities with front panel programming for varying production requirements. An impressive array of functions are available, including intercom, squawk, IFB/SA, station-iso, signaling, etc. SERIES 4000 IFB SYSTEM This program interrupt system is widely used to cue "ON-AIR" talent from up to four control stations, each with dedicated priority levels.

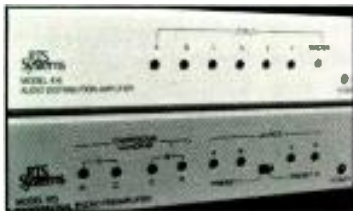


A modular format allows for custom configuration and easy expansion for up to twelve IFB outputs. SYSTEM 2500 CARD CAGE AMPLIFIER

SYSTEM Our high density packaging system allows for up to ten circuit cards in only 3½" of rack space. Initially available is the Model 2510 1 x 6 Audio Distribution Amplifier with fully balanced transformer outputs and top rated performance specifications. SERIES 1000 INTERCOM Our ten by ten



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top performance in a low profile portable or rack mount package. HPM-41 MICROPHONE MIXER This is no ordinary mic mixer. It's a familiar looking package with extraordinary performance features, super spec's, and great sound. Equally im-

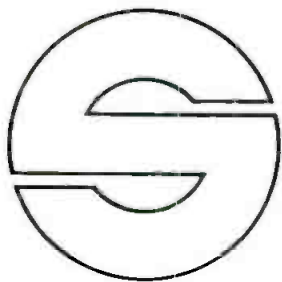
pressive, our rugged, battery powered Model 1400 In-Line Microphone Preamplifier boosts any mic signal to line level.



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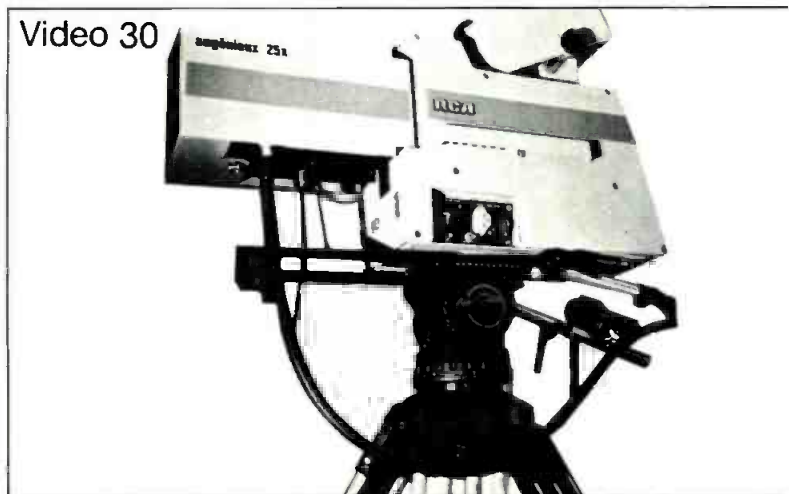
Video 20



Video 25



Video 30





OTHER AUDIO, RADIO EQUIPMENT

TYPES: audio patch panels (1) soundproofing material (2) EBS two-tone systems (3) other (4)

SUPPLIERS: ADC (1)*; ADM (1)*; Alpha Audio (2)*; Atlantic Research (1); Audio Technologies (1)*; Audio Acc. (1)*; Audisar; Broadcast Technology (1)*; Datatronics (1); Emergency Alert (3)*; Farrtronics (1)*; Gorman-Redlich (3,4)*; Hedco (4)*; International Nuclear (3); Jenel (1); Jahnsen (3)*; Lemo (1)*; McCurdy (1,4)*; McMartin (3)*; Ramko (4)*; RTS (4)*; Sescam (1)*; Sphere (1)*; Symetrix (1)*; TFT (3)*; Trumpeter (1)*; Tweed (1)*; Word-Beck (1)*; Wireworks (1)*; World Video (4)*



VIDEO, IMAGING

CAMERAS

TYPES: studio (30 mm tubes) (1) field (25 mm tubes) (2) ENG/EFP (18 mm tubes) (3) lightweight (13 mm tubes) (4) single-tube cameras (5) recorder/camera combos (6) monochrome cameras (7) solid state cameras (8)

SUPPLIERS: Ampex (1,3,6)*; Arriflex (8)*; Asaca (7)*; Boch Auricon (8)*; Birns & Sawyer (8)*; Bosch (1,2,3,6)*; Camera Mart (3,8)*; CEI (2,3)*; Central Dynamics (1,2,3)*; Cinema Products (3,8)*; Eumig (8)*; GBC (7); Harris Broadcast (1,2,4,9)*; Hitachi (1-7,9)*; Ikegami (1,2,3,6,7,8)*; Javelin (7); JVC (3,4,5)*; Marconi (1)*; NEC (3)*; Panasonic (2,3,5,6,7)*; RCA Commercial (1,2,3,6)*; Sea-Cam (3)*; Sharp (3,5,7)*; Sony (1,2,3,5,6)*; Teledyne (9)*; Thomson-CSF (1,2,3,4)*; Toshiba (1,3)*; Tritronics (motion analysis)*; Westinghouse (5,7)*

CAMERA COMPONENTS

TYPES: lenses (1) lens extenders (2) filters (3) pickup tubes (4) standalone micro-processor CCUs (5)

SUPPLIERS: Amperex (4)*; Angenieux (1,2)*; Anton/Bauer (5)*; Calvert (4)*; Canon (1,2)*; CEI (1)*; Century Precision (1,2); Cinema Products (1)*; F&B/Ceco (1,3)*; Film/Video Equip. (2)*; Fujinon (1,2)*; GBC (1,2); Ikegami (1-5)*; Javelin (1,2); JVC (1,2)*; Lenzar (1); Panasonic (1)*; RCA EO&D (4)*; RCA Solid State (4)*; Schneider (1,2)*; Warren R. Smith (1)*; Sony (5)*; Tele-Cine (1,2,3)*; Thomson-CSF (4)*; Tiffen (3)*; Tritronics (1)*; Zei-Mark (1)*; Zoomar (1)

VTRs, VCRs

TYPES: quad (1) one-inch 8 (2) one-inch C (3) U-type VCR (4) pro beta VCR (5) pro VHS HCR (6) recorder/camera combo (7) video cart/cassette automation system (8)

SUPPLIERS: AF Assoc. (3)*; Ampex (1,3,7,8)*; Bosch (7,8)*; Calico Video (8)*; Central Dynamics (3)*; Channelmatic (8); CMC (1,3)*; Delcom (4)*; Hitachi (3,6,7)*; JVC (4,6)*; Lake (8)*; 3M (3)*; Marconi (3)*; Media Concepts (6,8)*; Merlin (1,2,3)*; Odetics (8)*; Panasonic (4,6,7)*; Phasecam (8)*; RCA (1,3,7,8)*; Recortec (4,8)*; Sharp (6)*; Sony (3,4,5,7)*; Tech Elect. (8)*; Techtran (port. 1/4-inch)*

VIDEO HEADS, ACCESSORIES

TYPES: replacement heads (1) rebuilt heads (2) VTR rebuilding service (3) head cleaners, degaussers (4) alignment, tension gauges (5)

SUPPLIERS: AF Assoc. (3)*; Ampex (1,2,3,4)*; Allsop (4)*; R.B. Annis (4)*; CMC (1,2,3)*; Glentronix (2)*; Lauderdale (4); Merlin (3)*; Minneapolis Mag. (1,3)*; Nortronics (1,4,5)*; Rangertone (1,3); RCA Commercial (1,2,3)*; Saki (1)*; Spin Physics (1,3)*; Taber (1,3)*; Tentel (5)*; Texwipe (4)*; Videomagnetics (1,2)*

VIDEOTAPE, FILM, ACCESSORIES

TYPES: two-inch tape (1) one-inch tape (2) 3/4-inch tape (3) 1/2-inch tape (4) film stack (5) tape, film cleaners & evaluators (6) bulk erasers (7) tape loaders (8) empty reels, containers (9) other (10)

SUPPLIERS: Agfa-Gevaert (3,4,5)*; Ampex (1-4,9)*; Allsop (6)*; R.B. Annis (7)*; Asaca (6)*; Audico (6,8)*; BASF (4)*; Calico Video (8)*; Calzone (9)*; Eastman Kodak (5)*; Environmental (9); Fidelipac (7)*; Fuji (1-4,10)*; Garner (7)*; JVC (4)*; Lauderdale (7); 3M (1-6,8,9)*; Memorex (4)*; Nortronics (7)*; N.O.V.A. (6)*; Otari (8)*; Panasonic (3,4)*; PDM (4)*; Plastic Reel (9)*; Polyline (9); Quanta (6)*; Recortec (6)*; Re-Play (10)*; RKO Tape (4)*; RTI (6)*; Sawyer (8,9); Smith-Victor (4)*; Sonar (7)*; Sony (2,3,4)*; Studio Film*; Superex (7); Taber (7,9)*; TDK (4,6)*; Wide Range (7)*

SLOW MOTION RECORDERS

TYPES: disc action recorder (1) video animation controller (2) slow-mo recorder (3) VTR slow-mo controller (4)

SUPPLIERS: Ampex (4)*; Animation Video (2)*; Aurora (2)*; Computer Ops. (2); Convergence (2)*; Eigen (1,2)*; Grove (2)*; Hitachi (4)*; Interand (2)*; Lyon Lomb (2)*; 3M (4)*; MPB (2)*; Oktel (1,2); RCA Commercial (4)*; Sony (4)*

TELECINES, FILM EQUIPMENT

TYPES: solid state telecines (1) telecine cameras (2) 16/35 mm film projectors (3) 35 mm slide projectors (4) optical multiplexers (5) sprocketed film transports (6) telecine color corrector (7) auto light control (8)

SUPPLIERS: AF Assoc. (1)*; Bell & Howell (3,4)*; Beston (3)*; Basch (1,5,7)*; Buhl (4,5); CEI (2)*; Corporate Comm. (7)*; Dubner (7)*; Eastman Kodak (3)*; Fairchild (1); Alan Gordon (4)*; Hitachi (2)*; Ikegami (2,7)*; Kalart Victor (3,5)*; KB (6); Laird (3,4,5)*; L-W (3)*; Magnasync/Moviola (3,6,7)*; Magna-Tech (3,6)*; Marconi (1,7)*; Multi-Track (3,6)*; North Hills (1)*; Nytone (3,5,7); W.A. Palmer (3)*; Radmor (3)*; Rangertone (3,5,6); Ronk Precision (2,3,4,7)*; RCA Commercial (2-5,7)*; Singer Ed. (3,4)*; Spindler & Sauppe (4)*; Teledyne (video-to-film)*; Tritronics (5)*; Wide Range (6)*; Zei-Mark (3,4,5)*



ELECTRONIC ART, GRAPHICS

TYPES: character generators (1) character generator/framestores (2) digital art/paint systems (3) digital still stores (4) bit pad digitizers (5) camera/VTR digitizers (6) weather symbol inserters (7) "draw-on-screen" systems (8)

SUPPLIERS: ADDA (4)*; Ampex (4)*; Apert-Herzog (4)*; Aurora (3,6,7)*; Barda (1)*; Beston (1)*; Bosch (1,4)*; British Videotex (1); Chyran (1,2,3,5,7,8)*; Colorado Video (4)*; Colorgraphics (3,8); Comprehensive Video (1)*; Computer Graphics Lab (3,6,8)*; Computer Video (1); Datum (1)*; Dubner (1,3,4-8)*; EEG (1)*; For-A (1,8)*; Grove (1,2,3,6)*; Harris Broadcast (4)*; Harris Video (4)*; Interand (3,5,7,8)*; Knox (1)*; Laird (1)*; Logica (3)*; 3M (1,6)*; MCI/Quantel (1-4)*; MPB (1)*; Newscan (1,3,7)*; QSI (1)*; Quanta (1,5)*; Ramtek (3)*; Shintron (1)*; Spectra (3,7)*; Texscan (1,8); Thalner (1)*; Thomson-CSF (1,2,5,7)*; Via Video (3,6)*; Video Assoc. (1)*; Video Data (1)*; Weatherscan (7)*; Xiphios (3,5,7)*

PRODUCTION SWITCHERS

TYPES: portable (1) large studio (2) compact studio/mobile (3) automated, micro-processor controlled (4) post-production (5)

SUPPLIERS: Ampex (2-5)*; Asaco (1,3)*; Beaveronics (1,2,3,5)*; Central Dynamics (1-5)*; Comad (1)*; Commerce Air (1); Crosspoint Latch (1-5)*; Echolab (3,4,5)*; Grass Valley (2-5)*; Image Video (1,3)*; Industrial Sciences (1,5)*; International Nuclear (1,5)*; Kaitronics (1,3)*; Lang (1)*; NEC (2,5)*; Ross (1,2,3,5)*; Shintron (3)*; Siegel (5)*; Toshiba (1,2)*; Viscount (1,3)*; Vital (1-5)*



SPECIAL EFFECTS

TYPES: digital efx processors (1) standalone efx generators (2) colorizers (3) RGB chromakeyers (4) encoded chromakeyers (5) title keyers (6) downstream keyers (7) non-additive keyers (8) compressor/positioners (9)

SUPPLIERS: ADDA (9)*; Ampex (1)*; Asaca (2)*; Beaveronics (2,3,4,6,7)*; Broadcast Video (2,4-7)*; Central Dynamics (2-7)*; Chyron (1)*; Colorado Video (3)*; Computer Graphics (1)*; Convergence (1)*; Crosspoint Latch (4,5,7)*; Digital Services Corp. (1)*; Dubner (2)*; Dynair (2)*; For-A (3,6)*; Graham-Patten (6,7)*; Grass Valley (1,4-7)*; Grove (1)*; Image Video (2,7)*; Industrial Sciences (2,4,5,7)*; Interand (1,2,3)*; International Nuclear (2,5,7); JVC (2)*; Knox (3)*; 3M (3)*; Marconi (3)*; MCI/Quantel (1,2,9)*; Multidyne (7)*; NEC (1,2)*; Panasonic (2,3,4,7)*; Shintron (5)*; Siegel (4,5,6,8)*; Telemet (4,5); Thomson-CSF (6,7,8)*; Toshiba (1,2)*; Ultimatte (4)*; Video Assoc. (6)*; Video Data (6)*; Viscount (2)*; Vital (1,2,3)*

MASTER CONTROL SWITCHERS

TYPES: manual (1) automated (2) business automation interfaced (3)

SUPPLIERS: Ampex (1,2)*; Central Dynamics (1,2,3)*; Data Comm. (3)*; Dynair (1,2,3)*; Grass Valley (1,2)*; Image Video (1,2,3)*; Industrial Sciences (1,2)*; International Nuclear (1,2); Matrix Systems (1,2); Viscount (1)*; Vital (1,2,3)*

ROUTING SWITCHERS

TYPES: parallel interface (1) serial interface (2)

SUPPLIERS: AVL Digital (1,2)*; Central Dynamics (1,2)*; Datatek (2)*; Di-Tech (1,2)*; Dynair (2)*; Glentronix (1,2)*; Grass Valley (1,2)*; Grumman*; Hedco (1,2)*; Image Video (1,2)*; Industrial Sciences (1,2)*; International Nuclear (1,2); Kaitronics (1,2)*; 3M (1,2)*; NEC (1,2)*; Telemet (1,2); Ultra Audio (1); Utah Scientific (2)*; Vamco (1,2)*; Viscount*; Vital (2)*

MACHINE CONTROL, TECHNICAL AUTOMATION

TYPES: parallel interface (1) serial interface (2) VI systems (3)

SUPPLIERS: Auburn Instr. (1)*; Avonix; Control Video (1,2,3)*; Datatek (2)*; Dynair (2)*; EECO (3)*; Engineering Lab (1,2,3)*; Grass Valley (1,2)*; Image Video (1,2)*; Kaitronics (1)*; Kavco (1,2)*; 3M (2)*; Recortec (1)*; Solid State Logic (1,2,3)*; Torpey (2)*; Utah Scientific (2)*; Vamco (1,2,3)*; Vital (2)*

POST-PRODUCTION

TYPES: editor/controllers (1) multisource editors (2) SMPTE time code generators, readers (3) SMPTE time code synchronizers (4) proprietary time code systems (5)

SUPPLIERS: Ampex (1,2,3)*; Adams-Smith (3,4)*; Applied Digital (4)*; Audio Kinetics (3,4)*; Bosch (1)*; BTX (1,3,4)*; Cezar (1,3,4)*; CMX (1,2)*; Control Video (1-4)*; Convergence (1,2,3)*; Datametrix (3); Datatron (1-5)*; Datum (1,3,4,5)*; EECO (1,3,4,5)*; Electro & Optical (3,4); ESE (3,5)*; For-A (3)*; Glentronix (3,4)*; Gray (3)*; Grumman (3)*; Harris Broadcast (1)*; Harris Video (1)*; Interactive (1,5)*; Jatex (1,2,3,5)*; JVC (1,3)*; Kaitronics (3)*; Lyon Lamb (1)*; Multidyne (3,4,5)*; Multi-Track (3,4)*; Panasonic (1,3)*; RCA Commercial (1,2)*; Sawyer (1); Shintron (3)*; Skotel (3)*; Sony (1,2,3)*; United Media (1-5)*; Videomedia (1-5)*; Vital (3,4)*; Wide Range (3)*

VIDEO SIGNAL, SYNC GENERATORS

TYPES: sync (1) black burst (2) color bar (3) multiburst (4) staircase romp (5) source identification (6) safe title area (7) countdown (8) video slate board (9)

SUPPLIERS: Amtron (1,7)*; Asaca (1,2,3,4)*; Automation Techniques (2,3)*; AVL Digital (1,2,4,8)*; Bosch (3,6)*; Broadcast Video (7)*; Canter-Redman (2,3,4,5)*; Central Dynamics (2)*; Crosspoint Latch (1,2,3)*; Datatek (2)*; Dynair (1)*; EEG (6)*; For-A (1,2,3,7,8)*; Grass Valley (1,2)*; Gray (7)*; Industrial Sciences (1,2,3)*; International Nuclear (2); Javelin (6); Kaitronics (3)*; Lang (6)*; Leitch (1-7)*; Lenco (1-5)*; 3M (1,2,3)*; Marconi (1,2,3)*; McMichael (6,8)*; Multidyne (1-6,8,9)*; Panasonic (1,3)*; QSI (3,6,8,9)*; Rohde & Schwarz (1)*; Shintron (1)*; Siegel (1,2)*; Sigma (1,2,3)*; Telemet (1,3,4,5); Thalner (8)*; Torpey (8)*; Video Aids (1,2)*; Video Assoc. (9); Visual Info. (1,3,4,5)*; World Video (3)*

VIDEO SIGNAL PROCESSING

TYPES: NTSC encoders (1) decoders (2) comb filter decoders (3) video delay lines (4) video filters (5) video signal, cable equalizers (6) dropout compensators (7)

SUPPLIERS: Adwar (1)*; Allen Avionics (4,5,6)*; Asaca (1)*; Bosch (1)*; Broadcast Video (1-5)*; Canter-Redman (2,3)*; Central Dynamics (6)*; Coastcom (5)*; Datum (1,2)*; Digital Video Systems (3)*; Di-Tech (6)*; Dynair (6)*; Fairchild (4)*; Faroudja (2,3)*; Graham-Patten (6)*; Hedco (6)*; International Nuclear (6); Leitch (4,6)*; Lenco (1,2,4)*; Marconi (1,2,6)*; Microwave Filters (5)*; Multidyne (6)*; North Hills (5)*; Siegel (1,2,3,7)*; Superex (5,6); Telemet (3,6); TEA (4,5,6)*; TTE (3,5)*; Vio Video (1)*

DIGITAL PROCESSING

TYPES: TBCs (1) field synchronizers (2) frame synchronizers (3) framestores (4) TBC/framestores (5) noise reducers (6) image enhancers (7) color correctors (8) video multiprocessors (9) standards converters (10)

SUPPLIERS: ADDA (1,3,4,5)*; Ampex (1)*; Analog Devices; Apert-Herzog (3)*; Broadcast Video (8)*; Digital Video Systems (1,2,3)*; Dubner (8)*; Eigen (4,6)*; Faroudja (6,7,8)*; Fortel (1,3,6,7)*; For-A (1,3,7,8)*; Grumman (3)*; Harris Broadcast (1,3,4,5)*; Harris Video (1,3,5)*; Hitachi (1)*; Marconi (8)*; MCI/Quantel (1-6,10)*; McMichael (10)*; Merlin (1)*; Microtime (1,3-7)*; NEC (1,3,6)*; NTI (4)*; Oki (10)*; Phasecom (1); RCA Commercial (1)*; Siegel (8)*; Sony (1)*; Superex (7,9); Thomson-CSF (1,2,3,5-9)*; Toshiba (4)*; Vidicraft (7)



VIDEO AMPLIFIERS

TYPES: processing amps (1) pulse amps (2) video DAs (3) subcarrier amps (4)

SUPPLIERS: Automation Techniques (1)*; AVL Digital (2,3)*; Broadcast Video (1,3)*; Canter-Redman (1,3)*; Central Dynamics (2,3,4)*; Channematic (3); Comad (3)*; Commerce Air (3); Datatek (2,3)*; Di-Tech (3)*; Dynair (2,3)*; For-A (3)*; GBC (2,3); Graham-Patten (2,3,4)*; Grass Valley (1-4)*; Grumman (1)*; Hedco (2,3,4)*; Industrial Sciences (1-4)*; International Nuclear (1,4); Javelin (3); Knox (1,3)*; Lang (3)*; Leitch (1,2,3)*; Lenco (1-4)*; Marconi (2,3)*; NEC (1)*; Opomp (2,3)*; Panasonic (2,3)*; QSI (3)*; Shintron (2,3,4)*; Siegel (1)*; Sigma (1-4)*; Superex (3); Telemet (2,3); TEA (3)*; Vamco (3)*; V.A.M.P. (iso amps)*; Versa Count (1); Vidicraft (1,3); Viscount (3)*; Video Aids (2,3)*; Vital (2,3)*

VIDEO MONITORS

TYPES: monochrome (1) NTSC color (2) RGB (3) portable, dc (4) video projectors (5) monitor calibrators (6)

SUPPLIERS: Amtron (1,2,3)*; Asaca (2,3,4,6)*; Avonix (5); Bosch (2,3)*; Canter-Redman (3,5)*; Central Dynamics (2)*; Cinema Products (1,2)*; Conrac (1,2,3)*; Elector (2,3)*; Electrohome (2,5)*; Electro & Optical; GBC (1); General Electric Video (5)*; Heath (5); Hitachi (1,3)*; Ikegami (1,2,3)*; Image Magnification (5)*; In-flight (5)*; Javelin (1); JVC (2,3,4)*; Lectrotech (2); Leitch (6)*; McMichael (2,3)*; Minolta (6)*; Panasonic (1-5)*; Power-Optics (6)*; Ramtek (1,3)*; Rohde & Schwarz (1,2,3)*; Sharp (2)*; Sany (1,2,5)*; TEA (6)*; Tritrionics (2)*; V.A.M.P. (1,2,4)*; Videotek (2,3,4)*; World Video (2,3)*

OTHER VIDEO EQUIPMENT

TYPES: signal multiplexers (1) test charts, slides (2) video business auto hardware (3) TV newsroom computers (4) other (5)

SUPPLIERS: Basys (4)*; Computer Business (3); Control Video (3)*; Cox (3)*; Data Comm. (3)*; Edcor (1)*; Eigen (5)*; Glentronix (2)*; Grass Valley (5)*; Heath (4); Hewlett-Packard (3)*; Image Resource (5)*; Industrial Sciences (5)*; Jefferson Data (3,4)*; Kalart Victor (5)*; Kaman (3,4)*; Marconi (2)*; Microtime (5)*; NEC (1)*; Newscan (4)*; Nidus (4)*; North Hills (1)*; W.A. Palmer (5)*; Porta-Pattern (2)*; Quanta (4,5)*; Recortec (5)*; R.E. (1)*; Reynolds/Leteron (5)*; RTI (3)*; Warren R. Smith (5)*; Station Business (3,4)*; Telesource (4)*; TVNS (4); Visual Info. (2)*; Frank Wooley (animation graphics)*

IN A WORLD WHERE EVERYTHING THAT CAN GO WRONG USUALLY DOES...



ISN'T IT GOOD TO KNOW THERE'S SOMETHING THAT WON'T LET YOU DOWN.

Everybody's learned to live with Murphy's law. But that doesn't mean all hope is gone with the wind. There's still something you can rely on—film. The state-of-the-art imaging technology is built right into the film medium itself. So motion picture photography is dependable. Camera equipment is also simple and unobtrusive.

For your next production, depend on Eastman color films. You can't go wrong.



Eastman film. It's looking better all the time.



LIGHTING, POWER, SUPPORT, SET DESIGN, ETC.

CAMERA, MICROWAVE SUPPORT

TYPES: tripods, heads (1)
pedestals (2)
ENG braces (3)
remote pan/
tilt systems (4)
camera,
lens stabilizers (5)
helicopter rigs (6)
cranes (7)
dollies (8)

SUPPLIERS: Arriflex (1,5)*; Birns & Sawyer (1,8)*; Bogen (1)*; Colvert (1-4,8)*; Camera Mart (1,2,5)*; Cinema Products (1,5)*; Cine 60 (3,9)*; Commerce Air (6); Davis & Sanford (1,8)*; ENG Helicopter (5,6)*; Alan Gordon (1,8)*; Harris Broadcast (1-4,6)*; Heitz (1,8)*; ITE (1,2,3,8)*; Javelin (4); K&H (3)*; Lee (7,8)*; Listec (1-4,7,8)*; Matthews (7,8)*; Miller Professional (1,8)*; O'Connor (1,2)*; Quick-Set (1,2,8)*; Sachtler (1,3)*; Sfeno (5)*; Smith-Victor (1)*

LIGHTING

TYPES: lamps (1)
HMI, CSI fixtures (2)
quartz fixtures (3)
stands, rigging (4)
lighting control
boards (5)
dimmer packs (6)
diffusion,
efx material (7)
cyc lighting (8)
other (cycs, etc.) (9)

SUPPLIERS: Peter Albrecht (4)*; Arriflex (2,4)*; Atlas Sound (4)*; Barbizon (1-9)*; Bardwell & McAlister (1,3,4,8); Birns & Sawyer (3,7)*; Bogen (1)*; B-W Lighting (1-6,8)*; Cinema Products (1,2,3)*; Coloratron (1,3-8)*; Comprehensive Video (3,7,8)*; Cool Light (1,3)*; Electro Controls (5,6)*; Electronics Diversified (5,6)*; F&B/Ceco (1-4,7,8)*; Frezzolini (1,3,4,7)*; General Electric Lighting (1,3)*; Alan Gordon (9)*; Graphic Express (9)*; Great American (1,2,3,5,8,9)*; Grish (4); GTE/Sylvania (1)*; Harwood (9); Heitz (4)*;

Ideal (6); Janson (1,3,5,9)*; Kliegel (3-6,8)*; Lee (1-8)*; Lowel-Light (3,4,7,9)*; LTM (1-5)*; Matthews (4,7)*; Male-Richardson (1-8)*; Olesen (1-7); Osram (1,2)*; Packaged Lighting (3-8)*; Phoebus (1,3)*; Polites (4)*; Rainba (9)*; Rosco (7)*; Skirpan (5,6)*; Smith-Victor (1,3,4,7)*; Strand Century (2-6,8)*; Superior (6); Teatronics (5,6)*; Teledyne Bigby (emergency)*; Theater Techniques (5,6)*; Theatrical Services (1-9)*; TVI (1,3-8)

POWER SUPPLIES

TYPES: nicad batteries,
chargers (1)
silver-zinc batteries,
chargers (2)
lead-acid batteries,
chargers (3)
power generators (4)
AC power dividers (5)
inverters, converters (6)
other (7)

SUPPLIERS: Alexander (1)*; Anton/Bauer (1,2,5)*; Arriflex (1)*; Birns & Sawyer (1)*; B-W Lighting (1)*; California Inst. (4,6)*; John Chiles (1)*; Christie (1)*; Cinema Products (1)*; Cine 60 (1,7)*; Coloratron (1)*; F&B/Ceco (1,4)*; Frezzolini (1,6)*; G&M (1,3,5,6); Hipatronics (7)*; JVC (1)*; Leader Inst. (7)*; Lee (1,4,5,6)*; LTM (1,2,3); Male-Richardson (4)*; Matarala (6)*; North Wind (3,4,6,7)*; Onan (4)*; Packaged Lighting (5)*; PEP (1,6)*; Perrott (1,2,3)*; Portable Energy (1,3)*; Radmor (3)*; Smith-Victor (3,6)*; Teledyne Energy (4)*; Topaz (6)*; Vanner (6); Winegard (7); Yardney (1,2,3)*

TELEPROMPTERS

TYPES: monitor-based (1)
scroll entry (2)
keyboard entry (3)
ENG/EFP portable (4)

SUPPLIERS: Beston (3)*; Cinema Products (4)*; Listec (1)*; Q-TV (1-4)*; Telescript (1)*

TRANSPORTATION CASES

TYPES: foam insert (1)
rack configuration (2)
editing,
production consoles (3)
LTM (1)*; Parsons (1)*; Plastic Reel (1,2)*; RTI (2,3)*; Star Case (1,2,3)*; Thermodyne (1,2)*; Winsted (3)*

SUPPLIERS: Anvil (1,2,3)*; William Bol (1,2)*; B-W Lighting (1,2)*; Colzone (1,2,3)*; Cases, Inc. (1,2,3)*; Center Video (3)*; Environmental (1,2); Excalibur (1,2,3)*; Fiberbit (1,2)*; Hardigg (1,2)*; K&H (1)*; Lee-Roy*; Lipsner-Smith (3)*

SET DESIGN

TYPES: modular news,
studio sets (1)
scenery construction (2)
scenery rigging (3)
props, materials (4)

SUPPLIERS: Peter Albrecht (3)*; Arben (1,2,4)*; Gagnon LaForest (3)*; Grish (1,2,3); Janson (2,3,4)*; Rees (1)*; Syracuse (3)*; Theatre Service (3)*; TVI (2,3,4); Uni-Set (1)*



RF, TRANSMITTING/ RECEIVING EQUIPMENT, ANTENNAS, TOWERS

TRANSMITTERS

TYPES: AM (1)
FM (2)
UHF (3)
VHF (4)
LPTV (5)
translators (6)

SUPPLIERS: Acrodyne (3-6)*; Anixter-Mark (3,5); Bayly (2,3,4)*; Broadcast Electronics (2)*; Central Dynamics (3,4)*; Comark (3)*; Continental Electronics (1,2)*; Elcom Bauer (1,2)*; EMCEE (3-6)*; Harris Broadcast (1-4)*; International Microwave (1,2); Larcon (2,3,4,6)*; Loral (2); LPB (1)*; Marconi (1-4)*; McMartin (1-6)*; Nautel

Maine (1); NEC (2,3,4)*; QEI (2)*; Radio Systems (1)*; RCA Commercial (1-4)*; RHG (2); Rodelco (6)*; Rohde & Schwarz (4)*; Ken Schaffer (2)*; Singer Broadcast (1,2,3)*; Television Tech. (3-6)*; Tepca (5,6)*; Townsend (3-6)*; Versa Count (2,6)



RF POWER EQUIPMENT

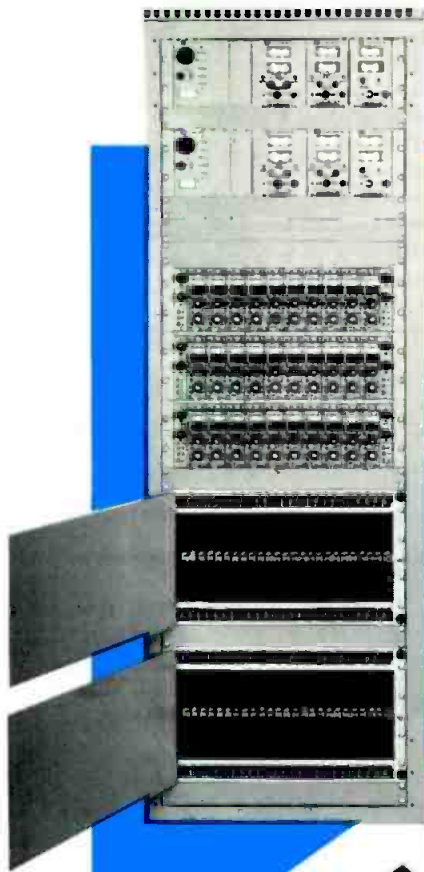
TYPES: RF amplifiers (1)
RF power tubes (2)
AM exciters (3)
AM stereo exciters (4)
FM exciters (5)
TV exciters (6)
RF attenuators (7)
RF converters (8)
RF filters (9)
RF loads (10)
RF switches (11)
power dividers (12)
diplexers (13)
stereo generators (14)
modulators (15)
other (16)

SUPPLIERS: Alford (13); AVA (1,7,9); Barker & Williamson (9,10); Bayly (1)*; Bird (7,9,10,11)*; Blonder-Tongue (1,9,10)*; Broadcast Electronics (1,5,14)*; Cotel (1,8,14,15); Central Dynamics (6)*; Cetec Antennas (9,12,13)*; Coostcom (13)*; Coaxial Dynamics (9-12)*; Comark (1,6-9,11,12,13,15)*; Continental Electronics (1,4,5,9,10,13,14)*; CSP (9-13,16); Delta Electronics (11)*; Dielectric (10); Dyma (11)*; Dynair (15)*; Ecanco (2); Eidsun (16)*; Eimac (1,2,9)*; Elcom Bauer (3,5)*; Electro Impulse (10)*; Harris Broadcast (3-6,14,15)*; International Microwave (1); ITT (11)*; Kahn (4,14)*; Larcon (1,5,6,13)*; LPB (3)*; M/A-COM (9,10,13,16)*; Magnecraft (11); McMartin (1,4,5,6,14,15)*; Micro Comm. (9-13); Microdyne (15)*; Microwave Filter (9,12,13)*; Kilovac (11)*; Moseley (12,14)*; Matarala (4)*; Mu-Del (1,7,8,9,13)*; Nautel Maine (1,3,4,14,15); NEC (5)*; North Hills (12)*; Oak (8)*; Orban (14,16)*; Phosecom (15)*; Phelps Dodge (11,12)*; Philips T&M (6,14,15)*; QEI (1,5,14)*; RCA Commercial (5,6)*; RCA EO&D (2)*; RCA Solid State (2)*; R.E. (14)*; RF Technology (1)*; RHG (7); RMS (11)*; Rohde & Schwarz (15)*; Scala (12); Scientific-Atlanta (12,15)*; Shively (9-13)*; Singer Broadcast (3,5)*; SWR (11)*; Telemet (15)*; Television Tech. (1,5,12,15)*; Telonic (7,9); Tennaplex (9,11,13)*; Tepca (1,9,15)*; Terracom (13); Texscan (1,7,9); Townsend (1,6)*; Tweed (1,9)*; UHF (15)*; Versa Count (1,5,6); Vidicraft (8,15); Wavetek (9)

SATELLITE EARTH STATIONS

TYPES: transmit/receive (1)
receive only (2)
transportable (3)

SUPPLIERS: Alden (2)*; Anixter-Mark (1,2,3); Antennas for Comm. (2,3)*; Antenna Tech. (1,2,3); Arvin/Diamond (2)*; Automation Techniques (2)*; Avontek (2); California Microwave (1,2,3); Coastcom (1)*; Comtech (1,2,3); Conifer (2); Dexcel (2)*; Fort Worth Tower (2,3); Gabriel (2); Gardiner (2); GTE Lenkurt (2); Harris (1,2,3)*;



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Hughes Microwave (2)*; M/A-COM (1,2,3)*; McMartin (1,2)*; Microdyne (2,3)*; NEC (2)*; Netcom (2,3)*; New England Sat. (3); Pinzone (2)*; Satcom (1,2)*; Ken Schaffer (2,3)*; Scientific-Atlanta (1,2)*; Winegard (2); Wald (1,2,3)*

MICROWAVE

TYPES: SUPPLIERS: Broadcast Microwave (1-4)*; intercity (1) Cablewave (1); Commercial Airborne (3); portable ENG (2) Datum (3,4); E-N-G (2)*; Enstram (2,3)*; airborne (3) GTE Lenkurt (1); Harris Broadcast (1-4)*; central receivers (4) Harris Microwave (1-4)*; Hughes Microwave (1)*; International Microwave (1,2); Loral (1,2,4); M/A-COM (1-4)*; Marti (1-4)*; MBB Helicopter (3)*; Micro Comm. (2); Micro Control (1)*; Moseley (1)*; NEC (2)*; Nurad (1-4)*; Omni Spectra (1)*; RF Technology (1-4)*; RHG (2,3); Systron Donner*; Telanic; Terracom (1,2); Versa Count (1); Wald (1,2)*

REMOTE CONTROL SYSTEMS

SUPPLIERS: American Laser*; CAT*; Channelmatic; Cinema Products*; Coastcom*; Comark*; Engineering Lab*; Hallikainen*; Harris Broadcast*; M/A-COM*; Marti*; McMartin*; Micro Control*; Microdyne*; Moseley*; Nurad*; Power-Optics*; QEI*; Sall; TFT*; Tweed*; Vamco*

REMOTE PICKUP EQUIPMENT

SUPPLIERS: Artel*; Comrex*; Harris Broadcast*; M/A-COM*; Marti*; McMartin*; Moseley*; Motorola*; Scala

STLs

TYPES: SUPPLIERS: Antennas for Comm. (1,2,3,5)*; microwave (1) Artel (4)*; AvanteK (1); Bayly (3)*; Broadcast Microwave (1)*; Cablewave (1,5); satellite (2) Gabriel (1,5); GTE Lenkurt (1,3); Harris telco (3) Broadcast (1,2)*; Harris Microwave (1)*; fiberoptic (4) Hughes Microwave (1)*; International Microwave (1); Loral (1,3); M/A-COM (1,4)*; waveguide (5) Loral (1,3); M/A-COM (1,4)*; Marti (1)*; Micro Control (1)*; Moseley (1)*; Nurad (1)*; R.E.(4)*; RF Technology (1)*; RHG (1); Scientific-Atlanta (2)*; Telemet (3,4)*; TEA (4)*; Terracom (1); TFT (1)*; Valtec (4)*; Versa Count (1)*; Wald (1,2,3)*

SCA EQUIPMENT

TYPES: SUPPLIERS: Belar (1,2)*; Broadcast Electronics (1)*; Continental Electronics (1)*; Emergency Alert (1)*; E-N-G (1)*; Harris Broadcast (1,2)*; Johnson (1,2)*; Marti (1,2)*; McMartin (1,2,3)*; Micro Control (1)*; Moseley (1,2)*; QEI (1)*; Tepco (2)*; TFT (1,2)*

WEATHER RADAR SYSTEMS

SUPPLIERS: Advanced Designs*; Alden*; Arvin/Diamond*; Color-Graphics; Enterprise; Information Processing; Kavouras*; Satellite Broadcast*; Technology Service*

SLOW SCAN TRANSMITTERS, RECEIVERS

SUPPLIERS: Colorado Video*; NEC*; Ken Schaffer*; Terracom

TWO-WAY RADIO COMMUNICATIONS TRANSMITTERS, RECEIVERS

SUPPLIERS: Bayly*; Circuit Devel.*; GTE Lenkurt; HME*; Marconi*; Marti*; McMartin*; Motorola*; Sonar*; Swintek*

ANTENNAS

TYPES: SUPPLIERS: Alford; Andrew (3,5,6,7)*; AM (1) Anixter-Mark (5,6,7); Antennas for FM (2) Comm. (5,6,7)*; Antenna Tech. (5); Barker & Williamson (7); Blonder-Tongue (2,3)*; Bogner (2-5)*; Broadcast Microwave (5)*; Cablewave (5); Cetec Antennas (2,3,4)*; Comark (2)*; Continental Electronics (2,8)*; CSP (8); Elcom Bauer (8)*; Gabriel (5,6); Grumman (8)*; Harris Broadcast (1-6,8)*; Harris Satellite (6)*; Hughes Microwave (6)*; Johnson (2)*; Larcen (3)*; LeBlanc & Royle (1); M/A-COM (6)*; Magnum (1)*; Marti (5,7)*; McKay Dymek (1,7)*; McMartin (1,2,3,4,6,7,8)*; Micro Comm. (2,4,5); Microdyne (6)*; Motorola (7)*; Netcom (6)*; Fred A. Nudd (1); Nurad (5)*; Old Dominion (8)*; Phelps Dodge (2,7,8)*; Prodelin (5,6)*; RCA Commercial (2,3,4)*; RF Technology (5)*; RHG (2); Satcom (6)*; Scala (2,7); Scientific-Atlanta (2,3,6)*; Shively (2,3,4,8)*; Sitco (3)*; SWR (3)*; Telex (7)*; Tennaplex (2,3,4,7)*; True Time (6)*; Winegard

TRANSMISSION LINE, CABLE, CONNECTORS

TYPES: SUPPLIERS: Andrew (1,2,3)*; Anixter-Mark solid core (1) (2); Antennas for Comm. (2)*; Artel (3)*; foam dielectric (2) Brand-Rex (1,2,3)*; Cablewave (2); Da-burn (1,2,3)*; Gabriel (1,2); Marti (2)*; fiberoptic (3) McMartin*; Phelps Dodge (1,2)*; Prodelin*; Scientific-Atlanta (2)*; Siecar (3)*; SWR (1)*; Telemet (3)*; Times (1,3)

TOWERS

TYPES: SUPPLIERS: Advanced Industries (1,2,3)*; towers, masts (1) Allen Osborne (1)*; Allied Tower (1,2,3)*; tower hardware, Atlas Tower (1,2,3)*; Broadcast Microwave (1)*; Capperweld (2)*; Deters (1,2)*; EG&G (3)*; Flash Tech. (3)*; Fort Warth Tower (1,2,3); Grasis (1,3)*; Hughey & Phillips (3)*; Kline (1,2); LeBlanc & Royle (1,2,3); Magnum (1,2)*; McMartin (1)*; Microflect (1)*; Narton (2)*; N-Pro (1)*; Fred A. Nudd (1,2); Allen Osborne (1)*; Philadelphia Resins (2)*; Palites (2)*; Racal-Decca (2,3)*; Stainless (1)*; Swager (1,2,3)*; Telex (1,2)*; TMD (1); Tri-X (1); UNR-Rohn (1,2,3)*; Utility Tower (1,2,3)*; Van Ladder (1)*; ZRC (2)*



OTHER RF EQUIPMENT

TYPES: SUPPLIERS: American Laser (5)*; Blonder-program subcarrier (1) Tanguet (4)*; California Microwave (4); carrier current (2) Coastcom (1)*; Continental Electronics (3)*; CSP (3); Datum (5)*; Dynacam (4,5)*; phasing network (3) GTE Lenkurt (1,5); Harris Broadcast (3)*; PTV scramblers (4) International Microwave (1); Kappa (3); other (5) LPB (2)*; Marti (1)*; McMartin (1,2)*; Micro Comm. (5); Micro Control (1)*; Moseley (1)*; Oak (4)*; Scientific-Atlanta (1)*; Tepco (1)*; Winegard (4); Zenith (4)*

TEST AND MEASUREMENT, LOGGING, TIMING

RF T&M

TYPES: SUPPLIERS: American Laser (13)*; Anchor (1); demodulators (1) R.B. Annis (13)*; Bald Mountain (9)*; modulation Barker & Williamson (7); Belar (1,9)*; Bird (7,8)*; Boonton (2,7,10,11); Bush & Millimaki (1)*; Coaxial Dynamics (3,5,9)*; Comark (1)*; Delta Electronics (2,3,10,11)*; Dielectric (7); DigiMax (13)*; EEG (1)*; Electro Impulse (7,8)*; John Fluke (10)*; Global Spec. (9,13); Gorman-Redlich (3,12)*; Harris Broadcast (2)*; Heath (9); Hewlett-Packard (2,11)*; Hipotronics (7)*; Kappa (13); Koy (10)*; Leader Inst. (6,7,10,11,13)*; Lectrotech (9); Lenco*; McMartin (1,2,5,9)*; Minolta (13)*; Keith Monks (11,12)*; Motorola (2,7,9,10)*; Phasecom (1)*; Philips T&M (1,10)*; Polarad (4,5,6,10)*; Potomac (3-6,10,12)*; QEI (2)*; QSI (1)*; R.E. (2,10)*; Rohde & Schwarz (1,4,5,6)*; Sadelco (6,11,13)*; Scientific-Atlanta (1,2,9,10)*; Sencore (11)*; Sennheiser (11)*; Shively (7)*; Sound Tech. (10)*; Studer Revox (1)*; Systron Donner (9,10)*; Tektronix (1)*; Telemet (1)*; Telonic (11); Texscan (11); TFT (1,2,9)*; Versa Count (2); Video Aids (12)*; Videotek (1)*; Weston (9)*; Wide Band (11,13)*; World Tower (1)*

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AUDIO T&M

TYPES: audio test signal generators (1) harmonic distortion meters (2) IM meters (3) spectrum analyzers (4) sideband analyzers (5) wow & flutter meters (6) other (real time analyzers, etc.) (7)

SUPPLIERS: Amber (1-4); Asaca (1,2)*; Audisar (1); AVAB (5,6)*; Bald Mountain (1)*; Bruel & Kjaer (1-7)*; CBS Tech. (7)*; Cetec Vega (1)*; Data Precision (6); Datatronic (1); DigiMax (7)*; Electro Sound (1)*; Eventide (4)*; Fidelipac (6)*; Finnitek (1); Frequency Devices (1); Glen-tronix (5)*; Global Spec. (7); Gotham Au-dia (6); Heath (2); Hewlett-Packard (4,5)*; HF (1,2)*; Inovonics (4)*; Ivie (1,4)*; Kay (4)*; Klark-Teknik (4)*; Leader Inst. (2,6)*; Modular Audio (1)*; Motorola (4)*; NEI (4)*; Polarad (4)*; Potomac (1,2,3,6)*; R.E. (2,3,4,6)*; Ken Schaffer (4)*; HH Scott (4); Sencore (1)*; Sescor (1,2)*; Sound Tech. (1-4,6,7)*; Spectra Sonics (1,7)*; Tektronix (2,4,5)*; Texscan (4); United Recordings (1)*; Wavetek (1,4); White (1); Xedit (6)*

VIDEO T&M

TYPES: video test signal generators (1) automatic VITS analyzers (2) blanking meters, adjusters (3) burst phase meters (4) diff. phase/ gain meters (5) video noise meters (6) waveform monitors (7) vectorscopes (8) other (9)

SUPPLIERS: Amtron (1)*; Asaca (1,2,6)*; Au-burn Instr. (3)*; AVL Digital (1)*; Broad-cast Video (2,3,7,8)*; Canter-Redman (1,7,9)*; Finnitek (1); Fiorentino (9)*; Heath (8); Hedco (9)*; Hewlett-Packard (5)*; Hickock (1)*; Leader Inst. (1,7,8)*; Lectrotech (7,8); Leitch (1,9)*; Lenco (6)*; Multidyne (1)*; NTI (1)*; Philips T&M (1,2,7,8)*; Porta-Pattern (9)*; Rohde & Schwarz (1,2,6)*; Sencore (1)*; Tektronix (1,2,7,8)*; Telemet (1); TEA (1)*; Tungstone (1,2,3,6); Ultra Audio (7,8)*; Video Aids (4)*; Videotek (7,8)*; Visual Info. (1)*; Wavetek (1); World Video (3,9)*

GENERAL T&M

TYPES: oscilloscopes (1) delayed sweep scopes (2) voltmeters (3) multimeters (4) dB meters (5) logic analyzers (6) other (7)

SUPPLIERS: Amber (5); Apert-Herzog (6)*; Bald Mountain (5)*; Boonton (3); Bruel & Kjaer (3,5)*; Data Precision (1,3,4,7); dbx (5)*; John Fluke (3,4,5)*; Global Spec. (7); Heath (1,3,5); Hewlett-Packard (1,3-7)*; HF (3)*; Hickock (1,4,6)*; International In-struments (3,5)*; ITT (3)*; Leader Inst. (1-5)*; Marshall Claude (1,3,4,6)*; Motorola (1-6)*; Odetics (6)*; Philips T&M (1,2,6)*; Practical Tech. (6)*; Sencore (1,3,5)*; Systron Donner (4,5)*; Tektronix (1,2,4,6)*; Telonic (5); Texscan (1); TM Systems (5)*; Vidaire (4)*; Wavetek (1); Weston (3,4,5)*

LOGGING, MONITORING

TYPES: tape-based loggers (1) log printers (2) chart recorders (3) automatic TV monitors (4) automatic radio monitors (5) status, alarm indicators (6) other (7)

SUPPLIERS: Alden (3)*; B&I (6)*; Bird (6)*; Bruel & Kjaer (3)*; Delta Electronics (6)*; Dictaphone (1)*; Hallikainen (2,7)*; Logitek (3)*; Maseley (2,6)*; Nagra (1,3)*; Neutrik (3)*; Pinzone (6)*; Potomac (2,5,6)*; Scientific-Atlanta (6)*; SoundScriber (1)*; Stancil (1); Telex (1)*; TFT (6)*; Trepac (6)*; United Recording (3)*; Vidicraft (6)

CLOCKS, TIMING

TYPES: digital clocks (1) master, slave clocks (2) timers (3) time distribution (4) other (5)

SUPPLIERS: Amtel (1-4); Audio Techniques (1)*; BG Engineering (3)*; Broadcast Aids (1,3)*; Channelmatic (1,5); Chrono-Log (1-4)*; Datum (1-5)*; ESE (1-4)*; For-A (3)*; Glen-tronix (1,2)*; KB (1,3); Kitchen (5); Lauderdale (1,3); Leitch (1,2)*; McCurdy (1,2)*; NES (1,2,3); Odetics (1-4)*; QSI (3)*; Radio Systems (3)*; RTI (3)*; Sharepaint (1,3)*; Skotel (5)*; Standard Elect. (1-4)*; Systron Donner (1,4)*; Torpey (1-5)*; True Time*; United Media (4)*



COMPONENTS, HARDWARE

FURNITURE, STORAGE

TYPES: studio furniture (1) studio consoles (2) tape storage units (3) 19-inch equipment racks (4)

SUPPLIES: Allied Broadcast (1,2)*; Amco En-gineering (1,2,4)*; Aristocart (3)*; Bayly (4)*; B-W Lighting (4)*; Calzone (1,4)*; Enclosure (4); E-N-G (4)*; Environmental (4); Fidelipac (3)*; GF (2,4); GKM (4); Graphic Express (2); Grinnan; Grumman (4)*; Harris Broadcast (2)*; HSC (1,2,4)*; Marconi (2,4)*; Neumade (3); Optima (1-4)*; Plastic Reel (3,4)*; Protech (2)*; RTI (1,3,4)*; Ruslang (1-4)*; Scientific-Atlanta (4)*; Stantron (1,2,4)*; Storeel (3)*; Tweed (1,2,4)*; Wallach (3)*; Winsted (1-4)*

WIRE, CABLE, CONNECTORS

TYPES: video cable (1) audio cable (2) lighting, ac cable (3) RF cable (4) connectors (5) jackfields, patch panels (6)

SUPPLIERS: ADC (5,6)*; Alpha Wire; Audio Techniques (2)*; Audio-Technica (2)*; Belar (1,4)*; BIW (1-5)*; Brand-Rex (1-5)*; B-W Lighting (3,5,6)*; Cablewave (4,5); Cambridge (5); Canford (2)*; Co-mad (6)*; Daburn (1-5)*; Dynatech (4,5,6); Glen-tronix (6)*; Ideal (3,5); Jenel (6); Kings (5,6)*; Lemo (5,6)*; LTM (3,5)*; M/A-COM (4,5)*; Marconi (6)*; Motorola (4,5)*; Neutrik (5)*; Olesen (3,5); Pace*; Panduit (5)*; RCA (4,5)*; RMS (1,5)*; Scientific-Atlanta (4)*; Seacor (5)*; Sescor (2,5,6)*; Shively (4,6)*; Shure (2)*; Spectra Sonics (2)*; Superior (5); Switchcraft (2,5,6)*; SWR (4,5)*; Trompeter (1,4,5,6)*; Union Connector (3,5,6)*; Vidaire (2,5)*; Wireworks (1,2,5,6)*



HUM BUCKING COILS

SUPPLIERS: Jenel; North Hills*; PTS*; V.A.M.P.*

RF GASKETS, INDUCTORS

SUPPLIERS: Calvert*; Kappa

VACUUM TUBES

SUPPLIERS: Amperex*; Calvert*; Econco; Eimac*; Freeland*; Inmark*; RCA*; Thomson-CSF*; Thor; Vacuum Tube*; Westinghouse*

SOLID STATE COMPONENTS

SUPPLIERS: Amperex*; Apert-Herzog*; Calvert*; Fairchild*; M/A-COM*; Motorola*; RCA*; Thor

TRANSFORMERS

SUPPLIERS: Calvert*; Dohl*; Hipatronics*; Hughey & Phillips*; Jensen Transformers*; Kappa; Microtran; North Hills*; Protech*; Sescor*; Superior; Topaz*; TTE*; United Recording*; V.A.M.P.*

RECTIFIERS

SUPPLIERS: Amperex*; Calvert*; Eimac*; Electronic Devices*; Hipatronics*; Thor

SURGE PROTECTORS

SUPPLIERS: Calvert*; Dyma*; Lightning Elimination*; MCG; RCA*; Siemens*; Superior; Thor; Topaz*

QUARTZ CRYSTALS

SUPPLIERS: Calvert*; Motorola*; Perrott*

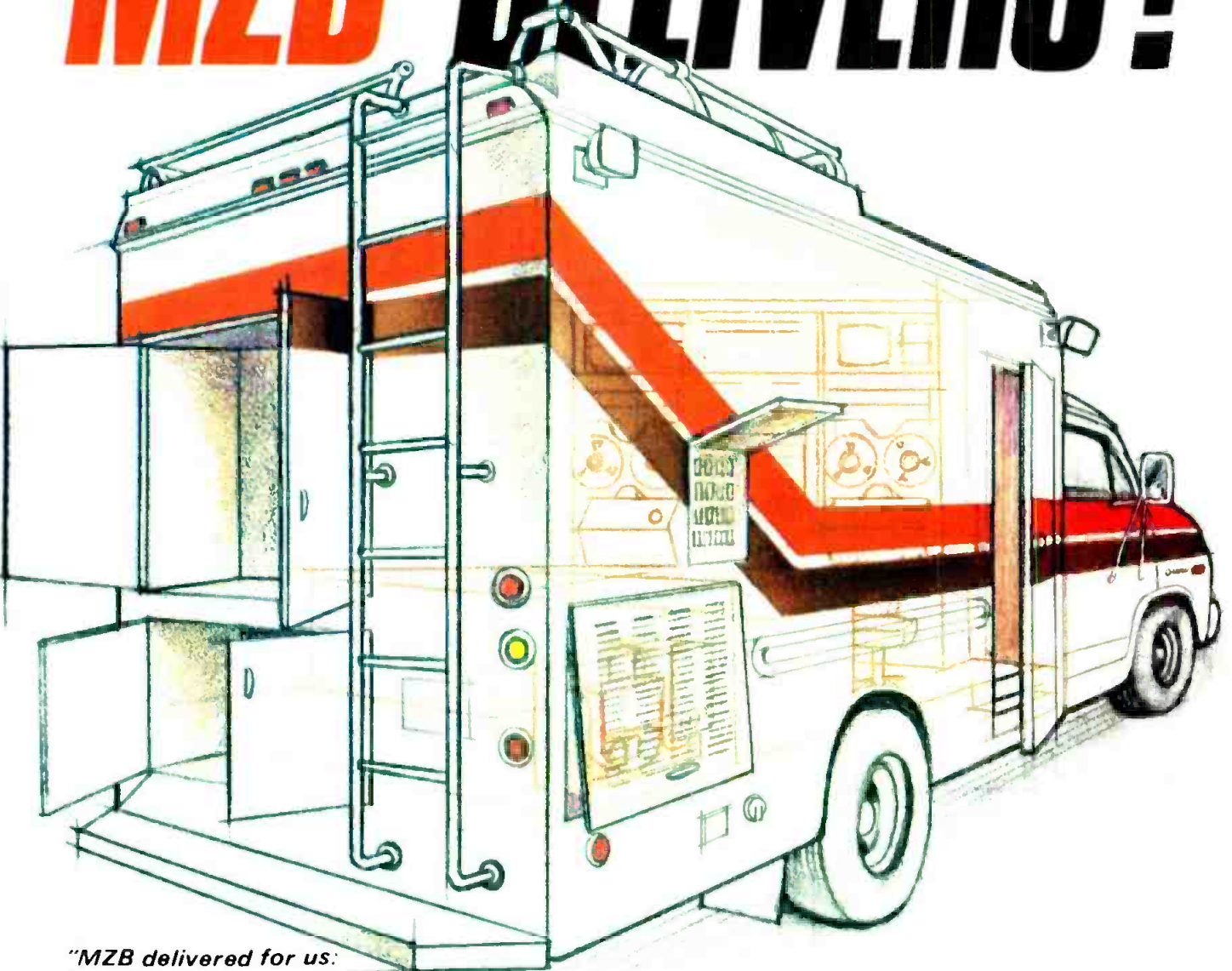
TOOLS

SUPPLIERS: Cooper Group; Ideal; Jensen Tools*; M/A-COM*; Marshall Claude*; Pace*

OTHER

SUPPLIERS: Grasis*; Gruver; Hedco*; HSC*; Surcom (capacitors)*

MZB DELIVERS!



*"MZB delivered for us:
The right truck, the right
equipment, at the right price."*

— Bob Gutierrez

*Hispanic Telecommunications Network
San Antonio, Texas*



Pictured (L-R) are Bob Gutierrez, HTN Media Director; "Nuestra Familia" Producer Oscar Lawson; and HTN President Adan Medrano

For 27 years MZB has been delivering equipment and services to the Broadcast and Professional market. But we deliver something else too: Integrity and Excellence.

In other words, we do what we say we are going to do. And we won't compromise when it comes to doing the job right.

If you think a philosophy like this sounds too expensive, you're going to be pleasantly

surprised. The custom mobile unit shown above is a good example. It's well designed, built with quality materials, and engineered for easy operation and maintenance. And it's priced very attractively, too.

So, whether it's a 'turn key' studio facility or a mobile production unit, call us.

We have a quarter-century of integrity and excellence built into every system.



MZB
& ASSOCIATES



"The Professional Touch"

• Corporate Office: 4203 Beltway Drive/Dallas, Texas 75234/
phone (214) 233-5535/Telex: 79-5028 MZB DA

Circle 139 on Reader Service Card



SERVICES

EQUIPMENT RENTAL

SUPPLIERS: Adwor*; Aphex*; Audio Techniques*; Audio-Video; Best Audio*; Birns & Sawyer*; Camera Mart*; Center Video*; Cetec Antennas*; Columbia Video*; Digital by Dickinson*; Victor Duncon*; Dymo*; ENG Helicopter*; Fantasee; F&B/Ceco*; Fitzco*; Film/Video Equip.*; Frezzolini*; General Television; David Green; Image Devices; Landy*; Leasametric*; L. Matthew Miller; Mitsubishi*; MPCs*; Plastic Reel*; Sawyer; Ken Schaffer*; Solid; John Sullivan*; Technisphere*; TV Graphics*; Video Corp.*; Westec

AUDIO POST-PRODUCTION FACILITIES

SUPPLIERS: Best Audio*; Compact Video*; Continental Recording; Correlli; Firstcom*; General Television; Gruver; Kansas; McCurdy*; W.A. Palmer*; Peters; Richmond Sound*; Scharff*; William B. Tanner*; Valentino; Westec

RECORDING STUDIOS

SUPPLIERS: American Image; Columbia Video; Continental Recording; General Television; Gruver; JAM; Kansas; Music Director*; W.A. Palmer*; Peters; Richmond Sound*; United Recording*; Valentino*

VIDEO POST-PRODUCTION FACILITIES

SUPPLIERS: AF Assoc.*; A&G Prods.*; A&G Video*; All Mobile Video*; A.M.E.*; Astro Video*; Bay Area Mobiletape*; Bullet*; Camrac*; Canter-Redman*; Carleton*; Carob*; Catalyst*; C.C.R.*; Center City*; Center Video*; Century III*; CFI*; Channel One*; Chicago Video*; Chris Craft*; Chronicle*; Cinetape*; Cinetronics*; Color Film*; Columbia Video*; Compact Video*; Continental Colour*; Creative Technology*; Devlin*; Digital Video Productions*; Duart*; Edit/Chicago*; Editel*; Electronic Field Productions*; ESPN*; Excalibur Video*; Fax*; First Comm.*; Florida Prod.*; GBH*; General Television; Golden West*; Hawaii*; HBO*; Image Resources*; Image Transform*; Instant Replay*; Interface Video*; International Production*; Jefferson Productions*; Jones*; J.S.L.*; Kansas; Kartes*; KHJ-TV; KQED*; KTVY*; KVIE*; Louisville*; Matrix*; Metro Tape*; Mobile Video Prods.*; Mobile Video Services*; MTI*; MPCs*; Multivision*; National*; NET*; Nexus*; Niles*; North American*; Northeast*; Northwest Prod.*; Northwest Teleprod.*; One Pass*; Opryland*; Optimus*; Pacific Coast*; Pacific Video*; W.A. Palmer*; Phase Two*; Phoenix*; Polycom*; Past Group*; Prime Time; Producers Color*; Producers Video*; Professional Video*; RCA American*; Scene Three*; Skaggs*; Southwest*; Starfax*; John Sullivan*; Sundance*; Sunrise Canyon*; Tapepower*; Technisphere*; Tele-Calor*; Tele-Image*; Telemation*; Teleprompter*; Teletronics*; TV Assoc.*; Third Coast*; Today Video*; TPC*; Trans-American*; Tritronics*; UAB*; Unitel*; Versatile Video*; Video Central*; Videocom*; Video Corp.*; Videography*; Video Images*; Video Post*; Videosmith*; Video Tape*; Video Transitions*; Video West*; Western Video*; WGN*; Wickerworks*; Windsor*; WKYT*; WPHL*; WXXI*; Yes*

TELEPRODUCTION FACILITIES

SUPPLIERS: A&G Video*; Airfax*; Bullet*; Burbank Studios*; California Video*; Camrac*; Carleton*; Catalyst*; Celestial Mechanics*; Center City*; Century III*; Channel One*; Chicago Video*; Chris Craft*; Chronicle*; Cinema Video*; Cinetape*; Cinetronics*; Compact Video*; Computer Image*; Columbia Video*; Creative Technology*; Devlin*; Digital Video Productions*; Docuvid*; ESPN*; Excalibur Video*; Fantasee; Fax*; General Television; Hawaii*; HBO*; Image Resources*; Instant Replay*; Interface Video*; International Production*; Jefferson Productions*; Jones*; Kartes*; KHJ-TV; KQED*; KTVY*; KVIE*; Louisville*; Matrix*; Metro Tape*; Mobile Video Prods.*; Mobile Video Services*; MTI*; National*; NET*; Niles*; North American*; Northwest Comm.*; Northwest Teleprod.*; One Pass*; Opryland*; Optimus*; Pacific Coast*; Pacific Video*; Pacific Video*; Phoenix*; Polycom*; Producers Color*; Producers Video*; Professional Video*; Pyramid*; Scene Three*; Skaggs*; Southwest*; John Sullivan*; Sundance*; Sunrise Canyon*; Tapepower*; Tele-Calor*; Tele-Image*; Telemation*; Teleprompter*; Teletronics*; TV Assoc.*; Third Coast*; Today Video*; TPC*; Trans-American*; Tritronics*; UAB*; Unitel*; Versatile Video*; Video Central*; Videocom*; Video Corp.*; Videography*; Video Images*; Videosmith*; Video West*; Western Video*; WGN*; Wickerworks*; Windsor*; WKYT*; WPHL*; WXXI*; Yes*

MOBILE PRODUCTION FACILITIES

SUPPLIERS: Aerial Video*; A&G Prods.*; A&G Video*; Airfax*; All Mobile Video*; AVT*; Bay Area Mobiletape*; California Video*; Carleton*; Catalyst*; C.C.R.*; Center City*; Channel One*; Chicago Video*; Chronicle*; Clorion*; Compact Video*; Continental Colour*; Creative Technology*; Devlin*; Digital Video Productions*; Docuvid*; Electronic Field Productions*; ESPN*; Excalibur Video*; Fax*; First Comm*; Florida Prod.*; GBH*; Golden West*; Hawaii*; Image Resources*; Jefferson Productions*; Jones*; Kartes*; KHJ-TV; KQED*; KTVY*; KVIE*; Louisville*; Matrix*; Mobile Tech.*; Mobile Video Prods.*; Mobile Video Services*; MTI*; Multivision*; National*; NET*; Niles*; North American*; Northeast*; Northwest Comm.*; Northwest Teleprod.*; One Pass*; Opryland*; Pacific Video*; Phoenix*; Polycom*; Producers Color*; Professional Video*; Scene Three*; Skaggs*; Southwest*; Starfax*; Sundance*; Sunrise Canyon*; Tapepower*; TBS*; Tele-Calor*; Tele-Image*; Telemation*; Teleprompter*; Teletronics*; TV Assoc.*; TV Graphics*; Third Coast*; TPC*; Trans-American*; Tritronics*; TRI*; UAB*; Unitel*; Versatile Video*; Vidcam*; Video Central*; Videocom*; Videography*; Video Images*; Video One*; Videosmith*; Video West*; WGN*; Windsor*; WKYT*; WPHL*; WXXI*; Yes*

FACILITY DESIGN & ENGINEERING

SUPPLIERS: Audia Techniques*; AF Assoc.*; Broadcast Systems*; R.W. Burden Assoc.; California Microwave; Canter-Redman*; Central Dynamics*; Columbia Video; Comark*; Control Tech.; Delcom*; Dynacom; EMCEE*; First Comm.*; Florida Prod.*; GBH*; General Television; Generic; Global Comm.; Golden West*; Graham-Patten*; Grinnan; Grumman*; Harris Satellite*; Hughes Helicopters*; Jamieson*; Jenel; Kavco*; Kitchen; Landy*; Larcen*; Lerro*; Long; Midwest*; Neve*; N-Z Video; Old Dominion*; Peirce-Phelps*; Radio Systems*; RCA*; Real World*; Rees*; Rosner*; Shook*; Soll; Spencer*; Tele-Measurements; Video Corp.*; Westlake*

ENGINEERING CONSULTANTS

SUPPLIERS: Advanced Designs; Broadcast Techniques*; Broadcast Technology Consultants*; R.W. Burden Assoc.; California Microwave; Condex Pacific*; Canter-Redman*; Comark*; Commerce Air; Compucon*; Comsearch*; Control Tech.; Drake-Chenault*; Delcam*; Dubner*; East Coast; Fiorentino*; Fitzco*; Frezzolini*; General Television; Grinnan; Harris Broadcast*; HSC*; Jamieson*; Jenel; E.M. Johnson*; Kappa; Kavco*; Kitchen; Landy*; Fred A. Nudd*; QSI*; Radiotechniques; Real World*; Rees*; Rosner*; Scape; Smith Elect.*; Soll; Spencer*; VLSI; Westec; Wold*

STUDIO, SET DESIGN

SUPPLIERS: Arben*; B-W Lighting*; Center Video*; Columbia Video; East Coast; Fantasee; Fiorentino*; Global Comm.; Graphic Express*; Grash; Jamieson*; LTM*; McCurdy*; Milan*; MPCs*; Rees*; Rosco*; Tele-Measurements; Television Engineering*

EARTH STATION SITE SELECTION

SUPPLIERS: California Microwave; Compucon*; Comsearch*; General Television; Harris Broadcast*; Kitchen; Netcom*; Radiotechniques; Rees*; Ken Schaffer*; Wold*

MOBILE VEHICLE CONSTRUCTION

SUPPLIERS: AF Assoc.*; Audio-Video; Bell Helicopter*; Central Dynamics*; Commerce Air; Delcam*; Dymo*; E-N-G*; General Television; Gerstenslager*; Grinnan; Grumman*; Harris Broadcast*; HSC*; Hughes Helicopters*; Jenel; Kavco*; Lerro*; MBB Helicopter*; Midwest*; N-Z Video; Peirce-Phelps*; RCA Commercial*; Real World*; Rosner*; Shook*; Tele-Measurements; Television Engineering*; Wolf*

WEATHER INFORMATION

SUPPLIERS: Advanced Designs; ColorGraphics; Kavouras*; W.A. Palmer*; RAM*; Satellite Broadcast*; Texas Elect.*; Weatherscan*; WSI*

MUSIC LIBRARY

SUPPLIERS: American Image; Toby Arnold*; Chase Media; Conner*; Continental Recording; De Wolfe; Firstcam*; Gruver; JAM*; Kalamusic*; Live Sound*; Music Director*; Network; Soper*; William B. Tanner*; Valentino

SATELLITE TIME BROKER

SUPPLIERS: Netcom*; Wold*

OTHER

SUPPLIERS: Compact Video*; Comsearch*; Conner*; Continental Plastic*; Continental Recording; Convergence*; Cross; Enstrom; Fotokem*; Generic; Graphic Express*; Grash; Gruver; Image Transform; JAM*; Jamieson*; Kansas; Landy*; Mead Data*; PTS*; Radiotechniques; RCA American*; Rees*



INNER VIEW: A closer look at Conrac Monitors

Active Convergence: Registration made simple.

Conrac's Active Convergence System gives you complete control over color registration adjustments and greatly streamlines convergence checks.

It uses 36 independent controls to individually adjust nine separate areas on the CRT screen—including corners!

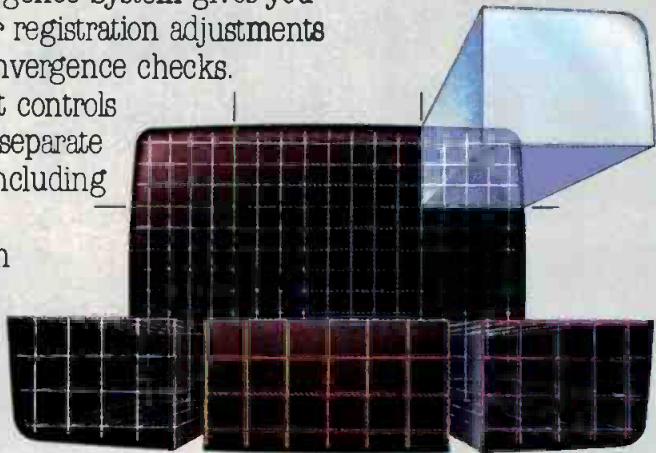
You spend less time on convergence checks—and the adjustments you make will be much more accurate.

Conrac's system uses 24 operational amplifiers to independently control red, green, and blue in each screen area. Vertical and horizontal waveforms are referenced for shaping the signals that excite the convergence yoke assembly. Dynamic blue lateral convergence is achieved with operational amplifiers.

Beam Current Feedback: The Ultimate in Black Level Stability.

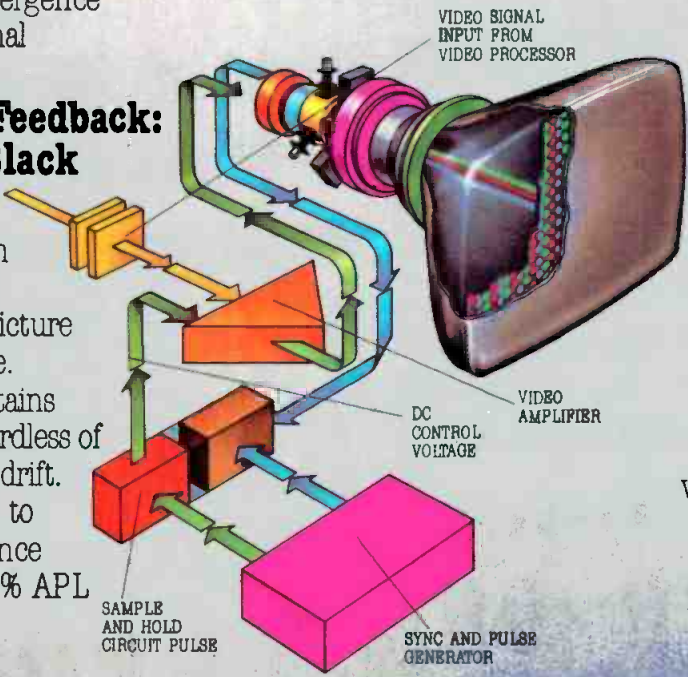
Conrac's unique Beam Current Feedback system maintains a more stable picture for a longer period of time.

It automatically maintains black level stability—regardless of CRT aging or component drift. In fact, black level is held to within 1% of peak luminance level between 10% and 90% APL (Average Picture Level).



Conrac's Active Convergence system lets you adjust color registration on nine separate areas of the CRT.

Conrac's exclusive Beam Current Feedback system automatically maintains black level stability.



Conrac's unique system uses a keyed back porch video amplifier and beam current sensing that occurs during the vertical interval.

The video signal is ac coupled to the video amplifier, thus eliminating the dc component and retaining the level between black and white. It is then amplified and applied to G1 of the CRT. The feedback loop is completed when a sample cathode current (gated by the brightness pulse) is applied to a sample and hold circuit.

If the cathode current changes for any reason, the video amplifier's dc level is automatically adjusted. Result: reference black level will remain constant.

Conrac Technology: 30 years of leadership.

Conrac's track record of technical innovation stretches back nearly three decades.

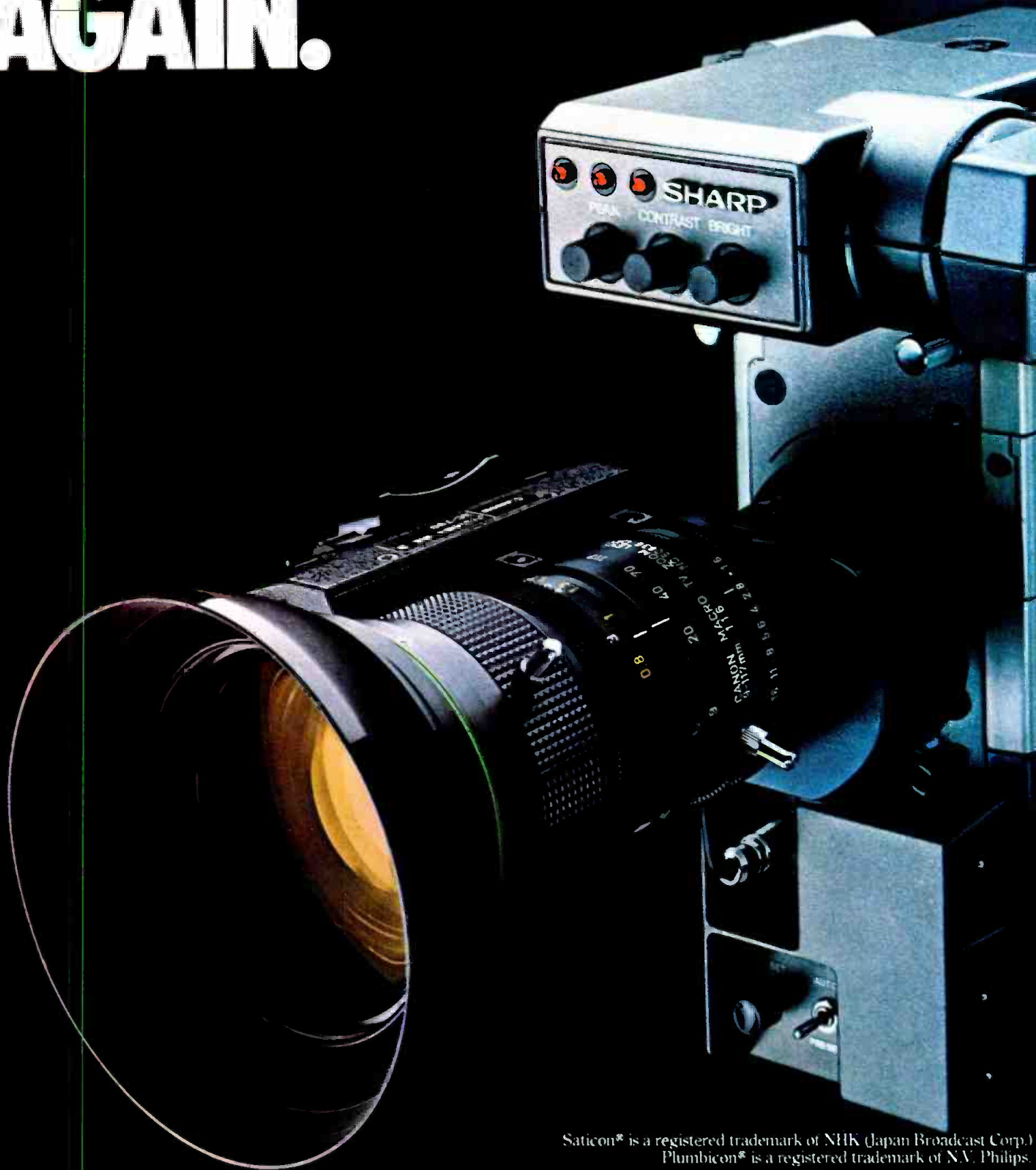
And what we've learned since then goes into every monitor we make today. That's important to you. Because the more technology we pack into each monitor, the more performance you'll receive from it.

Active Convergence and Beam Current Feedback are just two ways Conrac technology can save you time and money.

For the complete inner view of Conrac technology, call or write us today: Conrac Division, Conrac Corporation, 600 North Rimsdale Ave., Covina, CA 91722, Telephone: (213) 966-3511, Telex: 67-0437

Quality you can take for granted.

INTRODUCING THE XC EVERYONE ELSE OUT AGAIN.



Saticon® is a registered trademark of NHK (Japan Broadcast Corp.)
Plumbicon® is a registered trademark of N.V. Philips.

800. SHARP® TAKES OF THE PICTURE.

While everyone else is introducing a mid-priced camera, Sharp introduces a whole new generation.

The Saticon II Generation.

The Sharp XC-800 is the first camera priced under \$13,000 with Saticon II Tubes.

That means it's the first camera in its class that combines Saticon® strengths with a Plumbicon® plus.

So unlike conventional Saticons, you get substantially less highlight sticking, even when you pan across bright lights.

And you still get the higher resolution and depth of modulation Saticons are known for.

But that's just the beginning.

Pound for pound, feature for feature, nothing comes close to the new Sharp XC-800. It's lightweight and perfectly balanced.

And while we're proud of our new on-board computer, and newly designed Remote Operations Panel with serial data transmission and black stretch, the name of our game is more than just features.

It's reliability.

That's what the pros were looking for when we introduced the original XC-700, the first mid-priced camera that didn't perform like a mid-priced camera.

In fact, it performed so well, there are over a thousand of them out in the field today.

And it's been so successful, it's encouraged a rash of new mid-priced cameras.

We encourage you to compare any of them with the new Sharp XC-800.

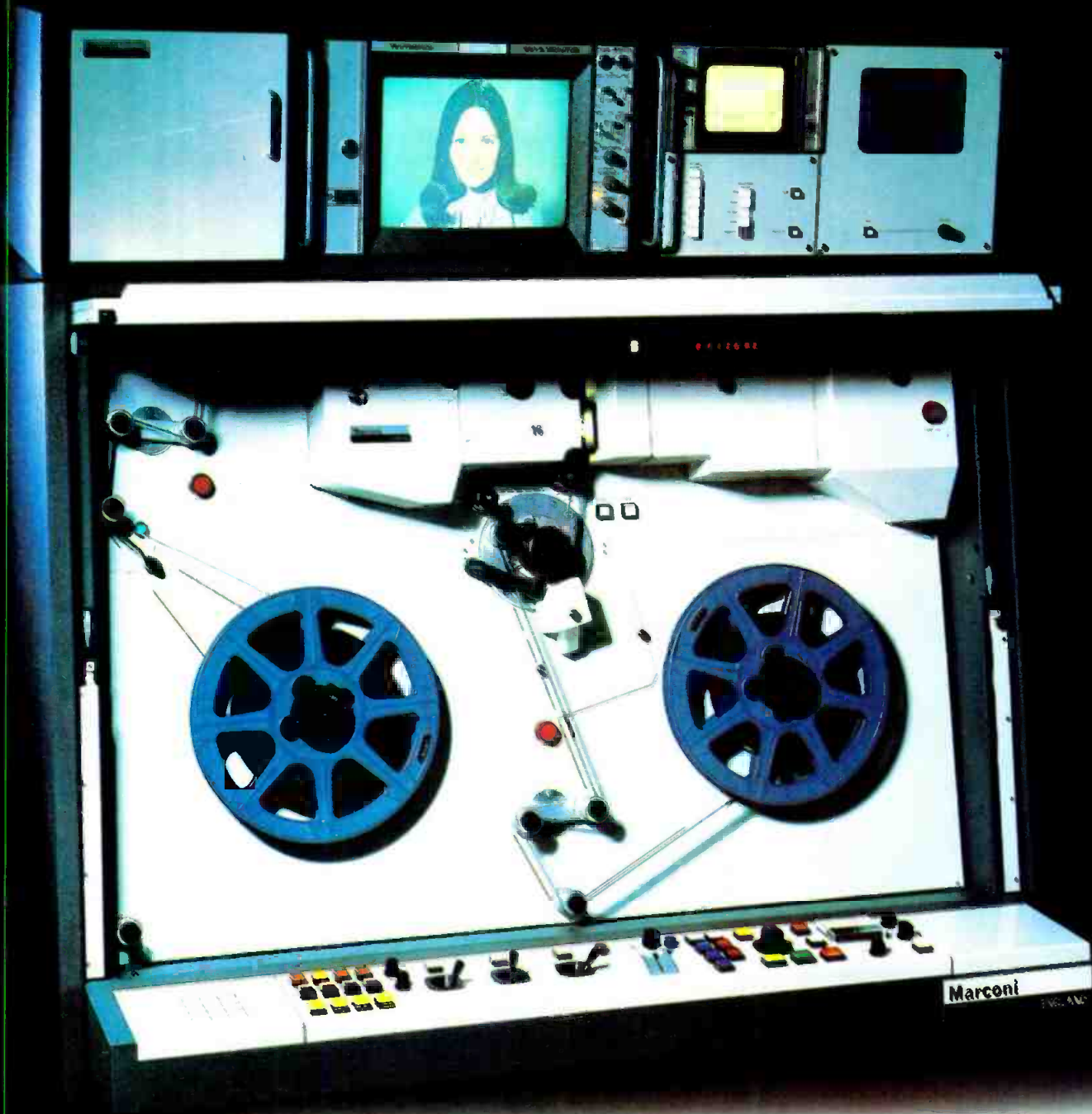
Between the Saticon II breakthrough and everything else, nobody offers more camera for the money. For more information, contact your local dealer, or write: Sharp Electronics Corporation, Professional Products, 10 Sharp Plaza, Paramus, New Jersey 07652.



FROM SHARP MINDS
COME SHARP PRODUCTS

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It deserves an Oscar



The New Marconi Line Array Telecine B3410

For a remarkable contribution to film in TV, Marconi's new Line Array Telecine B3410 fully deserves its great reputation.

The unique combination of full digital processing with micro-processor control and CCD sensors means exceptional picture quality, shorter set-up times, rapid change of TV standards, long life and minimum maintenance. No tubes, no replacements!

Also offering fast change of film gauge and full resolution Cinemascope, this most outstanding newcomer is available for swift delivery at a highly competitive price.

For full details contact: Marconi Electronics Inc. (John White or Simon Frazer)

Tel: (201) 767-7250 or A.F. Associates Inc.

Rich Lunniss Tel: (201) 767-1000.

Marconi
Electronics Inc.



100 Stonehurst Court, Northvale, New Jersey 07647. U.S.A. Tel: 767-7250, Telex: 710-991-9752.

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www.americanradiohistory.com

Alphabetical Listing of Manufacturers

ACCURATE SOUND CORP. ★
3515 Edison Way, Menlo Park, CA 94025
415 365-2843
High-speed audio tape duplicators.

ACOUSTIC RESEARCH ★
10 American Dr., Norwood, MA 02062
617 769-4200
Monitor speakers.

ACRODYNE INDUSTRIES ★
516 Township Line Rd., Blue Bell, PA 19422
800 523-2596
UHF, VHF & LPTV transmitter & translators.

ADAMS-SMITH ★
34 Tower St., Hudson, MA 01749
617 562-3801
SMPTE time code readers, generators & synchronizers.

ADC MAGNETIC CONTROLS CO. ★
4900 W. 78 St., Minneapolis, MN 55435
612 835-6800
Audio patch panels; video jackfields.

ADDA CORP. ★
1671 Dell Ave., Campbell, CA 95008
408 379-1500
Digital still stores; video compressor/positioners; TBCs, frame synchronizers, framestores. TBC/ framestores.

SEE AD PG. 1

Field Offices:

CA Sheila Ross, 13952 Chelmsford,
Westminster, 92683 714 891-3364
GA Duane Tuttle, 2693 Twigg Circle,
Marietta 30067 404 953-1500
KS Emerson Ray, 9517 Moody Park Cir.,
Overland Park 66212 913 631-1500
MA Frank Alioto, 7 Pitman Ave.,
Wakefield 01880 617 245-4602
MD Kevin Zmarthie, 207H Victor Pkwy.,
Annapolis 21403 301 263-7111
MI Dick Strauss, 30310 Woodgate Dr.,
Southfield 48076 313 332-1500
NY Marty Frange, 1747 Interlake Dr.,
Wantaugh 11793 516 679-9033

ADM TECHNOLOGY, INC. ★
1626 E. Big Beaver Rd., Troy, MI 48084
313 524-2100
Mono, stereo, audio for TV audio studio consoles; audio DAs; PPM meters; audio patch panels.

SEE AD COVER 2

Field Offices:

CA Ron Webb, 11 Adak Ct.,
Walnut Creek 94596 415 945-0181

Refer to Reps/Distribution section

ADVANCED DESIGNS CORP. ★
22B S. Franklin, Bloomfield, IN 47424
812 384-3687
Weather radar systems; engineering consultant.

ADVANCE INDUSTRIES, INC. ★
2301 Bridgeport Dr., Sioux City, IA 51102
712 252-4101
Antenna towers, tower hardware & lighting.

ADVANCED MUSIC SYSTEMS (AMS) ★
Quintek Dist. Inc.,
4721 Laurel Canyon Blvd., Suite 209, N.
Hollywood, CA 91607
213 980-5717
Digital audio special effects, digital delay & reverb, analog special effects & reverb, audio/video sync delay, time compression/expansion.

ADVANCING TECHNOLOGY CORP. ★
27106 46 Ave. S., Kent, WA 98032
206 854-1004
ALC & AGC amps, AM & FM compressor/limiters; VU & PPM meters.

ADWAR VIDEO ★
100 Fifth Ave., New York, NY 10011
212 691-0976
NTSC encoder for Apple computer. Equipment rental service.

AERIAL VIDEO SYSTEMS ★
27 Eastwind, Marina Del Rey, CA 90291
213 396-7791
Airborne teleproduction facility.

AF ASSOCIATES, INC. ★
100 Stonehurst Ct., Northvale, NJ 07647
201 767-1000
One-inch VTRs (Marconi); VTR rebuilding; Marconi CCD telecine; mobile van construction, facility turnkey installation; production equipment rentals; color framer editing aid device; standards conversion & video duplication services.

SEE AD PG. 125

Field Office:

CA 1438 N. Gower St., Box 47,
Hollywood 90028 213 466-5066

A&G PRODUCTIONS ★
1660 Hotel Circle N., Ste. 107, San Diego, CA 92108
714 291-7031
Mobile teleproduction facility; post-production facility.

A&G VIDEO ★
245 E. 84 St., New York, NY 10028
212 288-3883
Studio & mobile teleproduction facilities; post-production facilities.

AGFA-GEVAERT, INC. ★
275 North St., Teterboro, NJ 07608
201 288-4100
Open-reel & bulk cassette audio tape; 3/4- & half-inch videocassettes.

SEE AD PG. 204

Field Offices:

CA 1633 Old Bayshore Hwy.,
Burlingame 94010 415 692-2432

CA Will Moore, Century Pk. Plaza, 1801
Century Park East
Los Angeles 90067 213 552-9622

GA Robert Zamosciany, 380 Interstate N.,
Suite 200,
Atlanta 30339 404 955-4326

IL Wayne Woodhams, 2803 Butterfield Rd.,
Suite 200,
Oak Brook 60521 312 242-1951/312
986-9076

MA Lexington Office Center, Ste. 304-N,
33 Hayden Ave.,
Lexington 02173 617 861-6740

NJ Mark Nevejans, Twin Bridge Plaza, 24
Meadowland Pkwy., Ste. 300,
Secaucus 07094 201 330-1800/212
947-2848

Refer to Reps/Distributors section

AIRFAX VIDEO ★
211 E. Grand, Chicago, IL 60611
312 836-0211
Studio & mobile teleproduction facilities.

AKG ACOUSTICS ★
200 Consumers Rd., Suite 105, Willowdale,
Ont. M2J 4R4, Canada
416 494-1464
Time delay audio cart player/recorders; phono cartridges; digital delay & reverb, analog special effects & reverb; headphones; dynamic, electret/condenser, shotgun, lavalier, modular & capsule mics; mic stands, booms, dollies.



AKG ACOUSTICS, INC. ★
77 Selleck St., Stamford, CT 06902
203 348-2121
Phono cartridges; digital delay, reverb; analog special effects, reverb; mechanical reverb; headphones; dynamic, electret/condenser, shotgun, lavalier, modular & capsule mics; mic stands, booms, dollies.

PETER ALBRECHT CORP. ★
325 E. Chicago St., Milwaukee, WI 53202
414 272-2811
Motorized rigging & controls for TV studio lighting & scenery systems.

ALDEN ELEC. & IMPULSE RECORDING EQUIP. CO., INC. ★
Washington St., Westboro, MA 01581
617-366-8851
Weather chart recorders; weather satellite earth station.

ALEXANDER MFG. CO. ★
1511 S. Garfield Pl., Mason City, IA 50401
515 423-8955
Nicad batteries, chargers.

ALFORD MFG. CO.

15 Sixth Rd., Woburn, MA 01801
617 935-8611
RF duplexers & antennas.

ALLEN AVIONICS, INC. ★

224 E. 2 St., Box 350, Mineola, NY 11501
516 248-8080

Video delay lines, filters; signal & cable equalizers.

SEE AD PG. 168

Refer to Reps/Distributors section

ALLIED BROADCAST EQUIPMENT ★

635 South E St., Richmond, IN 47374
317 962-8596

Audio DAs, preamps; studio furniture & cabinets.

ALLIED TOWER CO., INC. ★

12450 Old Galveston Rd., Webster, TX 77598

713 486-7691

Towers & masts; tower hardware, construction equipment, lighting.

ALL MOBILE VIDEO, INC. ★

630 Ninth Ave., New York, NY 10036
212 757-8919

Equipment rental services, including mobile units; video production & post-production facility.

ALLSOP, INC. ★

Box 23, Bellingham, WA 98227
206 734-9090

Audio tape, cassette cleaners; video head cleaners; record cleaners.

ALPHA AUDIO ★

2049 W. Broad St., Richmond, VA 23220
804 358-3852

Sonex soundproofing material.

SEE AD PG. 29

ALPHA WIRE CORP.

711 Lidgerwood Ave., Box 711, Elizabeth, NJ 07207

201 925-8000

Wire & cable; cable connectors; tubing.

ALTEC LANSING ★

1515 Manchester Ave., Anaheim, CA 92803
714 774-2900

Graphic equalizers; monitor speakers; dynamic, electret/condenser, lavalier mics; audio preamps, line amps, monitor & power amps.

AMBER ELECTRO DESIGN, INC. ★

4810 Jean Talon W., Montreal, Que. H4P 2N5, Canada
514 735-4105

Audio test signal generators, harmonic distortion meters, IM meters, spectrum analyzers; dB meters.

AMCO ENGINEERING CO. ★

3801 N. Rose St., Schiller Park, IL 60176
312 671-6670

Studio furniture, consoles, 19-inch equipment racks.

AMDAX CORP. ★

160 Wilbur Pl., Bohemia, NY 11716
516 567-7887

Data modems for CATV; local area communications network.

A.M.E., INC. ★

2921 W. Olive Ave., Burbank, CA 91505
213 841-7440

Video post-production facility.

AMERICAN DATA CORP.

See listing for CENTRAL DYNAMICS CORP.

AMERICAN IMAGE PRODUCTIONS, INC.

Box 23355, Nashville, TN 37202
800 251-2058

Syndicated radio programming; music library; recording studio.

AMERICAN LASER SYSTEMS, INC. ★

106 James Fowler Rd., Goleta, CA 93117
805 967-0423

Remote control systems; infrared TV transmission system; wideband current probe.

AMILON CORP. ★

49-12 30 Ave., Woodside, NY 11377
212 274-1794

Audio cassette transports.

AMPEREX ELECTRONIC CORP. ★

Providence Pike, Slatersville, RI 02876
401 762-3800

Camera pickup tubes; RF power tubes; vacuum tubes, solid state components, rectifiers.

SEE AD PG. 109

Field Offices:

CA Ed Marchner, Ste. 115,
Santa Clara 95050 408 249-1134

CO Ron Barnes, 3110 South Wadsworth,
Denver 80227 303 989-7310

GA Lee Knowell, 3731 North Crest Rd.,
Atlanta 30340 404 458-2519

NY Kipp Rabbitt, 230 Duffy Ave.,
Hicksville 11802 516 931-6200

TX Greg Gambill, 13773 North Central Ewy.,
Dallas 75243 214 231-3481

Refer to Reps/Distributors section

AMPEX CORP. ★

401 Broadway, Redwood City, CA 94063
415 367-2011

Portable, studio & multitrack ATRs; replacement & rebuilt audio heads. Studio, ENG/EFP, single-piece cameras. Quad & one-inch C VTRs; video cart automation systems; replacement & rebuilt video heads; VTR rebuilding service; video head cleaners & degaussers; VTR slow-mo controller. Digital still stores. Large, microprocessor-controlled & compact production switchers; post-production switchers; digital effects processors; manual & automated master control switchers. Editor/controllers & multisource editors; SMPTE time code generators, readers; TBCs.

SEE AD PG. 19

Field Offices:

CA 10435 N. Tantau Ave.,
Cupertino 95014 408 255-4800

CA 500 Rodier Dr.,
Glendale 91201 213 240-5000

GA 3135 Chestnut,
Atlanta 30340 404 451-7112

IL 719 W. Algonquin Rd.,
Arlington Heights 60005 312 222-0437

MD 10215 Fernwood Rd.,
Bethesda 20034 710 828-9689

NJ 5 Pearl Court,
Allendale 07401 201 825-9600

TX 1615 Prudential Dr.,
Dallas 75235 910 861-4967

AMPEX CORP. MAGNETIC TAPE DIV. ★

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415 367-3809

Open-reel audio tape & cassettes; one-inch, two-inch, half-inch & ¼-in videotape & cassettes; empty reels, cases, cassettes.

SEE AD PG. 137

AMPRO/SCULLY ★

2693 Philmont Ave., Huntingdon Valley, PA 19006

215 947-7000

Mono & stereo studio consoles; single, dual & triple audio cart player/recorders, phase control matrixing; 2,4-track & multitrack studio ATRs.

AMTEL SYSTEMS, INC.

29-16 Connell Ct., Toronto, Ont. M8T 5T7, Canada

416 251-3355

SMPTE time code generators, readers; safe title area & countdown generators; digital clocks, master & slave clocks, timers, time distribution.

AMTRON CORP. ★

Box 1150, 5620 Freedom Blvd., Aptos, CA 95003

408 688-4445

Sync generators; mono, NTSC color & RGB video monitors; video test signal generators.



ANALOG DEVICES, INC.

Box 280, Norwood, MA 02062
617 329-4700

Video A/D & D/A converters.

ANCHOR SYSTEMS, INC.

4510 Federal Blvd., San Diego, CA 92102
714 262-9901

Audio monitors for TV.

ANDREW CORP. ★

10500 W. 153 St., Orland Park, IL 60462
312 349-3300

Transmit/receive, receive only & transportable satellite earth stations; intercity & portable ENG microwave; microwave, satellite & waveguide STLs; HP & CP TV antennas; microwave, satellite dish & communications antennas; solid core, foam dielectric & fiberoptic transmission line.

ANGENIEUX, INC. ★

120 Derry Rd., Hudson, NH 03051
603 880-1710

Camera lenses & lens extenders; equipment rental service.

SEE AD PG. 167

Field Offices:

CA 13381 Beach Ave.,
Venice 90291 213 821-5080

CN 190 Don Park Rd., Unit 2,
Markham, Ontario L3R 2V8 416 475-5454

ANIMATION VIDEO, DIV. CONVERGENCE CORP. ★

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And you can always retain your "originals" in their pristine state.

The DLS 6030 lets you browse through its disk library to select the pictures you need, and gives you unprecedented facilities for on-air editing, previewing, and presentation.

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Because Quantel's technology is leading-edge, the DLS 6030 is small—about one-quarter the size of still-stores using older technology—and draws far less power. So it's ideal for mobile operations as well as the studio.

There's nothing else like it. See for yourself. Call your local MCI/Quantel representative. Or get in touch with us directly at 415/856-6226. Micro Consultants, Inc., P.O. Box 50810, Palo Alto, California 94303.



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904 687-4121

Microwave antennas.

ANTENNA TECHNOLOGY CORP.

895 Central Florida Pky., Orlando, FL 32809
305 851-1112

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ANTON/BAUER, INC. *

1 Controls Dr., Shelton, CT 06484
203 929-1100

Nicad & silver-zinc batteries & chargers; ac power dividers. Camera remote control system.

SEE AD PG. 92

Refer to Reps/Distributors section

ANVIL CASES, INC. *

4128 Temple City Blvd., Rosemead, CA 91770
213 575-8614

Foam insert & rack configuration transportation cases.

APERT-HERZOG CORP. *

7007 Realm Dr. (B3), San Jose, CA 95117
408 225-1425

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213 655-1411

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APPLELOG

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412 283-1500

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APPLIED DIGITAL TECHNOLOGY *

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212 289-8660

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ARBEN DESIGN *

9870 Derby Lane, Westchester, IL 60153
312 345-1545

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ARISTOCART, DIV. WESTERN BROADCASTING *

1960-505 Burrard St., Vancouver, BC V7X 1M6 Canada
604 687-2844

Audio carts & test tapes, empty reels & carts; cart storage units.

SEE AD PG. 12

Refer to Reps/Distributors section

TOBY ARNOLD & ASSOC. *

4255 LBJ, Suite 156, Dallas, TX 75234
214 661-8201

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ARRAKIS SYSTEMS

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617 752-5690

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614 756-9222

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ASACA/SHIBASOKU CORP. OF AMERICA *

12509 Beatrice St., Los Angeles, CA 90066
213 827-7144

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SEE AD PG. 82

Refer to Reps/Distributors section

ASHLY AUDIO, INC. *

100 Fernwood Ave., Rochester, NY 14621
716 544-5191

FM compressor/limiters; parametric equalizers; noise reduction; electronic crossovers; engineering consultant.

ASTATIC CORP.

Box 120, Conneaut, OH 44030
216 593-1111

Phono cartridges & pickup arms; dynamic, electret/condenser & lavalier mics; mic stands, booms & dollies.

ASTIN/ZAPPIA *

3501 Cahuenga Blvd. W., Los Angeles, CA 90068
213 876-8008

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ASTRO VIDEO SERVICES *

61 W. Erie St., Chicago, IL 60610
312 280-5520

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ATI (AUDIO TECHNOLOGIES, INC.) *

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215 443-0330

Phono preamps; ALC & AGC amps, AM & FM compressor/limiters; parametric equalizers; noise reduction; audio preamps, line, monitor & power amps; audio DAs; amp power supplies; VU meters; audio patch panels, jackfields.

SEE AD PG. 224

Refer to Reps/Distributors section

ATLANTIC RESEARCH CORP.

5390 Cherokee Ave., Alexandria, VA 22314
703 642-4000

Portable, mono & stereo studio, automated & audio for TV mixing consoles; AM & FM compressor/limiters, parametric & graphic equalizers; slide attenuators; audio patch panels.

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201 887-7800

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227 South Vann, Box 972, Vinita, OK 74301
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617 332-7747

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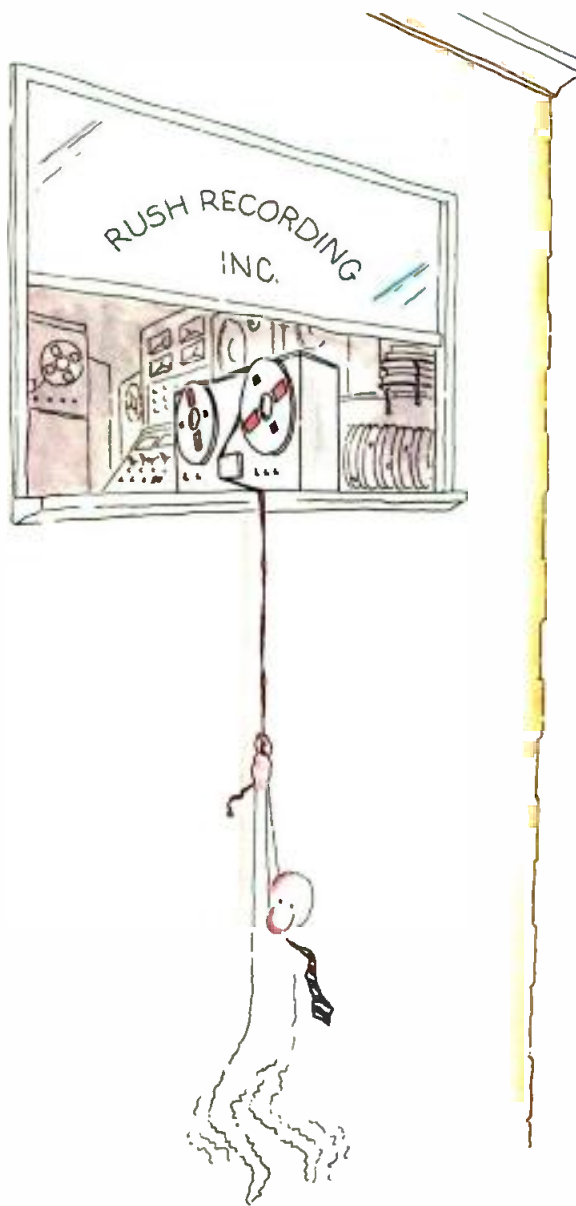
Mill St., Marlow, NH 03456
603 446-3335

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 213 980-5717
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 503 239-5343
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 203 359-2312
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 312 885-0066
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 502-D Vandell Way, Campbell, CA 95008
 408 378-5586
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AUDIOTRONICS CORP. ★
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 901 362-1350
 Mono, stereo, automated & TV audio studio consoles; audio preamps, line amps, audio DAs; audio patch panels.
 SEE AD PG. 70-71,172
 Refer to Reps/Distributors section

AUERNHEIMER LABS & CO. ★
 4561 E. Florence Ave., Fresno, CA 93725
 209 442-1048
 Monitor speakers.

AURATONE CORP. ★
 Box 698, Coronado, CA 92118
 714 297-2820
 Monitor speakers.



AURORA SYSTEMS ★
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 415 777-2288
 Digital art/paint systems with character generators, camera/VTR digitizers, weather symbol inserters; standalone video effects generators.
 SEE AD PG. 103

AUTOGRAM CORP. ★
 Box 456, 631 J Pl., Plano, TX 75074
 214 424-8585
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AUTOMATED BROADCAST CONTROLS, INC.
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 301 587-3505
 Complete program automation systems, radio business automation hardware.

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 805 684-7186
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 918 836-2584
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AVAB AMERICA, INC. ★
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 415 421-3562
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AVA ELECTRONICS
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 215 284-2500
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AVANTEK, INC.
 3175 Bowers Ave., Santa Clara, CA 95051
 408 727-0700
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AVL DIGITAL, LTD.
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AVONIX VIDEO SYSTEMS, INC.
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AVT TELEVISION PRODUCTIONS ★
 1466 Amherst Rd., Knoxville, TN 37919
 615 584-2166
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 213 462-0931
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 518 279-9753
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BARBIZON
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 212 586-1620
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 514 486-1186
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 213 466-9361
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215 687-5550
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817 280-2222

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312 262-1600

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516 935-8000

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SEE AD PG. 213
Field Office:
NY 5-05 Burns Avenue,
Hicksville 11801 516 935-8000
Refer to Reps/Distributors section

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415 444-5986

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201 679-4000

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801 237-2400

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801 237-2450

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801 972-8000

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SEE AD PG. 193

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800 426-9082
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SEE AD PG. 143

BRAND-REX CO. ★
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212 599-0828

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215 547-7133

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916 635-1048

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4100 N. 24 St., Quincy, IL 62305
217 224-9600

Mono and stereo audio studio consoles; single, dual, multi, time delay cart player/recorders; tape loaders, rewinders; turntables; pickup arms, phono preamps; complete program automation systems; AM & FM compressor/limiters; telco interface equipment; preamps, line & monitor amps; audio DAs. FM transmitters, exciters, RF amps; FM SCA equipment.

BROADCAST MICROWAVE SERVICES, INC. ★

7320 Convoy Court, San Diego, CA 92111
714 560-8601

Intercity, ENG & airborne microwave & central receivers; STLs, microwave antennas; towers & masts.

See ad pg. 15, 140

Field Office:

NY Convergence, 250 W. 57 St., #815,
New York 10019. 212 765-1333

Refer to Reps/Distributors section

BROADCAST MUSIC, INC. (BMI)

320 W. 57 St., New York, NY 10019
212 586-2000

Syndicated radio programming service.

BROADCAST SYSTEMS, INC. ★

8222 Jamestown Dr., Austin, TX 78758
512 836-6011

Equipment rental service.

BROADCAST TECHNIQUES ★

316 E. El Camino Dr., Phoenix, AZ 85020
602 995-1666

Engineering consultant.

SEE AD PAGE 146

BROADCAST TECHNOLOGY CONSULTANTS ★

6700 Squibb Rd. Suite 104, Mission, KS
66202

913 677-1983

Engineering, facilities design consulting.

BROADCAST TECHNOLOGY, INC. ★

33 Comac Loop, Ronkonkoma, NY 11779
516 588-6565

Mono, stereo, audio for TV studio consoles; mic mixers, portable mixers; graphic equalizers; digital and analog reverb/effects systems; audio delay lines. Headphones. Audio preamps, monitor & line amps, DAs, power amps; VU, PPM, LED level indicators. Serial & parallel interface routing switchers.

BROADCAST VIDEO SYSTEMS, LTD. ★

1050 McNicoll Ave., Unit 15, Agincourt, Ont.
M1W 2L8 Canada

416 497-1020

Dist. of Cox SEGs; RGB & encoded chroma-keyers; title & downstream keyers; safe title area generator; NTSC encoders, decoders, comb filter decoders; delay lines & filters; color correctors; proc amps; passive video switchers. Mfg. of automatic VITS analyzer, blanking width meter. Dist. of Electronic Visuals waveform monitors, vectorscopes, combination scopes. Hum bucking coils.

BRUEL & KJAER INSTRUMENTS, INC. ★

185 Forest St., Marlborough, MA 01752
617 481-7000

Electret/condenser microphones. Audio signal generators, harmonic distortion meters, IM meters, spectrum analyzers, wow & flutter meters, time delay spectrometry.

BRYSTON MFG., LTD. ★

57 Westmore Dr., Rexdale, Ont. M90 3Y6
Canada

416 746-1800

Audio preamps, monitor/line amps.

BSM SYSTEMS ★

Box 8081, Spokane, WA 99203
509 448-0697

Portable & studio audio consoles; audio DAs; audio routing switchers.

SEE AD PG. 206

THE BTX CORP. ★

12 Huron Dr., Natick, MA 01760
617 653-6811

SMPTTE time code generator/readers, time code synchronizers, audio/video interfaces.

BUHL OPTICAL

1009 Beech Ave., Pittsburgh, PA 15233
412 321-0076

35mm telecine slide projectors, optical multiplexers.

BULLET RECORDING ★

49 Music Square W., Nashville, TN 37203
615 327-4621

Teleproduction & post-production facilities.



THE BURBANK STUDIOS ★

4000 Warner Blvd., Burbank, CA 91522
213 954-6000

Teleproduction facility.

RICHARD W. BURDEN ASSOC.

20944 Sherman Way, Canoga Park, CA
91303

213 340-4590

Mfg. of audio test signal generators. Dist. of full line of audio equipment. Engineering, facility design consulting.

BUSH & MILLIMAKI SERVICES, INC. ★

902 Bob Wallace Ave., Huntsville, AL 35801
205 533-9274

Tripods & heads. Lens repair service.

B-W LIGHTING SYSTEMS ★

Box 45162, Tulsa, OK 74145
918 664-1111

Full line of lighting equipment including lamps, HMI, CSI & quartz fixtures, stands & rigging, lighting control boards & dimmer packs, cyc lighting; cyc track & curtains. Transportation cases. Studio furniture, equipment racks. Lighting cable, connectors, jackfields. Engineering consulting, set design services.

CABLEWAVE SYSTEMS, INC.

60 Dodge Ave., North Haven, CT 06473
203 239-3311

Intercity microwave links, microwave & waveguide STLs; microwave antennas; foam dielectric transmission line, connectors; carrier current systems.

AUDITRONICS AUTHORIZED DEALERS

Allied Broadcast Equipment
635 South E Street
Richmond, IN 47374-8487
(317) 962-8596

Audio Broadcast Group, Inc.
2342 S. Division Avenue
Grand Rapids, MI 49507
(616) 452-1596

Broadcast Services Co.
Rt. 3, Box 45-E
Four Oaks, NC 27524
(919) 934-6869

Doug Brown Enterprises
1703 East Skelly Drive
Tulsa, OK 74105
(918) 747-3618

Control Technology, Inc.
2322 Davie Blvd.
Ft. Lauderdale, FL 33312
(305) 587-2716

Phase Audio, Inc.
151 N. Angelus
Memphis, TN 38104
(901) 726-1900

Pro Audio General Store
1378 N.W. 100th Ave.
Coral Springs, FL 33065
(305) 752-0330

Robert Slye Electronics
3415 N. Washington Blvd.
Arlington, VA 22201
(703) 525-7272

Sonics Associates, Inc.
237 Oxmoor Cl. Suite 101
Birmingham, AL 35209
(205) 942-9631

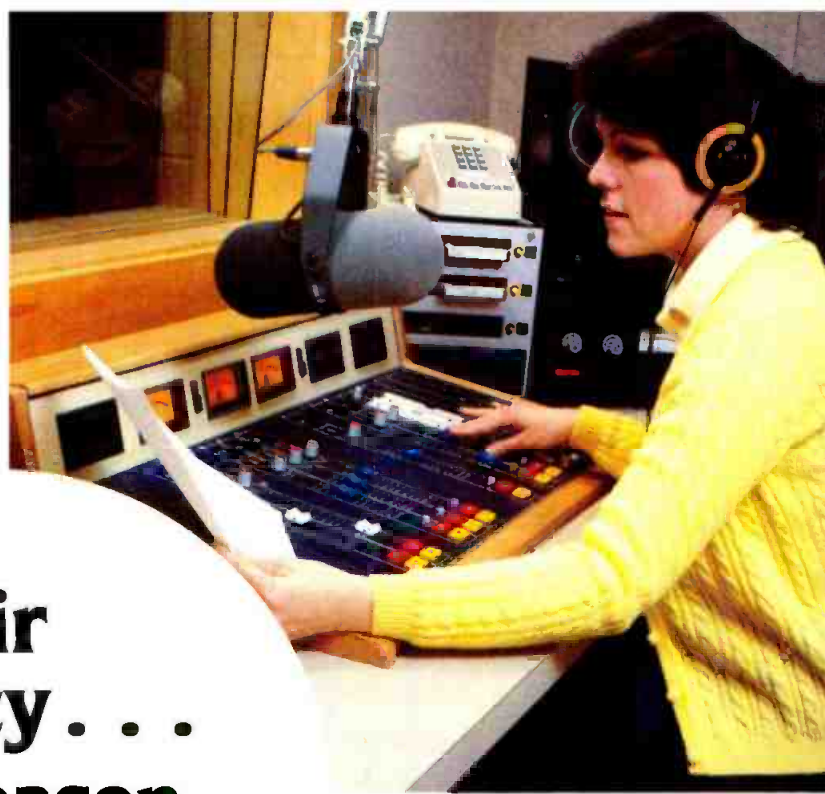
Sound Genesis
2001 Bryant Street
San Francisco, CA 94110
(415) 285-8900

Westec Audio Video, Inc.
1841 Broadway, Suite 1203
New York, NY 10023
(212) 586-1662



auditronics. inc.

3750 Old Getwell Rd.
Memphis, TN 38118 USA
Tel: (901) 362-1350
Telex: 533356



**“on-air
quality . . .
our reason
for buying
Auditronics,”**



Bob Taylor, General Manager of Wilmington's WDEL-AM and WSTW-FM says, "We've had Auditronics 200 Series consoles on-line for over six months and our sound's superiority is reflected in listener response. The psychological effect on our own on-air people was immediate and positive. They find the Auditronics boards comfortable to work with, whether it's the 212 in the news booth, the 218s in the production rooms or the 224 in AM master control.

"Best of all, when it came to price, Auditronics was affordable. I don't mean the cheapest; I mean cost/efficient. For a few extra dollars, we have future expansion capability and the customizing that we needed. To us, that's what affordable really means."

For complete product information and a report on why WDEL's Bob Taylor chose four Auditronics 200 Series consoles for his new facilities, contact:



auditronics, inc.

3750 Old Getwell Road
Memphis, Tennessee 38118 USA
(901) 362-1350 TELEX: 533356

Circle 147 on Reader Service Card

CADO SYSTEMS CORP. ★
2771 Toledo St. Torrance, CA 90503
213 320-9660
Radio business automation hardware & software;
music format control.

CALICO VIDEO CO., INC. ★
8955 Thornton Rd., Stockton, CA 95209
209 952-3333
Video carts for TCR-100, cart rebuilding.

CALIFORNIA INSTRUMENTS
5150 Convoy St., San Diego, CA 92111
714 279-8620
AC power generators, converters, inverters.

CALIFORNIA MICROWAVE, INC. ★
990 Almanor Ave., Sunnyvale, CA 94086
408 732-4000
Transmit/receive, receive only, transportable satellite earth stations; PTV scramblers; facility turnkey installation, engineering consulting, satellite earth station site selection services.

CALIFORNIA VIDEO STUDIOS ★
1041 N. Orange Dr., Hollywood, CA 90038
213 464-4266
Studio & mobile teleproduction facilities.

CALREC AUDIO, LTD. ★
(Dist. by Audio + Design)
Box 786, Bremerton, WA 98310
800 426-6170
Capsular, electret/condenser, sound field mics; audio preamps.

CALVERT ELECTRONICS, INC. ★
1 Branca Rd., E. Rutherford, NJ 07073
800 526-6362
Camera pickup tubes. Tripods, heads, pedestals, ENG braces, dollies. Vacuum tubes; RF inductors, gaskets, transformers, rectifiers, surge protectors, quartz crystals, solid state components.
SEE AD PG. 152
Field Office:
CA 1355 Redondo Ave.,
Long Beach 90804 800 421-7549

CALZONE CASE CO. ★
Box 862, S. Norwalk, CT 06856
203 853-7907
Foam insert & rack configuration transportation cases. Studio furniture, tape storage units, equipment racks.
SEE AD PG. 14
Refer to Reps/Distributors section

CAMBRIDGE PRODUCTS CORP.
244 Woodlond Ave., Bloomfield, CT 06002
203 243-1761
Cable connectors.

THE CAMERA MART, INC. ★
456 W. 55 St., New York, NY 10019
212 757-6977
Equipment rental service. East coast dist. of EC-35. Dist. of Ronford tripods, heads, legs.
SEE AD PG. 104-105

CAMRAC STUDIOS ★
1775 Kuenzli St., Box 9298, Reno, NV 89507
702 323-0965
Video production & post-production facility.

CANDEX PACIFIC, INC. ★
693 Veterans Blvd., Redwood City, CA 94404
415 364-8427
Engineering consultant.

CANFORD AUDIO (NA), INC. ★
652 Glenbrook Rd., Stamford, CT 06906
203 324-2889
Audio, ac cable; connectors.

CANON USA, INC. ★
1 Canon Plaza, Lake Success, NY 11042
516 488-6700
TV & cine camera lenses, lens accessories.
SEE AD PG. 21, 155

CANTER-REDMAN TECHNOLOGIES CORP. ★
321 W. 44 St., New York, NY 10036
212 245-5505
Video test signal generators; waveform monitors; "test center." Black burst, color bar, multiburst, staircase ramp signal generators; NTSC, comb filter decoders. Video proc amps, DAs. RGB monitors, video projectors.



CAPITOL MAGNETIC PRODUCTS ★
6902 Sunset Blvd., Hollywood, CA 90028
213 461-2701
Audio carts, bulk tapes; master disk recording blanks.
SEE AD PG. 26

CARLETON PRODUCTIONS ★
1500 Merivale Rd., Ottawa, Ont. K2C 3G6
Canada
613 224-1313
Studio & mobile teleproduction facility; video post-production facility.

CAROB VIDEO ★
250 W. 57 St., New York, NY 10019
212 957-9525
Video post-production facility.

CASES, INC.
1745 W. 134 St., Gardena, CA 90249
213 770-4444
Foam insert & rack configuration transportation cases, equipment racks.

CAT SYSTEMS, INC. ★
401 E. 74 St., New York, NY 10021
212 988-0290
Computerized automation for telesystems, remote control systems. Facility turnkey installations, engineering & computer consultants.

CATALYST PRODUCTION SERVICES ★
1782 University Ave., Berkeley, CA 94703
415 848-7606
Studio & mobile teleproduction facilities; video post-production facility.

CATEL, DIV. UNITED SCIENTIFIC CORP. ★
4800 Patrick Henry, Santa Clara, CA 95054
408 988-7722
RF amplifiers, converters, stereo generators, modulators.

CAVOX-TAPEATHON CORP.
502 S. Isis Ave., Inglewood, CA 90301
800 421-1029
Relay & time insertion automation sequencers; complete automation systems; auto time/weather announcers; tape duplicating services; portable & studio open-reel tape player/recorders; syndicated radio programming services.

CBS TECHNOLOGY CENTER ★
227 High Ridge Rd., Stamford, CT 06905
203 327-2000
Audio test records.

C.C.R. POST, INC. ★
135 E. 55 St., New York, NY 10022
212 753-9230
Mobile teleproduction facility; video post-production facility.

CECO COMMUNICATIONS, INC. ★
2115 Ave. X, Brooklyn, NY 11235
800 221-0860
Single-tube & b&w video cameras; solid state cameras; lenses & pickup tubes; videotape, empty reels; mono, NTSC, RGB & dc portable video monitors; video projectors; video DAs. RF power tubes. Vacuum tubes, solid state components, rectifiers, connectors.
SEE AD PG. 210

CEI, A PANAVISON CO. ★
880 Maude Ave., Mountain View, CA 94043
415 969-1910
Field, electronic cinematography & ENG/EFP cameras, lenses; telecine cameras.

CELESTIAL MECHANIX
612 Hampton Dr., Venice, CA 90291
213 392-8771
Video production & special effects.

CENTER CITY VIDEO, INC. ★
1503 Wolnut St., Philadelphia, PA 19102
215 568-4134
Studio & mobile teleproduction facilities; video post-production facility.

CENTER VIDEO CENTER, INC. ★
5565 N. Elston Ave., Chicago, IL 60630
800 621-4354
Editing, production consoles. Equipment rental service; video post-production facility; studio, set design.

CENTRAL DYNAMICS CORP. ★
900 Corporate Dr., Mahwah, NJ 07430
201 529-1550
AMERICAN DATA: Portable, large & compact production switchers; post-production switchers; colorizers, RGB chromakeyers, title & downstream keyers; manual master control switchers; parallel & serial interface routing switchers; black burst generators; pulse amps, video DAs. CENTRAL DYNAMICS: Large, compact/mobile & automated video production switchers, post-production switchers; standalone effects generators, RGB & encoded chromakeyers, title & downstream keyers; manual, automated & business automation interfaced master control switchers; video signal & cable equalizers; video pulse amps, DAs & sc amps. Audio preamps, line, monitor & power amps, audio DAs, amp power supplies.
PHILIPS BROADCAST GROUP: Studio, field & ENG/EFP camera; one-inch C VTRs. Digital

SMALL WONDER

The MICROTIME S-130 Full Frame Synchronizer



Versatility, simplicity and reliability in one compact chassis. The result of packaging innovation and design excellence. The S-130. Only from Microtime.

- Full Frame storage processes VITS, VIRS, and teletext information
- Selectable auto freeze or auto black with loss of input signal
- Manual selection of Field 1, Field 2, or Full Frame Freeze

- Independent adjustment of horizontal and burst output phase, with respect to black burst reference signal
- Automatic color/mono detection and switching
- Differential video input for common mode hum rejection
- Light weight, small size, and low power consumption make the S-130 ideal for mobile or ENG use

A microprocessor testing subroutine initiated by internal switch selection provides self-testing capability for ease of maintenance and confidence testing.

For full information, contact:
MICROTIME, INC.
1280 Blue Hills Avenue
Bloomfield, CT 06002
Tel. (203) 242-4242.
TWX 710-425-1165

 **MICROTIME**

Circle 148 on Reader Service Card

Visit our SMPTE Booth No. 223-224

TBCs, noise reducers. NTSC monitors. UHF, VHF TV transmitters, TV excitors. Facility turnkey installations, mobile vehicle construction.

CENTRO CORP. ★
9516 Chesapeake Dr., San Diego, CA 92123
714 560-1578
Mobile van construction; facility turnkey installation; TV studio design.

CENTURY PRECISION CINE/OPTICS
10661 Burbank Blvd., N. Hollywood, CA 91601
213 766-3715
Cine & video camera lenses; motion picture accessories; cine & video adapters & special modifications.

CENTURY III TELEPRODUCTIONS, INC. ★
651 Beacon St., Boston, MA 02115
617 267-6400
Video production & post-production facilities.

CENTURY 21 PROGRAMMING, INC. ★
4340 Beltwood Pky., Dallas, TX 75234
800 527-5959
Syndicated radio programming services.



CETEC ANTENNAS ★
Box 28425, 6939 Power Inn Rd., Sacramento, CA 95828
916 383-1177
FM, TV (HP & CP) antennas. RF filters, power dividers, diplexers.

CETEC BROADCAST GROUP ★
1110 Mark Ave., Carpinteria, CA 93013
805 684-7686
Portable, mono & stereo studio & audio for TV mixing consoles; turntables & pickup arms; complete program automation systems; time insertion sequencers, computer controllers, auto time/weather announcers, audio business automation hardware.

CETEC GAUSS
9130 Glenoaks Blvd., Sun Valley, CA 91352
213 875-1900
High-speed audio tape duplicators, audio monitors.

CETEC VEGA ★
9900 Baldwin Pl., El Mante, CA 91731
213 442-0782
RF intercoms; RF mics; tone encoders & decoders.
SEE AD PG. 191
Refer to Reps/Distributors section

CEZAR INTERNATIONAL, LTD. ★
1026 West Maude Ave., Sunnyvale, CA 94086
408 738-3900
Audio/video synchronizers; two-VTR editor/controllers; SMPTE time code readers & generators.

CFI VIDEO ★
959 Seward St., Hollywood, CA 90038
213 462-3161
Video post-production facility.

CHANNELMATIC, INC.
821 Tavern Rd., Alpine, CA 92001
714 445-2691
Relay & time insertion automation sequencers, computer controllers; audio DAs. Video cart, cassette automation systems; video DAs. Remote control systems. Digital clocks, clock-controllers.

CHANNEL ONE VIDEO TAPE, INC. ★
3341 NW 82 Ave., Miami, FL 33122
305 592-1764
Studio & mobile teleproduction facilities; video post-production facility.

CHASE MEDIA, INC.
5284 S. 320 West, Ste. C-266, Salt Lake City, UT 84107
801 261-1383
Business automation systems.

CHICAGO VIDEO, INC. ★
12 W. College Dr., Arlington Hts., IL 60004
800 323-6344
Studio & mobile teleproduction facilities; video post-production facility.

JOHN CHILES, INC. ★
7622 Main St., Jacksonville, FL 32208
904 764-5281
Nicad batteries, chargers.

CHRIS CRAFT VIDEO TAPE CENTER ★
915 N. La Brea, Hollywood, CA 90038
213 851-1000 ext. 247
Video production & post-production facility.

CHRISTIE ELECTRIC CORP. ★
20665 Manhattan Pl., Torrance, CA 90501
213 320-0808
Nicad batteries, chargers.

CHRONICLE PRODUCTIONS ★
1001 Van Ness Ave., San Francisco, CA 94109
415 561-8663
Studio & mobile teleproduction facilities; video post-production facility.

CHRONO-LOG CORP. ★
2 W. Park Rd., Havertown, PA 19083
215 853-1130
Digital clocks, master & slave clocks, timers, time distribution.

CHYRON CORP. ★
265 Spagnoli Rd., Melville, NY 11747
516 249-3296
Character generators, character generator/framestores, digital art/paint systems, bit pad digitizers, weather symbol inserters, "draw-on-screen" systems.

CINEMA PRODUCTS CORP. ★
2037 Granville Ave., Los Angeles, CA 90025
213 478-0711
ENG/EFP cameras, cine cameras, lenses; digital camera control unit. Tripods, heads, camera stabilizing system; lamps, HMI & quartz fixtures; nicad batteries, chargers; ENG/EFP portable teleprompters. Video camera service.

CINEMA VIDEO CENTER ★
211 E. Grand, Chicago, IL 60611
312 527-4050
Teleproduction facility.

CINE 60, INC. ★
630 Ninth Ave., New York, NY 10036
212 586-8782
Nicad power supplies, chargers; portable lighting units, ENG braces.
SEE AD PG. 98

CINETAPE ★
801 N. La Brea, Hollywood, CA 90038
213 934-8836
Teleproduction & post-production facilities.

CINETRONICS, INC. ★
304 S. Broadway, Ste. 510, Los Angeles, CA 90013
213 617-0976
Teleproduction & post-production facilities.

CIRCUIT DEVELOPMENT CO., INC. ★
1029 Urica Ave. Brooklyn, NY 11203
212 346-1212
3-channel RF monitors; two-way communications systems including base station/repeater & cassette recorder interface; headphone monitor amp.

CLARCOMPUTER SERVICES
Box 100, 111 S. Fifth St., Vandalia, IL 62471
618 283-2325
Radio business automation software.

CLARION PRODUCTION SERVICES, INC. ★
8 S. Michigan, Ste. 3700, Chicago, IL 60603
212 781-0080
Mobile teleproduction facilities.

DAVID CLARK CO.
360 Franklin St., Worcester, MA 01604
617 756-6216
Headphones, intercom systems.

CLEAR-COM INTERCOM SYSTEMS ★
1111 17 St., San Francisco, CA 94107
415 861-6666
Headphones, hardwired intercoms.
SEE AD PG. 111

CMC TECHNOLOGY CORP. ★
733 N. Pastoria Ave., Sunnyvale, CA 94086
408 245-3342
Replacement & rebuilt heads for quad and one-inch VTRs; VTR rebuilding service.

CMX SYSTEMS, AN ORROX CORP. ★
3303 Scott Blvd., Santa Clara, CA 95014
408 988-2000
Video editor/controllers, multisource editors.
SEE AD PG. 36
Refer to Reps/Distributors section

COASTCOM ★
2312 Stanwell Dr., Concord, CA 94520
415 825-7500
Video filters. Diplexers; transmit/receive satellite earth stations; remote control systems; RF program subcarrier.

COAXIAL DYNAMICS, INC. ★
13110 Enterprise Ave., Cleveland, OH 44135
216 267-2233
RF filters, loads, switches, power dividers. RF power meters, wattmeters; frequency monitors, controllers.



Midwest can deliver the mobile unit you need... **FAST!**



Whether you're covering on-the-spot news or providing network coverage of a tie-breaking football game, Midwest can put you in the action ... fast! ... with the mobile production unit precisely suited to the job. Midwest's totally integrated mobile production systems give you the quality you need, plus the comfort and convenience that make the tough assignments easier.



One of the largest and most experienced video equipment suppliers in the nation, Midwest offers a complete line of mobile units ... from ENG trucks to 45-foot semi's. And Midwest acts as your single source supplier for all the equipment you could ever need.

For full information on how fast Midwest can put you in action with the mobile unit you need, call toll-free today:



800-543-1584
(In Kentucky 606-331-8990)



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Virginia Beach, VA
804-464-6256
Washington, DC
301-577-4903
Charlotte, NC
704-399-6336
Miami, FL
305-592-5355

Circle 149 on Reader Service Card

COHERENT COMMUNICATIONS, INC. ★
13756 Glenoaks Blvd., Sylmar, CA 91342
213 362-2566
Mic mixers, portable audio consoles; RF intercoms; electret/condenser, RF & lavalier mics.

COHU INC., ELECTRONICS DIV. ★
Box 85623, San Diego, CA 92138
714 277-6700
Telecine multiplexers, automatic light controls & complete telecine systems; monochrome monitors; pulse. equalizing amps, DAs; NTSC encoders; sync generators.

COLORADO VIDEO, INC. ★
Box 598, Boulder, CO 80306
303 444-3972
Digital still stores; colorizers; slow scan transmitters & receivers.

COLOR FILM CORP., VIDEO DIV. ★
98 Commerce Rd. Stamford, CT 06904
203 327-7270
Video post-production facility; video duplication services.

COLORGRAPHICS WEATHER SYSTEMS, INC. ★
5727 Tokay Blvd., Madison, WI 53719
608 274-5786
Digital art/paint systems, weather symbol inserters; weather radar systems. weather information services.

COLORTRAN, INC. ★
1015 Chestnut St., Burbank, CA 91506
213 843-1200
Lamps, quartz fixtures, stands & rigging, lighting control boards, dimmer packs, diffusion & efx material, cyc lighting; nicad batteries, chargers.



COLUMBIA VIDEO SYSTEMS ★
The Columbia Building, 1741 Second St., Highland Park, IL 60035
312 433-6010
Equipment rental service; recording studio; video post-production facility; stage, studio rentals; facility turnkey installation; studio, set design.

COLUMBINE SYSTEMS, INC. ★
7 Jackson Bldg., Level 3, Plaza of the Presidents, Golden, CO 80401
303 279-4000
Complete radio program automation systems; radio business automation software.

COMAD, INC. ★
Box 10667, Pensacola, FL 32504
904 434-9782
Portable production switchers; video DAs; jackfields, patch panels.

COMARK, INC. ★
Rt. 57 & Hudson Dr., Southwick, MA 01077
413 569-5939

UHF TV transmitters; RF amps, TV exciters; RF attenuators, converters, filters, switches; power dividers; diplexers; modulators; remote control systems; FM antennas; RF demodulators; facility turnkey installations; engineering consultant.

COMEX SYSTEMS ★
2 Columbia Dr., Amherst, NH 03031
603 889-8564
Digital audio delay.
SEE AD PG. 136

COMMERCE AIRBORNE, DIV. IFR AVIONICS ★
16425 Hart St., Ste. 106, Van Nuys, CA 91406
213 782-4801
Aircraft & airborne microwave systems; audio DAs; engineering consultant.

COMPACT VIDEO SERVICES, INC. ★
2813 W. Alameda Ave., Burbank, CA 91505
213 840-7000
Studio & mobile teleproduction facilities; video post-production facility.

COMPREHENSIVE VIDEO SUPPLY CORP. ★
148 Veterans Dr., Northvale, NJ 07647
201 767-7990
Mfr. of mic mixers, character generators, video signal test device, lighting units; distributor of full line of audio & video products.
SEE AD PG. 86

COMPUCON, INC. ★
Box 401229, Dallas, TX 75240
214 233-4380
Engineering consultant; earth station site selection.

COMPUTER BUSINESS SYSTEMS ★
167 Moore Rd., Weymouth, MA 02189
617 337-7799
Business automation hardware.

COMPUTER CONCEPTS CORP. ★
8001 W. 63 St., Shawnee Mission, KS 66202
800 255-6350
Complete program automation systems, radio business automation hardware, radio newsroom computers.

COMPUTER GRAPHICS LAB, INC. ★
405 Lexington Ave., New York, NY 10174
212 557-5130
Digital art/paint systems, camera/VTR digitizers.

COMPUTER IMAGE CORP. ★
2475 W. 2 Ave. Ste. 4, Denver, CO 80223
303 934-5801
Electronic animation.

COMPUTER LABS, DIV. ANALOG DEVICES, INC. ★
505 Edwardia Dr., Greensboro, NC 27409
919 292-6427
Video A/D & D/A converters.

COMPUTER MANAGEMENT SYSTEMS, INC. ★
6610 N. Shadeland Ave., Indianapolis, IN 46220
317 842-1830
Radio business computer & music rotation systems.

COMPUTER OPERATIONS, INC. ★
5001-J Forbes Blvd., Lanham, MD 20706
301 459-2100
Real-time video animation.

COMPUTER VIDEO SYSTEMS, INC. ★
3678 W. 2150 South, Unit 2, Salt Lake City, UT 84120
801 974-5380
Character generators.

COMREX CORP. ★
Box 269, 60 Union Ave., Sudbury, MA 01776
617 443-8811
Portable audio consoles; ALC, AGC amps; RF intercoms; telco interface equipment; remote pickup equipment.
SEE AD PG. 145

COMSEARCH, INC. ★
11503 Sunrise Valley Dr., Reston, VA 22091
703 620-6300
Engineering consultant; earth station site selection; cellular radio.

COMTECH DATA CORP. ★
350 N. Hayden Rd., Scottsdale, AZ 85257
602 949-1155
Transmit/receive, receive only. transportable satellite earth stations.

CONCEPT PRODUCTIONS ★
1224 Coloma Way, Roseville, CA 95678
916 782-7754
Syndicated radio programming.

CONEX ELECTRO SYSTEMS, INC. ★
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206 734-4323
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CONIFER CORP. ★
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319 752-3607
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OTIS CONNER PRODUCTIONS ★
2829 W. Northwest Hwy., Ste. 940, Dallas, TX 75220
214 358-5500
Music library; TV & radio musical ID production packages.

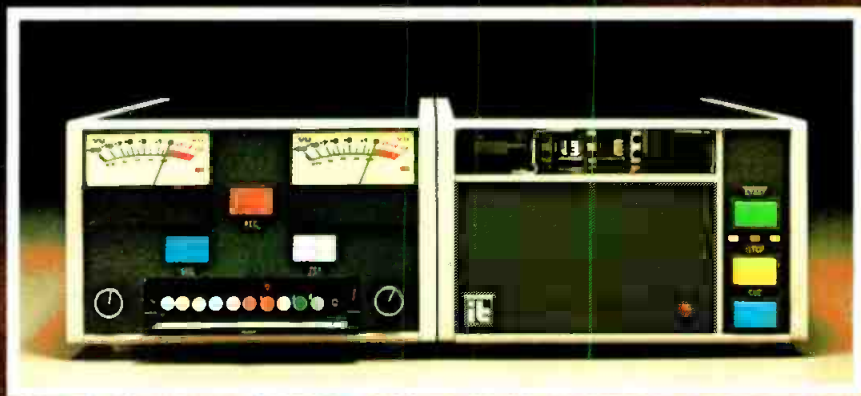
CONRAC, DIV. CONRAC CORP. ★
600 N. Rimsdale Ave., Covina, CA 91722
213 966-3511
Monochrome, NTSC, RGB video monitors; graphics display monitors.
SEE AD PG. 57
Refer to Reps/Distributors section

CONTINENTAL COLOUR RECORDING, INC. ★
135 E. 55 St., New York, NY 10022
212 753-7341
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305 822-1421
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For information on the products or services mentioned here, contact your RCA Representative. Or write RCA, Prime Time, Bldg. 2-2A, Camden, NJ 08102.

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800-257-7952

WOR-TV TK-47's Save Time, Air Picture-Perfect N.Y. Mets Games Across USA



Channel 9 covers home plate action from one of their six TK-47 automatic color cameras. In the distance, the Met's Diamond Vision replays game action in slow motion from another TK-47 output.

WOR-TV is no ordinary independent VHF station. It's one of the few superstations in the U.S. Of the 81 Mets home games per season, most are carried via satellite to baseball fans in nearly every major U.S. city. "Fundamental to the quality of service we provide viewers . . . and essential to production efficiency are our six TK-47 Automatic Color Cameras installed at Shea Stadium (the Mets' home field)", reports Dick Quodomine, WOR's Chief Engineer.

In their third season of operation, WOR's 47's have proved the advantages of their extensive automatic capabilities. Explains Quodomine, "With our previous cameras, we needed the assistance of each cameraman to set-up our cameras before every telecast . . . an operation taking one and one-half to two hours. Now the video operator can do the total job himself in about 12 minutes. Cameramen are free to do other jobs, such as setting up audio facilities and assembling our two 47's used on the field."

Quodomine adds, "With the diaspore in the lens and the automatics, the video operator just hits a button at the set-up terminal and the 47 goes through the complete set-up on its own." And, because the TK-47 covers more parameters (100 in all) than the video operator and cameraman can manually, "You're getting far more precise results. Video quality is far more consistent from telecast to telecast . . . far more

uniform from camera to camera. We've had comments from a number of ball clubs in the league as to the excellent quality of pictures we're airing from Shea Stadium."

WOR-TV has also found that the TK-47 memory files have challenged the changing lighting conditions inherent to outdoor production. Lighting settings are preset for games played at night . . . or day games where there's bright sunlight or overcast conditions. By simply selecting the appropriate memory file, the proper balance is set automatically . . . saving the video operator time and providing the precise setting for the lighting conditions encountered.

Reliability, consistently and uniformly superior pictures have convinced Quodomine that his TK-47 choice was right-on-the-money. He comments, "No, we're not happy with our 47's . . . we're very, very happy!"

This year WOR received the New York State Broadcasters Association's TV award for "Outstanding Telecast of a Local Sporting Event". In Quodomine's estimation it was the superior picture quality of the TK-47 and the expertise of WOR's technical staff that clinched the award for the station. He says proudly, "As an independent you like to feel you're providing video quality comparable to the networks'. From the feedback we're getting from various sources, we believe we are."

TR-800 NEWS UPDATE

WRGB, Schenectady, NY

"We have been increasingly aware that the future of commercial production at WRGB was in the retail area," remarks Charlie King, Manager of Operations for WRGB in Schenectady, New York. "We needed increased quality in recording and more sophistication in post-production. We realized that the TR-800 might be the answer to our need for better equipment."

With two TR-800's in use at WRGB, Charlie King reports a shift towards more mobile production and relying heavily on the TR-800's for post production. "Our first editing job on the TR-800's was for our annual Christmas special. The clients and station staff were very pleased with the results," says King. An interesting side note is that the location recording was done on three different brands of portable units. All tapes were edited on the TR-800's which are equipped with the integral TR-800 editing unit. Charlie King at WRGB states, "Our clients have become very interested in going almost exclusively to 1 inch as the best marriage between 3/4 inch portability and the 2 inch quality. You do encourage the local client, particularly the retailer, to come in to your shop and do your work with you. You can really be his consultant from start to finish." King concludes, "Our programming people are insisting on 1 inch quality and flexibility in their productions. Our promotional people are very intrigued with the flexibility of 1 inch. Our commercial clients have received it very favorably."



Charlie King (left) watches TR-800's in action

WEHT-TV, Evansville, Indiana



Elmer Chancellor, Director of Engineering for Gilmore Broadcasting/WEHT, and Earl Waitman, WEHT Director, at the station's new TR-800 installation

"Our local clients have been impressed with our TR-800's editing capabilities. The machines are convenient to use, the flexibility is very good, quality is very high, and we believe that clients should be very happy with the quality of work we can produce for them," says Elmer Chancellor, Director of Engineering for Gilmore Broadcasting Company/WEHT television.

WEHT is replacing its RCA quad VTR's, in service for sixteen years, with modern 1 inch machines. According to Chancellor, "We looked at the 1 inch market for quite some time before making a final decision. We believe that the RCA TR-800 with its micro-processor based control circuitry is the most modern machine on the market today. Our clients come to us for quality production work and we want to continue to maintain that image."

Earl Waitman, TV Director at the station finds that "being able to edit very accurately to the frame is something else that we're ecstatic about."

One of WEHT's two TR-800's is equipped with the Super Search Editor (SSE) option. Also micro-processor controlled, the SSE gives tape operators even more flexibility: nine independent search-to-cue points, modifiable edit point through the keyboard, a store-direct model to capture edit points on the fly, an out transfer mode, keyboard entry and playback VTR control. About SSE, Waitman says, "One tremendous

feature is search to cue . . . the ability to make that same edit on that very same frame any number of times, if it's not correct the first time."

Director of Engineering Chancellor concludes, "We wanted to make sure that the equipment we purchased was state of the art, that it would serve our clients, have flexibility, be functional, and efficient. We decided that the TR-800 was the machine that would fulfill our needs, now and for the future."

Built in historic Camden, New Jersey, U.S.A., RCA's TR-800 1 inch type C helical scan VTR's are now in service in many parts of the world. New TR-800 shipments include:

BTV-6, Ballarat, Australia
Continental Color
Recording, New York, NY
ECV, Enterprise ColorVideo,
Crows Nest, NSW,
Australia
Humphrey Video Service,
London, England
KUSI-TV, San Diego, CA
Northern TV, Auckland,
New Zealand
PTL (Praise The Lord),
Charlotte, NC
Swell Pictures, Chicago, IL
Union Carbide, Danbury, CT

RCA

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Stereo studio audio consoles. AM, FM transmitters; RF amps, AM stereo exciters, FM exciters, RF filters & loads, diplexers, stereo generators; FM SCA equipment; FM antennas, antenna tuning units; RF phasing network.

SEE AD PG. 144

Field Offices:

- AL Dave Hultsman, 2280 Rockcreek Trail, Birmingham 35226 205 822-1078
- CA Steve Keating, 7225 Hollywood Blvd., Suite 105, Hollywood 90046 213 851-6380
- IL John Abdnour, Box 575, Streator 61364 815 672-8585
- MN Jim Littlejohn, 670 North Branch Rd., Maple Plain 55359 612 479-2633
- MO Lloyd Collins, Route 3, Box 106, Holts Summit 65043 . 314 896-5791/5365
- NH Mark Hutchins, Box 13, Greenland 03840 603 436-4059
- NJ Keith Leach, Box 16, Newton 07860 201 383-8797
- OR Tom Cauthers, 1215 SE 73 Ave., Portland 97215 503 254-2818
- TN Ray Evans, Box 143, Alcoa 37701 615 970-2572
- TX Steve Schott, Box 2008, Plano 75075 214 423-3644

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305 753-0670

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617 426-3131

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2322 Davie Blvd., Ft. Lauderdale, FL 33312
800 327-4121

Relay & time insertion sequencers, computer automation controllers, complete radio program automations systems, auto time/weather announcers. Facility turnkey installations; engineering consultant; studio, set design. Distributor of full line audio & RF equipment.

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CONVERGENCE CORP. ★

1641 McGaw, Irvine, CA 92714
714 549-3746

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See ad pg. 97

COOL LIGHT CO., INC. ★

5723 Aukland Ave., N. Hollywood, CA 91601
213 761-6116

Lamps, lighting fixtures.

COOPER GROUP, ELECTRONICS DIV.

Box 728, Apex, NC 27502
919 362-751

Tools.

COPPERWELD BIMETALLICS GROUP ★

Robinson Plaza Two, Pittsburgh, PA 15205
412 777-3000

Tower hardware, construction equipment.

CORPORATE COMMUNICATIONS ★

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516 737-0903

Telecine color correctors; field-by-field, videotape-to-videotape computerized color correctors & luminance compensators.

CORRELLI JACOBS FILM MUSIC

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212 586-6673

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COUNTRYMAN ASSOCIATES ★

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415 364-9988

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SEE AD PG. 194

COX DATA SERVICES ★

5600 Roswell Rd. NE, Suite 100 Prado N., Atlanta, GA 30342
404 256-5200

TV business automation hardware & software.



CREATIVE TECHNOLOGY, INC. ★

853 Copley Rd., Akron, OH 44320
216 535-5778

Studio & mobile teleproduction facilities; video post-production facility.

CRL SYSTEMS

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800 535-7648

AM & FM compressor/limiters, audio noise reduction.

CROSS COMMUNICATIONS CO.

934 Pearl, Suite B, Boulder, CO 80302
303 499-8888

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CROSSPOINT LATCH CORP. ★

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201 688-1510

Portable, compact, large & automated video production switchers, post-production switchers; RGB & encoded chromakeyers, downstream keyers; sync, black burst & color bar generators. Mic mixers, automated audio consoles; radio computer automation controllers.

SEE AD PG. 129

CROWN INTERNATIONAL, INC. ★

1718 W. Mishawaka Rd., Elkhart, IN 46517
219 294-5571

Audio preamps, line, monitor, power & dist. amps; parametric & graphic equalizers; computer automation controllers; Pressure Zone (PZM) mics.

CSI ELECTRONICS, INC.

18248 E. Rogers Cir., Boca Raton, FL 33431
305 994-6511

AM & FM transmitters; status & alarm indicators; stereo & SCA generators.

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203 Airport Rd., Doylestown, PA 18901
215 345-7386

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Box 67, Reedsport, OR 97467
503 271-3684

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12113 Johnson Dr. Shawnee, KS 66216
913 631-5707

Catalog of broadcast equipment.

DATA COMMUNICATIONS CORP. (BIAS) ★

3000 Directors Row, Memphis, TN 38131
901 345-3544

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SEE AD PG. 177

DATAMETRICS-DRESSER

340 Fordham Rd., Wilmington, MA 01887
617 658-5410

SMPTE time code readers, generators.

DATA PRECISION CORP.

Electronics Ave., Danvers, MA 01923
617 777-1401

Waveform analyzers; dc voltage standards; voltmeters, multimeters, capacitance meters, ohm meters; thermometers.

DATATEK CORP. ★

1121 Bristol Rd., Mountainside, NJ 07092
201 654-8100

Audio preamps, line, monitor & power amps, DAs. Serial interface video routing switchers; serial interface machine control; black burst generators; pulse amps, video DAs.

SEE AD PG. 51

Refer to Reps/Distributors section

DATATRON, INC. ★

2942 Dow Ave., Tustin, CA 92680
714 554-9970

Video editor/controllers, multisource editors; SMPTE time code generators, readers, synchronizers; proprietary time code system.

embodying the unique feature of color field identification will provide for the economic implementation of an SCH timed facility as per RS170A, and eliminate the shift problems plaguing your match frame editing operations.

The SYNC PROC™ which combines a sync generator (master and slave capability) with a processing amplifier, contains additional options including VITS and VIRS, Video Source Identification, Blanking Width Verification, and Digital Remote Control.

Through the use of data bus, and multiplexing, advanced digital/analog circuit design,



custom hybrid circuits, software microprocessors and system integration, Grumman is cost effectively applying its aerospace design and manufacturing capabilities to areas such as master control room systems, satellite transmission processing, and machine controls.

For more information write Marketing Department, MS A24-43, Grumman Aerospace Corporation, Bethpage, N.Y. 11714, or call (516) 435-6089.

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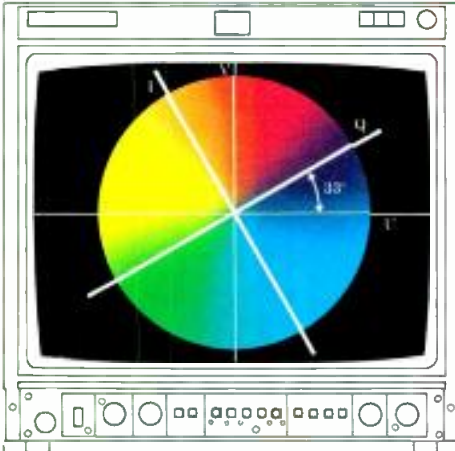
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- OPTIONS... Built-in color bar or cross hatch patterns. Built-in safe title marker generator. Multi-standards. RGB inputs.
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CORP. OF AMERICA

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914 632-1636

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SEE AD PG. 201

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212 586-6673

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408 727-9833

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SEE AD PG. 212

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717 824-1161

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416 499-4826

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SEE AD PG. 207

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220 E. 23 St., New York, NY 10010
212 532-6903

ENG production services, facilities.

DOLBY LABORATORIES ★

731 Sansome, San Francisco, CA 94111
415 392-0300

Audio noise reduction systems.

SEE AD PG. 113

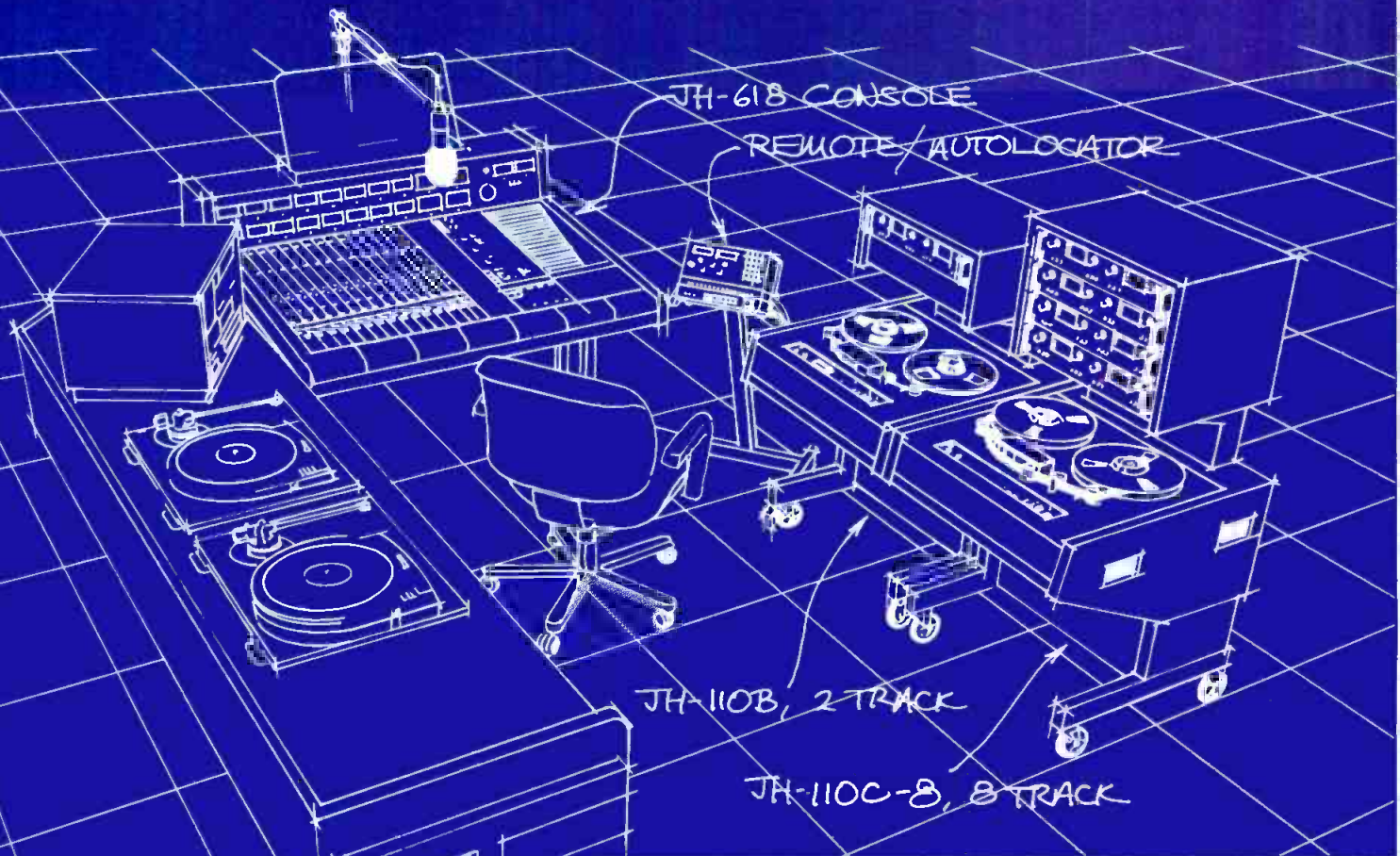
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213 883-7400
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DUART VIDEO ★
245 W. 55 St., New York, NY 10019
212 757-3681
Video post-production facility.

DUBNER COMPUTER SYSTEMS ★
158 Linwood Plaza, Fort Lee, NJ 07024
201 592-6500
Telicine color correctors; character generators; digital art/paint systems, bit pad & camera/VTR digitizers, weather symbol inserters; color correctors. Engineering consultant.
SEE AD PG. 17
Refer to Reps/Distributors section

VICTOR DUNCAN, INC. ★
2659 Fondren, Dallas, TX 75206
214 369-1165
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DUNCAN ELECTRONICS
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714 545-8261
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505 758-8686
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404 428-3100
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212 431-7453
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343 State St., Rochester, NY 14650
716 724-4000
Motion picture film, projectors, film processors.
SEE AD PG. 49

ECHOLAB, INC. ★
175 Bedford Rd., Burlington, MA 01803
617 273-1512
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916 662-7553
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EDCOR ★
16782 Hale Ave., Irvine, CA 92714
714 556-2740
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312 280-2200
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312 440-2360
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213 931-1821
Studio & mobile teleproduction facilities; video post-production facility.

EDITEL/NEW YORK ★
222 E. 44 St., New York, NY 10017
212 551-8400
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1601 E. Chestnut Ave., Santa Ana, CA 92701
714 835-6000
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EEG ENTERPRISES, INC.
1 Rome St., Farmingdale, NY 11735
516 293-7472
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EELA AUDIO ★
Box 786, Bremerton, WA 98310
800 426-6170
Mic mixers; portable, mono & stereo, & audio for TV mixing consoles.

EEV, INC. ★
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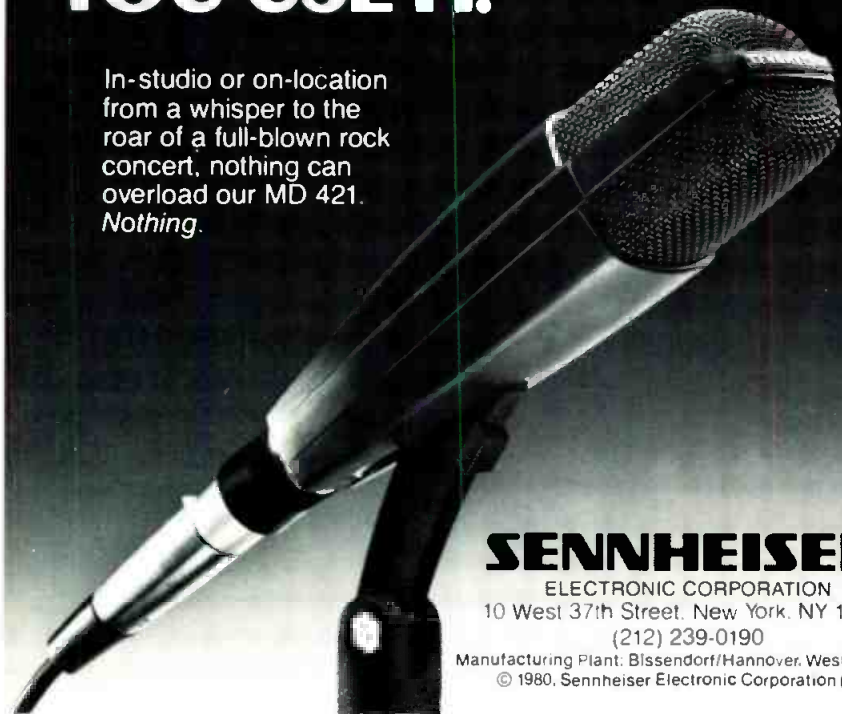
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The Schneider 14X is designed to bring out the best in Ampex, CEI, Fernseh, Hitachi, Ikegami, JVC, NEC, Panasonic, Philips, RCA, Sharp, Sony, Thomson and Toshiba $\frac{2}{3}$ " cameras. Lightweight, compact, ruggedly constructed, and weather resistant, it comes with a complete line of accessories. Superb European optics combined with excellent f/1.7 sensitivity bring back crisp, clear pictures even under low light level conditions.

In addition, Schneider offers the 14X lens in a $\frac{1}{2}$ -inch format for the new one-piece VCR cameras such as RCA Hawkeye, Panasonic and Sony. Schneider broadcast lenses are available throughout the United States and Canada from: **TELE-CINE CORP.**, 400 Crossways Park Drive, Woodbury, NY 11797; (516) 496-8500.

Schneider 14X ENG/EFP

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Electron Device Group
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San Carlos, California 94070
415-592-1221

Varian A.G.
Steinhauserstrasse
CH-6300 Zug, Switzerland
Tel: (042) 23 25 75
Telex: 78 841

EIMAC Cavity	Matching EIMAC Tube	Tuning Range (MHz)	Power Output
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CV-2220	3CX1500A7	86-108	1.5 kW
CV-2225	4CX3500A	86-108	5 kW
CV-2240	3CX10,000U7	54-88	10 kW†
CV-2250	3CX10,000U7	170-227	10 kW†
CV-2400	8874	420-450	300/1250 W*
CV-2800	3CX400U7	850-970	225 W
CV-2810	3CX400U7	910-970	190 W

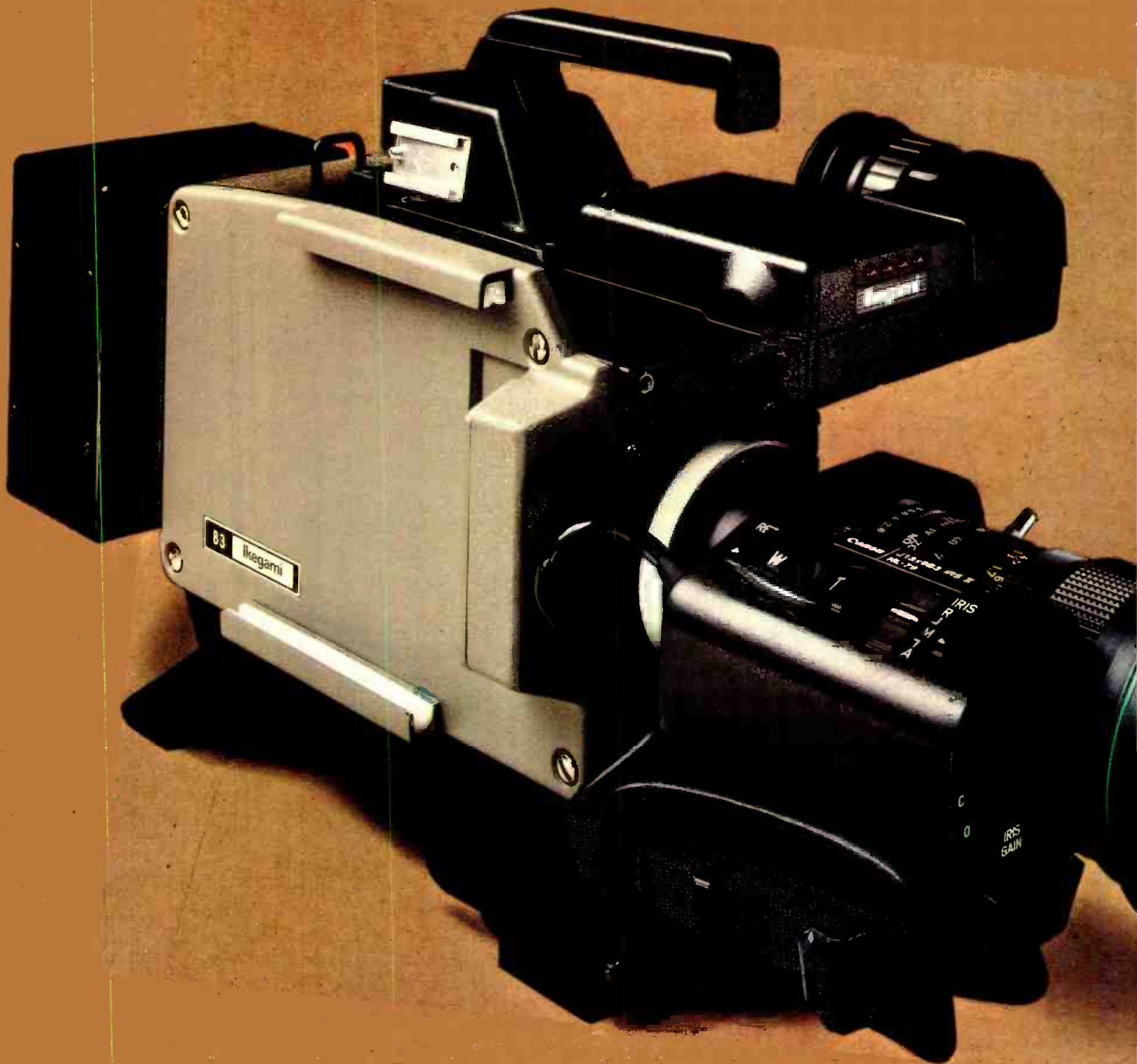
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varian

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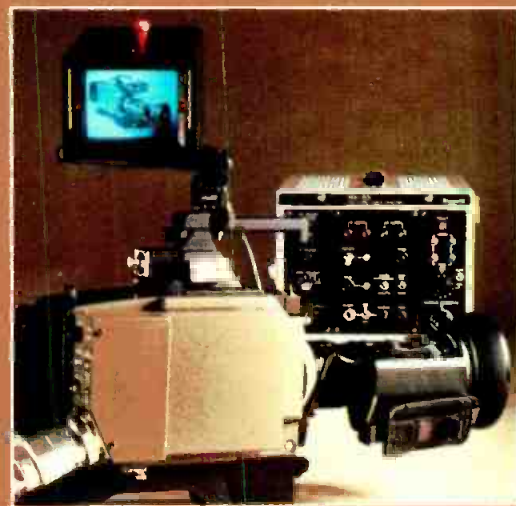
The HL-83 can easily adapt to your changing needs. For ENG there's direct interface to existing $\frac{3}{4}$ -inch VCR's. And with adaptor, there's interface to either on-board or hip-mounted component recording $\frac{1}{2}$ -inch high-speed VCR's.

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Put the HL-83 on your shoulder. You'll be amazed at how little it weighs. How well it handles. And how much picture it delivers. It's the compact top performer with a very bright future. Contact Ikegami for full details.



Ikegami HL-83

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 Atlanta 30341 404 451-0886
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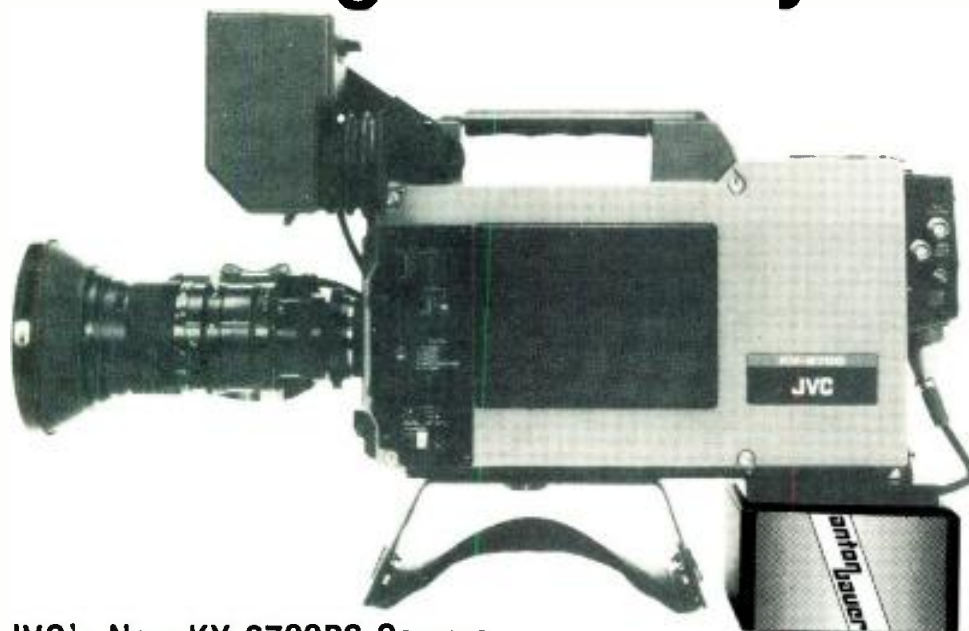


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Behind every great camera is a great battery



JVC's New KY-2700PS Camera

The JVC new KY-2700PS combines technology and economy in a 3 tube saticon camera that stands alone in the marketplace. With an impressive list of performance features including high sensitivity and resolution, lightweight (17 lbs. w/lens and viewfinder) handling, needle-sharp picture quality, a remote control unit for adaptation to any field or studio situation, plus a very economical price, it's easy to see why people in the know are calling JVC's KY-2700PS a great camera and a great value.

So it made sense that when JVC went looking for a battery good enough for its portable camera, they came to Anton/Bauer.

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The engineers who designed the JVC KY-2700PS demanded the best power source available. Keep a great battery behind your great camera. Ask for Anton/Bauer.

Anton/Bauer: The Source of Power



ANTON/BAUER, INC. One Controls Drive, Shelton, CT 06484 (203) 929-1100

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212 388-4114
19-inch equipment racks.

GLETRONIX (1977), LTD. ★
160 Duncan Mill Rd., Don Mills, Ont. M3B 1Z5, Canada
416 444-8497
Exclusive Canadian distributor of: Ross video switchers and special effects systems: Dynatech jackfields: Telcom Research time code generators, readers & synchronizers: Porta-Pattern test charts: CMC Technology head rebuilding program: Scientel sideband analyzers: Torpey clocks & timing systems.

GLOBAL COMMUNICATIONS & ENGINEERING
914 White Plains Rd., Trumbull, CT 06611
Facility turnkey installation: radio & TV studio design.

GLOBAL SPECIALTIES CORP.
70 Fulton Terrace, New Haven, CT 06509
203 624-3103
RF frequency counter: audio function generator: scope multiplexers.

G&M POWER PRODUCTS ★
6362 Santa Monica Blvd., Los Angeles, CA 90038
213 465-8236
Nicad & lead-acid batteries, chargers; ac power dividers; inverters, converters: monitoring devices, analyzers, condition monitors.

GOLDEN WEST VIDEOTAPE ★
5800 Sunset Blvd., Box 500, Los Angeles, CA 90028
213 460-5866
Studio & mobile teleproduction facilities: video post-production facility.

ALAN GORDON ENTERPRISES, INC. ★
1430 N. Cahuenga Blvd., Hollywood, CA 90028
213 466-3561
Distributor of cine production equipment: tripods: Swintek RF mics: director's viewfinder: NCE animation motors: film projectors: portable lighting; Elemack dollies. Supergrip camera support equipment.
SEE AD PG. 192

GORMAN-REDLICH MFG. CO. ★
6 Curtis St., Athens, OH 45701
614 593-3150
EBS two-tone systems: weather radios: antenna monitors: phase meters.

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AND STILL GOING STRONG!**

OVER ONE MILLION FEET OF COMMUNICATIONS TOWER CONSTRUCTION... WE'VE DONE IT!

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North Wales, PA 19454 U.S.A.
Phone: (215) 699-4871
TWX: 510-661-8097

CO182

Circle 161 on Reader Service Card

GOTHAM AUDIO CORP.

741 Washington St., New York, NY 10014
212 741-7411

Importer of portable consoles, mono, stereo & TV audio consoles; portable ATRs, 2,4-track & multitrack studio ATRs; turntables, pickup arms, phono cartridges, complete disc consoles; AM & FM compressor/limiters, digital delay & reverb, analog special effects & reverb, mechanical reverb, audio noise reduction; monitor speakers; electret/condenser & shotgun mics & mic supports; PPM & LED audio level indicators, video monitor display meters; wow & flutter meters.

GRAHAM-PATTEN SYSTEMS, INC. ★

Box 1960, Grass Valley, CA 95945
916 273-8412

Audio DAs, Title keyers, downstream keyers; video signal, cable equalizers; video pulse amps, DAs, SC amps. Facility turnkey installations.
SEE AD PG. 206

THE GRAPHIC EXPRESS CORP. ★

3678 Fourth St., San Diego, CA 92103
714 298-2834

Lighting design; studio, set design; newsgraphic slide service.

GRASIS CORP. ★

Box 1039, Kansas City, MO 64141
816 483-1100

Towers, masts, tower lighting; electronic equipment shelters.

THE GRASS VALLEY GROUP, INC. ★

Box 1114, Grass Valley, CA 95945
916 273-8421

Large studio, compact studio/mobile & automated production switchers, post-production switchers; digital video effects processors, RGB & encoded chromakeyers, title keyers, downstream keyers; manual & automated master control switchers; parallel & serial interface machine control systems; sync, black burst generators; video proc amps, pulse amps, DAs, SC amps; sch phase monitor.

GRAY ENGINEERING LABS, INC. ★

504 W. Chapman Ave., Ste. P, Orange, CA 92668
714 997-4151

SMPTÉ time code generators, readers; safe title area generators.

SEE AD PG. 200

THE GREAT AMERICAN MARKET ★

Box 178, Woodland Hills, CA 91364
213 883-8182

Lamps, HMI & quartz fixtures, lighting control boards, cyc lighting, lighting projection & special effects.

DAVID GREEN BROADCAST CONSULTANTS CORP.

Box 590, Leesburg, VA 22075
703 777-8660

Production equipment rentals & sales.

GREGG LABORATORIES

1542-A Moulton Pky., Tustin, CA 92680
714 730-1100

Mono & stereo studio audio consoles; phono preamps; ALC & AGC amps, AM & FM compressor/limiters, TV audio processor; telco interface equipment.

GRINNAN FIXTURE CO.

16041 Georgetown St. NE, Minerva, OH 44657

216 862-2323

Facility turnkey installations, engineering consultation, mobile vehicle construction, studio cabinets & furniture.

GROSH SCENIC STUDIOS

4114 Sunset Blvd., Hollywood, CA 90029
213 662-1134

Lighting stands, rigging; modular news & studio sets, scenery construction & rigging.

GROTON COMPUTER, INC. ★

19 Fort Hill Rd., Gratan, CT 06340
203 445-2325

Complete program automation systems, radio business automation hardware.

GROVE VIDEO

16851 Oakmont Ave., Gaithersburg, MD 20877

301 840-5801

Video animation controllers; character generators, character generator/framestores, digital graphics systems, camera/VTR digitizers; digital video effects processors.

GRUBER PRODUCTS CO.

Box 7350, Toledo, OH 43615
419 531-4900

Mobile ENG carts, projection tables.



GRUMMAN AEROSPACE CORP. ★

Sunrise Hwy., Great River, NY 11739
516 435-6001

Sync processing with switching; time code generators & readers; VITS remote control monitors; custom routing switchers; digital video frame syncs, color identification; video processing equipment, proc amp; RF test equipment; system research & development; antenna tuning units; 19-inch equipment racks; facility turnkey installation; mobile vehicle construction.

SEE AD PG. 81

Refer to Reps/Distributors section

GRUVER RECORDING & SERVICE CO. ★

Box 16, Perkasio, PA 18944
215 257-4460

Audio cassettes; audio post-production facility & recording studio; music library, syndicated radio programming & tower maintenance.

GTE LENKURT, INC.

1105 County Rd., San Carlos, CA 94070
415 595-3000

Intercity microwave equipment; RF program subcarrier; comm. & monitor receivers; microwave & telco STLs; transmit/receive, receive only satellite earth stations; fiberoptic video transmission systems; CATV transmission equipment.

GTE/SYLVANIA LIGHTING PRODUCTS ★

Sylvania Lighting Center, Danvers, MA 01923
617 777-1900

Quartz lamps.

HALLIKAINEN & FRIENDS, INC. ★

101 Suburban Rd., San Luis Obispo, CA 93401

805 541-0200

TV audio consoles; auto time, weather announcers. Remote control systems. Log printers; automatic transmitter logging & control.

HARDIGG INDUSTRIES, INC. ★

N. Main St., S. Deerfield, MA 01373
413 665-2163

Foam insert & rack configuration transportation cases.

HARRIS CORP., BROADCAST DIV. ★

Box 4290, Quincy, IL 62301
217 222-8200

Mic mixers; portable, stereo & mono studio & automated audio consoles; electronic audio editors; turntables; time insertion sequencers, complete program automation systems, auto time/weather announcers, radio business automation hardware & newsroom computers & word processing. ALC & AGC amps, AM & FM compressor/limiters. Studio, ENG/EFP & lightweight video cameras, solid state cameras; digital still stores; video editor/controllers; TBCs, frame synchronizers, framestores, TBC/framestores. Camera tripods, heads, pedestals, ENG braces, remote pan/tilt systems, helicopter rigs. AM, FM, UHF & VHF transmitters; AM, AM stereo, FM & TV exciters, stereo generators, modulators; transmit/receive, receive only & transportable satellite earth stations; intercity, portable ENG & airborne microwave, central receivers; remote control systems; remote pickup equipment; microwave & satellite STLs; FM & TV SCA equipment; AM, FM & TV (HP & CP) TV antennas; microwave, satellite dish & communications antennas, antenna tuning units; RF phasing network. Modulation monitors. Studio consoles. Engineering consultant; earth station site selection; mobile vehicle construction.
SEE AD PG. 53, 139

Field Offices:

CA 5839 Green Valley Circle, Ste. 200
Culver City, 90230 213 642-0052

NY 675 3rd Ave.,
New York, NY 10017 212 986-7600

TX 7000 Regency Square Blvd., Ste. 200
Houston 77036 713 977-2411

CN 3452 Ashby St., Ville St. Laurent,
Quebec H4R 2C1 514 336-0900

CN 19 Lesmill Rd., Don Mills,
Ont. M3B 2T3 416 441-2400

HARRIS CORP., BROADCAST MICROWAVE ★

1680 Bayport Ave., San Carlos, CA 94070
415 595-3500

Intercity, portable ENG & airborne microwave, central receivers; microwave STLs.

HARRIS CORP. SATELLITE COMM. DIV. ★

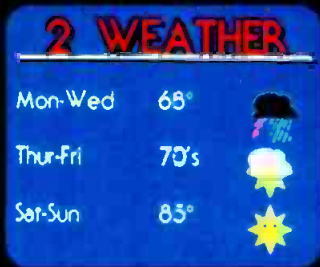
Box 1700 Melbourne, FL 32901
305 724-3000

Transmit/receive & receive only satellite earth stations.

HARRIS CORP., SATELLITE COMM. DIV., ANTENNA OP. ★

Box 1277, Kilgore, TX 75662
214 984-0555

Transmit/receive, receive only & transportable satellite earth stations.



Keyboard Logo Compose.



Character Reduction.



Left/Right Italics.



Dual Channel.



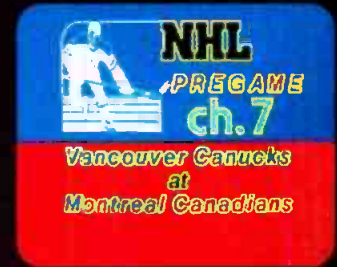
Mirror Image.



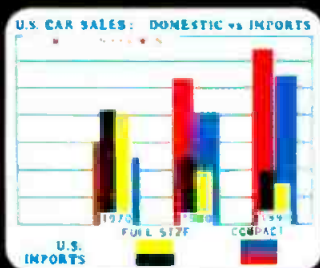
Character Reversal.



Auto Camera Compose.



Sports Logos.



Business Statistics.

Candidate	Party	Count	Percentage
Helmes	D	6,000	60%
Roberts	R	3,000	30%
Peoples	I	1,000	10%

Computer Interface.



Background Figures.



Character Outlining.

When you own a D-8800,
it's easy to show off.

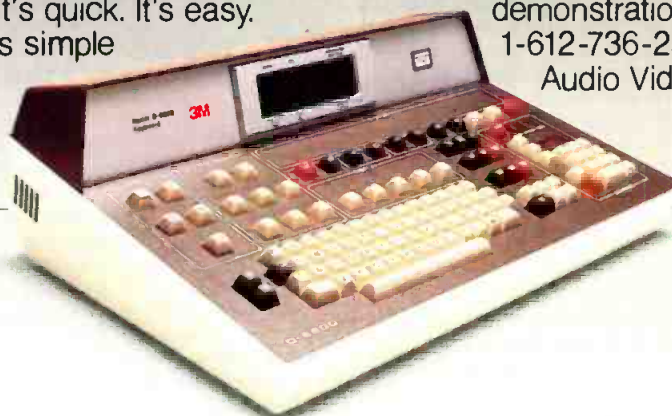
With the 3M D-8800 Graphics Generator, you can do all this and more. It gives you ten roll and crawl speeds. Hundreds of fonts. Eight mask positions. Automatic centering, both horizontally and vertically. Generous storage capabilities. And the dynamics of animation. All without any add-ons.

Yet with all its capabilities, you don't need special training to run it. It's quick. It's easy. The keyboard language is simple English. And our optional

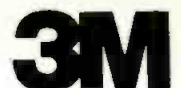
System Diagnostics package keeps your maintenance simple, too.

So give your productions the look of the top professionals. Show off with the D-8800.

All photos above are taken from actual TV monitors. If you'd like to see for yourself, call us collect at 1-612-733-8132 for a free demonstration. Outside the U.S., call 1-612-736-2549. Professional Audio Video Equipment/3M.



3M hears you...



HARRIS VIDEO SYSTEMS ★

1255 E. Arques Ave., Sunnyvale, CA 94086
408 737-2100

Digital still stores; video editor/controllers; TBCs, frame synchronizers, TBC/framestores.
SEE AD PG. 69

Field Offices:

- AL Robert Ridge, Box 229,
Hazel Green 35750..... 205 828-3508
- IA Clay Selthun, 1421 W. 1st St.,
Pella 50315..... 515 628-9389
- MA Aaron Snyder, 1443 Beacon St.,
Brookline 22146..... 617 232-6545

HARRISON SYSTEMS, INC. ★

Box 22964, Nashville, TN 37202
615 834-1184

Portable, mono & stereo studio, automated & audio for TV mixing consoles; complete radio program automation systems; graphic equalizers; VU, PPM, video monitor display & LED audio level indicators.

SEE AD PG. 7

Refer to Reps/Distributors section

HARWOOD MFG. CO.

1800 W. Fullerton, Chicago, IL 60614
312 929-1100

Photographic & electronic lighting equipment; portable lighting.



HAWAII PRODUCTION CENTER ★

1534 Kapiolani Blvd., Honolulu, HI 96814
808 944-5200

Studio & mobile teleproduction facilities; video post-production facility.

H.B.O. STUDIOS ★

120-A E. 23 St., New York, NY 10010
212 477-8600

Teleproduction & post-production facilities.

HEATH CO.

Benton Harbor, MI 49022
616 982-3200

Audio preamps, monitor & power amps; LED audio level indicators; frequency monitors, harmonic distortion meters, oscilloscopes, vectorscopes, voltmeters, dB meters; computer systems including digital weather system; video projectors.

HEDCO (HUGHES ELECTRONIC DEVICES CORP.) ★

Box 1985, Grass Valley, CA 95945
916 273-9524

Audio line amps, DAs; audio routing switchers. Parallel & serial interface video routing switchers; video signal, cable equalizers; video pulse amps, DAs & SC amps; return loss bridges; terminations.

SEE AD PG. 190

Refer to Reps/Distributors section

KARL HEITZ, INC. ★

979 Third Ave., New York, NY 10022
212 421-5220

Tripods, heads, dollies; lighting stands & rigging.

HEWLETT-PACKARD CO. ★

1501 Page Mill Rd., Palo Alto, CA 94304
415 857-1501

Automated test & measuring systems; diff. phase/gain measurement; frequency monitors & counters; audio & RF generators; impedance bridges; logic analyzers, modulation monitors, oscilloscopes, phase meters, sideband analyzers, spectrum analyzers, voltmeters, multimeters, dB meters; TV & computer equipment; audio preamps & line amps.

HF SIGNALLING, INC. ★

3101 Mercier, Box 17510, Kansas City, MO 64130

816 931-4448

Audio test signal generators, harmonic distortion meters; voltmeters.

HICKOK ELECTRICAL INSTRUMENTS CO. ★

10514 DuPont Ave., Cleveland, OH 44108
216 541-8060

Video test signal generators; oscilloscopes, multimeters, logic analyzers.

HIPOTRONICS ★

Drawer A, Rt. 22, Brewster, NY 10509
914 279-8091

High-voltage power supplies & test equipment; variable transformers; voltage regulators.

SEE AD PG. 200

Refer to Reps/Distributors section.

HITACHI DENSHI AMERICA, LTD. ★

175 Crossways Park W., Woodbury, NY 11797

516 921-7200

Studio, field, ENG/EFP, lightweight, single-tube, single-piece, b&w & solid state cameras; one-inch C VTRs, pro VHS VCRs; VTR slow-mo controller; telecine cameras; TBCs; monochrome & RGB monitors.

SEE AD PG. 156

Refer to Reps/Distributors section

HM ELECTRONICS, INC. ★

6151 Fairmount Ave., San Diego, CA 92120
714 280-6050

RF intercoms; RF mics.

HOWE AUDIO MARKETING

3085-A Bluff St., Boulder, CO 80301
800 525-7520

Mic mixers; stereo, automated & TV audio consoles; stereo phase corrector; telco interface equipment.

HSC, INC. ★

2211 Oakton St., Unit 10, Arlington Heights, IL 60005

312 956-7280

Studio furniture, studio consoles, 19-inch equipment racks; custom rack-mounting hardware for video equipment. Engineering consultant; mobile vehicle construction.

HUGHES HELICOPTERS, INC. ★

5320 Arizona Circle, Los Angeles, CA 90045
213 305-5000

Broadcast-equipped helicopters.

HUGHES MICROWAVE COMM. PRODUCTS ★

Box 2999, Torrance, Ca 90509
213 517-6233

Receive only satellite earth stations; intercity microwave; microwave STLs; satellite dish antennas.

HUGHEY & PHILLIPS, INC. ★

Box 6729, Burbank, CA 91510
213 849-1104

Tower lighting; transformers.

IDEAL INDUSTRIES, INC.

Becker Pl., Sycamore, IL 60178
815 895-5181

Dimmer packs; lighting, ac cable; connectors, tools.

IGM COMMUNICATIONS ★

4041 Home Rd., Bellingham, WA 98226
206 733-4567

Complete automation systems; time insertion sequencers; computer/microprocessor automation controllers; auto time/weather announcers; audio cart player/recorders; audio distribution equipment.

SEE AD PG. 202

IKEGAMI ELECTRONICS (U.S.A.), INC. ★

37 Brook Ave., Maywood, NJ 07607
201 368-9171

Studio, field, ENG/EFP, single piece & monochrome cameras; CCUs, lenses, pickup tubes, camera accessories; telecine cameras & color connectors; monochrome, NTSC & RGB video monitors.

SEE AD PG. 32,90-91

Field Offices:

- CA 3445 Kashiwa St.,
Torrance 90505..... 213 534-0050
- FL 6201 Johns Rd., Ste. 5,
Tampa 33614..... 813 884-2046
- MO 12623 Woody Grove Dr.,
St. Louis 63141..... 314 878-6290
- TX 330 N. Belt E., Ste. 228,
Houston 77060..... 713 445-0100

IMAGE DEVICES INTERNATIONAL

1825 NE 149 St., Miami, FL 33181
305 945-1111

Video & cine, lighting & grip equipment rentals; camera cranes & generators; underwater cameras & lights; portable audio mixer; cassette player/recorders; electret/condenser mics.

IMAGE MAGNIFICATION, INC. ★

739 Airway Circle, New Smyrna Beach, FL 32069

904 427-5294

Video projectors.

IMAGE RESOURCE CORP. ★

2260 Townsgate Rd., Westlake Village, CA 91361

805 496-3317

Color film recorder (Videoprint).

IMAGE RESOURCES, INC. ★

801 S. Orlando Ave., Winter Park, FL 32789
305 645-4200

Studio & mobile teleproduction facilities; video post-production facility.

IMAGE TRANSFORM, INC. ★

4142 Lankershim Blvd., N. Hollywood, CA 91602

213 985-7566

Video post-production facility; film laboratory; tape-to-film transfers & standards conversions.

20

VTR

ON



CRUISE



Modern art.

The science of video production is certainly modern art. There is no better example of the human ability to combine imagination with technology and experience to change the way we communicate.

Convergence Corporation is an integral part of the video revolution. We make the best video editing systems money can buy. And yet, it's surprising how little it costs to own the best.

But there's something about Convergence editing systems that's even more important than quality and price. And that's the way they perform. They're designed to be operated by people - not computers. They don't get in the way of the creative process, but actually make

it easier to combine skill and imagination to produce a finished product that's a thing of beauty.

Convergence Corporation. The modern art of video editing systems.



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We stand out from the crowd.

Thanks to the unique design of the patented Beau pancake motor, our Type 100 Recorder/Reproducer gives you *space* economy (it's only 3 5/8" high and stackable) and *power* economy, too. Also cool-running and compact, there's the inexpensive Beaucart II Reproducer.

Simple design means greater efficiency. Our versatile Model SFE-1 Automatic Splice Finder and Bulk Eraser combines *two* machines in *one*.

A common-sense approach makes Beau-Master Stereo Console and its companion Beau-Pro easy to operate—with the performance you demand.

Simple functional design makes UMC stand out from the crowd.



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North Haven, Connecticut 06473
Phone (203) 288-7731

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Outside Connecticut, toll free, (800) 243-6178

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CINE 60 SUN-GUN

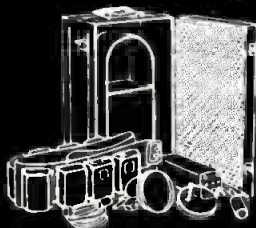
Beautifully Simple

Beautiful . . . because it's fresnel-soft and uniform — ideal for video. And simple because . . . if 250 Watts is too much, change to 150 Watts. Need more? Go to 350 Watts. Want to go really light? Use 100 Watts (12V.). Outdoors, swing-in the built-on Daylight Filter. You color correct instantly! Indoors, swing away the Filter and you have tungsten light! Never a need to readjust camera color controls here! For focus, vary the beam from 8 to 14 Ft. For power, choose from 20 Sun-Gun Powerbelts and Powerpaks. And, to make it beautifully simple . . . we put it all together for you in any one of 17 Portable Sun-Gun Kits. See your dealer or send for data, today.



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MANUFACTURERS

IMAGE VIDEO

705 Progress Ave., Unit 46, Scarborough, Ont. M1H 2X1, Canada
416 438-3940

Manual, automated & business automation interfaced master control switchers; parallel & serial interface routing switchers; parallel & serial interface machine control; video DAs.

INDUSTRIAL RESEARCH PRODUCTS, INC.

321 N. Bond St., Elk Grove Village, IL 60004
312 439-3600

Digital audio special effects; audio/video sync delay; automatic mic mixers.

INDUSTRIAL SCIENCES, INC.

3521 SW 42 Ave., Box 1495, Gainesville, FL 32608

800 874-7590

Portable, large studio, compact studio/mobile & automated video production switchers; post-production switchers; standalone effects generators; RGB & encoded chromakeyers, downstream keyers; manual & automated master control switchers; parallel & serial interface routing switchers; sync, black burst & color bar generators; video proc amps, pulse amps, DAs, SC amps; telecine light control. Mono audio mixing consoles.

SEE AD PG. 160



INFLIGHT SERVICES, INC.

485 Madison Ave., New York, NY 10022
212 751-1800

Large-screen video projection system.

INFORMATION PROCESSING SYSTEMS OF CALIFORNIA, INC.

70 Glenn Way, Ste. 2, Belmont, CA 94002
415 592-1742

TV weather satellite recorders: color graphics system.

INMARK CORP.

147 W. Cedar St., Norwalk, CT 06854
203 866-8474

High vacuum capacitors.

INNOVATIVE TELEVISION EQUIPMENT (ITE)

Box 681, Woodland Hills, CA 91365
213 888-9421

Camera heads, tripods, dollies, ENG braces, pedestals; microwave support & portable equipment.

INOVONICS, INC.

503-B Vandell Way, Campbell, CA 95008
408 374-8300

Audio recorder replacement electronics, ATR tape tension servo kit; ALC & AGC amps, AM & FM compressor/limiters; noise reduction systems; PPM meters. Spectrum analyzers.

SEE AD PG. 110

MANUFACTURERS

INSTANT REPLAY VIDEO PRODUCTIONS ★

1349 E. McMillan St., Cincinnati, OH 45206
513 861-7065
Teleproduction facility; video post-production facility.

INTEGRATED SOUND SYSTEMS ★

29-50 Northern Blvd., Long Island City, NY 11101
212 729-8400
Time compression/expansion; graphic equalizers; stereo audio consoles; turntables & complete disc consoles; monitor speakers; dynamic, electret/condenser & shotgun mics; monitor & power amps.

INTERACTIVE SYSTEMS CO. ★

2425 6 St., Boulder, CO 80302
303 443-0305
SMPTE & proprietary time code generators, readers & synchronizers.

INTERAND CORP. ★

666 N. Lake Shore Dr., Suite 1100, Chicago, IL 60611
312 943-1200
Video animation controller; digital art/paint systems, bit pad digitizers, weather symbol inserter, "draw-on-screen" systems; digital effects processors, standalone effects generators, colorizers.

INTERFACE DATA SYSTEMS, INC. ★

2990 E. La Jolla St., Anaheim, CA 92806
714 630-8030
Complete program automation systems, time insertion sequencers, computer automation controllers, radio business automation hardware, radio newsroom computers.

INTERFACE ELECTRONICS

6710 Alder, Houston, TX 77081
713 660-0100
Portable audio consoles.

INTERFACE VIDEO SYSTEMS, INC. ★

1333 New Hampshire Ave. NW, Washington, DC
202 861-0500
Teleproduction & post-production facilities.

INTERNATIONAL ELECTRO-MAGNETICS ★

350 N. Eric Dr., Palatine, IL 60067
312 358-4622
Replacement & rebuilt audio & video heads; graphic equalizers.

INTERNATIONAL INSTRUMENTS, DIV. SIGMA ★

88 Marsh Hill Rd., Orange, CT 06477
203 795-4711
Voltmeters, dB meters.

INTERNATIONAL MICROWAVE CORP.

33 River Rd., Cos Cob, CT 06807
203 661-6277
Intercity, portable & ENG microwave equipment; RF program subcarrier, RF amps; microwave STLs; AM & FM transmitters.

INTERNATIONAL NUCLEAR CORP.

608 Norris Ave., Nashville, TN 37204
615 254-3365
Audio preamps, line, monitor & power amps, amp power supplies; audio DAs; EBS two-tone

systems. Portable, large studio, compact studio/mobile & automated production switchers; post-production switchers; standalone video effects generators, colorizers, RGB & encoded chromakeyers, downstream keyers; manual & automated master control switchers; parallel & serial interface routing switchers; black burst generators; video signal, cable equalizers; video proc amps, pulse amps, DAs, SC amps.

INTERNATIONAL PRODUCTION CENTER ★

514 W. 57 St., New York, NY 10019
800 223-0622
Teleproduction facility; video post-production facility.

INTERNATIONAL TAPETRONICS CORP./3M ★

2425 S. Main St., Bloomington, IL 61701
309 828-1381
Single-deck, dual/triple-deck & time delay audio cart player/recorders; 2,4-track studio ATRs; audio carts.
SEE AD PG. 77

ITI ELECTRONICS, INC. ★

369 Lexington Ave., Clifton, NJ 07011
201 546-3900
Audio preamps, line, monitor & power amps, amp power supplies.

ITT JENNINGS ★

970 McLaughlin Ave., San Jose, CA 95122
408 292-4025
RF switches; voltmeters.

IVIE ELECTRONICS ★

500 W. 1200 South, Orem, UT 84057
801 224-1800
Graphic equalizers, digital audio delay & reverb; audio preamps, monitor & power amps. Audio test signal generators, spectrum analyzers.

JAM CREATIVE PRODUCTIONS, INC. ★

4631 Insurance Ln., Dallas, TX 75205
214 526-7080
Recording studio; music library; station ID jingle packages.

JAMIESON & ASSOC., INC. ★

4130 IDS Tower, Minneapolis, MN 55402
612 333-4581
Radio & TV station design; facility turnkey installations; engineering consultant; studio, set design.

THE JANSON INDUSTRIES ★

1200 Garfield Ave., SW, Canton, OH 44706
216 455-7029
Scenery construction; scenery & rigging, props & materials; cycloramas.

JATEX, INC. ★

2626 Freewood Dr., Dallas, TX 75220
214 358-0200
Video & audio editing systems; SMPTE and proprietary time code generators & readers.

JAVELIN ELECTRONICS, INC.

19831 Magellan Dr., Torrance, CA 90502
213 327-7440
Monochrome video cameras; camera lenses & extenders; monochrome picture monitors; video DAs; remote pan & tilt systems; time lapse video action recorders; video source ID systems; modulators.



The Lowel Omni and Lowel Tota lights have very different personalities. But they complement each other

so brilliantly that they even share many of the same components. Every Tota accessory functions equally well with the Omni-light.

As a result, you will have less equipment to purchase, less to lug on location, and more lighting options when you get there.

In addition to seven Tota and Omni-light kits, we have four combined Tota/Omni kits or, you can create your own unique kit.

These uncommon lights, and kits, share something else in common—countless professionals who love them.

For information on equipment, kits and authorized dealers, contact Lowel-Light Manufacturing, Inc. 475 Tenth Ave. New York, N.Y. 10018. 212-947-0950. Or Lowel West, 3407 West Olive Ave. Burbank, California 91505. 213-846-7740.


lowel®

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JEFFERSON DATA SYSTEMS ★
Executive Plaza, 501 Archdale Dr., Charlotte, NC 28210
704 525-3901
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JEFFERSON PRODUCTIONS ★
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704 374-3823
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JENEL CONSULTANTS CORP.
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602 968-6241
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JENSEN TRANSFORMERS ★
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213 876-0059
Transformers.



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305 339-2111
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E.M. JOHNSON & ASSOC., INC. ★
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615 521-6464
Engineering consultant.

JONES TELEVISION PRODUCTION, INC. ★
517 Chester St., Little Rock, AR 72201
501 372-4285
Studio & mobile teleproduction facilities; video post-production facility.

JRF CO., INC. ★
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201 398-7426
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J.S.L. VIDEO SERVICES, INC. ★
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212 575-5802
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JVC CO. OF AMERICA ★
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SEE AD PG. 85

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KAITRONICS CORP. ★
1540 Gilbreth Rd., Burlingame, CA 94010
415 697-9102
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KALAMUSIC ★
151 S. Rose St., Suite 600, Kalamazoo, MI 49007
616 385-5110
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KALART VICTOR CORP. ★
Hultenius St., Plainville, CT 06062
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303 599-1601
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KANSAS PUBLIC TELECOMMUNICATIONS, INC. ★
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316 838-3090
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KAPPA NETWORKS, INC. ★
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KARTES VIDEO COMMUNICATIONS, INC. ★
10 E. 106 St., Indianapolis, IN 46280
317 844-7403
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KAVCO, INC. ★
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513 898-2003
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KAVOURAS, INC. ★
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612 726-9515
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201 227-2000
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KB SYSTEMS
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206 355-8740

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K&H PRODUCTS, LTD. ★
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802 442-9118
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KHJ-TV
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KILOVAC CORP., DOW-KEY DIV. ★
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805 684-4560
RF switches.

KINGS ELECTRONICS ★
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714 375-2753
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KLARK-TEKNIK ELECTRONICS, INC. ★
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516 249-3660
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KLIEGL BROS. ★
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212 786-7474
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KLINE IRON & STEEL CO., INC.
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803 779-7080
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KNOX VIDEO PRODUCTS ★
5001-J Forbes Blvd., Lanham, MD 20706
301 459-2106
Character generators, colorizers; video proc. amps & DAs.

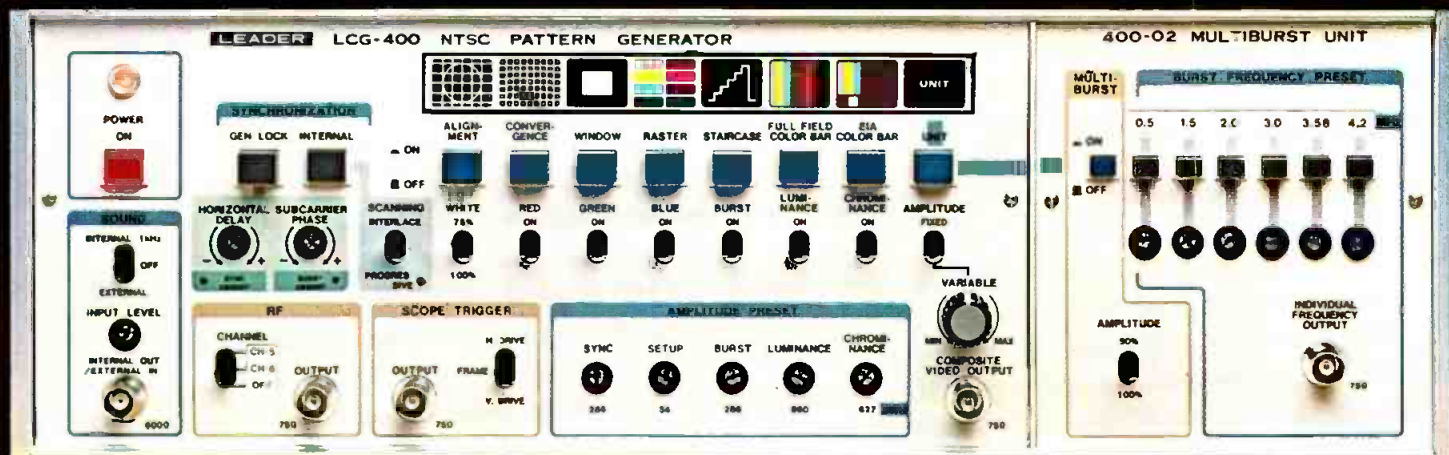
KOSS CORP.
4129 N. Port Washington St., Milwaukee, WI 53212
414 964-5000
Dynamic & electrostatic headphones, speakers; digital delay systems.

KOZIN INTERNATIONAL ★
836 Greenwood Ct., Carpentersville, IL 60110
312 428-2495
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500 8 St., San Francisco, CA 94103
415 553-2137
Studio & mobile teleproduction facilities; video post-production facility.

The Leader Sync/Test Generators.

Every important feature for under \$2,000.*

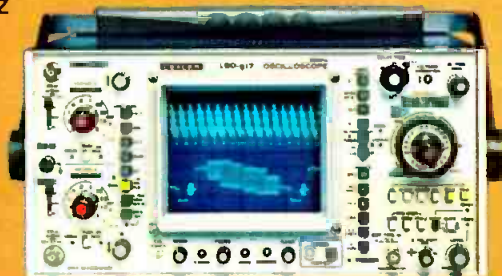


Precise NTSC sync/test pattern generators.

Leader's LCG-400 series sync/test generators provide accurate reference signals for any off-the-air broadcast or non-broadcast operation. Available in either multi-burst or sweep marker configurations, the LCG-400 provides EIA and full-field color bars as well as staircase, raster (in eight colors), window, convergence and cross-hatch test signals... plus gen-lock capabilities and a host of auxiliary outputs. As a matter of fact, Leader's sync/test generators do virtually everything the \$4,000 generators do... except cost as much.

A network-proven 50 MHz oscilloscope.

The Leader LBO-517 oscilloscope makes accurate and detailed measurements. It offers sensitivities of 1 mV to 10 MHz and 5 mV to 50 MHz. Two main and two auxiliary channels can be displayed on main and delayed time bases (8 traces) simultaneously while intensifying



LBO-517 50 MHz Oscilloscope. \$1695*

the delayed portion. Composite triggering provides *stable* viewing of two asynchronous inputs. Positive, stable triggering on composite video signals, at either H or V rates, is automatic. Leader's new dome-mesh 20 kV CRT assures bright, clearly defined displays, even at the highest or lowest sweep rates. All for under \$2,000.

The Leader Vectorscope is unique.

Only the Leader LVS-5850 NTSC Vectorscope offers CRT-generated phase/amplitude targets that are as bright and clear as the vectors themselves. Now you can easily verify NTSC Vectors in darkened control rooms. And, electronically generating the targets eliminates non-linearity errors caused by CRT aging. You can mount it in your existing console, view it from any angle



LVS-5850 NTSC Vectorscope. \$2050*

or distance, and be confident that what you see is what you've got.

Two-year warranty. Evaluation units.

A history of high reliability permits Leader to provide a generous two-year warranty (even on the CRT)... backed by factory service depots on the East and West Coasts. Evaluation units are

available to all qualified customers. Call toll-free (800) 645-5104 to request: an evaluation unit, our 1981/82 catalog, the name of your nearest "Select" distributor and additional information.

For video engineers who know the difference.

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Instruments Corporation

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Hauppauge, N.Y. 11788 (516) 231-6900
Regional Offices:
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405 478-1212
Studio & mobile teleproduction facilities; video post-production facility.

KVIE VIDEO ★
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916 929-5843
Studio & mobile teleproduction facilities; video post-production facility.

LAIRD TELEMEDIA ★
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801 972-5900
16/35mm telecine projectors, optical multiplexers; character generators.

LAKE SYSTEMS CORP. ★
55 Chapel St., Newton, MA 02160
617 244-6881
Video cart automation system.
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Refer to Reps/Distributors section

LANDY ASSOCIATES, INC.
1890 E. Marlton Pike, Cherry Hill, NJ 08003
609 424-4660
Equipment rental service; facility turnkey installations; engineering consultant; service & repair.

LANG VIDEO SYSTEMS CORP. ★
700 Warrington Ave., Redwood City, CA 94063
415 364-1287
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JAMES B. LANSING SOUND, INC. (JBL) ★
8500 Bolboa Blvd., Northridge, CA 91329
213 893-8411
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Field Office:
MI Tom Roseberry
3040 Charlevoix Dr. SE. #101
Grand Rapids 49506 616 455-6270
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LARCAN COMMUNICATIONS EQUIPMENT, INC. ★
396 Attwell Dr., Rexdale, Ont. M9W 5C3, Canada
416 675-7517
FM, UHF & VHF transmitters, translators; RF amplifiers, FM & TV exciters, diplexers; TV HP antennas; facility turnkey installations.

LAUDERDALE ELECTRONIC LABS
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305 764-7755
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LEADER BROADCAST SYSTEMS, INC. ★
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Canada
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chronizers, VU & PPM meters; Milab dynamic, electret/condenser, ribbon, RF, shotgun, lavalier & capsular mics, mic stands, booms & dollies. Distributor of full line of other audio equipment.
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380 Oser Ave., Hauppauge, NY 11788
516 231-6900
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LEAR SIEGLER, INC., BOGEN DIV.
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201 343-5700
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Field Offices:
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Culver City 90230 213 670-0461
CA 1155 Triton Dr.,
Foster City 94404 415 574-5797
CO 7338 S. Alton Way,
Englewood 80112 303 741-4900
GA 6320 McDonough Dr.,
Norcross 30093 404 449-6123
IL 755 Route 83,
Bensenville 60106 312 595-2700
MA 400 W. Cummings Park,
Woburn 01801 617 935-7780
MD 9246 Gaither Rd.,
Gaithersburg 20877 301 948-9700
NJ 6 Pearl Court,
Allendale 07401 201 825-9000
NY #3 Northern Concourse,
N. Syracuse 13212 315 455-5611
OH 6500 Poe Ave.,
Dayton 45414 513 898-1707
PA 701 Ashland Ave.,
Folcroft 19032 215 583-2000
TX 720 N. Post Oak Rd.,
Houston 77024 713 682-8920
VA 1 Koger Exec. Center,
Norfolk 23501 804 627-4411
WA 2865 152 Ave. N.E.,
Redmond 98052 206 883-6510

LEBLANC & ROYLE COMMUNICATIONS, INC.
514 Chartwell Rd., Box 880, Oakville, Ont. L6J 5C5, Canada
416 844-1242
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LECTROTECH, INC.
5810 N. Western Ave., Chicago, IL 60659
312 769-6262
Color picture monitors; oscilloscopes, vectorscopes, frequency monitors & counters.

LEE LIGHTING AMERICA, LTD. ★
534 W. 25 St., New York, NY 10001
212 691-1910
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LEE-RAY INDUSTRIES, INC. ★
38 E. 1 Ave., Mesa, AZ 85202
602 962-6806
Video equipment carriers.

LEITCH VIDEO, LTD. ★
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416 445-9640
Video sync, black burst, color bar, multiburst, staircase ramp, source ID & safe title area generators; video delay lines, video signal & cable equalizers; video proc amps, pulse amps, DAs & SC amps; monitor calibrators. Video test signal generators; sch phase monitor; digital clocks, master & slave clocks.

LEMO USA, INC. ★
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707 523-0600
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LENCO, INC., ELECTRONICS DIV. ★
300 N. Maryland St., Jackson, MO 63755
314 243-3147
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LENZAR OPTICS CORP.
1006 W. 15 St., Riviera Beach, FL 33403
305 844-0263
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LERRO ELECTRICAL CORP., COMM. SYSTEMS DIV. ★
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215 223-8200
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LEXICON, INC. ★
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LIBRA PROGRAMMING, INC.
1945 E. 7000 South, Salt Lake City, UT 84121
800 453-3827
Radio business & traffic automation hardware.

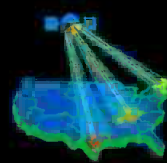
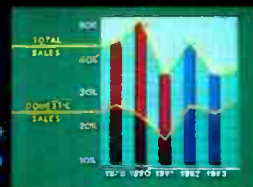
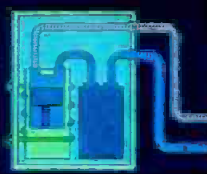
LIGHTNING ELIMINATION ASSOC. ★
12516 Lakeland Rd., Santa Fe Springs, CA 90670
213 944-0916
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Freedom of Expression



*The Aurora/100 digital videographic and animation system.
Creativity limited only by your imagination.*

Spacing SHADOW
FONT
ROTATE
ROTATE
STRETCH
Squash



The Aurora/100 is the most powerful television artist's tool ever developed. We've taken the time to do it right. In fact, our people pioneered in the design and application of digital videographic and animation systems starting in the early 70's.

The Aurora/100 was designed first and foremost to permit real artistic flexibility. It's not just an extended character generator but a complete graphic and animation system built from the ground up by creative people for creative people.

This is an extraordinarily powerful system. Yet it is simple to learn. Easy to use. And it requires absolutely no computer experience.

You will be amazed at the speed with which ideas and concepts can be transformed into exciting, colorful visual images.

The Aurora/100 features real-time animation, freehand painting, powerful graphic editing tools, character generation, video input and many other capabilities.

Digital videographics has come of age. Aurora systems are already in use in NTSC and SECAM broadcast, post production and industrial applications in the U.S., France, Japan and Canada.

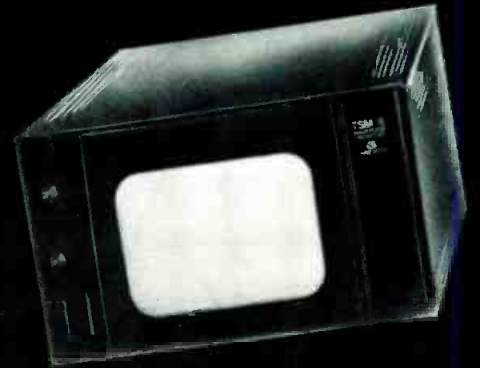
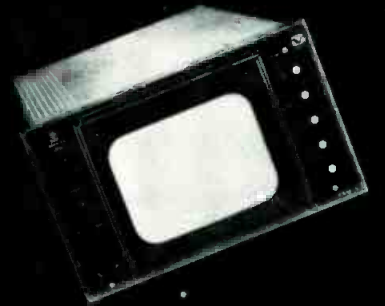
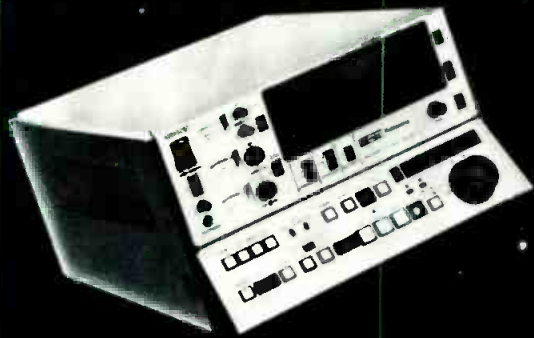
The Aurora/100. Limited only by your imagination.

AURORA 

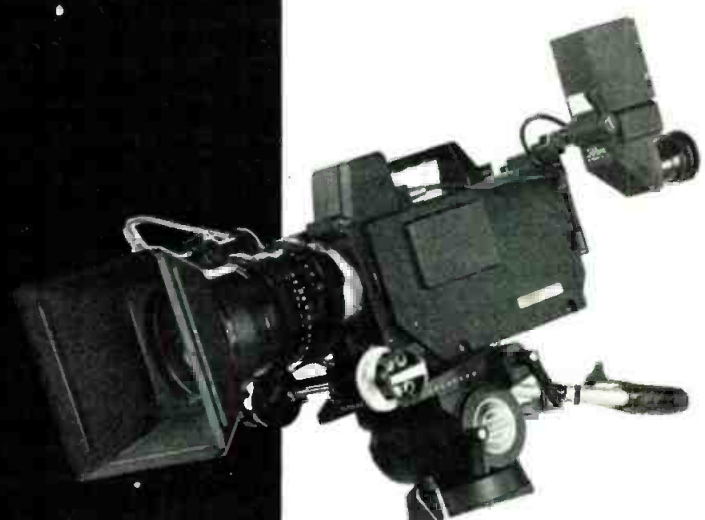
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THE NEW OF VIDEO.



WORLD



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At Camera Mart, we're keeping pace with the rapidly advancing science of video technology to give you the most sophisticated state-of-the-art equipment available.

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Videotek VSM-5 Vectorscope, Ikegami EC-35 Electronic
Cinematography Camera, Quantel DPE 5000 Digital
Effects System, Panasonic NV-8500 VHS Editing Recorder,
Microtime T-120 Time Base Corrector.*

The Camera Mart, Inc.

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Video Department: 800 Tenth Ave.

Sales • Service • Rental

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Audio power rewind; ultrasonic film cleaners; editing, production consoles.

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516 694-8963
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Refer to Reps/Distributors section

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213 462-3351
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LOGICA, INC. ★
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212 599-0828
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800 231-5870
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919 725-2306
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9020 Bolboa Ave., San Diego, CA 92123
714 278-4100
FM transmitters; intercity, portable ENG & airborne microwave; central microwave receivers; microwave & telco STLs; microwave antennas.

LOUISVILLE PRODUCTIONS ★
520 W. Chestnut St., Louisville, KY 40202
502 582-7744
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LOWEL-LIGHT MFG., INC. ★
475 10 Ave., New York, NY 10018
212 947-0950
Quartz lighting fixtures, location lighting kits; lighting stands & rigging, diffusion & efx material.
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Field Office:
CA Lowel-Light West, 3407 West Olive Ave., Burbank 91505 213 846-7740

LPB, INC. ★
28 Bacton Hill Rd., Frazer, PA 19355
215 644-1123
Mic mixers; mono, stereo & audio for TV mixing consoles; turntables, pickup arms; AM & FM compressor/limiters; audio DAs.
SEE AD PG. 197
Field Office:
CA Burden Assoc., 20944 Sherman Way, Ste. 216, Canoga Park 91303. 213 340-4590
Refer to Reps/Distributors section

LTM CORP. OF AMERICA
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Lamps; HMI, CSI & quartz fixtures; lighting stands & rigging; lighting control boards; cyc lighting. Nicad, silver-zinc & lead-acid batteries & chargers; inverters, converters; foam insert transportation cases. Lighting & ac cable, connectors. Mic mixers; mic stands, booms & dollies. Equipment rental service; stage, studio rentals; studio, set design.

L-W INTERNATIONAL ★
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213 348-8614
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LYON LAMB VIDEO ANIMATION ★
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213 655-0606
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3M CO., MAGNETIC AUDIO/VIDEO PRODUCTS DIV. ★
3M Center, St. Paul, MN 55144
612 736-1149
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SEE AD PG. 22-23
Refer to Reps/Distributors section

3M CO., MAGNETIC AUDIO/VIDEO PRODUCTS DIV. ★
3M Center, Bldg. 223-5E, St. Paul, MN 55144
612 733-7358
Fixed head, open-reel digital audio recorders.
Refer to Reps/Distributors section

3M CO., MAGNETIC AUDIO/VIDEO PRODUCTS DIV. ★
3M Center, Bldg. 223-5S, St. Paul, MN 55144
612 733-8132
One-inch C VTRs; VTR slow-mo controllers; character generators, camera/VTR digitizers; colorizers; parallel & serial interface routing switchers; serial interface machine control; sync, black burst & color bar generators; video proc amps. DAs.
SEE AD PG. 95, 169
Refer to Reps/Distributors section

MackENZIE LABORATORIES
5507 N. Peck Rd., Arcadia, CA 91066
213 579-0440
Single-deck, dual/triple-deck & multideck cart player/recorders.

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11717 Exploration Ln., Germantown, MD 20874
301 428-5500
Transmit/receive, receive only & transportable satellite earth stations.

M/A-COM LAND MOBILE COMMUNICATIONS CORP. ★
1362 Borregas Ave., Sunnyvale, CA 94086
408 734-4220
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M/A-COM OMNI SPECTRA, INC. ★
21 Continental Blvd., Merrimack, NH 03054
603 424-4111
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M/A-COM VIDEO SYSTEMS, INC. ★
63 Third Ave., Burlington, MA 01803
617 272-3000
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MAGNASYNC/MOVIOLA CORP. ★
5539 Riverton Ave., N. Hollywood, CA 91603
213 763-8441
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MAGNA-TECH ELECTRONIC CO., INC. ★
630 Ninth Ave., New York, NY 10036
212 586-7240
Sprocketed magnetic film transports, dubbers; film/video synchronizers.

MAGNECRAFT ELECTRIC CO.
5575 N. Lynch Ave., Chicago, IL 60630
312 282-5500
Coaxial & RF switches/relays.

MAGNETIC REFERENCE LAB ★
229 Polaris Ave., Ste. 4, Mountain View, CA 94043
415 965-8187
Audio test tapes.

MAGNUM TOWERS, INC. ★
9370 Elder Creek Rd., Sacramento, CA 95826
916 381-5053
AM antennas; towers & masts, tower hardware & construction equipment.

THE MANAGEMENT ★
Box T, Aledo, TX 76008
817 441-8045
Radio business automation systems.

MARATHON PRODUCTS CORP. ★
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617 853-0988
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408 438-4273
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Panasonic adds a new perspective to prism optics performance. Introducing the WV-777.

You expect great performance from a three-tube prism optics camera and that's just what you get with the Panasonic WV-777. But Panasonic knows it takes more than a great picture to make a great camera.

Take the WV-777's sleek, low-profile design and unique side-mounted hand grip. They give the cameraman a clear, unobstructed view that makes staying with the action easy.

The WV-777 is also easy to set up and operate because all critical controls are behind an easy-open side panel. You'll find hori-

zontal and vertical linearity, skew, centering, red and blue registration and more. For added precision, there are digital auto white and black circuits with memory.

The 1.5" di-optic electronic viewfinder is not only fully adjustable, it also includes indicators for battery warning, VTR tally and other key operating conditions.

With its magnesium die-cast chassis, the WV-777 combines light weight with strength to ensure a high level of performance over a long period of time. Its three Saticon® pickup tubes and middle index prism

produce 550 lines horizontal resolution and a S/N ratio of 55 dB at recommended illumination. And for easy serviceability, the WV-777 has modular plug-in fiberglass circuit boards.

The WV-777 has a -72dB mic input, a -20dB line input, 2 audio output levels, a snap-on AC adapter and battery case. And for studio use, there's also an optional 5" (meas diag) studio viewfinder, studio lens package and remote control unit.

But perhaps the Panasonic WV-777's most surprising element is its price, \$7,650*. So broaden your perspec-

tive and get the prism optics camera designed with the cameraman in mind. The Panasonic WV-777.

Saticon is a registered trademark of NHK (Japan Broadcasting Corp.)

*Manufacturer's suggested price.

Panasonic
VIDEO SYSTEMS DIVISION

For additional information on the new WV-777 mail to
Panasonic Industrial Company
Video Systems Division
One Panasonic Way
Secaucus, N.J. 07094

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(Please Print)
Company _____
Address _____
City _____
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BME-982

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SEE AD PG. 60

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415 854-5301

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213 686-0141

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MARSHALL ELECTRONIC ★
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817 645-9163

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SEE AD PG. 202

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IL 2250 East Devon Ave., Ste. 138, Des Plaines 60018 312 296-1010
NY John Selvaggio, 27 Thatcher Ave., Harrison 10522 914 835-1184
NY Joe Santangelo, Six Wellington Ct., Lake Ronkonkoma 11779. . . 516 981-8372

Refer to Reps/Distributors section

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SEE AD PG. 83

Field Office:

TN Nashville Commerce Mall, Ste. B9, 1717 Elm Hill Pike
Nashville 37210 615 366-0333

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415 856-6226

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SEE AD PG. 63

Refer to Reps/Distributors section

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714 621-6711

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McMARTIN INDUSTRIES, INC. ★
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402 331-2000

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SEE AD PG. 16

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214 352-3811

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603 624-4351

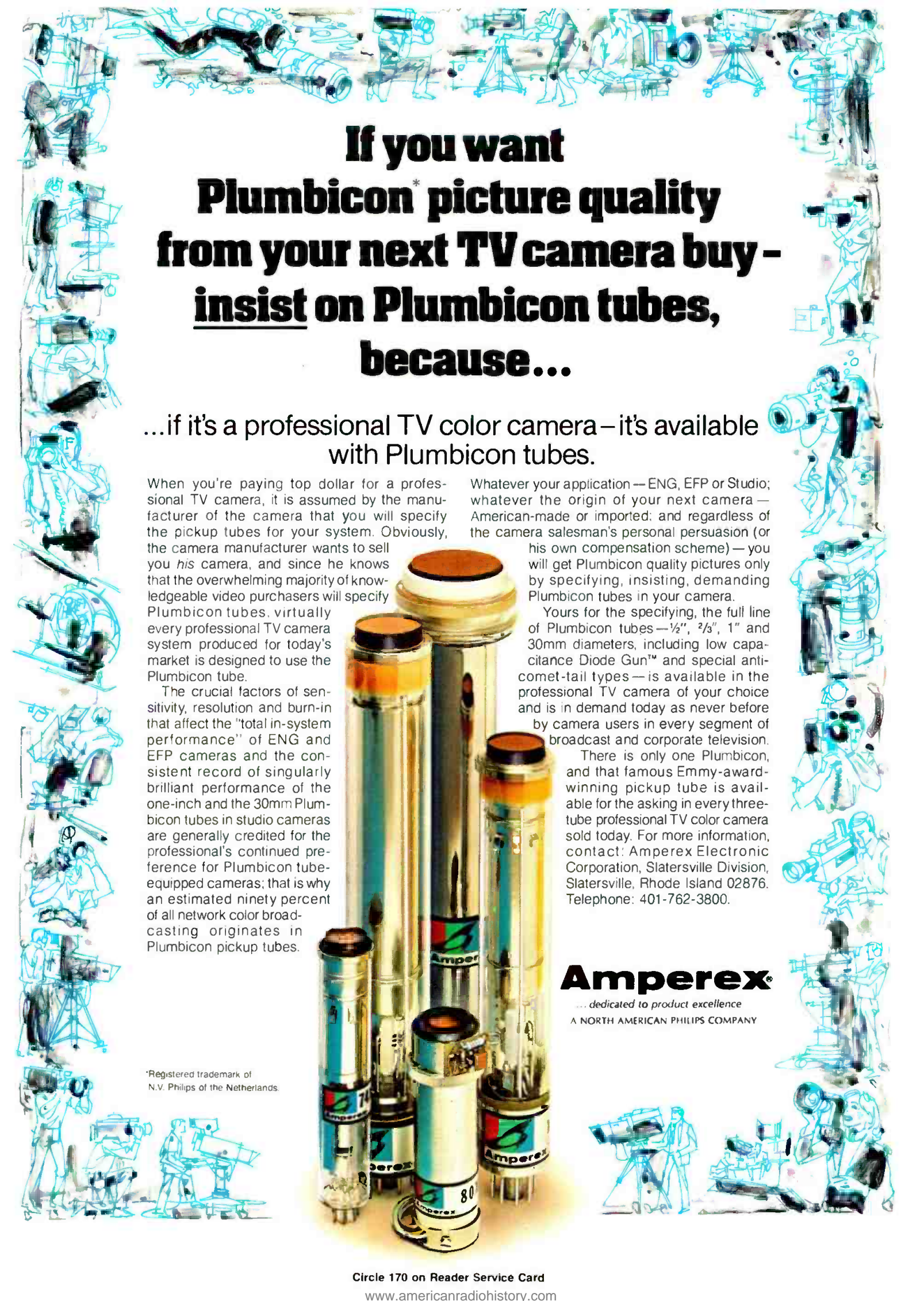
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904 687-4633

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Whatever your application - ENG, EFP or Studio; whatever the origin of your next camera - American-made or imported; and regardless of the camera salesman's personal persuasion (or his own compensation scheme) - you will get Plumbicon quality pictures only by specifying, insisting, demanding Plumbicon tubes in your camera.

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There is only one Plumbicon, and that famous Emmy-award-winning pickup tube is available for the asking in every three-tube professional TV color camera sold today. For more information, contact: Amperex Electronic Corporation, Slatersville Division, Slatersville, Rhode Island 02876. Telephone: 401-762-3800.

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Refer to Reps/Distributors section

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312 576-3591
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212 746-1100
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Refer to Reps/Distributors section

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SEE AD PG. 40,143
Refer to Reps/Distributors section



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*Outboard Dolby noise reduction units are available for use with virtually any other video or audio recorder.



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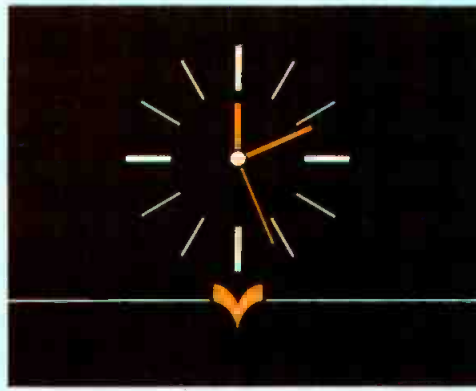
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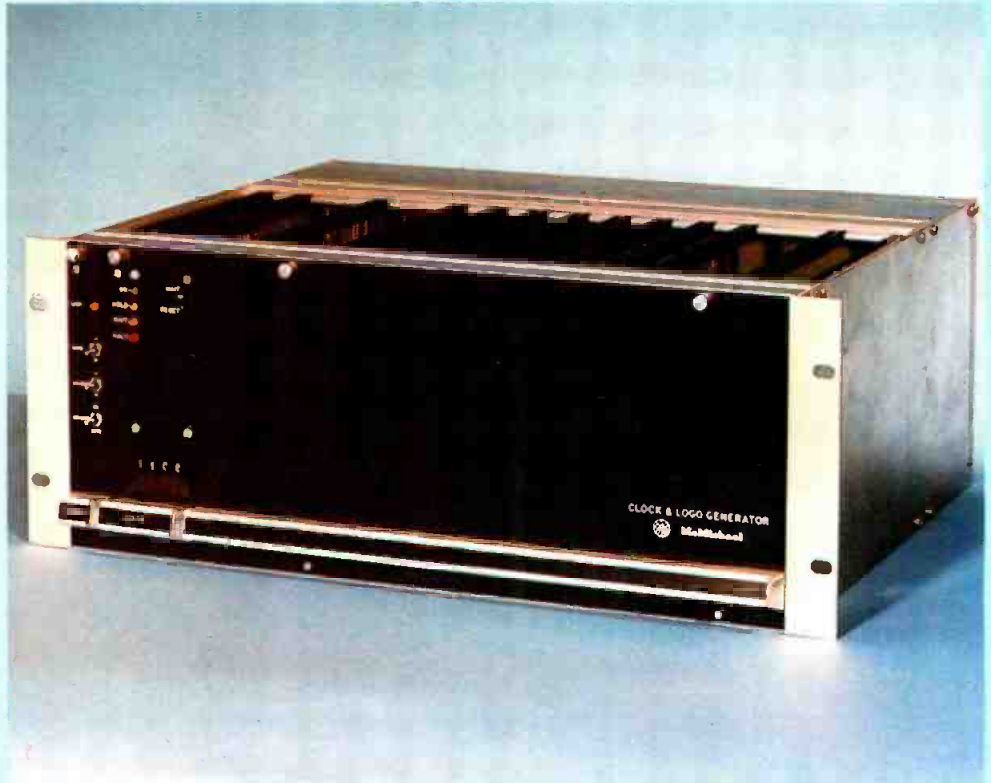


The McMichael Clock and Logo Generator electronically produces a video display comprising an analogue clock face and a fixed graphics caption.

Displays can be provided from a considerable range of designs held by the Company or may be tailored to individual requirements.

The Clock and Logo Generator is made under licence from the BBC and is supplied complete with all software necessary for immediate use.

The Broadcast quality 20in and 14in colour monitors make use of the latest technology to combine low cost and high reliability with a well converged, accurately reproduced and stable picture.



Clock and Logo Generator

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20 in Monitor



14 in Monitor





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McMICHAEL ACE CONVERTER

the best in Standards Conversion

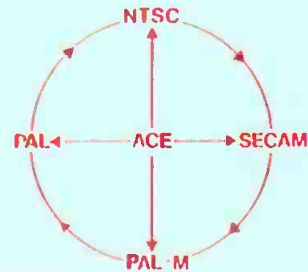
McMICHAEL ACE FOUR FIELD CONVERTER is the world's most sophisticated and accurate standards converter and is the accepted new standard for the industry.

- ★ Only converter in the world with four fields of digital storage
- ★ Bi-directional conversion between PAL, SECAM, NTSC and PAL-M and any other internationally recognized TV standards
- ★ No flicker on horizontal edges
- ★ Virtually transparent conversion
- ★ Minimum judder on vertical and horizontal motion
- ★ No loss of detail on pans
- ★ Significant noise reduction
- ★ Accepts and repairs signals which are out of specification
- ★ Soft failure modes
- ★ Price competitive to all other similar but less sophisticated systems

ACE is manufactured under licence from the BBC which uses ACE exclusively for standards conversion.

ACE was selected as the most suitable equipment for news and sports coverage of the World Cup by Radio Television España.

McMichael Limited is an advanced electronics company with over 60 years experience in the development and manufacture of state-of-the-art electronics equipment and systems.



McMICHAEL ACE CONVERTER

Marketing Dept.
McMichael Limited, Sefton Park, Stoke Poges, Slough, SL2 4HD England
Telephone: Fulmer (02816) 2777 Ext. 4004 Telex: 849212



Circle 176 on Reader Service Card

NEUMADE PRODUCTS CORP.

Box 568, Scarsdale, NY 10583
914 725-4900

Audio carts, sprocketed magnetic film, empty reels & carts, tape loaders, tape timers & rewinders; tape storage units.

NEUTRIK PRODUCTS ★

77 Selleck St., Stamford, CT 06902
203 348-2121

Graph recorder; audio connectors.

RUPERT NEVE, INC. ★

Berkshire Industrial Park, Bethel, CT 06801
203 744-6230

Mic mixers; portable, mono & stereo, automated & audio for TV mixing consoles; digital audio editors; audio line amps, DAs; facility turnkey installations.

NEW ENGLAND SATELLITE SYSTEMS ★

45 Drury Ln., Worcester, MA 01609
617 757-2531

Transportable satellite earth stations.

NEWSCAN/McINNIS SKINNER & ASSOC. ★

6529 Classen Blvd., Oklahoma City, OK 73116
405 848-4246

TV newsroom computers; character generators, digital art/paint systems, weather symbol inserters.

NEXUS PRODUCTIONS, INC. ★

10 E. 40 St., New York, NY 10016
212 679-2180

Video post-production facility.

NIDUS BROADCAST SYSTEMS ★

4090 Youngfield St., Wheat Ridge, CO 80033
800 525-0331

Computer automation controllers, complete program automation systems, radio & TV business automation hardware.

NIKKO AUDIO

320 Oser Ave., Hauppauge, NY 11788
516 231-8181

Audio preamps & power amps; equalizers & filters; mono & stereo consoles; turntables; tuners; receivers; integrated amps; time delay synthesizers; cassette decks.

FRED A. NILES COMMUNICATIONS, INC. ★

1058 W. Washington Blvd., Chicago, IL 60607
312 738-4181

Studio & mobile teleproduction facilities; video post-production facility.

NORTH AMERICAN VIDEO & BROADCASTING, INC. ★

1726 Cherry St., Philadelphia, PA 19103
215 854-0900

Studio & mobile teleproduction facilities; video post-production facility.

NORTHEAST PRODUCTIONS ★

Wilkes-Barre/Scranton Int'l Airport, Avoca, PA 18641
800 233-4777

Mobile teleproduction facility; video post-production facility.

NORTH HILLS ELECTRONICS, INC. ★

Glen Cove, NY 11542
516 671-5700

Video filters; signal multiplexers. RF power dividers; microwave STLs; hum bucking coils.

NORTH WIND POWER CO., INC. ★

Box 556, Moretown, VT 05660
802 496-2955

Wind energy systems; lead-acid batteries & chargers; generators, inverters & converters; towers & masts.

NORTHWEST COMMUNICATIONS, LTD. ★

5381 48 Ave., Delta, BC V4K 1W7, Canada
604 946-1146

Studio & mobile teleproduction facilities; video post-production facility.

NORTHWEST TELEPRODUCTIONS, INC. ★

4455 W. 77 St., Minneapolis, MN 55435
612 835-4455

Studio & mobile teleproduction facilities; video post-production facility.

NORTON CO./SPD ★

16624 Edwards Rd., Box 7500, Cerritos, CA 90701
213 926-0545

Ladder fall prevention system.

NORTRONICS CO., INC. ★

8101 Tenth Ave. N., Minneapolis, MN 55427
612 545-0401

Audio & video replacement heads, head cleaners & evaluators; alignment & tension gauges; bulk erasers; audio tape cleaners & evaluators; splicing blocks, tape. Manual master control switchers.

NORTRONICS, INC., RECORDER CARE DIV. ★

8101 Tenth Ave. N., Minneapolis, MN 55427
612 540-8680

Audio test tapes; tape head cleaners; replacement ATR heads; splicing block & tape; head degaussers, bulk erasers; VCR head cleaners; alignment gauges.

N.O.V.A. CORP. ★

5801 Uplander Way, Culver City, CA 90230
213 641-2046

Video cleaners, evaluators.

N-PRO ★

10022 Hazelwood Dr., Oregon City, OR 97045
503 656-5500

Hydraulic ENG pneumatic masts.

NTI AMERICA, INC. ★

1680 N. Vine St., Ste. 202, Los Angeles, CA 90028
213 462-8945

Digital video test signal generators; color time coder; digital still store.

FRED A. NUDD CORP.

1743 Rt. 104, Box 475, Ontario, NY 14519
315 524-2531

AM antennas: towers & masts, tower hardware & construction equipment; engineering consultant.

NURAD, INC. ★

2165 Druid Park Dr., Baltimore, MD 21211
301 462-1700

Intercity, portable ENG & airborne microwave, central receivers; remote control systems; microwave STLs; microwave antennas. Facility turnkey installations; engineering consultant.

NYTONE ELECTRONICS CORP.

2424 S. 900 West, Salt Lake City, UT 84119
801 973-4090

16/35 mm telecine projectors, optical multiplexers, telecine color correctors; video signal multiplexers.

N-Z VIDEO SYSTEMS

513 Greer Ave., Sikeston, MO 63801
314 471-7145

Facility turnkey installations; mobile vehicle construction.

OAK COMMUNICATIONS, INC., CATV DIV. ★

100 S. Main St., Crystal Lake, IL 60014
815 459-5000

Decoders, converters & addressable systems for STV, PTV & CATV.

O'CONNOR ENGINEERING LABS, INC. ★

100 Kalmus Dr., Costa Mesa, CA 92626
714 979-3993

Tripods, heads & pedestals.



ODETICS, INC. ★

1380 S. Anaheim Blvd., Anaheim, CA 92805
714 774-5000

Fixed head digital audio recorders; cassette player/recorders, duplicators; replacement heads, cassettes, bulk erasers; dynamic & condenser mics, booms. Video cassettes; digital, master/slave clocks, timers.

OKI ELECTRIC OVERSEAS CORP. ★

1 University Plaza, Hackensack, NJ 07601
201 646-0011

Digital standards converters; satellite receive only earth stations.

SEE AD PG. 188

OKTEL CORP.

490 Division St., Campbell, CA 95008
408 374-1811

Slow motion disc action recorders & video animation controllers.

OLD DOMINION BROADCAST ENG. SVCS. ★

1101 Front St., Richmond, VA 23222
804 321-4506

Telco interface equipment; equipment rental, facility turnkey installations, studio set design services.

OLESEN

1535 Ivar Ave., Hollywood, CA 90028
213 461-4631

Lamps, fixtures, scenery, rigging, lighting stands; lighting control boards & dimmer packs; diffusion, efx material; ac cables & connectors.

OMNI SPECTRA, INC. ★

See listing for M/A-COM VIDEO SYSTEMS, INC.

Barco can give them to you, brilliantly. Thanks to our new **American Standard Phosphors**, we can also give you increased compatability with broadcast network colorimetry and precise color reproduction to tolerances of ± 0.005 . But Barco also gives you freedom of choice because we can still offer you E.B.U. chromaticity coordinates, if you prefer.

Whatever Barco unit you choose, rest assured you'll get all the versatile Barco features you've heard about. Features like modular construction, delta and inline tubes, as well as different screen sizes and resolutions to choose from. And those are just some of the reasons why Barco has become the standard of the industry, there are plenty more.

Check out our numbers.

AMERICAN STANDARD PHOSPHORS

Delta	X	Y
Red	0.630	0.340
Green	0.310	0.595
Blue	0.155	0.070

E.B.U. PHOSPHORS

Delta	X	Y
Red	0.640	0.330
Green	0.290	0.600
Blue	0.150	0.060

Best of all, when you buy Barco you're buying one of the most comprehensive customer support programs in the industry, backed by Rohde & Schwarz.

Barco Color Monitors. When it has to be right on the money. For complete details, contact us at 14 Gloria Lane, Fairfield, N.J. 07006. Phone (201) 575-0750. Telex 13310.

BARCO HELPS YOU REMAIN TRUE TO YOUR COLORS.

Rohde & Schwarz Sales Co. (U.S.A.) Inc.



Circle 177 on Reader Service Card

MANUFACTURERS

ONAN CORP. ★
1400 73 Ave. NE, Minneapolis, MN 55432
612 574-5000
Power generators.

ONE PASS FILM AND VIDEO ★
1 China Basin Bldg., San Francisco, CA 94107
415 777-5777
Audio/video post-production facility; stage, studio rentals, set design services.

OPAMP LABS, INC. ★
1033 N. Sycamore Ave., Los Angeles, CA 90038
213 934-3566
Mic mixers; portable, mono & stereo, audio for TV mixing consoles; graphic equalizers, reverb & noise reduction. Preamps, line & monitor amps, amp power supplies; VU meters; rotary & slide attenuators. Video DAs & pulse amps.

OPRYLAND PRODUCTIONS ★
2806 Opryland Dr., Nashville, TN 37214
615 889-6840
Studio & mobile teleproduction facilities; post-production facility.

OPTIMA ENCLOSURES, DIV. SCIENTIFIC-ATLANTA INC. ★
2166 Mauntain Industrial Blvd., Tucker, GA 30084
404 939-6340
Racks, equipment enclosures, cabinets.

OPTIMUS ★
161 E. Grand, Chicago, IL 60611
312 321-0880
Video teleproduction & post-production facilities.

URBAN ASSOCIATES, INC. ★
645 Bryant St., San Francisco, CA 94107
800 227-4498
AM & FM compressor/limiters; graphic & parametric equalizers & filters; special effects & mechanical reverb; FM processors & stereo generators.
[SEE AD PG. 35,186](#)

ALLEN OSBORNE ASSOC. ★
5195 N. Douglas Fir Rd., Calabasas, CA 91320
213 888-2772
Telescoping & pneumatic towers & masts.

OSRAM SALES CORP. ★
Box 7062, Jeanne Dr., Newburgh, NY 12550
914 564-6300
HMI Lamps & lighting fixtures.

OTARI CORP. ★
2 Davis Dr., Belmont CA 94002
415 592-8311
Open reel portable, studio & multitrack ATRs; tape duplicators, loaders; videocassette loaders.
[SEE AD PG. 13](#)

PACE WIRE & CABLE CORP. ★
3590 Oceanside Rd., Oceanside, NY 11572
516 678-2275
Wire and cable.

PACIFIC COAST VIDEO ★
635 1/2 Chapala, Santa Barbara, CA 93101
805 965-5015
Teleproduction facility; video post-production facility.

PACIFIC RECORDERS & ENGINEERING CORP. ★
11100 Raselle St., San Diego, CA 92121
714 453-3255
Stereo audio consoles; single deck cart player/recorders & phase control matrixing; audio DAs.

PACIFIC VIDEO ★
809 N. Cahuenga Blvd., Los Angeles, CA 90038
213 462-6266
Studio & mobile teleproduction facilities; video post-production facility.

PACKAGED LIGHTING SYSTEMS, INC. ★
Box 285, Grant St., Walden, NY 12586
914 778-3515
Lighting stands, rigging, dimmer packs; quartz fixtures, cyc lighting & power systems.

PAKO CORP. ★
6300 Olson Memorial Hwy., Minneapolis, MN 55440
612 540-6300
Film processors; slide mounting systems.

W.A. PALMER FILMS, INC. ★
611 Howard St., San Francisco, CA 94105
415 986-5961
Telecines & video/film recording cameras.

PANASONIC INDUSTRIAL CO. ★
1 Panasonic Way, Secaucus, NJ 07094
201 348-7000
Field, ENG/EFP, single tube, single piece & monochrome cameras; effects generators, colorizers, chromakeyers & downstream keyers; editor/controllers, SMPTE time code generators & readers; sync & color bar generators; pulse amps, video DAs; monochrome, NTSC, RGB, dc portable monitors & video projectors; videotape & cassettes.
[SEE AD PG. 107](#)
Field Offices:
CA 6550 Katella Ave.,
Cypress 90630..... 714 895-7200
GA One Meca Way,
Norcross 30093..... 404 923-9700
IL 425 E. Algonquin Rd.,
Arlington Heights 60005 .. 312 364-7900
NJ 50 Meadowland Parkway,
Secaucus 07094..... 201 348-7000
TX 1825 Walnut Hill Lane,
Irving 75062 214 258-6400

Refer to Reps/Distributors section

PANDUIT CORP. ★
17301 Ridgeland Ave., Tinley Park, IL 60477
312 532-1800
Cables & connectors.

PARSONS MFG. CORP. ★
1055 O'Brien Dr., Menlo Park, CA 94025
415 324-4726
Foam insert transportation cases.

PD MAGNETICS ★
Box 4499, Wilmington, DE 19807
302 999-4253
Audio cassettes; videotape.

PEIRCE-PHELPS, INC., VIDEO SYSTEMS DIV. ★
2000 N. 59 St., Philadelphia, PA 19131
215 879-7171
Facility turnkey installations & mobile vehicle construction.

PENNY & GILES ★
1640 Fifth St., Santa Monica, CA 90401
213 393-0014
Audio rotary & slide attenuators.

PENTAGON INDUSTRIES, INC. ★
4751 N. Olcott, Chicago, IL 60656
312 867-9200
Audio cassette player/recorders, changers & duplicators; alignment gauges; tape rewinders.

PEP, INC. ★
25 W. 54 St., New York, NY 10019
212 246-2490
Nicad batteries & chargers; ac adaptors.

PERROTT ENGINEERING LABS, INC. ★
7201 Lee Hwy., Falls Church, VA 22046
703 532-0700
Nicad, silver-zinc & lead-acid batteries & chargers; quartz crystals.

PETERS PRODUCTIONS, INC. ★
9590 Chesapeake Dr., San Diego, CA 92123
415 565-8511
Audio post-production facility & recording studio; syndicated TV programming, promotions & advertising.



PHASECOM CORP. ★
6365 Arizona Circle, Los Angeles, CA 90045
213 641-3501
Heterodyne processors; modulators & demodulators; programmable videocassette automation systems; HRC head end equipment.

PHASE TWO VIDEO ★
609 W. 50 St., New York, NY 10019
212 246-5940
Video post-production facility.

PHELPS DODGE COMMUNICATIONS CO. ★
Route 79, Marlboro, NJ 07746
201 462-1880
RF switches & power dividers; FM & communications antennas & tuning units; solid core & foam dielectric cable.
[SEE AD PG. 163](#)
Field Offices:
AZ 115 E. Watkins St.,
Phoenix 85004 602 252-8058
CA 1420 Monterey Pass Rd.,
Monterey Pk 91754 213 268-9330
FL Route 44,
Leesburg 32748..... 904 787-9200

PHILADELPHIA RESINS CORP. ★
20 Commerce Dr., Montgomeryville, PA 18936
215 855-8450
Electrically transparent antenna guys.
[SEE AD PG. 25](#)

PHILIPS BROADCAST GROUP ★
See listing for CENTRAL DYNAMICS CORP.

STUDIO OR STADIUM, FUJINON'S NEW BCTV LENSES PLAY ALL THE ANGLES.

From super-wide to ultra-tele, in the studio or the stadium, Fujinon BCTV lenses are the clear winners . . . from any angle.

NEW. Fujinon's P28x15 ESM — the super studio lens. It gives you a wall-to-wall 15mm wide angle and a maximum aperture of F/2.2 which is maintained out to ten times. Even at 420mm, the F/4.2 allows you to keep your lighting levels reasonable. And for the tightest shots, the built-in 1.7X extender takes you to 714mm. Naturally, it has a built-in diascope for near instant computer setup. But range and speed do not reveal the incredibly sharp, bright, high contrast image the new 28X delivers. Its superior resolution and color performance place it ahead of any lens in its class.

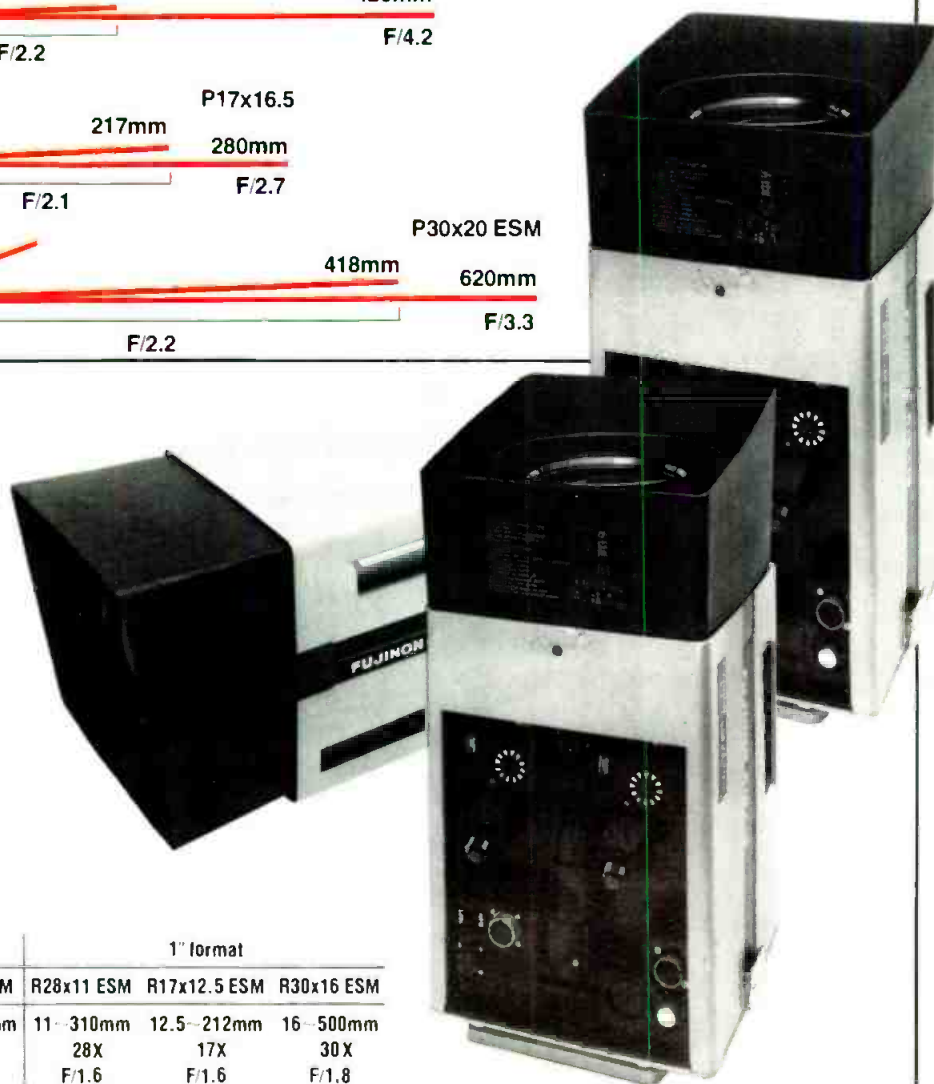
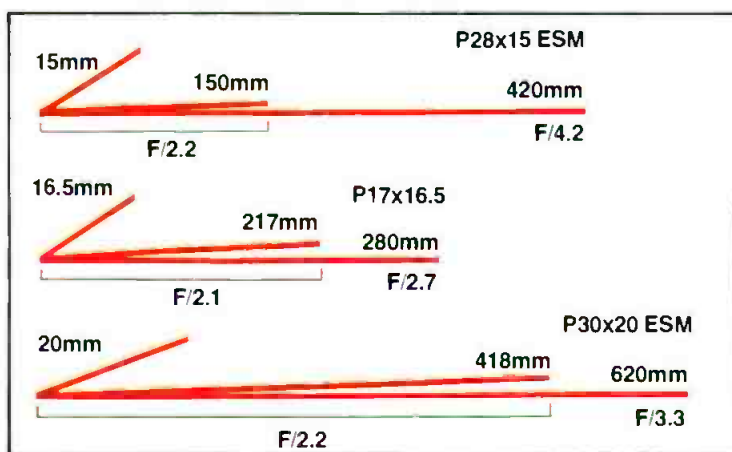
NEW. Fujinon's P17x16.5 ESM — the standard studio lens. With a zoom range from 16.5 to 280mm, an aperture which will remain flat at F/2.1 out to 217mm and built-in 1.5X and 2X extenders, here's the lens destined to be the industry workhorse for years to come. Simply put, it offers virtually every performance and operating feature — including built-in diascope — you're likely to need.

Not new. Fujinon's P30x20 ESM — the super field lens. Whether picking up the clearest shot of the space shuttle lifting off or a concert stage from the back of the top balcony, it goes out farther and flatter to deliver outstanding images . . . especially under lighting conditions that leave other lenses in the dark. Total zoom range, with the built-in 2X extender

is an incredible 20 to 1240mm. The F/2.2 aperture remains flat from 20 to 418mm — and at 620mm is giving you F/3.2. No wonder the 30X lens is acknowledged by the industry as the finest field zoom available.

For more information on the newest

and finest BCTV lenses, and why they are the best performance investment for your new or existing cameras, contact Fujinon. Large format zoom lenses are another reason why the world sees itself more clearly through the eyes of Fujinon.



Specifications:

	1 1/4" format			1" format		
	P28x15 ESM	17x16.5 ESM	30x20 ESM	R28x11 ESM	R17x12.5 ESM	R30x16 ESM
Focal Length	15 - 420mm	16.5 - 280mm	20 - 620mm	11 - 310mm	12.5 - 212mm	16 - 500mm
Zoom Ratio	28X	17X	30X	28X	17X	30X
Max. Aperture	F/2.2	F/2.1	F/2.2	F/1.6	F/1.6	F/1.8
M.O.D.	.95m	.75m	2.5m	.95m	.75m	2.5m
Range Extender	1.7X	1.5X, 2X	2X	1.7X	1.5X, 2X	2X



FUJINON

FUJINON INC. 672 White Plains Road, Scarsdale, New York 10583
(914) 472-9800 Telex: 131642

118 Savarona Way, Carson, California 90746
(213) 532-2861 Telex: 194978

THE PHOEBUS CORP.
2800 3 St., San Francisco, CA 94107
415 550-0770
Lamps, quartz fixtures.

PHILIPS TEST & MEASURING INSTRUMENTS, INC. ★
85 McKee Dr., Mahwah, NJ 07430
201 529-3800
TV exciters; stereo generators, modulators; de-modulators, RF & video test signal generators; automatic VITS analyzers; waveform monitors, vectorscopes, delayed sweep scopes, oscilloscopes & logic analyzers.
SEE AD PG. 171

Field Offices:
CA 12882 Valley View St., Ste. 9,
92645 714 898-5000/213 594-8741
CA 489 Valley Way,
Milpitas 95035 408 946-6722
MA 21 Olympia Dr.,
Woburn 01801 617 935-3972
CN 2375 Steeles Ave., W., Unit 126,
Downsview Ontario M3J 3A8 416
665-8470
CN 130 Albert St., Ste. 1005,
Ottawa, Ontario K1P 5G4 . 613 237-3134
CN 5930 Cote de Liesse,
Montreal PQ H4T 1E1 514 342-9180
Refer to Repts/Distributors section

PHOENIX VIDEO CENTER ★
5015 N. 6 St., Phoenix, AZ 85012
602 263-8866
Studio & mobile teleproduction facilities; video post-production facility.

PINZONE COMM. PRODUCTS, INC. ★
10142 Fairmount Rd., Newbury, OH 44065
304 296-4493
Receive only satellite earth stations, satellite receivers; status, alarm indicators.

PLASTIC REEL CORP. OF AMERICA ★
475 Boulevard, Elmwood Park, NJ 07407
201 796-6600
Empty audio & video reels, carts & containers; foam insert & rack mounting transportation cases; tape storage systems; equipment rental service.

POLARAD ELECTRONICS, INC. ★
5 Delaware Dr., Lake Success, NY 11042
516 328-1100
AM, FM & TV field intensity meters; transceiver test sets; spectrum analyzers; RF signal generators.

CONSTANTINE N. POLITES & CO. ★
833 Guenther Ave., Yeadon, PA 19050
215 626-4643
Hardware for lighting grids; tubes & clamps for tower construction.

POLYCOM TELEPRODUCTION ★
201 E. Erie St., Chicago, IL 60611
312 337-6000
Studio & mobile teleproduction facilities; video post-production facility.

POLYLINE CORP.
1233 Rand Rd., Des Plaines, IL 60016
312 298-5300
Audio cassettes; empty audio & video reels, carts & containers.

PORTABLE ENERGY PRODUCTS, INC. ★
1875 S. Pearl St., Denver, CO 80210
303 778-8616
Nicad & lead-acid batteries & chargers.

PORTA-PATTERN TELECOMMUN. INDS. LTD. ★
Box 38945, 6822 Santa Monica Blvd., Los Angeles, CA 90038
213 461-3561
Optical test images, charts & slides.

THE POST GROUP ★
6335 Homewood Ave., Los Angeles, CA 90028
213 462-2300
Video post-production facility.

POTOMAC INSTRUMENTS, INC. ★
932 Philadelphia Ave., Silver Spring, MD 20910
301 589-2662
Antenna monitors; AM, FM & TV field intensity meters; RF test signal generators, phase meters; audio test signal generators; harmonic distortion, IM & wow & flutter meters; log printers, automatic radio monitors, alarm indicators.
SEE AD PG. 20

POWER-OPTICS, INC. ★
341 Main St., Collegeville, PA 19426
215 539-5300

STROBEGUARD®

HIGH INTENSITY
OBSTRUCTION
LIGHTING SYSTEMS*
FOR TELEVISION AND
RADIO TOWERS AND
SIMILAR SKELETAL
STRUCTURES.



TECHNICAL PRODUCTS GROUP — BEDFORD DIVISION
35 CONGRESS ST., SALEM, MASSACHUSETTS 01970
TEL: (617) 745-3200
ATTENTION: GEORGE MANDEVILLE, PRODUCT MANAGER

*FAA APPROVED as meeting or exceeding the requirements of Advisory Circular AC 150/5345-43 and FAA/DoD Specifications L-856 plus FAA AC 70/7460-1

Circle 179 on Reader Service Card

Remote control systems; color monitor calibrators.

PRACTICAL TECHNOLOGY ★
12 Village Ctr., Box 449, Carmel Valley, CA 93924
408 659-3128
Logic analyzers.

PRECISION ECHO ★
485 E. Middlefield Rd., Mountain View, CA 94043
415 961-7145
Video animation controllers, compressor/positioners; video disc recorders.

PRIME TIME POST ★
6410 Santa Monica Blvd., Los Angeles, CA 90038
213 464-7151
Video post-production facility.

PROCART ★
7012 27 St. W., Tacoma, WA 98466
206 565-2301
Audio tape cartridges.

PRODELIN, INC. ★
Box 100, Claremont, NC 28610
800 438-9706
Satellite antennas; flexible transmission line; microwave antennas, reflectors & waveguides.

PRODUCERS COLOR SERVICE ★
24242 Northwestern Hwy., Southfield, MI 48075
313 352-5353
Studio & mobile teleproduction facilities; video post-production facility.

PRODUCERS VIDEO CENTER ★
Crown Center, 2450 Grand, Ste. 400, Kansas City, MO 64108
816 274-8335
Teleproduction & post-production facilities.

PROFESSIONAL VIDEO SERVICES ★
206 E. 29 St., New York, NY 10016
212 683-3636
Studio & mobile teleproduction facilities; video post-production facility.

PROTECH AUDIO CORP. ★
Flowerfield Bldg. 1, St. James, NY 11780
516 584-5855
Stereo, mono & TV audio consoles; ALC, AGC amps, AM compressor/limiters; hardwired intercoms; telco preamps. line & monitor amps, audio DAs, amp power supplies; slide attenuators; studio furniture.

PTS CORP. ★
5233 S. Hwy. 37, Bloomington, IN 47401
812 824-9331
Hum bucking coils; converter/amp rebuilding.

PYRAMID VIDEO, INC. ★
National Press Building, Room 340, Washington, DC 20045
202 783-5030
TV production and transmission facilities.

QEI CORP. ★
Route 73, Kresson, NJ 08053
609 767-8052
FM transmitters, exciters & SCA equipment; RF

power amps; stereo generators; remote control equipment; modulation monitors.

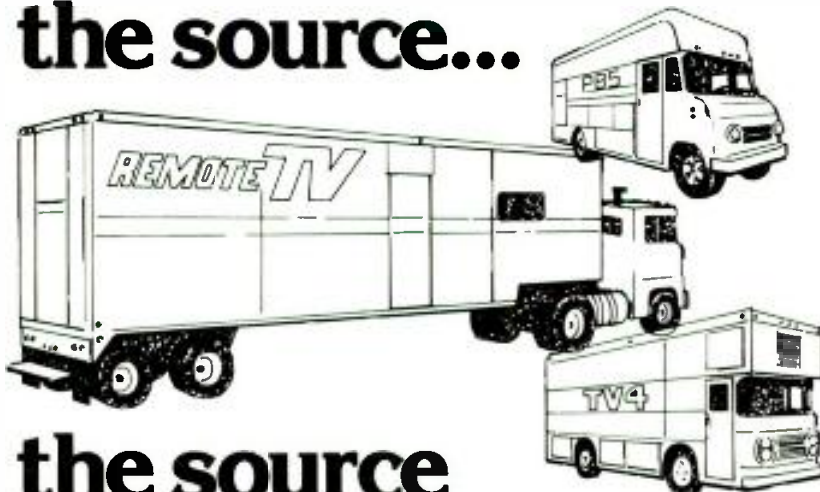
QSC AUDIO PRODUCTS, INC. ★
1926 Placentia Ave., Costa Mesa, CA 92627
714 645-2540
Monitor & power amps.

QSI SYSTEMS, INC. ★
12 Linscott Rd., Box 2176, Woburn, MA 01888
617 938-1403
Character generators; SID, countdown, video slate board & color bar generators; video DAs; demodulators; timers; engineering consultation.
SEE AD PG. 164

Q-TV ★
33 W. 60 St., New York, NY 10023
212 765-4200
Monitor based, scroll, keyboard entry & ENG/EFP teleprompters.

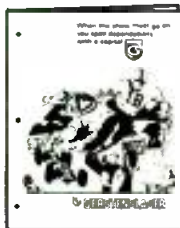


When you cover
the action from
the source...



the source
for mobile studios
should be
Gerstenslager.

In a van or trailer, your most modern, best equipped studio could be your Gerstenslager. It all starts when you tell us what you need. The job to be done. Then we'll work with your engineers and principal equipment suppliers. Develop the plans. Detail placement of every piece of equipment, generators, wiring, climate control, consoles. Exactly as you want it. Then, build the unit from the frame up. A studio on wheels that is actually a dependable broadcasting station comparable to conventional studio systems.



How we do it with examples of work we have done for others is included in this brochure. It's yours for the asking. Write or call: (216) 262-2015.

GERSTENSLAGER
The Gerstenslager Company, Wooster, Ohio 44691

Circle 180 on Reader Service Card

QUAD-EIGHT ELECTRONICS ★
11929 Vose St., N. Hollywood, CA 91605
213 764-1516

Mono, stereo, automated & audio for TV mixing consoles; digital audio editors; AM compressor/limiters, parametric & graphic equalizers; digital & analog reverb. Preamps, line amps & LED meters.

QUANTUM AUDIO LABS ★
1905 Riverside Dr., Glendale, CA 91201
213 841-0970

Mic mixers; portable, mono & stereo, & TV audio mixing consoles.

QUANTA CORP. ★
2440 S. Progress Dr., Salt Lake City, UT 84119
801 974-0992

Character generators, titlers, bit pad digitizers; radio & TV newsroom computers; tape cleaners, evaluators.

SEE AD PG. 195

Field Offices:

- CA 3566 Sunnysdale Ct.,
San Jose 95117 408 985-8888
- CT 57 North St., Ste. 122B,
Danbury 06810 203 797-1179
- GA 3566 Old Chamblee-Tucker Rd.,
Atlanta 30340 404 493-3913
- OH 16006 Waterloo Rd.,
Cleveland 44110 216 692-3410
- OK 1535 So. Memorial Dr. #124,
Tulsa 74112 918 627-4151
- UT 2440 So. Progress Dr.,
Salt Lake City 84119 801 974-0992

QUICK-SET, INC. ★
3650 Woodhead Dr., Northbrook, IL 60062
312 498-0700

Tripods, heads, pedestals & dollies.

RACAL-DECCA CANADA, LTD. ★
71 Selby Rd., Brampton, Ontario, Canada
L6W 1K5

416 457-8720
Lighting transformers; tower guy insulators.

RADIO ARTS, INC.
210 N. Pass Ave., Burbank, CA 91505
800 423-2840
Syndicated radio programming.

RADIOCOM ★
335 E. 70 St., New York, NY 10021
212 794-9702

Radio business automation hardware.

RADIO SYSTEMS ★
5131 W. Chester Pike, Edgemont, PA 19028
215 356-4700

Phono preamps; monitor & power amps, audio DAs; AM transmitters; timers; facility turnkey installations.

RADIOTECHNIQUES
402 Tenth Ave., Haddon Heights, NJ 08035
609 546-1841

Engineering consultation; earth station site selection.

RADMAR, INC. ★
1282 Old Skokie Rd., Highland Park, IL 60035
312 831-9000

Lead-acid batteries, chargers; 16/35 mm telecine projectors.

RAINBO PRODUCTS ★
404 N. River, Ypsilanti, MI 48197
313 482-6591

Lighting color changer.

RAM, INC. ★
FAA Bldg. 6301 34 Ave. S., Minneapolis, MN 55450
612 726-9059

Weather information services.

RAMKO RESEARCH ★
11355 A Folsom Blvd., Rancho Cordova, CA 95670
916 635-3600

Mic mixers; portable & mono & stereo studio consoles; single- & multi-deck cart player/recorders; cassette player/recorders; replacement heads; carts, tape loaders; turntables, phono preamps; AM compressor/limiters; speakers; telco preamps, line, monitor & power amps, audio DAs, amp power supplies; LED meters & audio routers.

SEE AD PG. 5

Refer to Reps/Distributors section

RAMSA (PANASONIC PROFESSIONAL AUDIO PRODS.)
1 Panasonic Way, Secaucus, NJ 07094
201 348-7470

Portable & mono & stereo studio consoles; dynamic & electret/condenser mics; monitor, power amps.

SEE AD PG. 8-9

RAMTEK CORP. ★
2211 Lawson Ln., Santa Clara, CA 95050
408 988-2211

Digital art/paint systems; monochrome & RGB monitors.

RANGERTONE RESEARCH, INC.
509 Madison Ave., New York, NY 10022
212 753-5430

Sprocketed magnetic film transports; replacement heads; preamps & line amps; VU meters; video replacement heads, VTR rebuilding service; 16/35 mm telecine projectors, optical multiplexers.

RANK PRECISION INDUSTRIES, INC. ★
411 E. Jarvis Ave., Des Plaines, IL 60018
312 279-7720

Solid-state telecines, 16/35 mm telecine projectors, 35 mm slide projectors, telecine color correctors, sprocketed magnetic film transports.

Field Offices:

- CA 13340 Saticoy, Unit F,
N. Hollywood 91605 213 765-7265
- NY 260 N. Rt. 303,
W. Nyack 10994 914 353-1914

RCA AMERICAN COMMUNICATIONS, INC. ★
400 College Rd. E., Princeton, NJ 08540
609 734-4069

Satellite transmission services; post-production services.

RCA COMMERCIAL COMM. SYSTEMS DIV. ★
Front & Cooper Sts., Camden, NJ 08102
609 338-3000

Studio, field, ENG/EFP & single-piece cameras. Quad & one-inch VTRs; video cart automation systems; replacement & rebuilt heads & VTR rebuilding services; VTR slow motion controllers; TBCs. Telecine cameras, 16/35 mm telecine projectors, optical multiplexers & telecine color cor-

rectors. Video editor/controllers & multisource editors. AM, FM, UHF & VHF transmitters; FM & TV exciters; FM & TV (HP & CP) antennas. Facility turnkey installations & mobile vehicle construction.

SEE AD PG. 78-79

Field Offices:

- CA E. Mehaffey, 330 Primrose Rd., Ste. 304,
Burlingame 94010 415 343-2741
- CA R. Abbenante, O.G. Bjerke, D. Diels,
4040 Vineland Ave., Ste. 204,
Studio City 91604 213 468-4081
- CO J. Butts, 777 S. Wadsworth Blvd., Ste. 205,
Iron Gate IV,
Lakewood 80226 303 986-1521
- FL R. Giles, 3900 RCA Blvd., Palm Beach
Gardens 33410 305 622-1100
- GA R. Greaves, P. Higginbotham, J. Kelley,
3395 N.E. Expy., RCA Bldg.
Atlanta 30341 404 452-2340
- IL R. Yokes, 120 W. Eastman St.,
RCA Ste. 303,
Arlington Heights 60004 312 255-2202
- IN J. Ayers, J. Kosiba, 9240 N. Meridian St.,
RCA Ste. 102,
Indianapolis 46260 317 267-6395
- KS H. Craig, 8900 Indian Creek Pkwy., RCA
Ste. 410,
Overland Park 66210 913 642-3185
- MA P. Taylor, 40 William St., Wellesley
Office Park,
Wellesley 02181 617 237-6050
- MI G. Schmidt, 16400 W. Twelve Mile Rd.,
RCA Ste. 215,
Southfield 48076 313 569-5880
- MN D.G. Schulte, 4601 Excelsior Blvd., RCA
Ste. 305,
Minneapolis 55416 612 920-6395/6
- NC C. Patterson, 1515 Mockingbird Lane,
RCA Ste. 211,
Charlotte 28209 704 525-4870
- NJ M.S. Hyman, W.A. Ritchey, Front &
Cooper Sts., RCA Bldg. 2-2,
Camden 08102 609 338-2020/3693
- NY D. Mewhinney 212 930-4654; T. Moore
212 930-4653/6; R. Varda 212 930-4651;
1180 Ave. of the Americas, RCA 22nd Floor,
New York 10036 212 930-4654
- PA C. Koriwchak, 924 N. Washington Rd.,
Malanos Bldg.,
McMurray 15317 412 941-5570
- TX R. Edenson, E. Hoff, B. Laughlin, R.
Phillips, 17000 Dallas Pkwy., RCA
Ste. 102, Dallas 75248 214 931-1683
- VA R. Dongelewicz, R. Parkhill, 1901 N.
Moore St.,
Arlington 22209 703 558-4233
- WA P. Lines, 1818 Westlake Ave., North, RCA
Ste. 222, Seattle 98109 206 285-2375

RCA D&SPD ★
2000 Clements Bridge Rd., Deptford, NJ 08096
609 853-2243

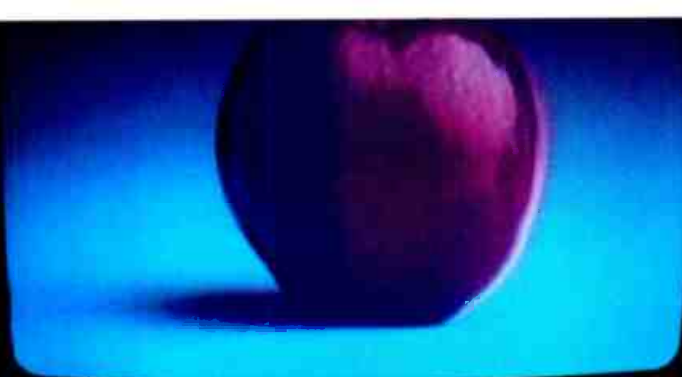
RF cable, connectors; vacuum tubes; solid state components; surge protectors.

RCA ELECTRO OPTICS & DEVICES ★
New Holland Ave., Lancaster, PA 17604
717 397-7661

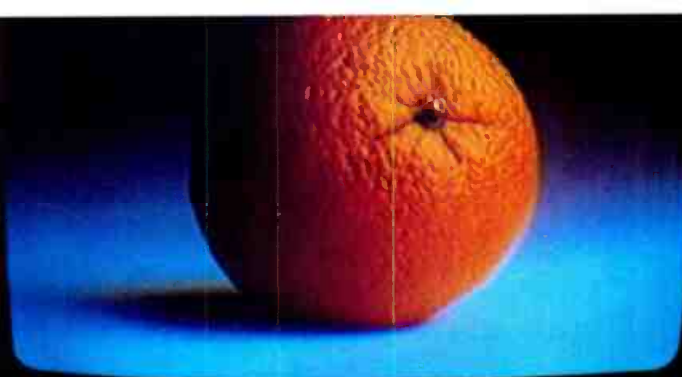
Camera pickup tubes & RF power tubes.

RCA SERVICE CO. ★
Dept. 2615, Bldg. 204-2, Rt.38, Cherry Hill, NJ 08358
609 338-5924

Facilities design & engineering; TV antenna installation services.



4th generation conventional TBC



4th generation Y-688 Total Error Corrector

NO COMPARISON

Comparing video from a conventional TBC to video from a Y-688³² Total Error Corrector is like comparing apples to oranges. A time base corrector, as the name implies, corrects timing errors. The Y-688³² Total Error Corrector corrects timing errors and virtually all VTR induced errors.

The major cause of video quality loss in 3/4 VTR's is inherent in the color under process. This process separates the input color video signal into its luma and chroma components, converts the chroma frequency for recording and playback and recombines the luma and chroma for color video output. The worst part is that this quality loss is cumulative, in that it is compounded with each pass through a VTR or conventional TBC.

Total Error Correction

The Y-688³² TEC is designed specifically to overcome multiple

generation quality loss from color under VTR's. The Y-688³² TEC utilizes "dub" (Y-688) input and output as well as encoded video. The "dub" mode allows processing of component (Y-688) video bypassing the separation, frequency conversion and recombination cycle. "Dub" signals processed through the Y-688³² TEC are better than encoded video signals because they contain more information and are less degraded.

The Y-688³² TEC also utilizes advanced signal processing techniques, some manufactured under exclusive license from Faroudja Laboratories. These techniques reduce chroma noise by up to 20dB, correct luma/chroma timing automatically, reduce luma noise by up to 10dB, improve chroma rise times, reduce second order ringing and eliminate luma/chroma crosstalk. Some processing is used during each pass through the Y-688, while

the balance of the processing is used for the last copy or for broadcast to correct any minor degradations which have occurred.

A Difference You Can See

The improved quality of Y-688³² TEC video can be seen in first generation playback. It becomes more obvious in successive generations. It is particularly noticeable in third and fourth generations because conventional TBC video has gotten worse with each pass, while fourth generation Y-688³² TEC video approximates original quality.

The Y-688³² TEC is simply the most powerful tool available for extending multi-generation quality from color under VTR's.

For more information on the Y-688³² TEC or an on-site demonstration, circle the reader's card. For immediate response write or call Fortel today.

Fortel Incorporated
6649 Peachtree Industrial Boulevard
Norcross, Georgia 30092-9990
Telephone (404) 447-4422
Telex 804822

Circle 181 on Reader Service Card



Y-688³²
Total Error Corrector

www.americanradiohistory.com

RCA SOLID STATE DIV. ★
New Holland Ave., Lancaster, PA 17604
717 397-7661
Saticon imaging tubes; UHF, VHF, AM & FM transmission tubes.

R-COLUMBIA PRODUCTS CO., INC. ★
2008 St. Johns Ave., Highland Park, IL 60035
312 432-7915
Hardwired & RF intercoms; dynamic & electret/condenser mics.

REAL RADIO CO. ★
127 Glen Summer Rd., Pasadena, CA 91105
213 795-4900
Syndicated radio programming.



THE REAL WORLD TECHNOLOGIES GROUP, INC. ★
3176 Pullman St., Ste. 106, Costa Mesa, CA 92626
714 957-1061
VU & PPM meters & video monitor displays; engineering consultation & mobile vehicle construction.

RECORTEC, INC. ★
475 Ellis St., Mountain View, CA 94043
415 962-0220
Audio/video cassettes, tape cleaners & evaluators; VCRs; videocassette automation systems; parallel interface machine control; timers.

RE:DB CO., DIV. OF PIERCE INDUSTRIES ★
3120 E. Pico Blvd., Los Angeles, CA 90023
213 264-7855
Audio/video replacement & rebuilt tape heads.

REDDING RADIO, DIV. OF SJ INDUSTRIES ★
Box 344, Fairfield, CT 06430
Telco interface equipment; editing blades.

REES ASSOC., INC. ★
4200 Perimeter Center Dr., Ste. 245, Oklahoma City, OK 73112
405 946-9800
Modular studio sets; facility turnkey installations; engineering consultation; studio, set design, financial services; earth station site selection.

REGISTER DATA SYSTEMS ★
Box 1246, Perry, GA 31069
912 987-2501
Business & traffic computer services and hardware.

R.E. INSTRUMENTS, INC. ★
31029 Center Ridge Rd., Westlake, OH 44145
216 871-7617
Signal multiplexers; stereo generators; fiberoptic transmission systems; modulation monitor, RF test signal generators, harmonic distortion & IM meters, spectrum analyzers, wow & flutter meters.

RE-PLAY VIDEO CARTRIDGE SERVICE ★
328 Meritt Ave., Pittsburgh, PA 15227
412 881-9172
Re-loaded videocassettes.

RESEARCH TECHNOLOGY INT'L (RTI) ★
4700 Chase Ave., Lincolnwood, IL 60646
800 323-7520
Electronic film previewers & editors; hardware & software for film inventory & management; videotape cleaner/evaluators; tape & film timers; studio furniture & storage units; video cable, shipping cases.

REYNOLDS/LETERON ★
6704 Valjean Ave., Van Nuys, CA 91406
213 994-1194
Mechanical character generators, lettering systems & title cards.

RF TECHNOLOGY, INC. ★
145 Woodward Ave., S. Norwalk, CT 06854
203 866-4283
RF amplifiers; intercity, ENG, airborne & central receiver microwave systems; STLs.

RHG ELECTRONICS LAB, INC. ★
161 E. Industry Ct., Deer Park, NY 11729
516 242-1100
FM transmitters; RF calorimeters; portable & airborne microwave systems; microwave STLs; communications antennas.

RICHMOND SOUND DESIGN, LTD. ★
1234 W. 6 Ave., Vancouver, BC, Canada V6H 1A5
604 734-1217
Mic mixers; portable, mono & stereo & audio for TV mixing consoles; phono preamps; ALC & AGC amps; parametric & graphic equalizers; line, monitor & power amps, amp power supplies; audio post-production facility & recording studio.

RKO TAPE CORP. ★
3 Fairfield Crescent, West Caldwell, NJ 07006
201 575-8484
Open-reel audio tape & audio cassettes; tape duplicators; half-inch videotape.

RMS ELECTRONICS, INC. ★
50 Antin Pl., Bronx, NY 10462
212 892-6700
Dynamic mics; RF switches; video cable & connectors.

RODELCO ELECTRONICS CORP. ★
365A Comac Rd., Deer Park, NY 11729
516 643-5110
TV & FM translators.

ROH CORP. ★
3603 Clearview Pl. N.E., Atlanta, GA 30340
404 455-7940
Audio preamps; line & monitor amps & DAs; attenuators; intercom systems.
[SEE AD PG. 222](#)

ROHDE & SCHWARZ SALES CO. (USA), INC. ★
14 Gloria Ln., Fairfield, NJ 07006
201 575-0750

Monochrome & color monitors; sync generator systems; comb filter decoders; RF demodulators, modulators; VHF transmitters; AM, FM & TV field intensity meters; RF generators; video generators; video noise meters & test generators; VITS & VIR systems.
[SEE AD PG. 117](#)

ROSCO LABORATORIES, INC. ★
36 Bush Ave., Port Chester, NY 10573
914 937-1300
Lighting diffusion material, gels & filters; lens cleaning tissue; set design.

ROSNER TELEVISION SYSTEMS, INC. ★
250 W. 57 St., New York, NY 10107
212 246-2850
Facility turnkey installations, engineering consultation & mobile vehicle construction.

ROSS VIDEO LTD. ★
9 Plaza Dr., Box 220, Iroquois, Ont., KOE IKO Canada
613 652-4889
Portable, studio & compact production switchers.

RPM-RADIO PROGRAMMING/MANAGEMENT ★
25140 Lahser Rd., Ste. 232, Southfield, MI 48034
800 521-2537
Syndicated radio programming.

RTS SYSTEMS, INC. ★
1100 W. Chestnut St., Burbank, CA 91506
213 843-7022
Hardwired intercoms & IFB systems; mic mixers & portable consoles; phone preamps; telco interface equipment; audio preamps; line, monitor & power amps; audio DAs, amp power supplies.
[SEE AD PG. 45](#)

RUSLANG CORP. ★
320 Dewey St., Bridgeport, CT 06605
203 384-1266
Studio furniture, consoles & tape storage units; 19-inch equipment racks.

RUSSCO ELECTRONICS MFG., INC. ★
5690 E. Shields Ave., Fresno, CA 93727
209 291-5591
Audio DAs, preamps, power amps & audio consoles.

SACHTLER CORP. OF AMERICA ★
400 Oser Ave., Hauppauge, NY 11788
516 231-0033
Tripods, heads. ENG braces.
[SEE AD PG. 46](#)

SADELCO, INC. ★
75 W. Forest Ave., Englewood, NJ 07631
201 569-3323
Calibrators, bridges & signal level meters for CATV.

SAKI MAGNETICS ★
8650 Hayden Pl., Culver City, CA 90230
213 559-6704
Audio & video replacement heads.

HOWARD W. SAMS & CO., INC. ★
4300 W. 62 St., Indianapolis, IN 46268
317 298-5400
Broadcast products directories.

FIVE PROBLEM SOLVERS FROM AFA!

Here are five no-nonsense products that have been developed by A.F. Associates in direct response to requests from broadcast and cable engineers across the country:



1. **AFA JOY STICK CAMERA CONTROL PANEL (RCC-200 Series)**
Provides mobile and studio operations with a fast, simple method of controlling camera shadings.
2. **AFA SLATE CAMERA SYSTEM (SC-300)**
A compact, self-contained title card camera for mobile and studio operations.
3. **MARCONI VIDEOTAPE MONITORING UNIT**
Provides monitoring selection and TBC controls in a single unit.
4. **AFA RICK RACK EXTENDER UNIT**
Provides a friction-controlled turntable that facilitates servicing of Ampex VPR2 & VPR2B and Marconi MR2 & MR2B VTRs when rack mounted.
5. **AFA AUDIO PATCHFIELD**
Precision engineered audio patch panel.

For more information on specifications, costs and delivery, contact Richard Lunniss in New Jersey (201) 767-1000 or Noel Parente in California (213) 466-5066. Check them out, today!



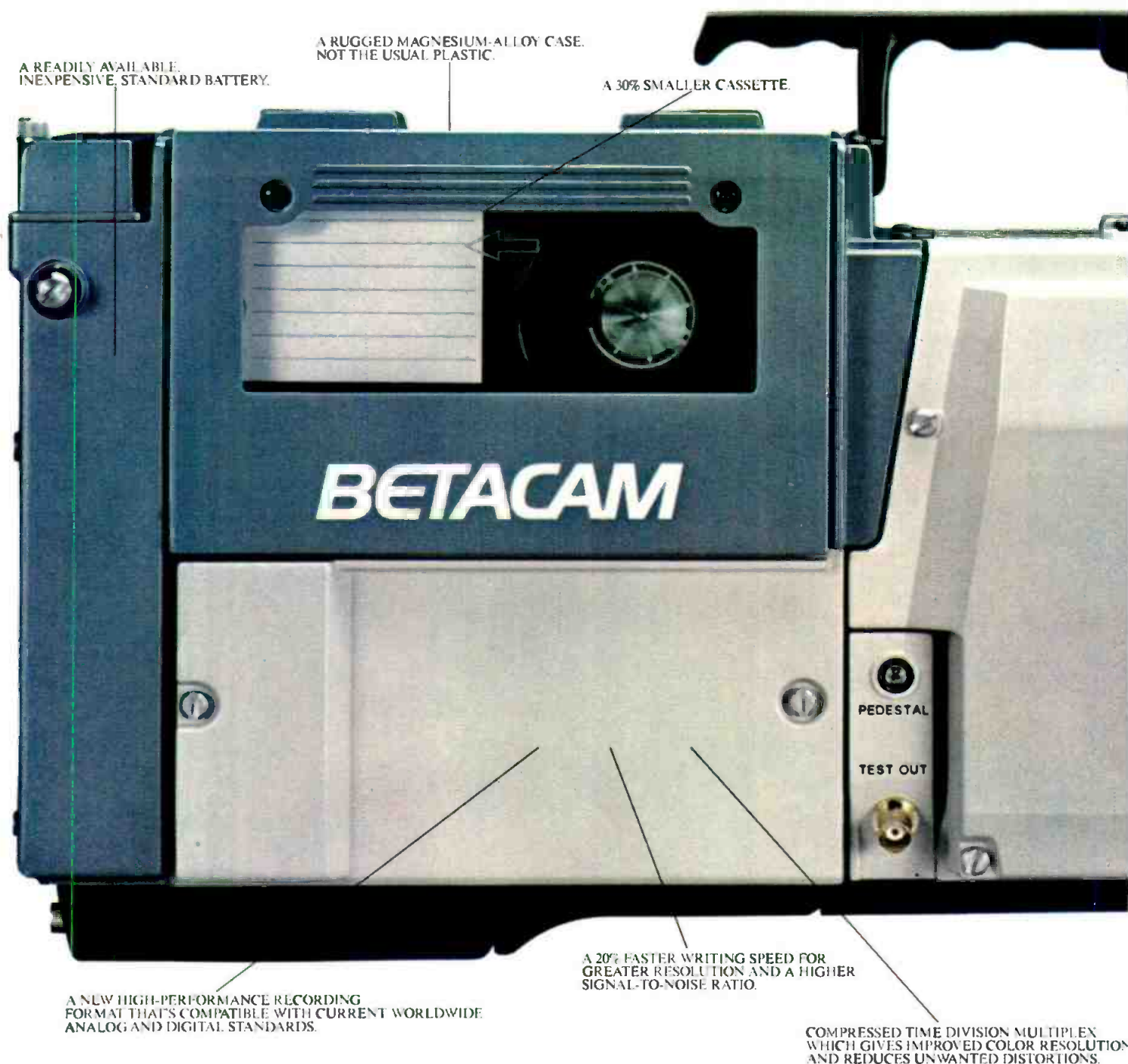
A.F. Associates, Inc.

100 Stonehurst Court, Northvale, NJ 07647 1438 N. Gower St., Box 47, Hollywood, CA 90028

11 REASONS NEWS IS EASIER TO

Of course, there are other reasons why ENG and EFP applications are easier and better with a complete Betacam™ system. Like three tubes for full luminance depth of modulation, wide chroma recording bandwidth for superior color resolution and linear emphasis for superior color reproduction.

In fact, Sony also offers a rugged, cost-effective one-tube version of the Betacam.



A READILY AVAILABLE,
INEXPENSIVE, STANDARD BATTERY.

A RUGGED MAGNESIUM-ALLOY CASE,
NOT THE USUAL PLASTIC.

A 30% SMALLER CASSETTE.

BETACAM

A NEW HIGH-PERFORMANCE RECORDING
FORMAT THAT'S COMPATIBLE WITH CURRENT WORLDWIDE
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A 20% FASTER WRITING SPEED FOR
GREATER RESOLUTION AND A HIGHER
SIGNAL-TO-NOISE RATIO.

COMPRESSED TIME DIVISION MULTIPLEX
WHICH GIVES IMPROVED COLOR RESOLUTION
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WHY THE TAKE WITH A SONY.

If you're looking for a half-inch cassette camera/recorder system that doesn't stop halfway, a system you can grow with that offers unmatched performance, flexibility and value—make it easy on yourself.

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AN OVERALL DESIGN THAT'S 14% LIGHTER, 26% SMALLER, AND 20% SHORTER, MAKING IT EASIER TO CARRY, PIVOT AND SHOOT.

INTERNAL VIEWFINDER CONNECTIONS INSTEAD OF A TROUBLESOME CABLE.

AN INTEGRAL DIRECTIONAL MICROPHONE.

LENSES WHICH ARE INTER-CHANGEABLE WITH OTHER CAMERAS.

THREE 2/3" MIXED FIELD TUBES FOR HIGHER RESOLUTION, BETTER REGISTRATION AND LOWER POWER CONSUMPTION.

SONY

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Broadcast

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SANSUI ELECTRONICS CORP. ★
1250 Valley Brook Ave., Lyndhurst, NJ 07071
201 460-9710
Audio cassette player/recorders; digital cassette recorders; graphic equalizers.

SATCOM TECHNOLOGIES ★
2912 Pacific Dr., Norcross, GA 30071
404 448-2116
Transmit/receive & receive only satellite earth stations, antennas.

SATELLITE BROADCAST NETWORK, INC./WEATHERMATION ★
190 N. State St., Ste. 516, Chicago, IL 60601
312 263-6921
Weather radar systems & weather information services.

SAWYER CAMERA & INSTRUMENT CO.
6820 Santa Monica Blvd., Los Angeles, CA 90038
213 466-6111
Videotape, tape loaders, edit controllers & equipment rental service.

SCALA ELECTRONIC CORP.
Box 4580, Medford, OR 97501
503 779-6500
Power dividers, remote pickup equipment; FM & communications antennas.

SCENE THREE, INC. ★
1813 Eighth Ave. S., Nashville, TN 37203
615 385-2820
Studio & mobile teleproduction facilities; post-production facility.

THE KEN SCHAFFER GROUP, INC. ★
330 W. 42 St., New York, NY 10036
212 695-1107
Digital special effects, delay, reverb, time compression/expansion; RF intercoms & mics; FM transmitters; receive only & transportable satellite earth stations; slow scan transmitters, receivers; spectrum analyzers; equipment rental service, earth station site selection.

SCHARFF COMMUNICATIONS, INC. ★
1600 Broadway, New York, NY 10019
212 582-7360
Mobile audio production facility.

SCHNEIDER CORP. OF AMERICA ★
400 Crossways Park Dr., Woodbury, NY 11797
516 496-8500
Camera lenses & accessories.
[SEE AD PG. 87](#)

SCIENTIFIC-ATLANTA, INC. ★
3845 Pleasantdale Rd., Atlanta, GA 30340
404 441-4000
Satellite transmit/receive, receive only earth stations & STLs; power dividers, modulators; FM, TV & satellite antennas; foam dielectric transmission cable; demodulators; program subcarriers, frequency monitors, controllers & RF test signal generators; status alarm indicators, equipment racks & RF cable.

SCIENTIFIC SYSTEMS, INC. ★
92 Westwood Dr., Toms River, NJ 08753
201 255-2230
Audio DAs.

SCOPE BROADCAST CONSULTANTS
2000 Broadway, Ste. 119, San Francisco, CA 94115
415 441-1070
Engineering consultation.

HH SCOTT, INC.
20 Commerce Way, Woburn, MA 01888
617 933-8800
Audio cassette player/recorders; audio analyzers.

SCOTT INSTRUMENT LABORATORIES ★
13 Sagamore Park Rd., Hudson, NH 03051
603 880-6300
Sound level meters & analyzers.

L.J. SCULLY MFG. CORP. ★
138 Hurd Ave., Bridgeport, CT 06604
203 368-2332
2,4-track studio ATRs.

SEA-CAM, INC. ★
6080 SW 28 St., Miami, FL 33155
305 665-5694
ENG/EFP video cameras; underwater video camera housings; equipment rental service.

SEACOR, INC. ★
123 Woodland Ave., Westwood, NJ 07675
201 666-5600
Capacitors.

SENCORE ★
3200 Sencore Dr., Sioux Falls, SD 57107
800 843-3338
Impedance bridges; audio & video test signal generators; oscilloscopes, multimeters & dB meters.

SENNHEISER ELEC. CORP. ★
10 W. 37 St., New York, NY 10018
212 239-0190
Headphones; dynamic, electret/condenser, RF, shotgun, lavalier & modular mics; mic stands, booms & dollies; impedance bridges.
[SEE AD PG. 86](#)

SESCOM, INC. ★
1111 Las Vegas Blvd. N., Las Vegas, NV 89101
702 384-0993
Mic mixers; ALC & AGC amps, parametric equalizers; preamps, line, monitor & power amps, amp power supplies; rotary & slide attenuators; audio patch panels; audio test signal generators & harmonic distortion meters; audio cable, connectors & jackfields; transformers.

SETCOM CORP.
1400 Stierlin Rd., Mountain View, CA 94043
415 965-8020
Headphones & hardwired intercoms.

SFENA CORP. ★
26 17 Aviation Pkwy., Grand Prairie, TX 75051
800 527-1777
Camera & helicopter stabilizing systems.

SHALCO, INC. ★
Smithfield Industrial Park, Box 1089, Smithfield, NC 27577
919 934-3135
Rotary & slide attenuators.
[SEE AD PG. 216](#)

SHAREPOINT SYSTEMS, INC. ★
402 Tenth Ave., Haddon Heights, NJ 08035
609 546-1841
Cart machine controller/timers, digital clocks & timers.

SHARP ELECTRONICS CORP. ★
10 Sharp Plaza, Paramus, NJ 07652
201 265-5548
ENG/EFP, single tube & monochrome cameras; pro VHS VCR; NTSC color monitors. Audio cassette player/recorders & duplicators; disc playing equipment; speakers; preamps, line, monitor & power amps.

[SEE AD PG. 58-59](#)
Field Offices:
CA 20600 S. Alameda St., Carson 90810 213 637-9488
GA 6478 Dawson Blvd., Norcross 30093 404 448-5230
PA 60 Great Oak Drive, Churchville 18966 215 322-8842

SHINTRON CO., INC. ★
144 Rogers St., Cambridge, MA 02138
617 491-8700
Audio DAs; character generators; compact studio/mobile production switchers & encoded chromakeyers; SMPTE time code generators & readers; sync generators; pulse amps, video DAs & sc amps.

SHIVELY LABS, DIV. HOWELL LABS, INC. ★
85 Harrison Rd., Bridgton, ME 04009
207 647-3327
RF filters, loads, switches; power dividers & diplexers; FM, TV (HP & CP) antennas; antenna monitors, RF power meters & wattmeters; RF cable & jackfields.
[SEE AD PG. 149](#)
[Refer to Reps/Distributors section](#)

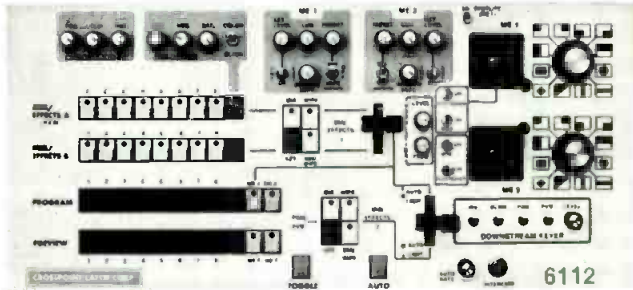
SHOOK ELECTRONIC ENTERPRISES, INC. ★
4846 Whirlwind, San Antonio, TX 78217
512 653-6761
Facility turnkey installations & mobile vehicle construction.

SHURE BROTHERS, INC. ★
222 Hartrey Ave., Evanston, IL 60204
312 866-2200
Mic mixers, portable consoles; pickup arms & phono cartridges; AM compressor/limiters, graphic equalizers; speakers, headphones; dynamic, electret/condenser, ribbon & lavalier mics, mic stands & booms; preamps, monitor & power amps; audio cable.
[SEE AD PG. 27](#)

SIECOR/OPTICAL CABLE
610 Siecor Pk., Hickory, NC 28603
704 324-3801
Fiberoptic transmission systems.

SIEGEL-ELECTRONICS ★
Box 33421, San Diego, CA 92103
714 293-4995
Post-production switchers; RGB, encoded chromakeyers, title & non-additive keyers; sync & black burst generators; NTSC encoders, comb filter decoders, dropout compensators; color correctors; proc amps.

VIDEO SWITCHERS



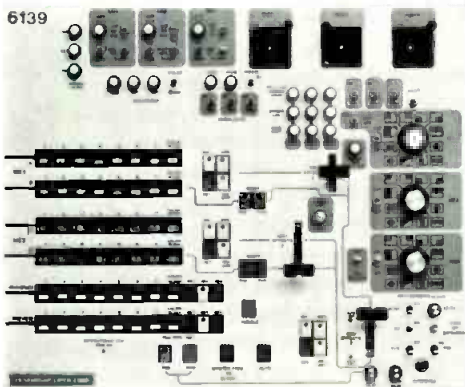
6112

The only switcher in its class to offer two fully independent MIX EFFECTS systems, with each M/E having its own pattern generator and positioner. This nine input, four bus unit includes the following standard features: downstream keyer, pattern modulator, spot-lite, colorizer, toggle or "take preview", automatic or manual mix and wipe operations, variable soft wipes, adjustable borders, internal or external keying on each M/E, intercom, loop-thru video inputs, preset of mix or wipes, black burst output, and a blanking processor. There is also a plug-in optional chroma keyer available. All inputs accept synchronous, non-synchronous, composite, non-composite, monochrome or color signals and go thru dual back porch clamping.

Price: \$7,950.00 PAL \$8,950.00

Options

- Encoded chroma keyer (plug-in board) **\$1,050.00**
- RGB chroma keyer (plug in board) **\$1,050.00**
- Slimline control panel (4 inches) **\$250.00**



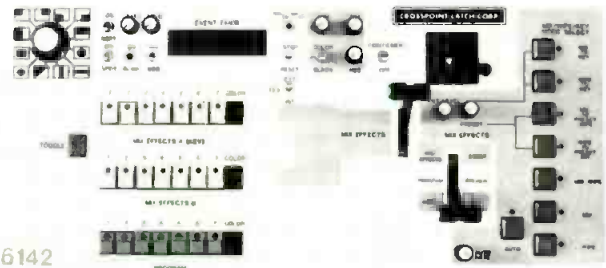
6139

6139

Eight input production switcher with three fully independent Mix Effects Systems. Each ME has its own pattern generator and positioner. Downstream keyer with matte, blink, invert and edge or external border. Downstream keyer may be previewed. Five video signals can be displayed at the same time. Downstream fade to black. Quad split. Field expandable to 16 inputs with additional patterns.

Price: 14,500 PAL \$15,500

- CHROMA KEYERS, each (max. two) **\$1,050.**
(Encoded or RGB) encoded not available in PAL
- Additional dual colorizer (instead of one CK) **\$420.**
- Genlock board **\$350.**
- Expansion Unit (8 additional inputs) **\$5,000.**
- Additional patterns + rotary wipes **\$3,000.**

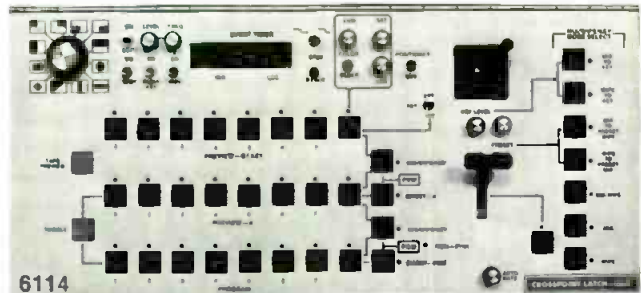


6142

6142

The 6142 is a three bus, eight input completely self-contained switcher. This unit features dual fader handles which permits the operator to dissolve to an effect. The mix effects system features double re-entry along with 12 patterns, variable soft, 24 hour event timer, internal or external keying, pattern modulator, blink key, colorizer, toggle, spot lite, positioner, mix or wipe to key, preset of mix and wipes, blanking processor, loop thru video inputs, dual back porch clamps and black burst output.

Price: \$5,245.00 PAL \$6,245.00

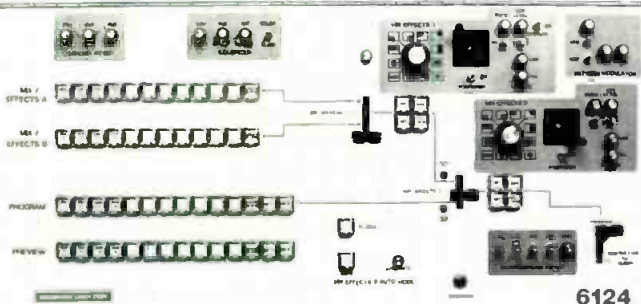


6114

6114

The 6114 is a broadcast quality, eight input, three bus video switcher. It features 12 patterns, positioner, event timer, pattern modulator, soft wipe, spot lite, blink key, toggle, take preview, automatic or manual mix and wipe blanking processor, non-sync lamp, loop through video inputs and a blackburst output.

Price: \$4,680 PAL \$5,680



6124

6124

Four bus, twelve input (including colorizer) video switcher with two fully independent mix effects systems, downstream keyer, RGB or encoded chromakeyer, pattern modulator, automatic or manual mix and wipe, colorizer, dual pattern generators with positioners, loop thru video inputs, take preview, toggle, adjustable soft and border effects, intercom, spot lite, dual back porch clamps, black burst output, blanking processor, master fade to black. Includes extender board and rack slides on electronic package. Control panel 30" x 14". Encoded chromakeyer not available in PAL.

Price: \$13,700 PAL \$14,700

CROSSPOINT LATCH CORP.

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SINGER EDUCATION SYSTEMS ★
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716 586-2020
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SITCO ANTENNAS ★
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503 253-2000
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Video Production Service, 5181 Amelia Earhart Dr., Box 27477, Salt Lake City, UT 84127
801 539-1427
Studio & mobile teleproduction facilities; post-production facility.

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Automated lighting control systems.

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Audio & 1/2-inch video cassettes; tripods, heads; quartz lighting fixtures, lamps, stands, rigging & diffusion & effects material.

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49 Fairfield Rd., Havertown, PA 19083
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Equipment rental service.

SOLID STATE LOGIC ★
Dist. by Musicworks Intl.
2352 Wisconsin Ave., Washington, DC 20007
202 333-1500
Automated audio mixing consoles & machine control systems.
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Audio & video tape bulk erasers; two-way radio communications systems.

SONO-MAG CORP. (SMC) ★
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Computer automation controllers & complete automation systems; single, multiple, & time delay audio cart player/recorders.

SONY BROADCAST PRODUCTS CO. ★
One Sony Dr., Park Ridge, NJ 07656
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Studio, ENG/EFP, single tube & single piece cameras; standalone microprocessor CCUs. One-inch C VTRs, U-type & pro Beta VCRs; slow motion VTR controllers; editor/controllers, multiresource editors, SMPTE time code generator & readers; TBCs; monochrome & NTSC video monitors & projectors. Full line of videotape and cassettes.
SEE AD PGS. 2-3,38-39,126-127,150-151
Field Offices:
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Compton 90220..... 213 537-4300
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San Jose 95134..... 408 946-9090
IL 500 Park Blvd.,
Hamilton Lakes 60106.... 312 773-6000
NJ 15 Essex Rd.,
Paramus 07652..... 201 368-5000
TX 1320 Walnut Hill Lane,
Irving 75062..... 214 659-3621

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Portable audio consoles; digital reverb systems; fixed-head, multichannel digital audio recorders; headphones; dynamic, electret/condenser, lavalier, shotgun & RF mics, mic stands, booms & dollies; RF intercom systems.

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Portable, studio, stereo & automated consoles; multitrack ATRs.

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Portable audio consoles; 2,4-track ATRs; rebuilt audio heads; telco interface equipment.

SOUNDScriber MAGNETIC RECORDING CO., INC. ★
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203 624-5179
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SOUND TECHNOLOGY ★
1400 Dell Ave., Campbell, CA 95008
408 378-6540
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SOUTHWEST TELEPRODUCTIONS ★
2649 Tarna Dr., Dallas, TX 75229
214 243-5719
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SOUTHWESTERN PROGRAMMING SERVICE ★
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602 833-2224
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801 581-5478
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1017 N. Minnesota Ave., Sioux Falls, SD 57104
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Radio business, scheduling, billing, traffic & ledger automation hardware.

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2338 W. Royal Palm Rd., Ste. E, Phoenix, AZ 85021
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Field Offices:
AZ Audio Path ENG Assoc., 316 E.
El Camino Dr.,
Phoenix 85020..... 602 242-2211

SPHERE ELECTRONICS ★
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STANCIL CORP.
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Tape-based loggers.

STANDARD ELECTRIC TIME CORP. ★
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STANDARD TAPE LABORATORY, INC. ★
26120 Eden Landing Rd. #5, Hayward, CA 94545
415 786-3546
Audio test tapes.

STANTON MAGNETICS, INC. ★
200 Terminal Dr., Plainview, NY 11803
212 445-0063
Phono cartridges, phono preamps, record cleaning & care; headphones.
SEE AD PG. 192

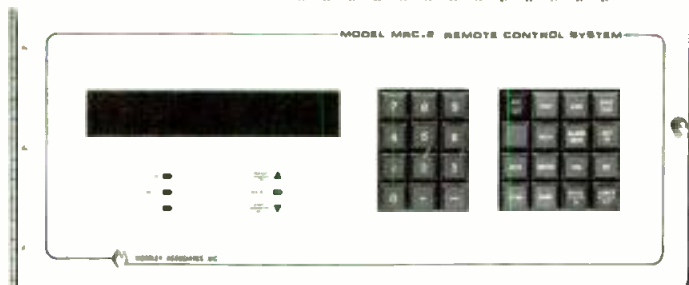
STANTRON, DIV. WYCO METAL PRODS. ★
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213 875-0800
Studio furniture, consoles & 19-inch equipment racks.

STAR CASE MFG. CO., INC. ★
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Radio & TV business automation systems & TV newsroom computers.

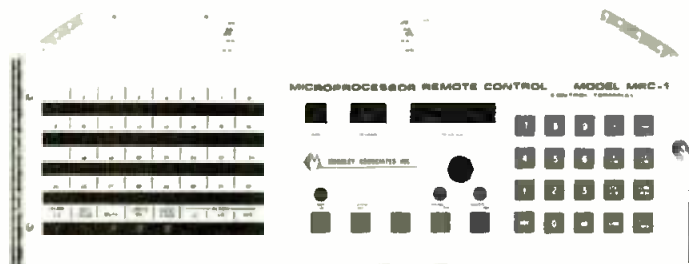
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MRC-2

- MULTI-REMOTE AND MULTI-COMMAND SITE CAPABILITY
- MULTIPLE TRANSMISSION CHANNELS
- USER DEFINED SOFTWARE
- CLEAR ENGLISH DISPLAY

Leading Moseley's ever-growing family of microprocessor-based remote and supervisory control systems, the **MRC-2** offers the user the most flexible and complete method of controlling and monitoring up to 99 remote sites available. With dual data link capability, 32 control lines, 32 status, and 32 telemetry channels standard; expansion capabilities allow for up to six data links, up to 255 control lines, and 255 status and 255 telemetry channels. User-defined dual upper and dual lower telemetry limits alarm when exceeded. Status channels can be programmed to alarm on rising, falling, or rising and falling waveforms. The **MRC-2** offers a choice of six calibration modes for telemetry inputs; all setup data is preserved in non-volatile memory. Multiple CRTs, Loggers, and Automatic Control Units for automatic transmitter operation are available at both command and remote terminals.



MRC-1

- MULTIPLE REMOTE SITE CAPABILITY
- AUTOMATIC TELEMETRY MUTING
- USER DEFINED SYSTEM SETUP
- UP TO 64 COMMAND LINES PER SITE

Closely following the **MRC-2** in performance, Moseley's **MRC-1** is the leading Microprocessor Control System in the industry today. Up to 64 command outputs at each of up to nine remote terminals gives the user outstanding system flexibility. System setup is tailored by the individual user. Telemetry channels may be keyboard-calibrated for linear, indirect power, or direct power scaling. The **MRC-1** features modular design, upper and lower telemetry limits, automatic telemetry muting, and a set of 32 LEDs that display all status inputs from any site simultaneously. In case of extended shutdown, the Moseley Memory Option stores setup data for up to ten years. Optional CRT and Logging terminals simplify operator interface with the **MRC-1**. The Multiple Direct Command options offers ten preselected command functions to give the operator quick control of critical parameters at any site.

For further information please contact our Marketing Department.



MOSELEY ASSOCIATES, INC.

A Flow General Company . Santa Barbara Research Park

111 Castilian Drive . . . Goleta, California 93117
(805) 968-9621 . Telex: 658-448 . Cable: MOSELEY

Circle 184 on Reader Service Card

STEPHENS ELECTRONICS, INC. ★
3513 Pacific Ave., Burbank, CA 91505
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Open-reel, portable, studio & multitrack ATRs; splicing blocks. tape; SMPTE time code synchronizers.

STOREEL CORP. ★
2050-C Carrall Ave., Ste. #2, Box 80523, Atlanta, GA 30341
404 458-3280
Tape storage units.
SEE AD PG. 209

STRAIGHT WIRE AUDIO, INC. ★
2523 Wilson Blvd., Arlington, VA 22201
703 522-7780
Phase control mixing; phono preamps; noise reduction; preamps, line, monitor & power amps, audio DAs & amp power supplies.

STRAND CENTURY ★
20 Bushes Ln., Elmwood Park, NJ 07407
201 791-7000
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SEE AD PG. 185
Field Offices:
CA 18111 S. Santa Fe St.,
Rancho Dominguez 90221
NJ 20 Bushes Ln.,
Elmwood Park 07407
Refer to Reps/Distributors section



STUDER REVOX AMERICA, INC. ★
1425 Elm Hill Pike, Nashville, TN 37210
615 254-5651
Mic mixers; portable, mono & stereo & TV audio consoles; portable, studio & multitrack ATRs; SMPTE time code synchronizers; turntables; speakers; telco monitor & power amps.
SEE AD PG. 24
Field Offices:
CA 14046 Burbank Blvd.,
Van Nuys 91401 213 780-4234
IL Brian Tucker, 11 S. Driver, Tower Lake,
Barrington 60010 312 526-1660
NJ Vision Sound, 110 Grand Ave.,
Englewood 07631 201 871-4101
NY 155 Ave. of the Americas,
New York 10013 212 255-4462
TX 910 S. Glasgow Dr.,
Dallas 75223 214 760-8647
Refer to Reps/Distributors section.

STUDIO FILM & TAPE, INC. ★
6670 Santa Monica Blvd., Hollywood, CA 90038
213 466-8101
Videotape & film.

STUDIOMASTER, INC. ★
1365-C Dynamics St., Anaheim, CA 92806
714 528-4930
Mic mixers; portable, stereo & mono & TV audio consoles; cassette player/recorders; monitor & power amps.

JOHN M. SULLIVAN ASSOC., INC. ★
880 Commonwealth Ave., Boston, MA 02215
617 227-1710
Equipment, stage & studio rental service; audio & video post-production facility.

SUNDANCE PRODUCTIONS, INC. ★
7141 Envoy Ct., Dallas, TX 75247
214 688-0081
Studio & mobile teleproduction facilities; video post-production facility.

SUNRISE CANYON VIDEO ★
439 Western Ave., Glendale, CA 91201
213 241-5173
Studio & mobile teleproduction facilities; video post-production facility.

SUPEREX ELECTRONICS
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SURCOM ASSOCIATES, INC. ★
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714 722-6162
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SWAGER TOWER CORP. ★
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219 495-5165
Tower masts, hardware & lighting.

SWINTEK ENTERPRISES, INC. ★
1180 Aster Ave. #J, Sunnyvale, CA 94086
408 249-5594
Intercoms; RF & lavalier mics; two-way radio transmitters/receivers.

SWITCHCRAFT, INC. ★
5555 N. Elston Ave., Chicago, IL 60630
312 792-2700
Audio cable, connectors & jackfields.

SWR, INC. ★
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SYLVANIA/GTE
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AM & FM compressor/limiters, parametric equalizers; telco interface equipment; monitor & power amps; audio patch panels.

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213 641-2042
Equipment listing catalog.

SYSTRON DONNER ★
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Digital clocks, time distribution systems; frequency monitors & counters; RF generators; multimeters, dB meters; multi-test systems; microwave equipment.

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2714 Union Ext., Memphis, TN 38112
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Music library; radio & TV audio production.

TAPEPOWER ★
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Studio & mobile teleproduction facilities; video post-production facility.

TAPEX CORP. ★
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TDK ELECTRONICS CORP. ★
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www.americanradiohistory.com

PERFECT TIMING



780 SERIES RAM TIME PROGRAMMERS

\$1200 to \$1500
When programming more than eight events, the 780 Series RAM Time Programmers are the most cost-effective way of dealing with the problem. They are flexible, easy to use, and provide 32 events (expandable to 96) in 5 1/4 inches of rack space.

780 Series units operate from the power line, with a backup crystal time base and 72 hour battery/charger as an integral part of the equipment.

- The front panel consists of:
- An eight digit real time display when day selection is required as on the ES 781, 784, 785, seven digits for ES 780, and six digits for the others.
- A two digit display of "Next Event" number.
- An eight digit display of "Next Event Time" when ES 780, 781, or 782 is specified, and a six digit display when ES 783, 784, 785, 786 or 787 is specified, and a four digit display when ES 788 or 789 is specified.
- All displays are 3 inch red light emitting diodes.
- Controls, mounted below the displays, consisting of:

An "Active-Disable" Switch used when it is necessary to preempt the program temporarily.

Time Setting Controls—All recessed to avoid accidental bumping.

"Display"—The displays can be observed by actuating this control during a power outage. The unit will continue to operate, but the displays will be blanked to conserve battery energy.

"Event Select"—A two decade thumbwheel, used to set the event number when entering or reading data in the memory.

"Event Time Select"—An eight or six or four decade thumbwheel, used to enter the event time in the memory. The number of thumbwheels will be determined by the part number of the unit specified.

"Enter"—This pushbutton is actuated to enter data into the memory.

"Run-Read/Enter"—A two position switch, placed in the "Run" position for normal operation, and in the "Read/Enter" position whenever entering data or reading data.

STANDARD UNITS

EIGHT DIGITS OF PROGRAMMING CAPACITY

ES 780—10 Days, 10 Outputs, Hours, Minutes, Seconds

ES 781—100 Days, Hours, Minutes, Seconds

ES 782—16 Outputs, Hours, Minutes, Seconds

SIX DIGITS OF PROGRAMMING CAPABILITY:

ES 783—Hours, Minutes, Seconds

ES 784—100 Days, Hours, Minutes

ES 785—100 Days, Minutes, Seconds

ES 786—16 Outputs, Hours, Minutes

ES 787—16 Outputs, Minutes, Seconds

FOUR DIGITS OF PROGRAMMING CAPABILITY

ES 788—Hours, Minutes

ES 789—Minutes, Seconds

The size of the unit is 5 1/4" High x 19" Wide x 10" Deep—Rack Construction, totally enclosed, with a screen top.

ES 782, 786 and 787 have 16 isolated outputs. Any of the 32 events can be programmed to activate any of the 16 outputs. ES 780 has 10 outputs. The other units have a single output.

ES 784, 786 and 788 have a one minute contact closure. The others have a one second contact closure. Contacts are single pole, form A, reed type, and have a one amp rating.

THE 780 SERIES AS A MASTER CLOCK
By adding the ES 167 Serial Time Code Generator and using a more accurate crystal, the 780 Series Ram Time Programmers can serve the dual functions of Master Clock and 96 event programmable timer.



750 SERIES THUMBWHEEL PROGRAMMER/COMPARATORS

\$310 to \$390

When programming up to eight time events, the 750 Series is recommended. Thumbwheel switches are set to compare the time information from an ESE Clock or Timer.

An output (event) occurs each time the thumbwheel switch setting agrees with the time display.

One set of thumbwheels is required for each event. The standard 750 Series units are enclosed in a 3 1/2 inch high relay rack panel, and chassis.

STANDARD UNITS

ES 750—ES 112 and one 8 Digit Program

ES 751—ES 124 and one 6 Digit Program

ES 753—ES 112 and two 4 Digit Programs (Hrs & Min)

ES 754—ES 124 and two 4 Digit Programs (Hrs & Min)

ES 756—ES 510 and one 4 Digit Program (Min & Sec)

ES 758—ES 510 and two 4 Digit Programs (Min & Sec)

ES 760

ATS CLOCK

The ES 760 is a six digit, 24 hour, programmable clock.

On the front panel are a six digit display of time, in hours, minutes and seconds, and two sets of four thumbwheels.

An internal Comparator is fed "Clock Time" and "Thumbwheel Time," and when these two agree, a reed relay contact closure occurs, which is brought to a rear-mounted connector. The connector also provides four line parallel BCD time information.

If normal power is interrupted, ES 760 will automatically switch to its internal battery and crystal time base.

Mechanical: 3 1/2" High x 19" Wide x 8" Deep.

PRESETTABLE TAPE TIMERS

ES 1296

For Off-Air taping, or operating tape recorders when nobody is there, ESE has created ES 1296.

ES 1296 is a six digit, twelve hour clock with LED displays and a programmable, 300 watt, 117V AC outlet on the rear.

There are four push-button controls (Fast, Slow, Set and Reset) and a four position selector switch. The Fast and Slow controls are used to set time of day and recorder start time.

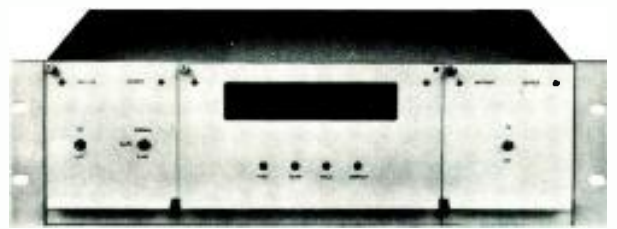
When setting the recorder start time, the Set control is used in addition to the Fast and Slow controls, to set the time to the nearest minute. A rear-mounted four position switch is used to Pre-set the start time as far ahead as 96 hours.

Once the rear outlet is activated, it will remain on for 66 minutes.

The Record Duration option allows the user to select one of four time intervals for recording. These four time intervals are either 16, 33, 66 and 138 minutes, or 33, 66, 138 and 250 minutes.

An additional option is Sequential Turn-on, for those machines that require Power, Play, Record in sequence.

A Manual Override Switch can be provided as an option, so that the user may operate his machine at any time without disconnecting from the ES 1296.



ESE Masters provide a means of keeping all time displays in the system in agreement, through the use of a Serial Time Code. Only one pair of wires is needed to distribute the time code to all remote serial input displays.

An ESE Master Clock System can operate digital displays, clocks with sweep second hands, Printers and, in addition, tell your computer what time it is.

Twelve hours of standby battery operation is standard in ES 160, 160/1 and 190.

MASTER CLOCKS

ES 160 Mounted in a 5 1/4" relay rack panel and chassis, displays six digits of time information on 3" LED displays, in 12 hour format.

ES 160 has three second per month accuracy, its standard output is serial BCD, CMOS compatible, and can drive ES 161, 166, 171, 991 or 993 Remote Displays without buffering. All inputs and outputs are through rear-mounted connectors.

Dimensions: 5 1/4" High x 19" Wide x 15" Deep **\$1050**

ES 160/1 One second per month version of ES 160. **\$1225**

ES 190 The ultimate in accuracy! Similar to ES 160, with special circuits for receiving and decoding a 1000 Hz tone at the start of each minute. The decoder output resets the seconds' counters in the clock each minute except the first minute of every hour. These tones are transmitted by radio station WWV, with an oscillator accuracy of ±1 part in 10¹¹. ES 190 has an antenna and internal WWV receiver with audio-output. Displays are .3" red LED's. Serial output drives ES 161, 166, 171, 991 and 993 Remote Displays.

Dimensions: 5 1/4" High x 19" Wide x 15" Deep. **\$1225**

ES 192/194 The most economical Masters, ES 192 (12 Hr) and ES 194 (24 Hr) are constructed using ES 112 or ES 124 digital clocks and adding the ES 167 Serial Time Code Generator to provide the output needed to drive Remote Serial Displays ES 161, 166, 171, 991 and 993. Displays are .6" incandescent type.

Dimensions: 2 1/2" High x 8" Wide x 6" Deep. **\$325**

ES 196 TIME AND TEMPERATURE MASTER Basically the same as ES 192, but with gas discharge displays, panel mounting and separate serial BCD outputs for time and temperature. Displays 12 hour and °F format.

Dimensions: 3 1/4" High x 19" Wide x 8" Deep. **\$766**

ACCESSORIES

ES 161 REMOTE DIGITAL DISPLAY Decodes serial time data and displays six digits of time on .55" Gas Discharge Displays, in either 12 or 24 hour format.

Dimensions: 8" Wide x 2 1/2" High x 6" Deep. **\$165**

ES 162 IMPULSE DRIVER Plugs into the ES 160 chassis, can drive 20 Impulse Clocks. Designed so that, if power fails, impulse always comes out with the same polarity when power is restored. **\$200**

ES 164 REMOTE DIGITAL IMPULSE DISPLAY Similar to the ES 161 except that the ES 164 derives its count command from the ES 162 Impulse Driver, or any impulse clock drive circuits already installed.

Dimensions: 8" Wide x 2 1/2" High x 6" Deep. **\$244**

ES 166 JUMBO 1" CLOCK DISPLAY Features six digits of one inch gas discharge displays in 12 or 24 hour format. Receives serial time code input from any ESE Master Clock or ES 167

Dimensions: 10 1/4" Wide x 4 1/4" High x 6 1/4" Deep. **\$254**

ES 167 SERIAL TIME CODE GENERATOR An integral part of ES 160, 190, 192/194 and 196 Master Clocks, this unit can be added to many other ESE products, including ES 112, 124, 182, 184, 992, 994, 750, 751, 753, 754 and all 780 Series Time Programmers. Drives ES 161, 166, 171, 991 or 993 Remote Displays. **\$146**

ES 168 TEMPERATURE SLAVE Receives serial code from ES 196, displays it on .55" Gas Discharge Displays.

Dimensions: 8" Wide x 2 1/2" High x 6" Deep. **\$146**

ES 171 CONSOLE MOUNT REMOTE DISPLAY Receives the serial time code generated by any ESE Master Clock, or any ESE product containing the ES 167 serial time code generator, and displays it on bright red .3" LED's.

Dimensions: 2 1/4" High x 4 1/4" Wide x 4" Deep. **\$158**

ES 1548 CONSOLE MOUNT TEMPERATURE DISPLAY In the same case as ES 171, receives the serial code from ES 196 and displays it on bright red .3" LED's.

Dimensions: 2 1/4" High x 4 1/4" Wide x 4" Deep. **\$158**

IMPULSE CLOCK When a sweep second hand is desired, specify the 3201.003 "Extra Flat" Impulse Clock. It has a 12 inch dial protected by a glass cover and metal bezel and is approximately one inch thick. As many as twenty impulse clocks can be driven by a Master Clock which has ES 162 as an accessory. **\$195**

ES 981 4 DIGIT SERIAL INPUT SLAVE Decodes serial time data and displays four digits of time on large 2" gas discharge displays.

Dimensions: 10 1/4" Wide x 4 1/4" High x 6 1/4" Deep. Desk Top Case. **\$325**

ES 993 6 DIGIT SERIAL INPUT SLAVE Features four digits of 2" high gas discharge displays, and two digits (Seconds) of 1" gas discharge displays. Receives serial time code input from any ESE Master Clock or ES 167.

Dimensions: 5" High x 12" Wide x 3" Deep (Wall Mount) **\$449**



SMPTE TIME CODE GENERATOR: ES 261 is a pre-settable, eight-digit SMPTE/Time Code Generator, capable of Drop Frame or Non-Drop Frame operation. **\$750**



ES 253 SMPTE TIME CODE READER: is an eight-digit SMPTE Time Code Reader displaying Hours, Minutes, Seconds and Frames. **\$454**

ES 254 SMPTE TIME CODE READER: is a bi-directional, multi-speed eight-digit reader, displaying Hours, Minutes, Seconds and Frames on .4" red LED displays. **\$675**

ES 255 is a bi-directional, multi-speed, eight-digit SMPTE Code Reader, that can add the information to a video stream for recording time code on the video portion of a tape, or for displaying it on a monitor. Reading speed is 1/20 to 20 times playback speed. **\$995**

ES 112/124

DIGITAL CLOCK \$165

ES 112 (12 hr.) and ES 124 (24 hr.) are solid state, six digit clocks. Can drive 80 Series and 90 Series slaves. Displays are incandescent filament. 6" high.
Dimensions: 2" High x 8" Wide x 6" Deep



ES 142/144

DIGITAL CLOCK THERMOMETER \$300

ES 142 (12 hr.) and ES 144 (24 hr.) are solid state digital clock/thermometers. Six digits of time (hours, minutes, seconds) and 3 digits of temperature (-50°F to +150°F or -45°C to +66°C) in gas discharge displays. 55" high. Temperature sensor on 25 ft. cable included.
Dimensions: 2 1/2" High x 10" Wide x 6" Deep

ES 240/241

ES 240 DIGITAL THERMOMETER is calibrated for °F and °C. Displays are planar gas discharge. 55" high. \$195
Dimensions: 2 1/2" High x 8" Wide x 6" Deep.

ES 241 DIGITAL THERMOMETER is calibrated for °F and °C, alternating between the two every four seconds. Displays are planar gas discharge. 55" high. \$236



\$113 \$135

ES 211/214

DYNAMIC AUDIO LEVEL INDICATOR

The ES 214 is a highly accurate audio level indicator which is designed to simulate the action of a conventional VU-Meter but with superior dynamic characteristics. The LED meter is five to one hundred times faster in responding to complex waveforms than the mechanical meter without sacrificing the familiar meter "movement".

SPECIFICATIONS

Number of indicators: 14 LED Lamps in 3 colors

Scale: +4, +3, +2, +1 dB—Red
0 dB—Yellow
-1, -2, -3, -5, -7, -10,
-15, -20, -25 dB—Green

Input Impedance: 2200 ohms at maximum sensitivity, 8800 ohms at +8dBm "House Level", 10,000 ohms at minimum sensitivity.

Input Circuit: Transformer isolated, balanced bridging

Frequency Response: 20-20 KHz ± 1 dB (all modes)

Rise Times: Less than 250 MicroSec (Peak Model), less than 25 MilliSec (Fast Averaging Model). Approximately 300 MilliSec (Optional VU Standard)

Fall Time: (All Modes) About 300 MicroSec from full scale

Modes of Operation: Peak Reading, Fast Averaging (Apparent Loudness), Slow Averaging (USA VU-Standard)



70 SERIES

CONSOLE MOUNT CLOCKS AND TIMERS

ES 172 SIX DIGIT, 12 HOUR CLOCK: Three setting controls—Fast Advance, Slow Advance and Hold. \$158

ES 174 SIX DIGIT, 24 HOUR CLOCK: Otherwise identical to the ES 172. \$158

ES 370 FOUR DIGIT, ONE HUNDRED MINUTE UP/DOWN TIMER: Six controls—Count Up, Count Down, Stop, Minutes Advance, Seconds Advance, Reset. \$201

ES 371 UP/DOWN TIMER: Similar to the ES 370 except with Leverwheel Preset capability for faster setting of the desired time. \$319

ES 570 FOUR DIGIT, SIXTY OR 100 MINUTE TIMER: Select 60 or 100 minute mode on rear connector. Start, Stop and Reset controls. Runs continuously unless stopped. Reset will return all displays to zero. Unit will run if reset while running or will stay at zero if reset when stopped. \$158

ES 572 SIX DIGIT, 12 HOUR CLOCK OR TIMER: Five controls—Start, Stop, Reset, Fast Advance, Slow Advance. Will run continuously to 12:59:59. Advances to 1:00:00 and continues as clock unless stopped or advanced. \$192

ES 574: A 24 hour version of ES 572. \$192

ES 575: Exactly like ES 570, with the addition of a "freeze" button. When the button is released, the display "catches up" with the correct elapsed time. \$192

Dimensions: 2 1/8" High x 4 5/8" Wide x 4 1/8" Deep



80 SERIES

JUMBO CLOCKS AND TIMERS

Large, bright 1" gas discharge displays provide effortless long distance viewing from 40 feet

ES 182 SIX DIGIT, 12 HOUR CLOCK: Three rear-mounted setting controls—Fast Advance, Slow Advance, and Hold. \$272

ES 184 SIX DIGIT, 24 HOUR CLOCK: Otherwise identical to the ES 182. \$272

ES 380 FOUR DIGIT, 100 MINUTE UP/DOWN TIMER: Displays minutes and seconds, with rear-mounted connector to allow remote wiring of six momentary SPST CONTROLS—Count Up, Count Down, Stop, Minutes Advance, Seconds Advance and Reset. Other features similar to ES 301. \$316

ES 381 UP/DOWN TIMER: Similar to ES 380, except that leverwheel preset is used. \$416

ES 580 FOUR DIGIT, 60 MINUTE TIMER: Displays minutes and seconds. Rear connector allows remote wiring of three momentary SPST controls—Start, Stop and Reset. Reset returns all displays to zero, and timer will continue to run from zero if reset while running.

80 Series slaves are also compatible with other ESE clocks and timers: ES 112/124, 301, 302 and 510. \$228

Dimensions: 4 4/5" High x 10.38" Wide x 6.58" Deep



90 SERIES

2 INCH DISPLAYS—VIEWABLE AT 60 FEET

ES 381—Presettable Up/Down Timer: 100 Minute Range—Displays Minutes and Seconds, uses Leverwheel Preset Controls are Count Up, Count Down, Stop, Reset and Preset. \$487
Dimensions: 4 4/5" High x 10.38" Wide x 6.58" Deep.

ES 580—Sixty Minute Timer: Displays Minutes and Seconds. Rear-mounted connector provides for wiring to user's single pole, momentary, push-button controls. Start, Stop and Reset. Reset returns all displays to zero, and timer will continue to run from zero if reset while counting. \$228

Dimensions: 4 4/5" High x 10.38" Wide x 6.58" Deep

ES 992/994—8 Digit Clocks: ES 992 (12 Hr) and ES 994 (24 Hr)—Hours and Minutes on Two Inch Gas Discharge Displays. Seconds on One Inch Gas Discharge Displays. Three independent setting controls—Fast Advance, Slow Advance and Hold. \$449

Dimensions: 5" High x 12" Wide x 3 1/2" Deep



ES 562/564

SIX DIGIT CLOCK/TIMER WITH MEMORY \$313

ES 562/564 is a combination six digit clock and 24 hour timer with memory, allowing the user to set the clock to the correct time of day, switch to timer mode, then switch back to time of day by pushing one button; time of day will be correctly displayed, in hours, minutes and seconds. Five pushbutton controls are mounted on the top of the unit, near the front of the desk-top case. When panel mounting is specified, they will be mounted on the front panel, below the display. The controls may also be removed, through two rear-mounted five pin connectors (Option R or Option D). These controls are Clock, Fast/Start, Slow/Stop, Timer and Hold.

Display: Six digits of .55" Planar Gas Discharge Display



ES 280

AUDIO TIME CODE GENERATOR/READER

The ES 280 is a 10 Digit Audio Time Code Generator/Reader, capable of laying down a serial BCD time code on audio tape in the Generator Mode, and recovering and displaying it in Digital form in the Reader Mode. The code has been designed by ESE. It is not a standard code, such as SMPTE or IRIG. The frequencies used to produce the code have been selected to be compatible with cartridge machines as well as other tape recording and playback equipment. Amplitude adjustment assures the right amount of signal for the particular machine being used.



ES 510L

FOUR DIGIT 60 MINUTE TIMER \$158

ES 510 is a four digit, sixty minute timer (59:59) with Start, Stop and Reset controls. If stopped, display will hold time reading and when restarted will continue with next count from last displayed figure. If reset while running, timer will continue to run. ES 510 can drive 80 Series and 90 Series Slaves.

Dimensions: 2 1/4" High x 6" Wide x 6" Deep



ES 203/205 \$89

ES 203/205 is a 20 input Timer/Source Interface. It was designed to provide a simple means of connecting a variety of sources such as carts and turntables to the remote input of ESE Timers. The most common application for this product is resetting either an ES 400 or ES 510 Timer each time a source is started.

The 20 inputs are divided into ten DC voltage inputs and ten contact closure inputs. Activation of any one of these inputs will cause an output which will momentarily reset an ESE timer.

Mechanical: Aluminum Case 8" x 6" x 2".



ES 301/302

100 MINUTE UP/DOWN TIMERS \$234 \$302

ES 301 is a four digit, one hundred minute timer (99:59) with six controls: Count Up, Count Down, Stop, Minutes Advance, Seconds Advance, Reset. Counting can be activated up or down or set back to zero. When "Stop" control is pressed, the four digit display is held. Counting direction (up or down) can be changed or time can be reset to zero without stopping the count. The ES 301 can drive 80 Series and 90 Series Slaves. Displays are gas discharge. 55" high.



With the ES 302, the user can preset times much faster than with the ES 301, because lever-wheel type switches are used for the preset feature. The ES 302 can drive 80 Series and 90 Series Slaves.

Dimensions: ES 301: 2 1/4" High x 8" Wide x 6" Deep
ES 302: 2 1/4" High x 10" Wide x 6" Deep



ES 206

VIDEO TIME AND DATE GENERATOR \$475

The ES 206 has been designed to allow the addition of Time and Date information to a video signal. Two rear-mounted video jacks permit "looping" the video information through the 206 to add the date.



ES 270

IRIG B TIME CODE READER \$350

The ES 270 TIME CODE READER has been designed to be an economical solution to the problem of receiving and displaying IRIG B

Nine digits (Days, Hrs, Min, Sec) of time are shown on bright red LED's. .3" character height. ES 270 comes in a rack mounting enclosure, 1 1/4" High, 19" Wide and 10" Deep. The power requirement is 117V AC, 50/60 Hz, 230V AC, 50 Hz is available as an option.



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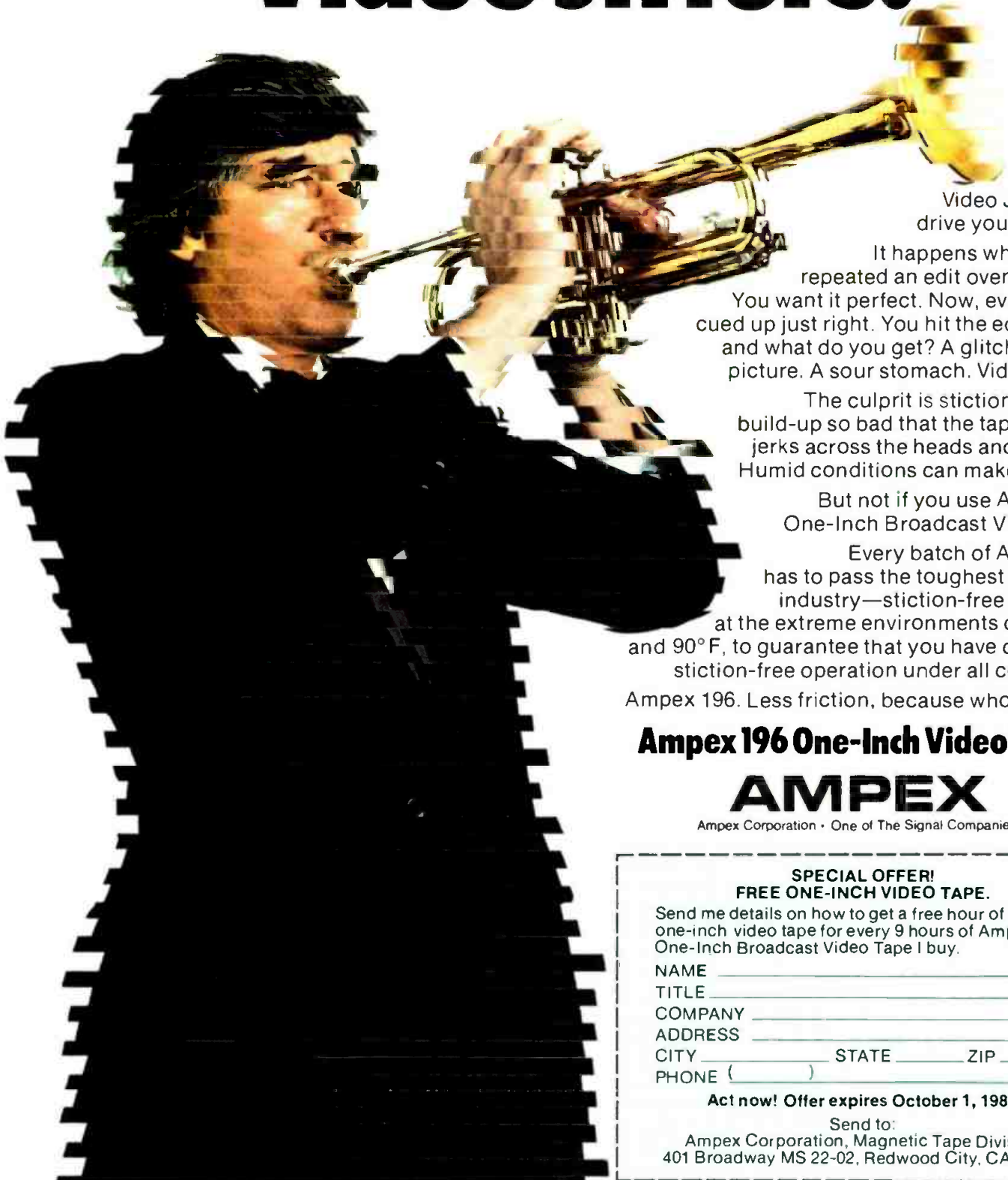
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Field Office:
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Equipment rental service; mobile teleproduction facility.
SEE AD PG. 212

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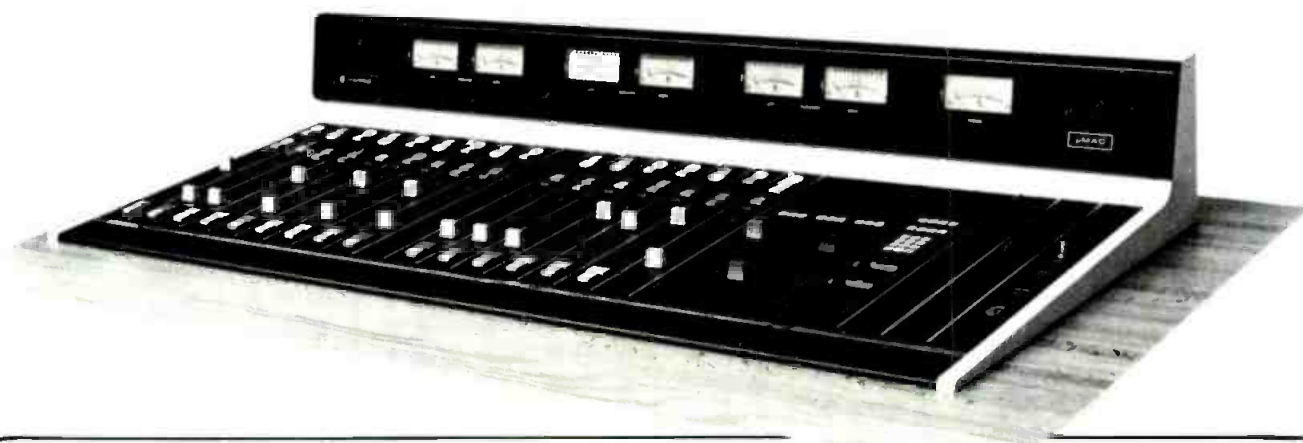
TIFFEN MFG. CO., INC. ★
90 Oser Ave., Hauppauge, NY 11788
516 273-2500
Special effects and color correction filters for cine & video cameras; audio cassette player/recorders.
SEE AD PG. 33
Refer to Reps/Distributors section

TIMES FIBER COMMUNICATIONS, INC.
358 Hall Ave., Box 384, Wallingford, CT 06492
800 243-6904
Fiberoptic transmission and interconnect systems; coaxial transmission line & connectors.

TMD, DIV. THE WILL-BURR CO.
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MICRO MAC's software control provides convenient enhancement features...built-in flexibility and adaptability for future digitized audio. All without mainframe changes!

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Find out more. Write Harris Corporation, Broadcast Products Division, P.O. Box 4290, Quincy, Illinois 62305-4290. 217-222-8200.



HARRIS

Circle 188 on Reader Service Card

www.americanradiohistory.com

TM SYSTEMS, INC.

25 Allen St., Bridgeport, CT 06604
203 366-4571
Line amps, amp power supplies; VU & dB meters; conditioning equipment.

TODAY VIDEO, INC.

45 W. 45 St., New York, NY 10036
212 391-1020
Teleproduction & post-production facilities.

TOPAZ, INC. POWERMARK DIV.

3855 Ruffin Rd., San Diego, CA 92123
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Inverters, converters; surge protectors.

TOPAZ, INC. TOPAZ ELECTRONICS DIV.

9192 Topaz Way, San Diego, CA 92123
619 279-0831
Power conditioners; transformers & surge protectors.

TORPEY CONTROLS & ENGINEERING, LTD.

2220 Midland Ave. #98, Scarborough, Ont., M1P 3E6 Canada
416 298-7788

Character generators; serial interface machine control system; digital clocks, master/slave clocks, time distribution, timers & time comparators.

TOSHIBA AMERICA, INC.

2441 Michelle Dr., Tuscan, CA 92680
714 730-5000
Studio & ENG/EFP cameras; production switchers, digital effects processors; frame synchronizers, audio/video delay systems.

TOWNSEND ASSOCIATES, INC.

Mainline Dr. Industrial Park, Box 1122, Westfield, MA 01086
413 562-5055
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TPC COMMUNICATIONS, INC.

Production Plaza, Sewickley, PA 15143
412 771-4700
Studio & mobile teleproduction facilities; video post-production facility.

TRANS-AMERICAN VIDEO, INC. (TAV)

1541 N. Vine St., Hollywood, CA 90028
213 466-2141
Studio & mobile teleproduction facilities; video post-production facility.



TRANSIST-O-SOUND

728 Yosemite Dr., Indianapolis, IN 46217
317 787-8491
Mic mixers.

TREPAC DATATONE

547 Windsor St., Reading, PA 19601
215 374-3439
Audio/video automatic line program alarm; tone status reporting & control modules.

TRIDENT (USA), INC.

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203 357-8337
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TRI-EX TOWER CORP.

Box 5009, 7182 Rasmussen Ave., Visalia, CA 93278
209 625-9400
Towers, masts.

TRITRONICS, INC.

733 N. Victory Blvd., Burbank, CA 91505
800 423-3640
Motion analysis TV cameras, color video monitors; telecines; motion analysis & microscope camera systems; telecine islands; NTSC color monitors.

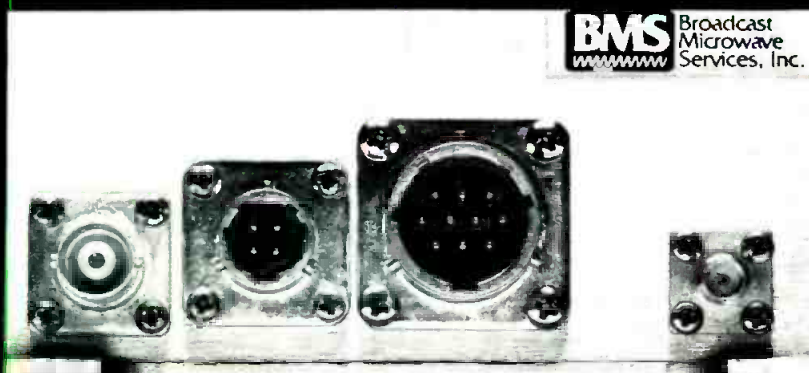
TRI VIDEO PRODUCTIONS

Box 8822, Incline Village, NV 89450
702 323-6868
Mobile video production facility.

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707 528-1230
Phase comparators; time code receivers.

TTE, INC. ★
2212-14 S. Barry Ave., Los Angeles, CA 90064
213 478-8224
Comb filter decoders, video filters; RF filters; transformers.

TUNGSTONE BATTERIES, INC.
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617 784-2000
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5426 Fair Ave., N. Hollywood, CA 91601
213 769-0928
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415 982-3073
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805 499-4764
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UAB PRODUCTIONS ★
8443 Day Dr., Cleveland, OH 44129
216 845-6043
Studio & mobile teleproduction facilities; video post-production facility.

UHF ASSOCIATES ★
5625 State Farm Dr. #4, Rahnert Park, CA 94928
707 584-7844
RF modulators.

ULTIMATE CORP. ★
18607 Topham St., Reseda, CA 91335
213 345-5525
Encoded chromakeyers.
SEE AD PG. 183

ULTRA AUDIO PIXTEC (DIV. AUDIO INT'L, INC.) ★
Box 921, Beverly Hills, CA 90213
213 651-5563
Mic mixers; portable, studio & TV audio consoles; monitor & power amps, audio DAs; parallel interface routing switchers; waveform monitors & vectorscopes.

UMC ELECTRONICS CO. ★
460 Sackett Point Rd., North Haven, CT 06473
203 288-7731
Portable & studio consoles; single & multiple cart player/recorders; phase control matrixing; replacement heads; alignment & tension gauges; bulk erasers & splice finders; complete program automation systems.
SEE AD PG. 98

UNIDYNE DIRECT MAIL ★
Box 19060, San Diego, CA 92119
714 588-6747
Promotion & advertising for radio & TV.

UNION CONNECTOR CO., INC. ★
149 Babylon Tpk., Box H, Roosevelt, NY 11575
516 623-7461
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UNI-SET CORP. ★
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716 544-3820
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Co-Sponsor: The National Association of Commercial Broadcasters in Japan
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 212 850-8600
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 213 767-1000
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 SEE AD PG. 181
 Refer to Reps/Distributors section

UNITED RESEARCH LAB ★
 16 E. 52 St., New York, NY 10022
 212 751-4663
 2,4-track studio ATRs & replacement heads.



UNITEL VIDEO, INC. ★
 510 W. 57 St., New York, NY 10019
 212 265-3600
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UNR-ROHN, DIV. UNR, INC. ★
 Box 2000, Peoria, IL 61656
 309 697-4400
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URSA MAJOR, INC. ★
 Box 18, 50 Trapelo Rd., Belmont, MA 02178
 617 489-0303
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U.S. TAPE & LABEL CORP. ★
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 314 423-4411
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 800 453-8982
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 SEE AD PG. 221
Field Office:
 Eric King..... 804 384-7001

UTILITY TOWER CO. ★
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 405 946-5551
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VACUUM TUBE INDUSTRIES, INC. ★
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 617 828-1650
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VALENTINO MUSIC LIBRARY ★
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 212 246-4675
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VALLEY PEOPLE, INC. ★
 Box 40306/2820 Erica Pl., Nashville, TN 37204
 615 383-4737
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VALTEC ★
 99 Hartwell St., W. Boylston, MA 01583
 617 835-6082
 Fiberoptic STLs.

VAMCO ENGINEERING, INC. ★
 11104 E. 56 St., Tulsa, OK 74145
 918 252-5448
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V.A.M.P., INC. ★
 6753 Selma Ave., Los Angeles, CA 90028
 213 466-5533
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VANNER, INC. ★
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 614 272-6263
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VERSA COUNT ENGINEERING, INC. ★
 533 Lively Blvd., Elk Grove Village, IL 60007
 312 593-0208
 Video proc amps; FM, TV translators; FM transmitters; exciters; RF amps; modulation monitors; audio DAs; intercity microwave equipment; microwave STLs.

VERSATILE VIDEO, INC. ★
 151 Gibraltar Ct., Sunnyvale, CA 94086
 408 734-5550
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VIA VIDEO, INC. ★
 10115 S. DeAnza Blvd., Cupertino, CA 95014
 408 996-2055
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MANUFACTURERS

VIDAIRE ELECTRONICS MFG. CORP. ★
150 Buffalo Ave., Box 788, Freeport, NY
11520
516 623-6696
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condenser mics; rotary attenuators; multimeters;
audio cable, connectors.

VIDCOM ★
2426 Townsgate Rd., Ste. K, Westlake
Village, CA 91361
213 991-1974
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VIDEO AIDS OF COLORADO ★
1930 Central Ave., Boulder, CO 80301
303 443-4950
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tors; pulse amps & video DAs; phase meters;
burst phase meters.

VIDEO ASSOCIATES LABS, INC.
2304 Hancock #1-F, Austin, TX 78756
512 459-5684
Character, slate & graphics generators & keyers.

VIDEO CENTRAL PRODUCTIONS ★
112 N. Collett, Dallas, TX 75214
214 824-0942
Studio & mobile teleproduction facilities.

VIDEOCOM, INC. ★
502 Sprague St., Dedham, MA 02026
617 329-4080
Studio & mobile teleproduction facilities; video
post-production facility.

VIDEO CORP. OF AMERICA (VCA) ★
1913 Route 27, Edison, NJ 08823
201 572-3300
Audio & video equipment rental; video post-
production facility; engineering consultant.

VIDEO DATA SYSTEMS
205 Oser Ave., Hauppauge, NY 11787
516 231-4400
Character generator systems; production titlers.

**THE VIDEOGRAPHY CO.
& STUDIOS** ★
8928 Ellis Ave., Los Angeles, CA 90034
213 204-2000
Studio & mobile teleproduction facilities; video
post-production facility.

VIDEO IMAGES, INC. ★
8409 Dixon Ave., Silver Springs, MD 20910
301 565-3310
Studio & mobile teleproduction facilities; video
post-production facility.

VIDEOMAGNETICS, INC.
155 San Lazaro, Sunnyvale, CA 94086
408 737-8300
New VTR heads; head refurbishing; pneumatic
cassette changer.

VIDEOMEDIA ★
211 Weddell Dr., Sunnyvale, CA 94086
408 745-1700
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SMPTE & proprietary time code systems.

VIDEO ONE ★
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CA 91601
213 980-0704
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NEC

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Broadcast Equipment Division
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VIDEO POST & TRANSFER ★
8036 Aviation Pl., Box 53, Dallas, TX 75235
214 350-2676
Video post-production facility.

VIDEOSMITH ★
2400 Chestnut St., Philadelphia, PA 19103
215 864-0658
Studio & mobile teleproduction facilities; video post-production facility.

THE VIDEO TAPE CO. ★
10545 Burbank Blvd., N. Hollywood, CA 91601
213 985-1666
Video post-production facility.

VIDEOTEK, INC. ★
125 N. York St., Pottstown, PA 19464
215 327-2292
Audio program monitors; NTSC, RGB & dc portable video monitors; demodulators; waveform monitors & vectorscopes.
SEE AD PG. 42
Field Office:
AZ 9625 North 21st Dr.,
Phoenix 85021 602 997-7523

VIDEOTEX/AMERICA
2050 Center Ave., Ste. 200, Fort Lee, NJ 07024
201 461-0217
Hardware & software for videotext systems.

VIDEO TRANSITIONS ★
920 N. Citrus Ave., Hollywood, CA 90038
213 465-3333
Video post-production facility.

VIDEO WEST ★
130 Social Hall Ave., Salt Lake City, UT 84111
801 237-2526
Studio & mobile teleproduction facilities; video post-production facility.

VIDICRAFT, INC.
0704 SW Bancroft St., Portland, OR 97201
503 223-4884
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VIF INTERNATIONAL ★
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408 739-9740
Portable & 2,4-track studio ATRs; replacement audio heads; audio test tapes, bulk erasers; phono cartridges; relay sequencers; ALC & AGC amps, AM & FM compressor/limiters, parametric equalizers; monitor speakers, headphones. Tower hardware, construction equipment; tape-based loggers.

VISCOUNT INDUSTRIES, LTD.
105 E. 69 Ave., Vancouver, BC V5X 2W9, Canada
604 327-9446
Video DAs; routing switchers; manual master control switchers; small & portable production switchers; special effects generators.
SEE AD PG. 110

VISUAL INFORMATION INSTITUTE, INC. ★
Box 33, Xenia, OH 45385
513 376-4361

Sync, color bar, multiburst & staircase ramp generators; signal multiplexers; video test signal generators.

VISION-SOUND, INC.
110 Grand Avenue, Englewood, NJ 07631
201 871-4101
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VITAL INDUSTRIES, INC. ★
3700 NE 53 Ave., Gainesville, FL 32601
904 378-1581
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Field Office:
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Hollywood 90028 213 463-7393

VLSI
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408 356-1031
Engineering consultant.

WALLACH & ASSOC., INC. ★
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216 575-0765
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SEE AD COVER 4
Field Offices:
MA William McFadden, 755 Washington St.,
Annisquam 01930 617 283-7507
TX Duke McLane, 4012 Mendenhall Dr.,
Dallas 75234 214 241-5999
Refer to Reps/Distributors section

WATERS MANUFACTURING, INC. ★
Longfellow Center, Wayland, MA 01778
617 893-6900
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WAVETEK INDIANA, INC.
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317 787-3332
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131 The Great Rd., Box B, Bedford, MA 01730

617 275-5300

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212 586-1662

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Box 22595, Wellshire Sta., Denver, CO 80222

303 771-8200

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WESTERN UNION

1 Lake St., Upper Saddle River, NJ 07658
201 825-5000

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WESTERN VIDEOTAPE PRODUCTIONS *

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415 543-2810

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Westinghouse Circle, Horseheads, NY 14845
607 796-3211

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WESTLAKE AUDIO, INC. *

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805 499-3686

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303 741-3400

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602 254-1570

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314 567-5366

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See listing for TELEVISION TECHNOLOGY CORP.

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212 725-8080

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R.F.



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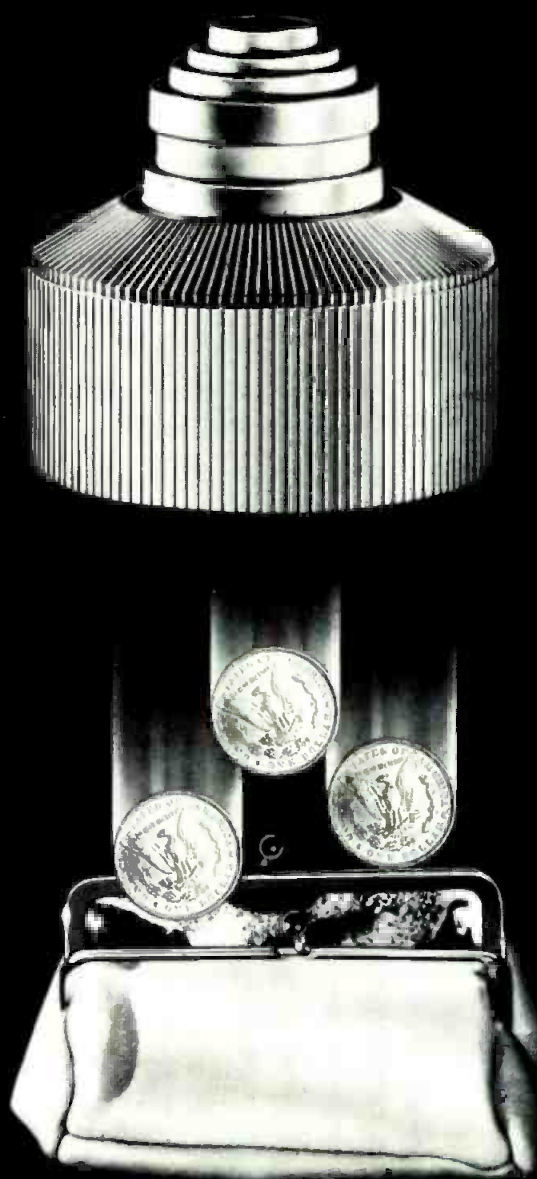
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**INTRODUCING
U-MATIC
SPECIAL EFFECTS
WITHOUT
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SLOW MOTION WITH BVU-820



Sony, the inventor of the U-matic® format, as well as every link in the chain, has evolutionized U-matic again.

Now, for the first time ever, you can make instant broadcast-quality edits of those dramatic events which call for freeze frame, slow motion, fast forward or reverse, without transferring to 1".

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At the heart of the new, fully integrated, plug-compatible Sony editing system is the BVU-820 videocassette recorder.

It retains all the outstanding qualities of the BVU-800 series. Including up to 40x play speed in shuttle, which is more than twice as fast as ever before—to stop, instantly, without slewing or breaking up.

But there's one brilliant addition—Dynamic Tracking. Which means U-matic users now have the ability to broadcast special effects—something which, until now, has only been associated with more expensive reel-to-reel broadcast VTR's.

TOTAL FLEXIBILITY AT YOUR FINGERTIPS.

If the BVU-820 is the heart of the system, then the BVE-800 is most assuredly the brain. Not merely because of its 128 multi-event edit memory,

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For all the facts on the state of the art, from the people who invented it, call Sony Broadcast in New York/New Jersey at (201) 368-5085; in Chicago at (312) 860-7800; in Los Angeles at (213) 537-4300; in Atlanta at (404) 451-7671; or in Dallas at (214) 659-3600.

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NEC America see ad pgs. 40, 143

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3M PRO A/V see ad pgs. 95, 169

POWELL ELECTRONICS, INC.

Sheffield
205 383-3330
Panasonic see ad pg. 107

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Hitachi see ad pg. 156

REYNOLDS & ASSOC., INC.

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Allen Avionics see ad pg. 168

ROSCOM, INC.

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TFT, Inc. see ad pg. 198

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Hipotronics see ad pg. 200

SONICS ASSOC., INC.

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Cetec Vega see ad pg. 191

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MARCOM

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TFT, Inc. see ad pg. 198

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Maxell see ad pg. 65

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NEC America see ad pgs. 40, 143

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Agfa see ad pg. 204

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Maxell see ad pg. 65

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Agfa see ad pg. 204

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Elector see ad pg. 37

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James B. Lansing see ad pg. 203

J.F. HURLBUT CO.

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Allen Avionics see ad pg. 168

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NEC America see ad pgs. 40, 143
TFT, Inc. see ad pg. 198

RIA CORP.
Cottonwood
602 634-8065
Broadcast Microwave see ad pgs.
15, 140
Emcee see ad pg. 142

ROH'S, INC.
Tucson
602 795-8573
Conrac see ad pg. 57
3M PRO A/V see ad pgs. 95, 169

SPENCER BROADCAST
Phoenix
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See ad pg. 146
ATI see ad pg. 224

Arkansas

CROCKETT SALES COMPANY
Dallas, TX
214 350-3377
Maxell see ad pg. 65

DIMENSION MARKETING CORP.
Dallas, TX
214 348-9657
Cetec Vega see ad pg. 191

ENGINEERING SERVICES CO.
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314 997-1515
Allen Avionics see ad pg. 168

MZB & ASSOC.
Dallas, TX
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See ad pg. 55
NEC America see ad pgs. 40, 143

PARCOM
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See ad pg. 187
TFT, Inc. see ad pg. 198

RADCOM, INC.
Eureka Springs
501 253-8702
Shively Labs see ad pg. 149

REP TECH, INC.
Terrell, TX
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Beyer Dynamic see ad pg. 213

California

ADTEK ASSOC.
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Allen Avionics see ad pg. 168

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Beyer Dynamic see ad pg. 213

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Santa Barbara
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Philips T&M see ad pg. 171

AUDIO INDUSTRIES CORP.
Hollywood
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MCI/Sony see ad pg. 83

KENNETH A. BACON ASSOC.
Novato
415 883-5041
Agfa see ad pg. 204

BOWDISH & ASSOC.
Woodland Hills
213 704-6324
Hedco see ad pg. 190

BROADCAST CARTRIDGE SERVICE
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Aristocart see ad pg. 12

BROADCAST ENGINEERING
San Diego
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ATI see ad pg. 224

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408 946-2236
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LPB see ad pg. 197

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Varian Eimac see ad pg. 89

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Encino
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ATI see ad pg. 224

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Conrac see ad pg. 57
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Philips T&M see ad pg. 171

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Varian Eimac see ad pg. 89

HENRY RADIO, INC.
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Varian Eimac see ad pg. 89

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MARCOM
Scotts Valley
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ATI see ad pg. 224
NEC America see ad pgs. 40, 143
QSI see ad pg. 164
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TFT, Inc. see ad pg. 198
UMC see ad pg. 98

MARKETING SPECIALISTS, INC.
Chatsworth
213 341-1471
FOR-A see ad pg. 175

CHUCK MARTIN
Canoga Park
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MCI/Quantel see ad pg. 63

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San Diego
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Philips T&M see ad pg. 171

OMEGA VIDEO, INC.
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213 679-9021
Conrac see ad pg. 57
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Los Gatos
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Ramko Research see ad pg. 5

PACIFIC RECORDERS & ENGINEERING
San Diego
714 453-3255
MCI/Sony see ad pg. 83

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Agfa see ad pg. 204

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Maxell see ad pg. 65

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NEC America see ad pgs. 40, 143

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415 570-5055
FOR-A see ad pg. 175

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Varian Eimac see ad pg. 89

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Well, Hitachi heard you, and has created an outright *genius*—
the Hitachi SK-110 Camera System.

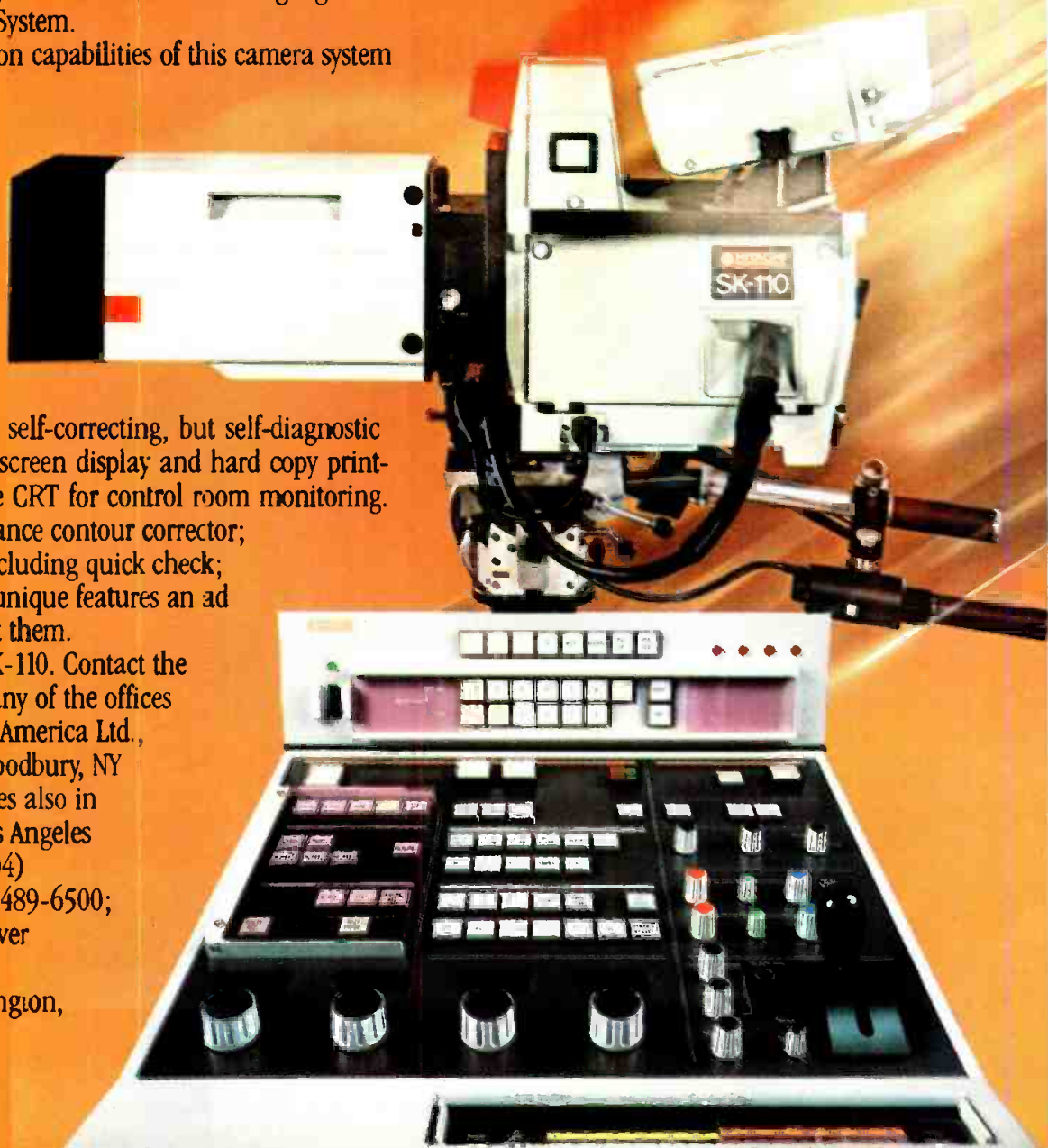
The computer registration capabilities of this camera system
produce pictures of a
clarity and resolution
previously unheard of.

And you get auto-setup
at the push of just one but-
ton, and zero reference,
too, where the computer
sets the green channel and
compares blue and red to
it with absolute precision.

The SK-110 is not only self-correcting, but self-diagnostic
as well. It gives both video screen display and hard copy print-
out; can be hooked into the CRT for control room monitoring.

There's a high-performance contour corrector;
5 automatic setup modes including quick check;
5 data files; so many other unique features an ad
can't begin to tell you about them.

The ultimate Hitachi SK-110. Contact the
broadcast video division at any of the offices
listed below. Hitachi Denshi America Ltd.,
175 Crossways Park West, Woodbury, NY
11797 (516) 921-7200. Offices also in
Chicago (312) 344-4020; Los Angeles
(213) 538-4880; Atlanta (404)
451-9453; Cincinnati (513) 489-6500;
Dallas (214) 233-7623; Denver
(303) 344-3156; Seattle,
(206) 575-1690; and Washington,
D.C. (301) 459-8262.



Circle 201 on Reader Service Card

STAR ENTERPRISES

Yorba Linda
714 996-5622
James B. Lansing see ad pg. 203

BRIAN TRANKLE & ASSOC.

Hillsborough
415 344-1133
Cetec Vega see ad pg. 191
UREI see ad pg. 181

TRI-TRONICS, INC.

Burbank
213 843-2170
Asaca/Shibasoku see ad pg. 82
Clear-Com see ad pg. 111
Conrac see ad pg. 57
Listec see ad pg. 182
3M PRO A/V see ad pgs. 95, 169

VAN GOTT & ASSOC., INC.

San Diego
714 272-8452
Allen Avionics see ad pg. 168

VIDEO COMMUNICATIONS CORP.

Santa Clara
408 988-2968
Walnut
714 594-2442
Datatek see ad pg. 51
Hedco see ad pg. 190

VIDEO EQUIPMENT CORP.

San Diego
714 278-4400
3M PRO A/V see ad pgs. 95, 169

VIDEO EQUIPMENT CORP. OF AMERICA

El Cajon
714 296-8661
Clear-Com see ad pg. 111

VIDEOMEDIA

Sunnyvale
408 733-6500
Hitachi see ad pg. 156
3M PRO A/V see ad pgs. 95, 169

THE VIDEO STORE

San Diego
714 560-4450
Panasonic see ad pg. 107

VOICE & VIDEO

San Diego
714 560-1166
CMX/Orox see ad pg. 36

WESTEC/COLLINS

San Francisco
415 957-1357
Hawthorne
213 772-4479
Shallco see ad pg. 216

WESTERN BROADCAST SYSTEMS

Cupertino
408 749-0900
MCI/Quantel see ad pg. 63

WESTLAKE AUDIO

Los Angeles
213 655-0303
ATI see ad pg. 224

ZACK ELECTRONICS

San Francisco
415 626-1444
Varian Eimac see ad pg. 89

Colorado

AUDIO VISUAL SYSTEMS

Denver
303 778-9295
Agfa see ad pg. 204

JOHN AXTELL & ASSOC.

Englewood
303 779-1731
Maxell see ad pg. 65

BROADCAST COMM. PRODUCTS

Boulder
303 424-3231
ATI see ad pg. 224

CEAVCO AUDIO VISUAL

Denver
303 238-6493
3M PRO A/V see ad pgs. 95, 169

CLEVELAND ENT. OF COLORADO, INC.

Denver
303 751-3252
Philips T&M see ad pg. 171

DAVIS AUDIO/VISUAL, INC.

Denver
303 455-1122
Conrac see ad pg. 57
3M PRO A/V see ad pgs. 95, 169

DIDIER/DENVER, INC.

Evergreen
303 674-6000
See ad pgs. 157, 196
Datatek see ad pg. 51
Hedco see ad pg. 190
TFT, Inc. see ad pg. 198

DYMA ENGINEERING

Taos, NM
505 758-8686
NEC America see ad pgs. 40, 143

FAITH TAPE INDUSTRY

Lakewood
303 238-2341
Agfa see ad pg. 204

HALL ELECTRONICS

Boise, ID
208 376-1663
TFT, Inc. see ad pg. 198

HP MARKETING

Littleton
303 794-8367
James B. Lansing see ad pg. 203
UREI see ad pg. 181

J.F. HURLBUT CO.

Golden
303 279-7796
Allen Avionics see ad pg. 168

INNOVATIVE CONCEPTS, INTL.

Redondo Beach, CA
213 540-5684
Elector see ad pg. 37

JACKSON SOUND PRODUCTIONS, LTD.

Denver
303 777-9111
Agfa see ad pg. 204

MAGNETIC MEDIA CORP.

Dallas, TX
214 931-0404
See ad pg. 189

RIA CORP.

Denver
303 320-5521
Broadcast Microwave Svcs. see ad pgs. 15, 140

SATTER DISTRIBUTING CORP.

Denver
303 399-7493
800 525-0196
Tiffen see ad pg. 33

SCIENTIFIC SYSTEMS, INC.

Bailey
303 838-4615
Conrac see ad pg. 57

SOUNDS PRO SALES

Denver
303 422-6869
Beyer Dynamic see ad pg. 213

SYSTEMS MARKETING SERVICES, INC.

Evergreen
303 674-3390
FOR-A see ad pg. 175

VIDEO TEKNIX, INC.

Denver
303 922-5564
Hitachi see ad pg. 156

WESCOM MARKETING, INC.

Arvada
303 422-7619
Hipotronics see ad pg. 200

COLORADO

Connecticut

ABBOTT ALLISON CO., INC.

Meriden
203 237-9232
Hipotronics see ad pg. 200

JOHN B. ANTHONY CO.

Stamford
203 322-9202
Eventide see ad pgs. 34, 161
UREI see ad pg. 181

AUDIOTECHNIQUES, INC.

Stamford
203 359-2312
ATI see ad pg. 224
MCI/Sony see ad pg. 83

CRAMER

Needham Heights, MA
617 449-2100
CMX/Orox see ad pg. 36

DAVID DEVER

Stamford
203 348-4104
MCI/Quantel see ad pg. 63

H.B. EDUCATIONAL SYST.

New Haven
203 777-5301
Hitachi see ad pg. 156
3M PRO A/V see ad pgs. 95, 169
Panasonic see ad pg. 107

HIGH-TECH SALES, INC.

Wayland, MA
617 653-3838
Allen Avionics see ad pg. 168

H.M. HOLZBERG ASSOC.

Totowa, NJ
201 256-0455
NEC America see ad pgs. 40, 143
TFT, Inc. see ad pg. 198

INTERSELL

South Windsor
203 528-5357
Philips T&M see ad pg. 171

LAKE SYSTEMS

North Haven
203 239-4991
See ad pg. 187

DIDIER DENVER

Evergreen, CO
303/674-6000

AM · FM · TV

LANDY ASSOC., INC.
Framingham, MA
617 877-9570
See ad this pg. 7

MARTIN AUDIO/VIDEO CORP.
New York, NY
212 541-5900
Harrison Systems see ad pg. 7

R.G. ASSOC., INC.
Millis, MA
617 376-2044
Beyer Dynamic see ad pg. 213

ALAN SARFATY & ASSOC.
Great Neck, NY
516 466-6700
Calzone Case Co. see ad pg. 14

SPHERE ASSOC.
Reston, VA
703 471-1230
Cetec Vega see ad pg. 191

U.M.C. ELECTRONICS CO.
North Haven
203 288-7731
Aristocart see ad pg. 12

F.M. VALENTI, INC.
Lexington, MA
617 861-0089
Maxell see ad pg. 65

VIDEO PLAY INDUSTRIES
Tolland
203 872-9195
3M PRO A/V see ad pgs. 95, 169

Delaware

COMMERCIAL VIDEO REPRESENTATIVES
Reisterstown, MD
301 252-8919
Maxell see ad pg. 65

RICHARD LEWIS SALES
Glenside, PA
215 886-1555
Beyer Dynamic see ad pg. 213

PEIRCE-PHELPS, INC.
Philadelphia, PA
215 879-7000
CMX/Orox see ad pg. 36

DISTRICT OF COLUMBIA

Landy Associates, Inc.

1890 E. Maritan Pike, Cherry Hill, NJ 08003—(609) 424-4660
801 Water Street, Framingham, MA 01701—(617) 877-9570

FEATURING: Systems Designs, Installation and Service and Supplying Ampex, Ampro, Anton-Bauer, BMS, Inc. (Microwave), Broadcast Electronics, Canon, Cine 60, Cinema Products, Conrac, Crown, Datatek, Datatron, Dynair, Electro-Voice, Fujinon, Gitzo, Ikegami, JBL, JVC, Leitch, Peter Lisand, Listec (Vinten), MCI/Quantel, O'Connor, Panasonic, Porta-Pattern, Quick-Set, Ross Video, RTS Systems, Sachtler, Sennheiser, Shure, Skotel, Tektronix, Thomson-CSF, Tweed Audio, UMC Beaucart, Videotek and other fine equipment. Call Jim Landy at 609-424-4660.

RABAL ASSOC., INC.
Huntingdon Valley, PA
215 947-4825
Allen Avionics see ad pg. 168

ALAN SARFATY & ASSOC.
Great Neck, NY
516 466-6770
Calzone Case Co. see ad pg. 14

VISION-SOUND PRO AUDIO, INC.
Englewood, NJ
201 871-4101
Harrison Systems see ad pg. 7

WILTRONIX, INC.
Washington Grove, MD
301 258-7676
NEC America see ad pgs. 40, 143

District of Columbia

AUDIO TECHNICAL SERVICES, LTD.
Vienna, VA
703 938-5115
Harrison Systems see ad pg. 7

COMMERCIAL VIDEO REPRESENTATIVES
Reisterstown, MD
301 252-8919
Maxell see ad pg. 65

COMEX
Washington, DC
202 338-5353
Shively Labs see ad pg. 149

LANDY ASSOCIATES, INC.
Cherry Hill, NJ
609 424-4660
See ad this pg.

RICHARD LEWIS SALES
Glenside, PA
215 886-1555
Beyer Dynamic see ad pg. 213

LION RECORDING SERVICES, INC.
Washington, DC
202 832-7885
Agfa see ad pg. 204

PEIRCE-PHELPS, INC.
Rockville, MD
301 984-7979
CMX/Orox see ad pg. 36

ALAN SARFATY & ASSOC.
Great Neck, NY
516 466-6770
Calzone Case Co. see ad pg. 14

SOLID STATE LOGIC
Washington, DC
202 333-1500
See ad Cover 3

SPHERE ASSOC.
Reston, VA
703 471-1230
Cetec Vega see ad pg. 191

VANGUARD ENGINEERING SALES, INC.
Alexandria, VA
703 768-1660
Allen Avionics see ad pg. 168

WILTRONIX, INC.
Washington Grove, MD
301 258-7676
NEC America see ad pgs. 40, 143
TFT, Inc. see ad pg. 198

Florida

BEATTIE AND ASSOC.
Tallahassee
904 893-1382
ATI see ad pg. 224
Shively Labs see ad pg. 149
TFT, Inc. see ad pg. 198

MICHAEL CHAFFEE, INTL.
Sarasota
813 366-9414
Cetec Vega see ad pg. 191

CONTROL TECHNOLOGY, INC.
Ft. Lauderdale
305 587-2716
Auditronics, Inc. see ad pgs. 70-71, 172
MCI/Sony see ad pg. 83

CRESCENDO ASSOC.
Atlanta, GA
404 223-0108
Calzone Case Co. see ad pg. 14

FLORIDA

Gray Communications Consultants, Inc.

1657 N.W. 79th Ave., Miami, FL 33126
(305) 591-3637

All sizes mobile production vehicles. Large selection of video hardware and accessories. Studio camera systems, earth stations, and distribution equipment. Complete systems design, sales, and service.

ELECTRONIC EQUIPMENT CO., INC.
Miami
305 871-3500
Varian Eimac see ad pg. 89

FLORIDA VIDEO SYSTEMS
Fort Lauderdale
305 771-4784
Hitachi see ad pg. 156

FLORIDA VIDEO SYSTEM
Jacksonville
904 739-1128
3M PRO A/V see ad pgs. 95, 169

FLORIDA VIDEO SYSTEMS
Miami
305 688-6618
3M PRO A/V see ad pgs. 95, 169

GLOBAL PHOTO DISTRIBUTORS INC.
Miami
305 253-2096
Tiffen see ad pg. 33

GRAY COMMUNICATIONS
Miami
305 591-3637
Tampa
813 885-1411
Gainesville
904 378-2890
See ad pgs. 158, 160
3M PRO A/V see ad pgs. 95, 169
Panasonic see ad pg. 107

INTERNATIONAL WHOLESALERS
Miami
305 940-7542
Agfa see ad pg. 204

J & J TELEVISION ELECTRONICS, INC.
Hollywood
315 989-7111
Panasonic see ad pg. 107

MANREP CORP.
Miami Lakes
305 822-7630
Beyer Dynamic see ad pg. 213

MIDWEST TELECOMMUNICATIONS
Miami
305 592-5355
Asaca/Shibasoku see ad pg. 82
Clear-Com see ad pg. 111
Conrac see ad pg. 57
3M PRO A/V see ad pgs. 95, 169
Panasonic see ad pg. 107

CONTINENTAL

MICROWAVE

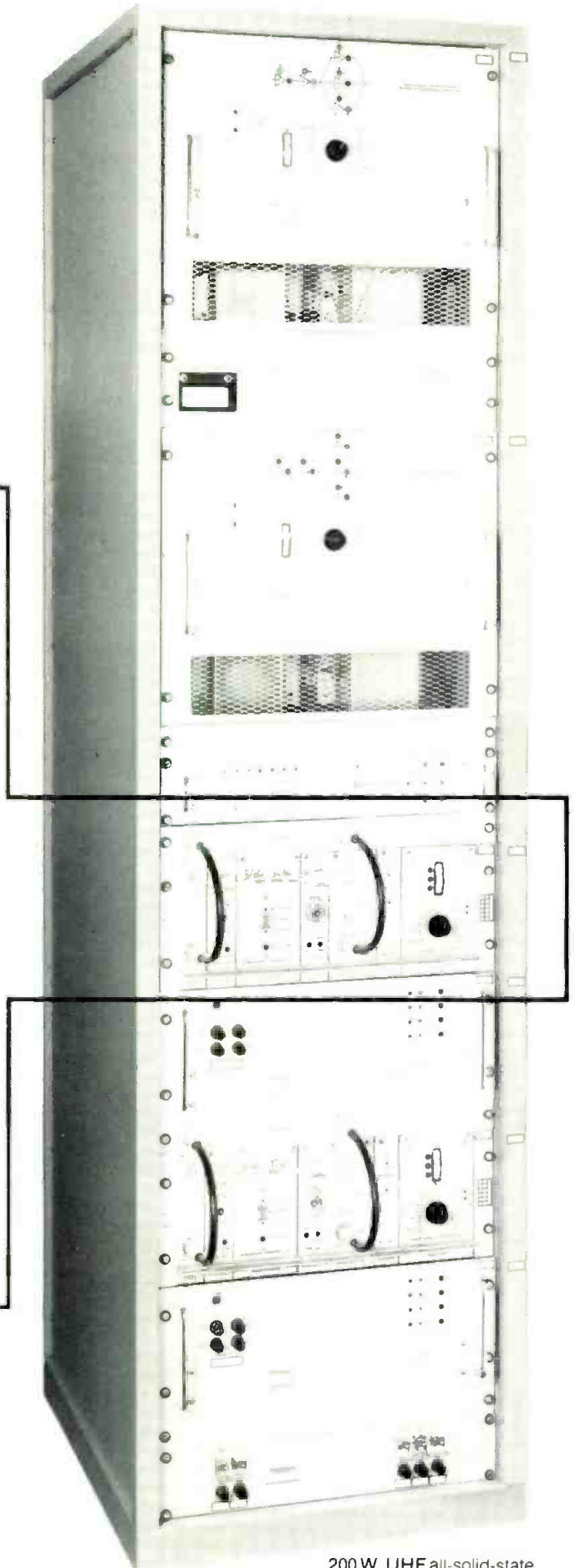
TV Transposers and Transmitters

2W Single or Multichannel and all standard powers:

High Power UHF: all-solid-state 200W and single tube 1kW

Single or Double Installations with automatic changeover.

Low-power TV transmitters and translator/transposers serve towns and villages.



The TC33

A TV Transposer featuring super frequency stability and designed for reliable, unattended operation.

- **Frequency Synthesizer**
Phase-lock loop techniques, already proven in many thousands of CML oscillators in communications equipment, enable the two transposer local oscillators to be locked to a fixed frequency reference. Carrier stability to within a few Hz allows the use of precision offset.
- **High MTBF**
All solid-state, including PA's up to 200W UHF, with built-in redundancy.
- **Simple Maintenance**
Plug-in broadband modules (eg, 470-860 MHz), easily portable and interchangeable.
- **VHF/UHF**
This transposer, also power amplifiers, available in versions for VHF/UHF and all systems.

Mobile Microwave Links
Fixed Microwave Links

CONTINENTAL MICROWAVE LTD

Admiral House
152 High Street North
Dunstable, Beds. LU6 1LW
England

Telephone:
Dunstable (0582) 604804
Telex 826877 CML G

200 W. UHF all-solid-state

Circle 202 on Reader Service Card

PHOTO TRACKMASTER INC.
Tampa
813 251-6441
Hitachi see ad pg. 156

ATI see ad pg. 224
Auditronics see ad pgs. 70-71, 172
MCI/Sony see ad pg. 83

MORT PRESS
N. Miami
305 895-2262
Hitachi see ad pg. 156
Maxell see ad pg. 65

RECORDING STUDIO EQUIPMENT CO.
North Miami Beach
305 949-8918
MCI/Sony see ad pg. 83

POWERCOM ENGINEERING CORP.
Fort Lauderdale
305 463-6059
Hipotronics see ad pg. 200

REPELECT
Tampa
813 227-5051
Ramko Research see ad pg. 5

PRO AUDIO GENERAL STORE, INC.
Coral Springs
305 752-0330

REYNOLDS & ASSOC. INC.
Cocoa Beach
305 784-4700
Allen Avionics see ad pg. 168

FLORIDA

R & H ASSOCIATES
Safety Harbor
813 442-7505
NEC America see ad pgs. 40, 143

SUN VIDEO COMM.
Largo
813 536-9424
3M PRO A/V see ad pgs. 95, 169

SINGER PRODUCTS CO., INC.
Miami
305 885-0030
ATI see ad pg. 224

TEQSPEC
Boynton Beach
305 734-4020
Philips T&M see ad pg. 171

SOUNDBOX INTERNATIONAL
Merritt Island
305 453-5480
Agfa see ad pg. 204

TROPICAL VIDEO EXPORTERS
Miami
305 758-5800
Broadcast Microwave Svcs. see ad pgs. 15, 140

SOUTHEAST ELECTRONICS, INC.
Jacksonville
904 356-3007
Moseley Assoc. see ad pg. 131
Panasonic see ad pg. 107

VAUGHAN ASSOCIATES
Sarasota
813 924-3734
Agfa see ad pg. 204

FLORIDA

Gray Communications Consultants, Inc.

**1605 South Bumby Ave., Orlando, FL 32806
(305) 591-3637**

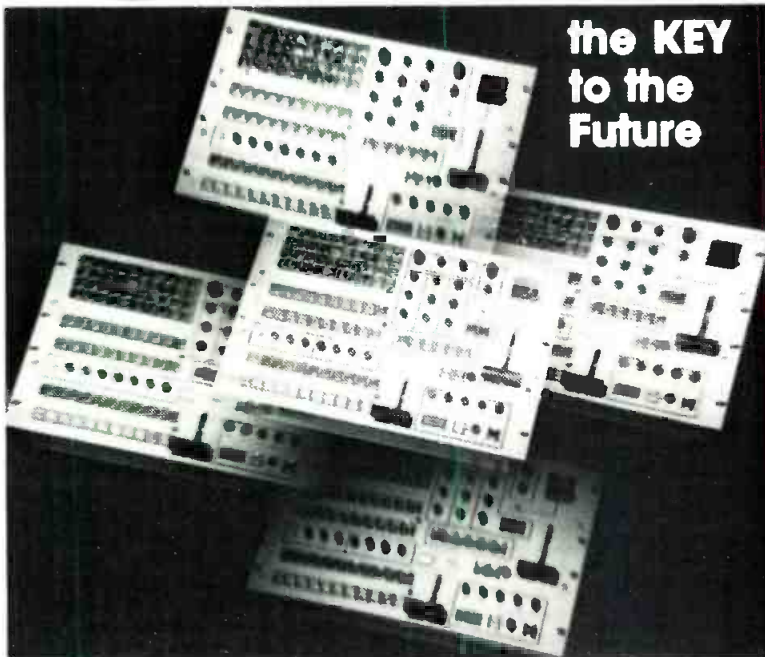
All sizes mobile production vehicles. Large selection of video hardware and accessories. Studio camera systems, earth stations, and distribution equipment. Complete systems design, sales, and service.

Gray Communications Consultants, Inc.

**5401 Southern Comfort Blvd., Tampa, FL 33614
(813) 885-1411**

All sizes mobile production vehicles. Large selection of video hardware and accessories. Studio camera systems, earth stations, and distribution equipment. Complete systems design, sales, and service.

isi 200 SERIES PRODUCTION SWITCHERS



**the KEY
to the
Future**

PolyKey® Effect System

200 Series Features:

The 200 Series is an advanced, state-of-the-art production switching system, offering one, two or three PolyKey® Effects (PKE) Systems. Each PKE has a 5 level processor with the following features:

- 4 input busses
- Manual or auto transitions
- Video key plus title key over/under
- Black/white/color border edging
- Chroma key standard
- Rotary and spin wipes

Every 200 Series switcher also has a Downstream Transition Unit which includes:

- "Flip-flop" mixer with cut bar
- Fade-to-black with pulse processing
- DSK with border edging and color
- Pointer Generator



INDUSTRIAL SCIENCES, INC.
3521 S.W. 42nd Avenue
P.O. Box 1495
Gainesville, Florida 32602
U.S.A.

TELEPHONE
Outside U.S.A. 01 (904) 373-6782
In Florida (904) 373-6783
Sales (800) 874-7590
Service (800) 874-7874

CABLE
TWX 810-825-2307

Georgia

ACK RADIO SUPPLY CO. OF GEORGIA

Atlanta
404 351-6340
Varian Eimac see ad pg. 89

ALLIED BROADCAST EQUIPMENT

Union City
404 964-1464
ATI see ad pg. 224
Auditronics see ad pgs. 70-71, 172

MARK BAUSERMAN

Stone Mountain
404 469-8468
Strand Century see ad pg. 185

MIKE CONNELL

Atlanta
404 457-1266
MCI/Quantel see ad pg. 63

CRESCENDO ASSOC.

Atlanta
404 223-0108
Calzone Case Co. see ad pg. 14

ELECTRONIC EQUIPMENT, INC.

Atlanta
404 873-5842

Conrac see ad pg. 57
Panasonic see ad pg. 107
EME II, INC.
Decatur
404 325-0165
NEC America see ad pgs. 40, 143

PAUL FLETCHER
Atlanta
404 457-1266
MCI/Quantel see ad pg. 63

GRAY COMMUNICATIONS
Albany
912 883-2121
Doraville
404 455-3121
See ad pg. 161
Listec see ad pg. 182
3M PRO A/V see ad pgs. 95, 169

THE PROMAR GROUP
Raleigh, NC
919 467-5466
Maxell see ad pg. 65

RADFORD ASSOCIATES
Atlanta
404 237-6097
Datatek see ad pg. 51
QSI see ad pg. 164

REEVES PHOTOGRAPHIC SALES INC.
Atlanta
404 351-7154
800 241-7830
Tiffen see ad pg. 33

REYNOLDS & ASSOC., INC.
Atlanta
404 393-9113
Allen Avionics see ad pg. 168

ROSCOM, INC.
Roswell
404 992-2700
TFT, Inc. see ad pg. 198

SOUND INVESTMENT
Chamblee
Agfa see ad pg. 204

TECHNICAL SYSTEMS REPS
Chamblee
404 457-0426
UREI see ad pg. 181

GEORGIA

Gray Communications Consultants, Inc.
3684 Clearview Ave., Doraville, GA 30340
(404) 455-3121

All sizes mobile production vehicles. Large selection of video hardware and accessories. Studio camera systems, earth stations, and distribution systems. Authorized dealer for Ultimatte and Newsmatte.

TECHNICAL VIDEO SYSTEM
Atlanta
404 458-1587
3M PRO A/V see ad pgs. 95, 169

TEQSPEC
Atlanta
404 455-7222
Philips T&M see ad pg. 171

TOTAL AUDIO VISUAL SERVICES, INC.
Atlanta
404 875-7555
Clear-Com see ad pg. 111

VICA ASSOCIATES
Stone Mountain
404 292-7506
FOR-A see ad pg. 175
Hedco see ad pg. 190

Eventide's BD955 Broadcast Audio Delay Finally Has Some Serious Low-Priced Competition...



EVENTIDE'S BD931 (MONO) PRICED AS LOW AS \$1795
EVENTIDE'S BD932 (STEREO) PRICED AS LOW AS \$2595

Now there's a worthy low-cost alternative to Eventide's BD955 - the world's best-selling digital obscenity delay. Eventide's new BD931/932 series is priced to be cost-effective even for stations that air only limited talk programming. Available in mono or stereo, with 3.2 or 6.4 seconds of delay, these new units feature specs that far exceed the performance of other economy delays:

FREQUENCY RESPONSE: 40Hz to 16kHz ± 1dB.
DYNAMIC RANGE: Greater than 90dB.
DISTORTION: Less than 0.2% at 1kHz & 100Hz.

So now stations on a tight budget can say goodbye to the problems of trouble-prone tape loop delays without sacrificing audio quality. Eventide's BD931/BD932 series is the low-cost, high quality alternative.



OUR BD955 SERIES-NOW A GREATER VALUE THAN EVER.

For the ultimate in operating convenience, Eventide's BD955 is still in a class by itself. Only the BD955 has the patented AUTO CATCH-UP feature that automatically rebuilds the delay after objectionable material is dumped. There's no need to fill the delay period. Now increased production and lower memory chip prices have enabled us to substantially reduce prices on all BD955 models - you save up to \$2400!

Eventide
the next step
265 West 54th Street
New York, N.Y. 10019
(212) 581-9290

VISUAL SYSTEMS COMPANY
Atlanta
404 457-1388
Hitachi see ad pg. 156

WILSON AUDIO SALES
Franklin, TN
615 794-0155
404 993-2366 (Atlanta)
Beyer Dynamic see ad pg. 213
Cetec Vega see ad pg. 191

Hawaii

ALOHA ASSOCIATES
Honolulu
808 941-1574
Hipotronics see ad pg. 200

AUDIO VISUAL COMPANY
Honolulu
808 533-3848
Hitachi see ad pg. 156

AUDISSEY
Honolulu
808 521-6791
Clear-Com see ad pg. 111

BOKU HAWAII, INC.
Honolulu
808 947-8802
Agfa see ad pg. 204

BROADCAST SERVICES
Honolulu
808 521-6311
Moseley Assoc. see ad pg. 131

C&L SALES
Waipahu
808 671-5384
Maxell see ad pg. 65

EMC CORPORATION
Honolulu
808 836-1138
NEC America see ad pgs. 40, 143

HONOLULU ELECTRONICS
Honolulu
808 949-5564
Varian Eimac see ad pg. 89

ISLAND INSTRUMENTS
Ewa Beach
808 689-0671
James B. Lansing see ad pg. 203

REP TECH, INC.
Terrell, TX
214 222-2131
Beyer Dynamic see ad pg. 213

Idaho

COMPONENTS WEST INC.
Renton, WA
206 271-5252
Portland, OR
503 643-5588
Allen Avionics see ad pg. 168

DIDIER/DENVER
Evergreen, CO
303 674-6000
See ad pgs. 157, 196
TFT, Inc. see ad pg. 198

HALL ELECTRONICS
Boise
208 376-1663
Ramko Research see ad pg. 5
Shively Labs see ad pg. 149
TFT, Inc. see ad pg. 198

J.F. HURLBUT CO.
Golden, CO
303 279-7796
Allen Avionics see ad pg. 168

INNOVATIVE CONCEPTS, INTL.
Redondo Beach, CA
213 540-5684
Elector see ad pg. 37

MATRIX MARKETING
Seattle, WA
206 789-5990
Cetec Vega see ad pg. 191

NORTHMAR, INC.
Seattle, WA
206 524-5170
Beyer Dynamic see ad pg. 213

PROFESSIONAL REPRESENTATIVES CORPORATION
Foster City, CA
415 570-5055
Maxell see ad pg. 65

Illinois

ADVANCED VIDEO COMMUNICATIONS
Hinsdale
312 323-7464
Hitachi see ad pg. 156
Panasonic see ad pg. 107

ALLIED BROADCAST EQUIPMENT
Chicago
312 784-2257
ATI see ad pg. 224
Auditronics see ad pgs. 70-71, 172

ILLINOIS

ANCHA ELECTRONICS, INC.

**189 Gordon Street, Elk Grove Village, IL 60007
(312) 437-7712**

A/V SYSTEMS AND EQUIPMENT INCLUDING: Lenco, Microtime, Sony, JVC, Shintron, Dynair, Datatek, Electrohome, Cohu, ITE, Panasonic Broadcast Video Systems, Videotek, Jerrold Ampex, Swintek, Altec, Yamaha, Biamp, EV, JBL.

ANCHA ELECTRONICS, INC.
Elk Grove Village
312 437-7712
See ad pg. 162

AUDICO LIMITED
Elk Grove
312 640-1030
Agfa see ad pg. 204

AUDIO RESOURCE
Westmont
312 655-1180
Eventide see ad pgs. 28, 161

AVC SYSTEMS, INC.
Chicago
312 763-6010
Harrison Systems see ad pg. 7

BRANDESS BROTHERS
Chicago
312 728-8914
800 621-5488
Tiffen see ad pg. 33

CENTER VIDEO CENTER
Chicago
312 637-1600
3M PRO A/V see ad pgs. 95, 169
Panasonic see ad pg. 107

VICTOR DUNCAN
Chicago
312 943-7300
CMX/Orox see ad pg. 36
MCI/Quantel see ad pg. 63

H.M. DYER ELECTRONICS
Farmington Hills, MI
313 478-2157
NEC America see ad pgs. 40, 143
TFT, Inc. see ad pg. 198

ELECTRO-TECH MARKETING ASSOC.
Chicago
312 588-4535
Allen Avionics see ad pg. 168

ENTERPRISES, INC.
Hartford, WI
414 966-3303
See ad pg. 194

ARCHIE FLETCHER
Lake Bluff
312 234-5547
Strand Century see ad pg. 185

GO VIDEO SALES, INC.
Lake Forest
312 295-6726
FOR-A see ad pg. 175
Hedco see ad pg. 190

HARRIS CORPORATION
Quincy
217 222-8200
See ad pgs. 53, 139
Auditronics see ad pgs. 70-71, 172
3M PRO A/V see ad pgs. 95, 169

MAGNETIC COMMUNICATIONS
Evanston
312 869-6735
Maxell see ad pg. 65

McCURDY RADIO INDUSTRIES, INC.
Elk Grove Village
312 640-7077
Aristocart see ad pg. 12

MEADE ELECTRIC CO.
Broadview
312 344-4174
Conrac see ad pg. 57

MILAM AUDIO COMPANY
Pekin
309 346-3161
Agfa see ad pg. 204
MCI/Sony see ad pg. 83

NEW HORIZONS
Bannockburn
312 234-5911
Beyer Dynamic see ad pg. 213
Cetec Vega see ad pg. 191

PBF MARKETING
Chicago
303 973-5300
Calzone Case Co. see ad pg. 14

POLYLINE
Des Plaines
312 997-0955
Agfa see ad pg. 204

PRO AUDIO GENERAL STORE
Carroll Stream
312 690-8301
ATI see ad pg. 224
Auditronics see ad pgs. 70-71, 172

RICH, INC.
Franklin Park
312 678-3100
3M PRO A/V see ad pgs. 95, 169

RICHARDSON ELECTRONICS
Franklin Park
312 456-0600
800 323-6860
Varian Eimac see ad pg. 89

ROSCOR, INC.
Morton Grove
312 539-7700
Listec see ad pg. 182
3M PRO A/V see ad pgs. 95, 169

Out of 4000 stations, 1700 chose our antennas.

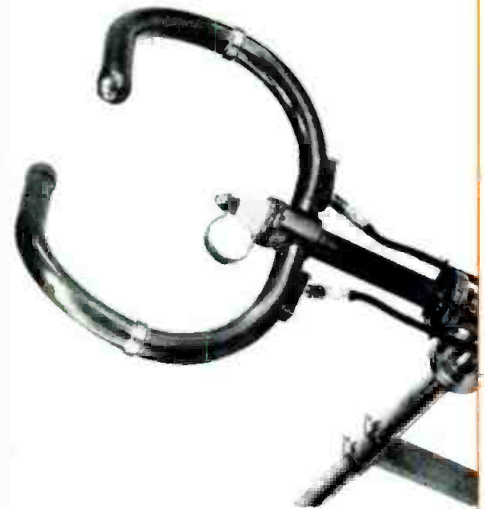
Phelps Dodge FM antennas were purchased for more applications from 10 watt educational to high power 25 kw class C stations.

We believe no one else even comes close to that record, and no wonder.

Performance is the overriding reason. Our antennas are less susceptible to corona. You get proper phase relationship between the vertical and horizontal components. They are available with any combination of null fill and

beam tilt. And, remember, only Phelps Dodge antenna elements are fabricated of hard drawn, high conductivity copper.

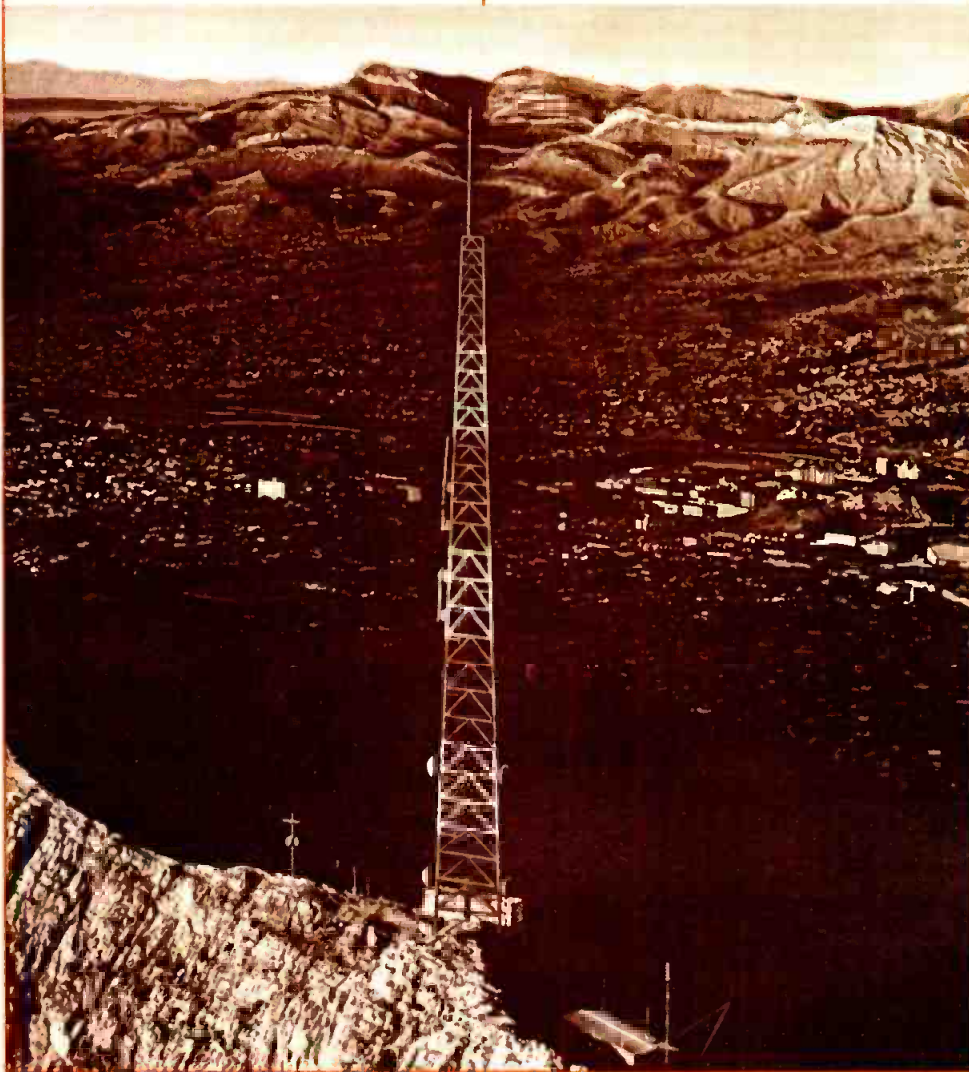
Whatever your needs may be, we can probably meet them with a range of 25 different types from which to choose; low power, high power or super high power. Use an



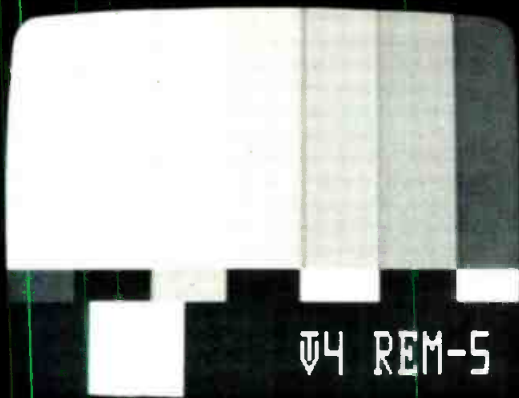
element as a single bay antenna for limited coverage or use multi-element arrays. We also have circularly and horizontally polarized stainless steel educational antennas. Directional couplers and low pass filters complete the line.

Whichever model you choose, your Phelps Dodge antenna arrives complete, ready for installation, with a tunable input transformer to match the antenna to the location. Deicer kits and radomes are optional.

Write, telephone or TWX for Catalog 779 with all the details: Phelps Dodge Communications Company, Route 79, Marlboro, NJ 07746, (201) 462-1880, TWX: 710-722-3861.



**phelps
dodge**
Communications Company
A Division of Phelps Dodge Industries, Inc.



NOW FULL TIME IDENTIFICATION

QSI announces its new series CB-9000V Live Video Identifier and Source Identified Color Bar Generators to meet the need for full time remote feed identification.

The CB-9000V Series, in the color bar mode, allows you to test your audio and video links, and the split field identification indicates who is out there. When the color bar is dropped for the live feed, the *identification is automatically transferred to the vertical interval* of the live video.



Photo by Stanley Forman, Courtesy Boston Herald American

QSi® *systems, inc.*

Circle 206 on Reader Service Card

12 Linscott Road, Woburn, Massachusetts 01888 (617) 938-1403

RYAN & ASSOCIATES, INC.

Hawthorne Woods
312 438-2905
Hipotronics see ad pg. 200

STEFFEY MARKETING

Northbrook
312 480-3575
James B. Lansing see ad pg. 203
UREI see ad pg. 181

SWIDERSKI ELECTRONICS

Elk Grove Village
312 364-1900
See ad pg. 215
Clear-Com see ad pg. 111
Conrac see ad pg. 57
Hitachi see ad pg. 156
3M PRO A/V see ad pgs. 95, 169

TELEVISUAL

Springfield
217 787-4855
3M PRO A/V see ad pgs. 95, 169

THROCKMORTON SALES

Ballwin, MO 63011
314 227-7222
Beyer Dynamic see ad pg. 213

TORKELSON ASSOCIATES, INC.

Deerfield
312 945-8700
Philips T&M see ad pg. 171

BRIAN TUCKER

Barrington
312 526-1660
Studer Revox America, Inc. see ad pg. 24

VIDEO MASTERS, INC.

Kansas City, MO
816 474-8530
CMX/Orox see ad pg. 36

V-TIP INC.

Rockford
815 654-9515
Hitachi see ad pg. 156

JOHN WALSH

Elk Grove
312 569-3500
Quanta see ad pg. 195

Indiana

ALLIED BROADCAST

Richmond
317 962-8596
Aristocart see ad pg. 12
ATI see ad pg. 224
Auditratics see ad pgs. 70-71, 172
Comex see ad pg. 136
ESE see ad pgs. 134-135
Moseley Assoc. see ad pg. 131

AVC SYSTEMS, INC.

Chicago, IL
312 763-6010
Harrison Systems see ad pg. 7

A/V MARKETING

Carmel
317 846-1034
Beyer Dynamic see ad pg. 213

B & A ELECTRONIC

Terre Haute
812 232-1061
Panasonic see ad pg. 107

N. BROWNING & CO.

Dayton, OH
513 222-3946
Calzone Case Co. see ad pg. 14

**COMMUNICATIONS SYSTEMS
DIV. OF POWER TOOL SUPPLY**

South Bend
219 489-3664
Agfa see ad pg. 204

**BRUCE DAWSON &
ASSOCIATES**

Indianapolis
317 241-1364
NEC America see ad pgs. 40, 143

DYER ELECTRONICS

Farmington Hills, MI
313 478-2157
TFT, Inc. see ad pg. 198

**ELECTRONIC TECHNICAL
SERVICE**

Indianapolis
317 299-8000
3M PRO A/V see ad pgs. 95, 169

**ELECTRO-TECH MARKETING
ASSOC.**

Chicago, IL
312 588-4535
Allen Avionics see ad pg. 168

INDIANAPOLIS VIDEO

Indianapolis
317 875-5313
3M PRO A/V see ad pgs. 95, 169

KAVCO

Indianapolis
317 875-5313
CMX/Orox see ad pg. 36
Hitachi see ad pg. 156

**MAGNETIC
COMMUNICATIONS**

Evanston, IL
312 869-6735
Maxell see ad pg. 65

ROBERT MILSK CO.

Southfield, MI
313 354-3310
317 842-3400 (Indianapolis)
Cetec Vega see ad pg. 191

SCIENCE SALES

Ossian
219 622-4346
Hipotronics see ad pg. 200

TORKELSON ASSOC., INC.

Indianapolis
317 244-7867
Philips T&M see ad pg. 171

OWA

ANTECH LABS, INC.

St. Louis, MO
314 962-5656
800 325-1960
Harrison Systems see ad pg. 7

EMMONS ASSOCIATES, INC.

Burnsville, MA
612 890-8920
NEC America see ad pgs. 40, 143
TFT, Inc. see ad pg. 198

ENGINEERING SERVICES CO.

St. Louis, MO
314 997-1515
Allen Avionics see ad pg. 168

ENTERPRISES, INC.

Hartford, WI
414 966-3303
See ad pg. 194

**MAGNETIC
COMMUNICATIONS**

Evanston, IL
312 869-6735
Maxell see ad pg. 65

MARCUS-JOHNSON ASSOC.

St. Charles, MO
314 441-7066
Calzone Case Co. see ad pg. 14

PALATINE SALES, INC.

Cedar Rapids
319 365-8071
Philips T&M see ad pg. 171

R.M. ASSOCIATES, LTD.

Shawnee Mission, KS
515 274-2517 (Des Moines)
314 225-8488 (St. Louis)
Cetec Vega see ad pg. 191
James B. Lansing see ad pg. 203

THROCKMORTON SALES

Ballwin, MO
314 227-7222
Beyer Dynamic see ad pg. 213

TRIANGLE AV

Des Moines
515 278-2929
3M PRO A/V see ad pgs. 95, 169

VIDEO MIDWEST INC.

Des Moines
515 244-1447
Hitachi see ad pg. 156
3M PRO A/V see ad pgs. 95, 169

Kansas

ANTECH LABS, INC.

St. Louis, MO
314 962-5656
800 325-1960
Harrison Systems see ad pg. 7

**BROADCAST TECHNICAL
CONSULTANTS**

Shawnee Mission
913 677-1483
Listec see ad pg. 182

BUSINESS COMMUNICATIONS

Kansas City
816 474-8000
3M PRO A/V see ad pgs. 95, 169

**CENTREX AUDIO VISUAL
SYSTEMS, INC.**

Topeka
913 232-7701
Panasonic see ad pg. 107

DIDIER/DENVER

Evergreen, CO
303 674-6000
See ad pgs. 157, 196
TFT, Inc. see ad pg. 198

ENGINEERING SERVICES CO.

St. Louis, MO
314 997-1515
Allen Avionics see ad pg. 168

MARCUS-JOHNSON ASSOC.

St. Charles, MO
314 441-7066
Calzone Case Co. see ad pg. 14

MIDTECH ASSOCIATES, INC.

DeSoto
913 441-6565
Hipotronics see ad pg. 200

PALATINE SALES, INC.

Mission
913 831-0555
Philips T&M see ad pg. 171

R.M. ASSOCIATES, LTD.

Shawnee Mission
913 631-7606
515 274-2517 (Des Moines)
314 225-8488 (St. Louis)
Cetec Vega see ad pg. 191
James B. Lansing see ad pg. 203
UREI see ad pg. 181

THROCKMORTON SALES

Ballwin, MO
314 227-7222
Beyer Dynamics see ad pg. 213

VIDEO MASTERS, INC.

Kansas City, MO
816 474-8530
CMX/Orox see ad pg. 36

Kentucky

ASHBY ASSOC.

Dayton, OH
513 252-5627
Allen Avionics see ad pg. 168

A/V MARKETING

Carmel, IN
317 846-1034
Beyer Dynamic see ad pg. 213

N. BROWNING & CO.
Dayton, OH
513 222-3946
Calzone Case Co. see ad pg. 14

BRUCE DAWSON & ASSOCIATES
Louisville
502 456-6666
502 456-6693
FOR-A see ad pg. 175
NEC America see ad pgs. 40, 143

RALPH L. HUCABY
Nashville, TN
615 373-0231
TFT, Inc. see ad pg. 198

KAVCO
Indianapolis, IN
317 875-5313
CMX/Orox see ad pg. 36

MAGNETIC COMMUNICATIONS
Evanston, IL
312 869-6735
Maxell see ad pg. 65

MIDWEST TELECOMMUNICATIONS
Louisville
502 491-2888
3M PRO A/V see ad pgs. 95, 169

ROBERT MILSK CO.
Southfield, MI
313 354-3310
317 842-3400 (Indianapolis)
Cetec Vega see ad pg. 191

VIDEO TECHNIQUES, INC.
Louisville
502 491-0910
Panasonic see ad pg. 107

LOUISIANA

Gray Communications Consultants, Inc.

**5441 Pepsi St., New Orleans, LA 70123
(504) 733-7265 in LA, (800) 252-9577**

All sizes mobile production vehicles. Large selection of video hardware and accessories. Studio camera systems, earth stations, and distribution systems. Authorized dealer for Ultimatte and Newsmatte.

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SUPPLY, INC.

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(713) 774-3314**

Professional advice, service, experience. Full line of RF & audio equipment. Offering transmitters through stylii. Call Bernie at (713) 774-3314.

Louisiana

AUDIO MEDIA ASSOCIATES
New Orleans
504 586-0140
ATI see ad pg. 224
Shively Labs see ad pg. 149

BRADENCO CORP.
Dallas, TX
214 243-7261
Allen Avionics see ad pg. 168

CROCKETT SALES COMPANY
Dallas, TX
214 350-3377
Maxell see ad pg. 65

DIMENSION MARKETING CORP.
Dallas, TX
214 348-9657
713 772-0961 (Houston)
Cetec Vega see ad pg. 191

GBS-GIESLER BROADCASTING SUPPLY, INC.
Houston, TX
713 774-3314
See ad this pg.

GRAY COMMUNICATIONS CONSULTANTS, INC.
New Orleans
504 733-7265
800 252-9577
See ad this page
3M PRO A/V see ad pgs. 95, 169

INTERSTATE SCHOOL SUPPLY COMPANY
Baton Rouge
504 387-5131
3M PRO A/V see ad pgs. 95, 169

MAGNETIC MEDIA CORP.
Dallas, TX
214 931-0404
See ad pg. 189

MAR ELECTRONICS
Kenner
504 469-2602
3M PRO A/V see ad pgs. 95, 169

MZB & ASSOC.
Dallas, TX
214 233-5535
See ad pg. 55
NEC America see ad pgs. 40, 143

PARCOM
Southlake, TX
817 481-7221
See ad pg. 187
TFT, Inc. see ad pg. 198

REP TECH, INC.
Terrell, TX
214 222-2131
Beyer Dynamic see ad pg. 213

SOUTHERN RADIO SUPPLY CO., INC.
New Orleans
504 524-2343
Varian Eimac see ad pg. 89

Maine

HIGH-TECH SALES INC.
Wayland, MA
617 653-3838
Allen Avionics see ad pg. 168

H.M. HOLZBERG ASSOCIATES
Totowa, NJ
201 256-0455
NEC America see ad pgs. 40, 143
TFT, Inc. see ad pg. 198

PRS, INC.
Boston, MA
617 254-2110
800 343-3001
Harrison Systems see ad pg. 7

R.G. ASSOCIATES, INC.
Millis, MA
617 376-2044
Beyer Dynamic see ad pg. 213

MARYLAND

Landy Associates, Inc.

1890 E. Marlton Pike, Cherry Hill, NJ 08003—(609) 424-4660
801 Water Street, Framingham, MA 01701—(617) 877-9570

FEATURING: Systems Designs, Installation and Service and Supplying Ampex, Ampro, Anton-Bauer, BMS, Inc. (Microwave), Broadcast Electronics, Canon, Cine 60, Cinema Products, Conrac, Crown, Datatek, Datatron, Dynair, Electro-Voice, Fujinon, Gitzo, Ikegami, JBL, JVC, Leitch, Peter Lisand, Listec (Vinten), MCI/Quantel, O'Connor, Panasonic, Porta-Pattern, Quick-Set, Ross Video, RTS Systems, Sachtler, Sennheiser, Shure, Skotel, Tektronix, Thomson-CSF, Tweed Audio, UMC Beaucart, Videotek and other fine equipment. Call Jim Landy at 609-424-4660.

ALAN SARFATY & ASSOCIATES
Great Neck, NY
516 466-6770
Calzone Case Co. see ad pg. 14

SPHERE ASSOCIATES
Reston, VA
703 471-1230
Cetec Vega see ad pg. 191

F.M. VALENTI, INC.
Lexington, MA
617 861-0089
Maxell see ad pg. 65

Maryland

ASSOCIATED SALES REPS
Baltimore
301 574-0550
UREI see ad pg. 181

AUDIO TECHNICAL SERVICES, LTD.
Vienna, VA
703 938-5115
Harrison Systems see ad pg. 7

AUDIOTECHNIQUES, INC.
Bethesda
301 469-7500
MCI/Sony see ad pg. 83

COMMERCIAL VIDEO REPRESENTATIVES
Reisterstown
301 252-8919
Maxell see ad pg. 65

CAPITOL RADIO WHOLESALE, INC.
Rockville
301 881-2270
Varian Eimac see ad pg. 89

CASSETTE SYSTEMS, INC.
Woodstock
301 922-8865
Agfa see ad pg. 204

COMMUNICATIONS TELEVIDEO LIMITED
Silver Spring
202 585-6311
Panasonic see ad pg. 107



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Angénieux has developed for your needs, the complete modular lens systems. With selectable attachments, we cover—from the widest wide angle to the super telephoto with the same basic lens. These systems cover studio lenses with outstanding optical quality as well as durable, lightweight, compact ENG, EFP and field lenses.

Whatever your format, $\frac{1}{2}$ " , $\frac{3}{4}$ " , 1" , $1\frac{1}{4}$ " ,
if you're thinking about purchasing a good lens
then why not consider—the very best.

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13381 BEACH AVE., VENICE, CA 90291 • (213) 821-5080
190 DON PARK RD., MARKHAM, ONT. L3R-2V8 • (416) 495-5454

Circle 207 on Reader Service Card

www.americanradiohistory.com

EASTERN SCIENTIFIC MARKETING
Laurel
301 490-3800
Philips T&M see ad pg. 171

LANDY ASSOCIATES, INC.
Cherry Hill, NJ
609 424-4660
See ad pgs. 166, 168

RICHARD LEWIS SALES
Glenside, PA
215 886-1555
Beyer Dynamic see ad pg. 213

MARKETRATION, INC.
Phoenix
301 666-9292
James B. Lansing see ad pg. 203

MIDWEST TELECOMM
Lanham
301 577-4903
Clear-Com see ad pg. 111
Conrac see ad pg. 57
3M PRO A/V see ad pgs. 95, 169

PEIRCE-PHELPS, INC.
Bethesda
301 530-9580
CMX/Orox see ad pg. 36
3M PRO A/V see ad pgs. 95, 169

PROFESSIONAL PRODUCTS
Bethesda
301 657-2141
Hitachi see ad pg. 156
3M PRO A/V see ad pgs. 95, 169
MCI/Quantel see ad pg. 63

RECORDING CONSULTANTS INC.
Silver Spring
301 587-1800
ATI see ad pg. 224
Clear-Com see ad pg. 111

SPHERE ASSOCIATES
Reston, VA
703 471-1230
Cetec Vega see ad pg. 191

MASSACHUSETTS

Landy Associates, Inc.
1890 E. Marlton Pike, Cherry Hill, NJ 08003—(609) 424-4660
801 Water Street, Framingham, MA 01701—(617) 877-9570

FEATURING: Systems Designs, Installation and Service and Supplying Ampex, Ampro, Anton-Bauer, BMS, Inc. (Microwave), Broadcast Electronics, Canon, Cine 60, Cinema Products, Conrac, Crown, Datatek, Datatron, Dynair, Electro-Voice, Fujinon, Gitzo, Ikegami, JBL, JVC, Leitch, Peter Lisand, Listec (Vinten), MCI/Quantel, O'Connor, Panasonic, Porta-Pattern, Quick-Set, Ross Video, RTS Systems, Sachtler, Sennheiser, Shure, Skotel, Tektronix, Thomson-CSF, Tweed Audio, UMC Beaucart, Videotek and other fine equipment. Call Brad Reed at 617-877-9570.

TELEVISION ENGINEERING CORP.
Chesterfield
314 532-4700
Conrac see ad pg. 57

VANGUARD ENGINEERING SALES, INC.
Alexandria, VA
703 768-1660
Allen Avionics see ad pg. 168

VISUAL INFORMATION SYSTEMS
Owings Mills
301 363-6390
3M PRO A/V see ad pgs. 95, 169

WILTRONIX, INC.
Washington Grove
301 258-7676
ATI see ad pg. 224
Hedco see ad pg. 190
NEC America see ad pgs. 40, 143
Ramko Research see ad pg. 5

Massachusetts

CRAMER AUDIO/VIDEO SYSTEMS
Needham
617 449-2100
ATI see ad pg. 224
CMX/Orox see ad pg. 36
3M PRO A/V see ad pgs. 95, 169

RICHARD DEAN ASSOC., INC.
Woburn
617 933-8435
James B. Lansing see ad pg. 203

HIGH-TECH SALES INC.
Wayland
617 653-3838
Allen Avionics see ad pg. 168



Video Delay Lines

ALLEN AVIONICS Video & Pulse Delay Lines replace 75 ohm coaxial cable, provide a more suitable method of achieving precise short delays. The units reduce size, weight, installation costs, save time & effort in making delay changes.

Part No.	Delay Range (Nano-Sec.)	Delay Steps (Nano-Sec.)	Method of Variation	Maximum Insertion Loss @ 100 KHz (db)	Amplitude Flatness At Any Delay Setting 100 KHz to 5.5 MHz (db)	Max. Rise Time (Nano-Sec.)	Package Size (Inches)
VAR005	3-7	Continuous	Trimmer	.20	.2 Max.	N.A.	3 3/8 x 1 1/2 x 1 1/4
VAR011	0-11	Continuous	Trimmer & Toggle	.20	.25	N.A.	4 3/8 x 2 3/8 x 1 1/16
VPO010	0-10.5	.5	Toggle	.15	.2	3	4 3/8 x 2 3/8 x 1 1/16
VP0127	0-127	1.0	Toggle	.15	.3	14	4 3/8 x 2 3/8 x 1 1/16
VP0255	0-255	1.0	Toggle	.15	.3	16	4 3/8 x 2 3/8 x 1 1/16
VP0317	0-317.5	2.5	Toggle	.15	.3	20	4 3/8 x 2 3/8 x 1 1/16
VP0635	0-635	5.0	Toggle	.50	.4	25	4 1/16 x 3 1/16 x 2 1/16
VP1100	0-1100	10.0	Rotary	1.25	.4	30	4 1/16 x 3 1/16 x 2 1/16
VP1270	0-1270	10.0	Toggle	*3.00	.4	30	4 1/16 x 3 1/16 x 2 1/16
VP2075	0-2075	25.0	Toggle	*3.00	.5	40	7 3/8 x 4 1/16 x 2 3/16
VS0315	0-315	5.0	Strap	.25	.4	28	4 x 2 x 1 1/4
VS0635	0-635	5.0	Strap	.60	.5	33	5 x 2 x 1 1/4
VS1275	0-1275	5.0	Strap	1.25	.5	33	5 x 3 x 1 1/4
VS2075	0-2075	25.0	Strap	2.50	.5	40	6 1/2 x 3 1/2 x 2

RACK MOUNTABLE UNITS

VRM0255	0-255	1.0	Slide Switch	.40	.4 Max.	20	1 1/8 x 4 1/8 x 4
VRM0637	0-637.5	2.5	Slide Switch	*1.00	.4	28	1 1/8 x 4 1/8 x 6
VRM1275	0-1275	5.0	Slide Switch	*3.00	.4	33	1 1/8 x 4 1/8 x 9
VRM2270	0-2270	10.0	Slide Switch	*3.00	.5	40	1 1/8 x 4 1/8 x 9
VRS0317	0-317.5	2.5	Strap	.40	.5	26	1 1/8 x 4 1/8 x 4
VRS0635	0-635	5.0	Strap	.75	.5	35	1 1/8 x 4 1/8 x 6
VRS1270	0-1270	10.0	Strap	1.50	.5	37	1 1/8 x 4 1/8 x 9
VRS2260	0-2260	20.0	Strap	3.00	.5	40	1 1/8 x 4 1/8 x 9

*±.2db variation at any delay setting.

NEW!



RACK MOUNTABLE VIDEO & PULSE DELAY LINES

A complete Rack Mountable series of Video & Pulse Delay Lines, with the capability of replacing up to 1450 feet of cable, is now being marketed by Allen Avionics. (See listing in table at left.)

Impedance: 75 ohms.
Pulse Distortion: Less than 4% with an input pulse rise time of 20 nanoseconds.
Working Voltage: 50 volts maximum. 100 volts maximum for Rack Mountable series.
Return Loss: 20db minimum. 15db minimum for VP2075, VS2075 and Rack Mountable series.
Delay Tolerance: 5% or 1 nanosecond, whichever is greater.

CALL/WRITE

For Video Delay Lines & Filters Catalog

ALLEN AVIONICS, INC.
224 EAST SECOND ST., MINEOLA, NY 11501
Phone: 516-248-8080

Routing
Switching
Equipment

3M

PROFESSIONAL VIDEO EQUIPMENT
Stereo, Audio Video
Switching, Control, etc.
3M, Inc. 1988

3M

Taft Broadcasting Company
1718 Young Street
Cincinnati, Ohio 45210

Taft Broadcasting is an immensely successful communication company with TV stations in seven major markets. Their quality standards are tough. Their business standards are demanding. And that's why, for the past three years, Taft has been sold on 3M Routing Switchers.

We lived up to their standards by saving them time and money. We saved them installation costs by setting up quickly and easily. We saved them equipment costs by doing more with less. And we saved them manpower and modification costs by expanding the system as their needs expanded. With 3M Routing Switchers, Taft was faced with add-ons, but never with obsolescence. They know our system will be as state-of-the-art tomorrow as it is today.

Our system can be as simple as a 10x1 or as sophisticated as a computer interfaced system controlling tape and film machines, printing logs, or connecting any combination of inputs to any combination of outputs. All at the touch of a button or the pulse of a computer command.

Virtually all 3M switching equipment is

microprocessor-based, so you can delegate control to individual stations, yet lock out other stations to prevent operational interference. You can route audio and video separately. And all controls are connected by one coaxial cable.

We offer five series of switchers, with your choice of control panels. And each one is designed to stay on the job for years.

For a firsthand impression of 3M Routing Switchers, check with John Owen, V.P. Television Engineering at Taft Broadcasting. So far, he's only had one complaint: "I wish we would have had them in '76, '77 and '78".

If you'd like more information about 3M Routing Switchers, call us collect at 1-612-733-8132. Or write us on your letterhead at 3M Professional Audio/Video Equipment, Bldg. 223-5E, 3M Center, St. Paul, MN 55144. For inquiries from outside the continental U.S., call or write, International Operations, 3M, Bldg. 220-5E, 3M Center, St. Paul, MN 55133. 1-612-736-2549.

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NEC America see ad pgs. 40, 143
TFT, Inc. see ad pg. 198

SPHERE ASSOCIATES

Reston, VA
703 471-1230
Cetec Vega see ad pg. 191

INDUSTRIAL COMPONENTS CORPORATION

North Wilbraham
413 596-3854
Varian Eimac see ad pg. 89

F.M. VALENTI, INC.

Lexington
617 861-0089
FOR-A see ad pg. 175
Maxell see ad pg. 65

INTERSELL

Burlington
617 273-3844
Philips T&M see ad pg. 171

WAGON PHOTO SALES

Chelsea
617 884-3738
Tiffen see ad pg. 33

LAKE SYSTEMS CORP.

Newton
617 244-6881
See ad pg. 187
Hitachi see ad pg. 156
3M PRO A/V see ad pgs. 95, 169
UMC see ad pg. 98

LANDY ASSOCIATES, INC.

Framingham
617 877-9570
See ad pgs. 166, 168
Panasonic see ad pg. 107

Michigan

ASHBY ASSOC.

Dayton, OH
513 252-5627
Allen Avionics see ad pg. 168

BILL McFADDEN

Annisquam
617 283-7507
Ward Beck see ad Cover 4

AUDIO DISTRIBUTORS, INC.

Grand Rapids
616 452-1596
ATI see ad pg. 224
Auditronics, Inc. see ad pgs. 70-71, 172
Moseley Assoc. see ad pg. 131

PRIME MARKETING CORP.

Allston
617 787-5004
800 343-4606
Tiffen see ad pg. 33

AVC SYSTEMS, INC.

Chicago, IL
312 763-6010
Harrison Systems see ad pg. 7

PRS, INC.

(PROFESSIONAL RECORDING & SOUND)

Boston
617 254-2110
ATI see ad pg. 224
Harrison Systems see ad pg. 7

LARRY BIEHL

Farmington Hills
313 553-2360
MCI/Quantel see ad pg. 63

QSI SYSTEMS, INC.

Woburn
617 938-1403
Conrac see ad pg. 57

CM SALES

W. Bloomfield
313 626-2397
Calzone Case Co. see ad pg. 14

ALAN SARFATY & ASSOCIATES

Great Neck, NY
516 466-6770
Calzone Case Co. see ad pg. 14

CRUSE COMMUNICATIONS

E. Lansing
517 332-3579
3M PRO A/V see ad pgs. 95, 169

R.G. ASSOCIATES, INC.

Millis
617 376-2044
Beyer Dynamics see ad pg. 213

DARNELL SALES

Detroit
313 534-9322
Beyer Dynamic see ad pg. 213

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Take it on a quick trip through your studio or control room and adjust all monitors to the same color temperature in a matter of minutes.

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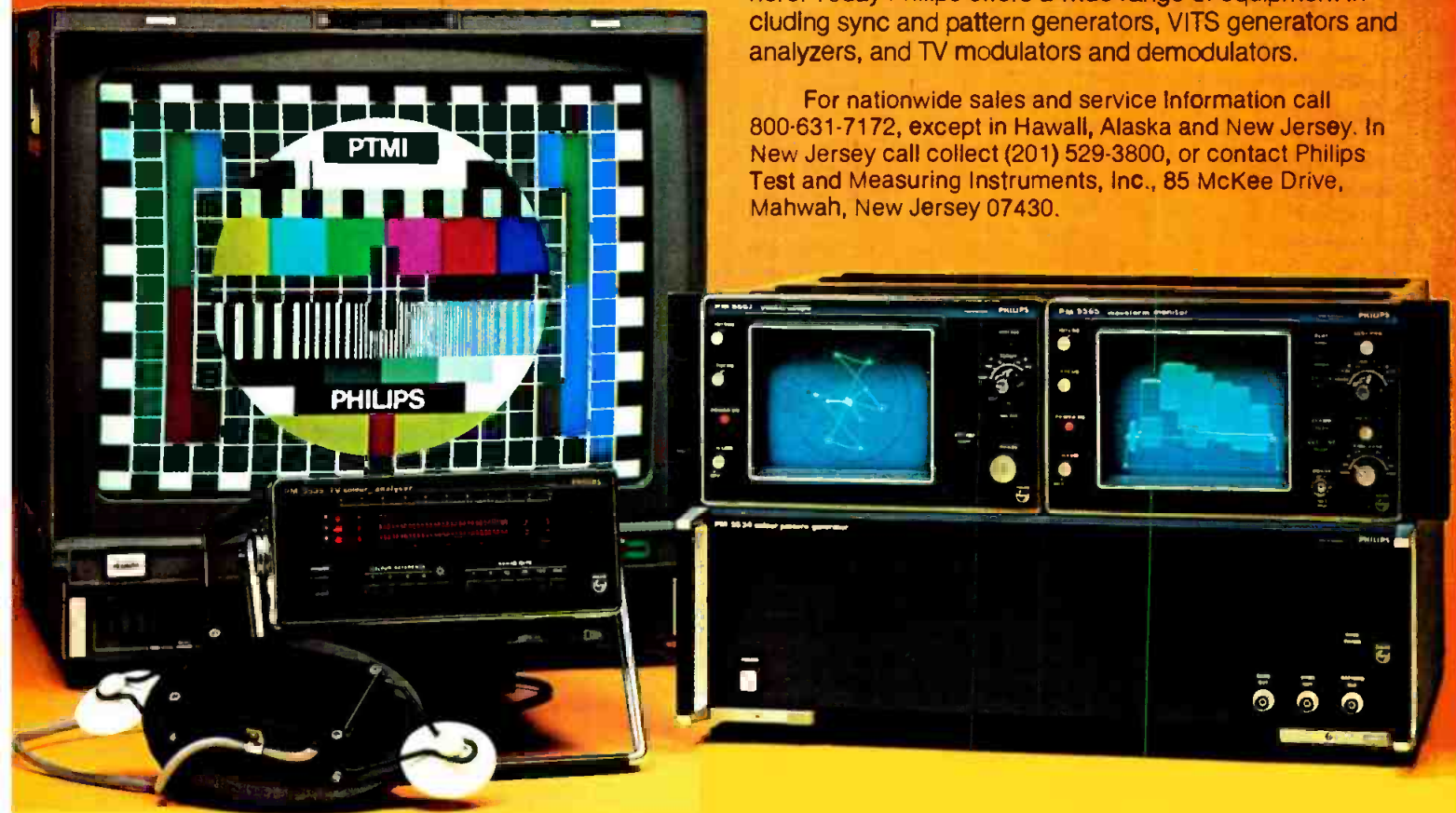
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Farmington Hills
313 478-2157
Clear-Com see ad pg. 111
Datatek see ad pg. 51
Hedco see ad pg. 190
NEC America see ad pgs. 40, 143
TFT, Inc. see ad pg. 198
QSI see ad pg. 164

GENERAL TELEVISION NW

Oak Park
313 548-2500
3M PRO A/V see ad pgs. 95, 169

MAGNETIC COMMUNICATIONS

Evanston, IL
312 869-6735
Maxell see ad pg. 65

ROBERT MILSK CO.

Southfield
313 354-3310
317 842-3400 (Indianapolis)
Cetec Vega see ad pg. 191

SOUND SOLUTIONS INC.

Canton
313 453-6586
ATI see ad pg. 224

THALNER ELECTRONIC LABS

Ann Arbor
313 761-4506
CMX/Orox see ad pg. 36
Hitachi see ad pg. 156
Panasonic see ad pg. 107

V F SALES

Plymouth
313 453-8720
UREI see ad pg. 181

WKM ASSOCIATES, INC.

Madison Heights
313 588-2300
Philips T&M see ad pg. 171

Minnesota

AINSLIE COMPANY

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Minneapolis
612 729-8305
Agfa see ad pg. 204
ATI see ad pg. 224
Harrison Systems see ad pg. 7
Moseley Assoc. see ad pg. 131

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Prior Lake
612 447-4453
Asaca/Shibasoku see ad pg. 82

CLARK R. GIBB COMPANY

Minnetonka
612 938-5434
UREI see ad pg. 181

ELECTRONIC CENTER, INC.

Minneapolis
612 371-5200
Varian Eimac see ad pg. 89

EMMONS ASSOCIATES, INC.

Burnsville
612 890-8920
Conrac see ad pg. 57
NEC America see ad pgs. 40, 143
TFT, Inc. see ad pg. 198

ENTERPRISES, INC.

Hartford, WI
414 966-3303
See ad pg. 194

CLARK R. GIBB CO.

Minnetonka
612 938-5434
Cetec Vega see ad pg. 191
James B. Lansing see ad pg. 203

GREAT TAPES

Minneapolis
612 339-1651
Agfa see ad pg. 204

KEN HAUGEN & ASSOC.

Anoka
612 421-3395
Allen Avionics see ad pg. 168

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Beyer Dynamic see ad pg. 213

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See ad pg. 172
Emcee see ad pg. 142
3M PRO A/V see ad pgs. 95, 169

TORKELSON ASSOCIATES, INC.

Minneapolis
612 835-2414
Philips T&M see ad pg. 171

VIDEO MIDWEST, INC.

Minneapolis
612 831-2248
Clear-Com see ad pg. 111
Hitachi see ad pg. 156
3M PRO A/V see ad pgs. 95, 169

Mississippi

CENTRAL SCHOOL SUPPLY

Jackson
601 969-6700
Hitachi see ad pg. 156
3M PRO A/V see ad pgs. 95, 169
Panasonic see ad pg. 107

CRESCENDO ASSOC.

Atlanta, GA
404 223-0108
Calzone Case Co. see ad pg. 14

EME II, INC.

Decatur, GA
404 325-0165
NEC America see ad pgs. 40, 143

GRAY COMMUNICATIONS CONSULTANTS, INC.

Mobile, AL
205 476-2051
See ad this pg.

THE PROMAR GROUP

Raleigh, NC
919 467-5466
Maxell see ad pg. 65

REP TECH, INC.

Terrell, TX
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Beyer Dynamic see ad pg. 213

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Allen Avionics see ad pg. 168

ROSCOM, INC.

Roswell, GA
404 992-2700
TFT, Inc. see ad pg. 198

WILSON AUDIO SALES

Franklin, TN
615 794-0155
404 993-2366 (Atlanta)
Cetec Vega see ad pg. 191

Missouri

ANTECH LABS, INC.

St. Louis
314 962-5656
800 325-1960
Harrison Systems see ad pg. 7
Moseley Assoc. see ad pg. 131

COMMUNITRONICS, INC.

St. Louis
314 771-7160
3M PRO A/V see ad pgs. 95, 169

DELCOM CORP. ST. LOUIS

St. Louis
314 432-1164
Hitachi see ad pg. 156

ENGINEERING SERVICES CO.

St. Louis
314 997-1515
Allen Avionics see ad pg. 168

H.M. DYER ELECTRONICS

Farmington Hills, MI
313 478-2157
NEC America see ad pgs. 40, 143
TFT, Inc. see ad pg. 198

LINES MUSIC COMPANY

Springfield
417 862-5533
3M PRO A/V see ad pgs. 95, 169

MAGNETIC COMMUNICATIONS

Evanston, IL
312 869-6735
Maxell see ad pg. 65

MARCUS-JOHNSON ASSOC.

St. Charles
314 441-7066
Calzone Case Co. see ad pg. 14

MIDTEC ASSOCIATES, INC.

Florissant
314 837-5200
Hipotronics see ad pg. 200

MIDWEST MAGNETIC TAPE CORP.

Blue Springs
816 229-6933
Agfa see ad pg. 204

N.Z. VIDEO SYSTEMS

Sikeston
314 471-7145
Panasonic see ad pg. 107

PALATINE SALES, INC.

Hazelwood
314 895-4577
Philips T&M see ad pg. 171

R.M. ASSOCIATES, LTD.

Shawnee Mission, KS
913 631-7606
515 274-2517 (Des Moines)
314 225-8488 (St. Louis)
Cetec Vega see ad pg. 191
James B. Lansing see ad pg. 203

TELEVISION ENGINEERING CORP.

Chesterfield
314 532-4700
Auditronics Inc. see ad pgs. 70-71, 172
Broadcast Microwave see ad pgs. 15, 140
Clear-Com see ad pg. 111
Hedco see ad pg. 190
Listec see ad pg. 182
3M PRO A/V see ad pgs. 95, 169

THROCKMORTON SALES

Ballwin
314 227-7222
Beyer Dynamic see ad pg. 213

VIDEO MASTERS INC.

Kansas City
816 474-8530
CMX/Orox see ad pg. 36
Hitachi see ad pg. 156
3M PRO A/V see ad pgs. 95, 169

VMI COMPANY

St. Louis
314 569-1334
Hitachi see ad pg. 156

Montana

DIDIER/DENVER

Evergreen, CO
303 674-6000
See ad pgs. 157, 196
TFT, Inc. see ad pg. 198

HALL ELECTRONICS

Boise, ID
208 376-1663
TFT, Inc. see ad pg. 198

J.F. HURLBUT CO.

Golden, CO
303 279-7796
Allen Avionics see ad pg. 168

INNOVATIVE CONCEPTS, INTL.

Redondo Beach, CA
213 540-5684
Elector see ad pg. 37

MATRIX MARKETING

Seattle, WA
206 789-5990
Cetec Vega see ad pg. 191

NORTHMAR, INC.

Seattle, WA
206 524-5170
Beyer Dynamic see ad pg. 213

PROFESSIONAL REPRESENTATIVES CORPORATION

Foster City, CA
415 570-5055
Maxell see ad pg. 65

SOUNDS PRO SALES

Denver, CO
303 422-6869
Beyer Dynamic see ad pg. 213

Nebraska

ANTECH LABS, INC.

St. Louis, MO
314 962-5656
800 325-1960
Harrison Systems see ad pg. 7

DIDIER/DENVER

Evergreen, CO
303 674-6000
See ad pg. 157, 196
TFT, Inc. see ad pg. 198

ENGINEERING SERVICES CO.

St. Louis, MO
314 997-1515
Allen Avionics see ad pg. 168

MAGNETIC COMMUNICATIONS

Evanston, IL
312 869-6735
Maxell see ad pg. 65

MARCUS-JOHNSON ASSOC.

St. Charles, MO
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Beyer Dynamic see ad pg. 213

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402 551-7600
3M PRO A/V see ad pgs. 95, 169

VIDEO MASTERS, INC.
Kansas City, MO
816 474-8530
CMX/Orron see ad pg. 36

VIDEO SERVICE OF NEBRASKA
Lincoln
402 467-3668
Panasonic see ad pg. 107

Nevada

ADTEK ASSOC.
Palo Alto, CA
415 323-5414
Allen Avionics see ad pg. 168

DEREK ALLEN ASSOCIATES
Toluca Lake, CA
213 840-8327
Beyer Dynamic see ad pg. 213

INNOVATIVE CONCEPTS, INTL.
Redondo Beach, CA
213 540-5684
Elector see ad pg. 37

MAGNETIC COMMUNICATIONS
Tustin, CA
714 730-5021
Maxell see ad pg. 65

MARCOM
Scotts Valley, CA
408 438-4273
NEC America see ad pgs. 40, 143
TFT, Inc. see ad pg. 198

BRIAN TRANKLE & ASSOC.
Hillsborough, CA
415 344-1133
Cetec Vega see ad pg. 191

VAN GOTT & ASSOC. INC.
Arcadia, CA
213 445-9728
Allen Avionics see ad pg. 168

VIDEO PRODUCTIONS OF NEVADA
Las Vegas
702 736-8034
Hitachi see ad pg. 156

New Hampshire

ASSOCIATED SYSTEMS
Manchester
603 472-2297
Asaca/Shibasoku see ad pg. 82

HIGH-TECH SALES INC.
Wayland, MA
617 653-3838
Allen Avionics see ad pg. 168

HOLZBERG ASSOC.
Totowa, NJ
201 256-0455
NEC America see ad pgs. 40, 143
TFT, Inc. see ad pg. 198

PRS, INC.
Boston, MA
617 254-2110
800 343-3001
Harrison Systems see ad pg. 7

R.G. ASSOCIATES, INC.
Millis, MA
617 376-2044
Beyer Dynamic see ad pg. 213

ALAN SARFATY & ASSOC.
Great Neck, NY
516 466-6770
Calzone Case Co. see ad pg. 14

SPHERE ASSOCIATES
Reston, VA
703 471-1230
Cetec Vega see ad pg. 191

F.M. VALENTI, INC.
Lexington, MA
617 861-0089
Maxell see ad pg. 65

New Jersey

AF ASSOCIATES, INC.
Northvale
201 767-1000
See ad pg. 125
3M PRO A/V see ad pgs. 95, 169
Marconi see ad pg. 60

BROADCAST SERVICE CO.
Newton
201 579-1811
ATI see ad pg. 224

CALVERT ELECTRONICS INC.
East Rutherford
201 460-8800
800 526-6362
See ad pg. 152
Varian Eimac see ad pg. 89

CINECRAFT INTERNATIONAL
Moonachie
201 939-0875
Eastman Kodak see ad pg. 49

BOB DENTE
Parsippany
201 263-4900
Strand Century see ad pg. 185

EASTERN METRO ASSOCIATES, INC.
Bloomingdale
201 492-1747
Allen Avionics see ad pg. 168

EASTERN SCIENTIFIC MARKETING
Vincentown
609 268-1373
Philips T&M see ad pg. 171

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Avenel
201 634-5310
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Totowa
201 256-0455
Hedco see ad pg. 190
NEC America see ad pgs. 40, 143
Shively Labs see ad pg. 149
TFT, Inc. see ad pg. 198

FRIEDMAN ASSOCIATES, INC.
Union
201 964-6200
Hipotronics see ad pg. 200

LANDY ASSOCIATES, INC.
Cherry Hill
609 424-4660
See ad pg. 179
Broadcast Microwave see ad pgs. 15, 140
Datatek see ad pg. 51
Listec see ad pg. 182
MCI/Quantel see ad pg. 63

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Glenside, PA
215 886-1555
Beyer Dynamic see ad pg. 213

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Mentor, Ohio
216 974-8270
Maxell see ad pg. 65

JOSEPH NIGRO ASSOCIATES INC.
Wayne
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Grumman see ad pg. 81

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It's called BIAS® Master Control Automation. Because that's exactly what it does. Makes master control automatic.

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Control Automation can work independently or with other BIAS systems to coordinate traffic, sales, accounting, administration, and much more.

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TITLE

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STATION/COMPANY

CITY

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516 367-8620
Beyer Dynamic see ad pg. 213

RABAL ASSOCIATES, INC.
Huntingdon Valley, PA
215 947-4825
Allen Avionics see ad pg. 168

ALAN SARFATY & ASSOC.
Great Neck, NY
516 466-6770
Calzone Case Co. see ad pg. 14

SHEA SALES
Maplewood
201 762-2382
Ramko Research see ad pg. 5

SPHERE ASSOCIATES
Reston, VA
703 471-1230
Cetec Vega see ad pg. 191

SYMCO, INC.
Millington
201 647-6262
FOR-A see ad pg. 175

TELE-MEASUREMENTS
Clifton
201 473-8822
Conrac see ad pg. 57

Hitachi see ad pg. 156
3M PRO A/V see ad pgs. 95, 169

VISION-SOUND PROFESSIONAL AUDIO, INC.
Englewood
201 871-4101
Harrison Systems see ad pg. 7
Studer Revox see ad pg. 24

New Mexico

JOHN AXTELL & ASSOCIATES
Englewood, CO
303 779-1731
Maxell see ad pg. 65

BROADCAST SYSTEMS CORPORATION
Albuquerque
505 884-8235
Emcee see ad pg. 142

DIDIER/DENVER
Evergreen, CO
303 674-6000
See ad pgs. 157, 196
TFT, Inc. see ad pg. 198

DYMA ENGINEERING
Taos
505 758-2686
NEC America see ad pgs. 40, 143
Shively Labs see ad pg. 149

J.F. HURLBUT CO.
Golden, CO
303 279-7796
Allen Avionics see ad pg. 168

INNOVATIVE CONCEPTS, INTL.
Redondo Beach, CA
213 540-5684
Elector see ad pg. 37

SOUNDS PRO SALES
Denver, CO
303 422-6869
Beyer Dynamic see ad pg. 213

New York

AETNA OPTIX INC.
Island Park
516 889-8570
Tiffen see ad pg. 33

ALPHA ELECTRONICS
Brooklyn
212 633-2800
Varian Eimac see ad pg. 89

ANDOL AUDIO PRODUCTS, INC.
Brooklyn
212 435-7322
Agfa see ad pg. 204

ANGEL SOUND CO.
New York
212 757-1952
Agfa see ad pg. 204

ASHTON COMMUNICATIONS SYSTEMS, INC.
Vestal
607 748-3331
Hitachi see ad pg. 156
3M PRO A/V see ad pgs. 95, 169

AUDIO VIDEO CORPORATION
Menands
518 449-7213
Hitachi see ad pg. 156
3M PRO A/V see ad pgs. 95, 169
Panasonic see ad pg. 107

DAVID BAIN ASSOCIATES
Port Washington
516 883-4818
ESE see ad pgs. 134-135
Moseley Assoc. see ad pg. 131

BROADCAST MARKETING CORPORATION
New York
212 593-0974
3M PRO A/V see ad pgs. 95, 169

CAMERA CRAFTSMAN CORP.
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Tiffen see ad pg. 33

VIDEO DELAY LINES

FOR TV BROADCASTING APPLICATIONS

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Racal Headsets for Intercom/ Sportscaster
Applications

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- TV BROADCAST PERFORMANCE
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MCI/Quantel see ad pg. 63
Panasonic see ad pg. 107

CECO COMMUNICATIONS, INC.

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212 646-6300
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Cazenovia
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H.M. HOLZBERG ASSOC.

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NEC America see ad pgs. 40, 143
TFT, Inc. see ad pg. 198

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New York
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Tiffen see ad pg. 33

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See ad this page

LAUMIC COMPANY

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MAGNO SOUND

New York
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3M PRO A/V see ad pgs. 95, 169

MARKETRATION, INC.

Levittown
516 731-5997
James B. Lansing see ad pg. 203

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New York
212 541-5900
ATI see ad pg. 224
Harrison Systems see ad pg. 7

L. MATTHEW MILLER ASSOCIATES LTD.

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Panasonic see ad pg. 107

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Mentor, OH
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Maxell see ad pg. 65

MPCS

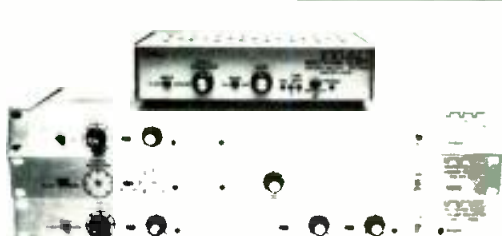
New York
212 586-3690
Clear-Com see ad pg. 111

NACO ELECTRONICS CORP.

N. Syracuse
315 699-2651
Philips T & M see ad pg. 171

NORTHEAST BROADCAST LABS

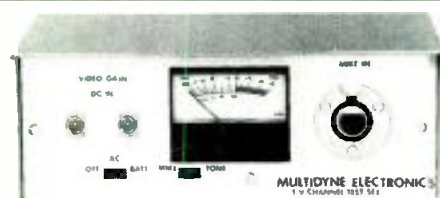
S. Glen Falls
518 793-2181
ATI see ad pg. 224
ESE see ad pgs. 134-135
Moseley Assoc. see ad pg. 131



VPDA-2
Very low distortion (.1 diff. phase), clamped, 6 output video distribution amplifier. Portable AC/DC, single and dual rack-mounted, sync adding.



High reliability graphics-character generator. Two character sizes, aural feedback, musical effects capability, RS232C computer interface for unlimited uses and storage, very low distortion keyer. Soon available for color operation. It costs only \$795.

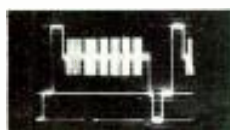


TS-1
Bars, tone, black, AC/DC microphone preamp still under \$1000. Thousands in use.

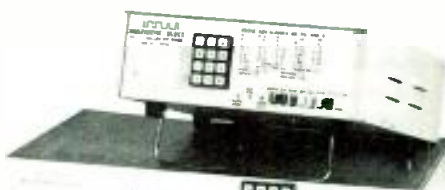


Before

Typical 8281 equalization results for 2300'



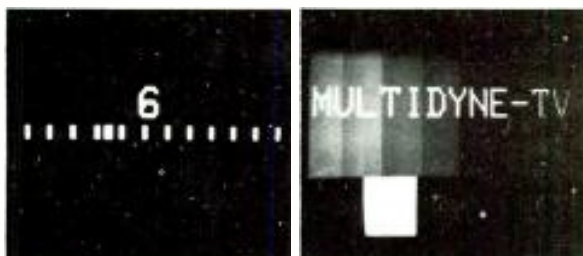
After



TS-3
The only computerized bar-black-countdown generator, hundreds in use.



Low distortion earphone amplifier, low power, lightweight, two gain ranges, low battery flashing indicator. It can amplify telephone audio through magnetic pick-up. It costs only \$110.



TS-2 SYNC & SIGNAL GENERATOR
Count-down with swinging dot and beeps, color bars with 12 character ID, black, oven referenced pulses, optional SMPTE bars and external character generator. Prices start at \$1600.



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ALAN SARFATY & ASSOC.
Great Neck
516 466-6770
Calzone Case Co. see ad pg. 14

SINGER PRODUCTS CO., INC.
Westbury
516 333-2000
ATI see ad pg. 224

SONOCRAFT CORP.
New York
212 760-9300
Conrac see ad pg. 57
Gray Engineering Labs see ad pg. 200
Hitachi see ad pg. 156
3M PRO A/V see ad pgs. 95, 169

SOUND SYSTEMS, INC.
Long Island City
212 786-4474
3M PRO A/V see ad pgs. 95, 169

SPHERE ASSOCIATES
Reston, VA
703 471-1230
Cetec Vega see ad pg. 191

STUDIO FILM & TAPE
New York
212 977-9330
Agfa see ad pg. 204

SYMCO, INC.
Glendale
212 417-0537
FOR-A see ad pg. 175

TECHNISPHERE CORP.
New York
212 889-9170
Agfa see ad pg. 204
Hitachi see ad pg. 156

TELEPROMPTER
New York
212 581-7787
Hitachi see ad pg. 156

UPSTATE MARKETING
Glenville
518 399-6311
UREI see ad pg. 181

VIDEO PROJECTS
New Hyde Park
516 352-6001
Hitachi see ad pg. 156

VISION-SOUND PROFESSIONAL AUDIO, INC.
Englewood, NJ
201 871-4101
Harrison Systems see ad pg. 7

J.G. WELCH ASSOC. INC.
Rochester
716 244-1100
Allen Avionics see ad pg. 168

WESTEC AUDIO VIDEO
New York
212 586-1662
Auditronics, Inc. see ad pgs. 70-71, 172

WINDSOR TOTAL VIDEO SYSTEMS
New York
212 725-8080
Hitachi see ad pg. 156

North Carolina

AUDIO TECHNICAL SERVICES, LTD.
Vienna, VA
703 938-5115
Harrison Systems see ad pg. 7

BROADCAST SERVICES CO.
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Auditronics, Inc. see ad pgs. 70-71, 172

CRESCENDO ASSOC.
Atlanta, GA
404 223-0108
Calzone Case Co. see ad pg. 14

DOUG COOK & ASSOC.
Charlotte
704 542-6510
Ramko Research see ad pg. 5

EME
High Point
919 869-3335
NEC America see ad pgs. 40, 143
TFT see ad pg. 198

KIRKMAN ELECTRONICS
Winston Salem
919 722-9131
3M PRO A/V see ad pgs. 95, 169

MICHAEL VIDEO SALES, INC.
Clemmons
919 766-8288
MCI/Quantel see ad pg. 63

THE PROMAR GROUP
Raleigh
919 467-5466
Maxell see ad pg. 65

REYNOLDS & ASSOCIATES, INC.
Cocoa Beach, FL
305 784-4700
Allen Avionics see ad pg. 168

SOUTHERN COASTAL MARKETING SERVICES
Charlotte
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Aristocart see ad pg. 12

Moseley Assoc. see ad pg. 131
QSI see ad pg. 164
Ramko Research see ad pg. 5

SOUTHEASTERN SIGHT AND SOUND
Raleigh
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Clear-Com see ad pg. 111
3M PRO A/V see ad pgs. 95, 169

STUDIOWORKS
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704 375-1053
MCI/Sony see ad pg. 83

TECHNICAL VIDEO SYSTEMS
Winston-Salem
919 748-0916
Listec see ad pg. 182
Panasonic see ad pg. 107

TEQSPEC
Winston-Salem
919 723-8102
Philips T&M see ad pg. 171

WILSON AUDIO SALES
Franklin, TN
615 794-0155
Beyer Dynamic see ad pg. 213
Cetec Vega see ad pg. 191

North Dakota

AUDIO VISUAL INC.
Bismark
701 258-6360
Hitachi see ad pg. 156

AVC SYSTEMS, INC.
Minneapolis, MN
612 729-8305
Harrison Systems see ad pg. 7

EMMONS ASSOC. INC.
Burnsville, MN
612 890-8920
NEC America see ad pgs. 40, 143
TFT, Inc. see ad pg. 198

ENTERPRISES, INC.
Hartford, WI
414 966-3303
See ad pg. 194

KODO ASSOC.
Minneapolis, MN
612 881-1255
Maxell see ad pg. 65

CLARK R. GIBB CO.
Minnetonka, MN
612 938-5434
Cetec Vega see ad pg. 191

NORTHLAND MEDIA
Chanhassen, MN
612 934-6317
Calzone Case Co. see ad pg. 14

KEN HAUGEN & ASSOC.
Anoka, MN
612 421-3395
Allen Avionics see ad pg. 168

RC SALES
Maple Grove, MN
612 425-5543
Beyer Dynamic see ad pg. 213

Ohio

ASHBY ASSOC.
Dayton
513 252-5627
Allen Avionics see ad pg. 168

AVC SYSTEMS, INC.
Chicago, IL
312 763-6010
Harrison Systems see ad pg. 7

N. BROWNING & CO.
Dayton
513 222-3946
Calzone Case Co. see ad pg. 14

BRUCE DAWSON & ASSOC.
Louisville, KY
502 456-6693
NEC America see ad pgs. 40, 143

H.M. DYER ELECTRONICS
Farmington Hills, MI
313 478-2157
NEC America see ad pgs. 40, 143
TFT, Inc. see ad pg. 198

BOB HAWKINS, INC.
Columbus
614 461-6997
FOR-A see ad pg. 175

INDUSTRIAL VIDEO INC.
Lorain
216 277-1218
Panasonic see ad pg. 107

KAVCO
Columbus
513 898-2003
CMX/Orox see ad pg. 36
Conrac see ad pg. 57
Hitachi see ad pg. 156
3M PRO A/V see ad pgs. 95, 169
Moseley Assoc. see ad pg. 131

THE LITTLE WAREHOUSE, INC.
Brooklyn Hts.
216 398-0022
Agfa see ad pg. 204

MAGNETIC COMMUNICATIONS
Evanston, IL
312 869-6735
Maxell see ad pg. 65

MARKETING ANALYSTS, INC.
Worthington
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Beyer Dynamic see ad pg. 213

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erson who owns a UREI equalizer,
tracks are
ten made.

In the studio,
sound rein-
cement sys-

The UREI Equalizers

ms, in broadcast radio and
levision production, a good
engineer relies upon his talent and
expertise. And, the UREI reputation
for unparalleled professional
performance and quality.

Whether to correct or create, UREI
offers a complete line of the most
effective audio frequency shaping
instruments available:

The Model 535 Dual Graphic Equalizer

Two channels of ten calibrated, step
less, vertical adjustment controls
with ± 12 dB boost or attenuation. Also
available in a single channel
version-Model 533.

The Model 537 One-Third Octave Graphic Equalizer

A single channel device, it provides
 ± 12 dB of boost or cut in 27 ISO
 $1/3$ octave increments from 40Hz
to 16kHz.

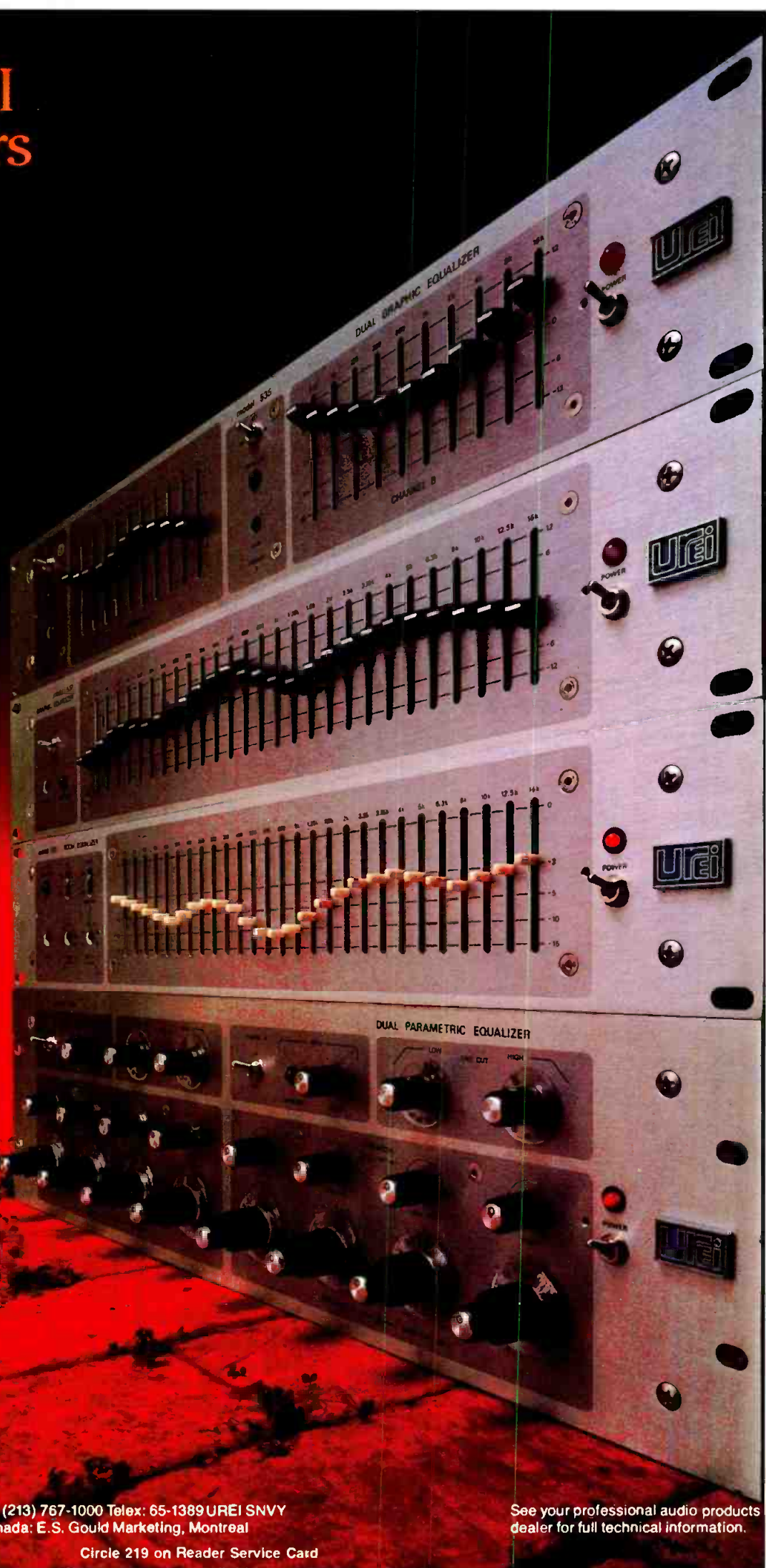
The Model 539 Room Equalization Filter Set

Specifically designed for room
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octave calibrated adjustments from 0
to -15 dB attenuation plus band-end
tunable high and low-pass filters.

The Model 546 Dual Parametric Equalizer

Two independent channels. Each has
four sections of continuously variable
bandwidth, frequency, boost or cut;
bypass for each filter section and
channel; tunable end-cut filters; and
 ± 10 dB gain. Also available in a single
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From One Pro To Another-trust all
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needs to UREI.



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Conrac see ad pg. 57
Listec see ad pg. 182
3M PRO A/V see ad pgs. 95, 169
Moseley see ad pg. 131
Panasonic see ad pg. 107

J.B. PARENT CO.

Columbus
614 459-5947
Cetec Vega see ad pg. 191
UREI see ad pg. 181

PHOTOCO INC.

Cleveland
216 581-0880
Tiffen see ad pg. 33

PI CORPORATION

Cleveland
216 238-0644
Agfa see ad pg. 204

JIMMY REA ELECTRONICS

Columbus
614 221-5884
3M PRO A/V see ad pgs. 95, 169
Panasonic see ad pg. 107

ROYAL AUDIO VISUAL

Cincinnati
513 841-1267
Agfa see ad pg. 204

RPC ELECTRONICS

Cleveland
216 461-2280
3M PRO A/V see ad pgs. 95, 169

THALNER ELECTRONIC LABS

Ann Arbor, MI
313 761-4506
CMX/Orox see ad pg. 36

UNITED RADIO INC.

Cincinnati
513 761-4030
Shalco see ad pg. 216

BOB WHITE ASSOC.

Solon
216 248-1317
James B. Lansing see ad pg. 203

WKM ASSOC., INC.

Cleveland
216 524-5930
Philips T & M see ad pg. 171

Oklahoma

AUDIO ASSOC.

Oklahoma City
405 524-3232
Agfa see ad pg. 204

BRADENCO CORP.

Dallas, TX
214 243-7261
Allen Avionics see ad pg. 168

CROCKETT SALES COMPANY

Dallas, TX
214 350-3377
Maxell see ad pg. 65

DELCOM CORP.

Tulsa
918 494-9500
Hitachi see ad pg. 156
3M PRO A/V see ad pgs. 95, 169

DOUG BROWN ENTERPRISES, INC.

Tulsa
918 747-3618
ATI see ad pg. 224
Auditronics see ad pgs. 70-71, 172

DIMENSION MARKETING CORP.

Dallas, TX
214 348-9657
713 772-0961 (Houston)
Cetec Vega see ad pg. 191

VICTOR DUNCAN, INC.

Dallas, TX
214 369-1165
Panasonic see ad pg. 107

ELECTRONIC SYSTEMS, INC.

Oklahoma City
405 946-9900
Panasonic see ad pg. 107

FORD AUDIO & ACOUSTICS INC.

Oklahoma City
405 947-9966
Hitachi see ad pg. 156

MZB & ASSOCIATES

Dallas, TX
214 233-5535
See ad pg. 55
NEC America see ad pgs. 40, 143

PARCOM

Southlake, TX
817 481-7221
See ad pg. 187
TFT, Inc. see ad pg. 198

REP TECH, INC.

Terrell, TX
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AVOCET HEAD**



- 12" & 17" Monitors
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- Crab & Steer Modes
- Smooth, Accurate Movement

- 140 lb. Capacity
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- 2 Piece Breakdown For Easy Transport

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Portland
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3M PRO A/V see ad pgs. 95, 169

INNOVATIVE CONCEPTS, INTL.
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213 540-5684
Elector see ad pg. 37

MARCOM
Scotts Valley, CA
408 438-4273
TFT, Inc. see ad pg. 198

MATRIX MARKETING
Seattle, WA
206 789-5990
Cetec Vega see ad pg. 191

NORTHMAR, INC.
Seattle, WA
206 524-5170
Beyer Dynamic see ad pg. 213

NU-COM ASSOC. INC.
Seattle, WA
206 364-9911
NEC America see ad pgs. 40, 143

PROFESSIONAL REPRESENTATIVES CORP.
Foster City, CA
415 570-5055
Maxell see ad pg. 65

TASCO, INC.
Portland
503 245-8168
Philips T & M see ad pg. 171

VIDEOSONICS
Portland
503 232-4632
Clear-Com see ad pg. 111
CMX/Orron see ad pg. 36
3M PRO A/V see ad pgs. 95, 169

Pennsylvania

ASHBY ASSOC.
Dayton, OH
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Allen Avionics see ad pg. 168

AUDIO ASSOC. INC.
Bethlehem
215 865-6013
ATI see ad pg. 224

AUDIO INNOVATORS, INC.
Pittsburgh
412 471-6220
ATI see ad pg. 224

BAY SYSTEMS
Lancaster
717 569-5726
Shively Labs see ad pg. 149

EASTERN SCIENTIFIC MARKETING
Chalfont
215 822-6503
Philips T & M see ad pg. 171

ELECTROMEDIA, INC.
Pittsburgh
412 683-5424
Panasonic see ad pg. 107

FORGE MANOR RECORDING
Phoenixville
215 644-3266
Agfa see ad pg. 204

BILL HAMILTON
Folsom
215 543-4677
James B. Lansing see ad pg. 203

HOLZBERG ASSOCIATES
Totowo, NJ
201 256-0455
TFT, Inc. see ad pg. 198

LANDY ASSOCIATES, INC.
Cherry Hill, NJ
609 424-4660
See ad pg. 184

LERRO ELECTRICAL CORP.
Philadelphia
215 223-8200
Conrac see ad pg. 57
Hitachi see ad pg. 156

Listec see ad pg. 182
3M PRO A/V see ad pgs. 95, 169

RICHARD LEWIS SALES
Glenside
215 886-1555
Beyer Dynamic see ad pg. 213

J.P. LILLEY & SON, INC.
Harrisburg
717 238-8123
Panasonic see ad pg. 107

MARKETING ANALYSTS, INC.
Worthington, OH
614 436-2808
Beyer Dynamic see ad pg. 213

MID ATLANTIC REPRESENTATIVE
Mentor, OH
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Cetec Vega see ad pg. 191

PEIRCE-PHELPS, INC.
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Conrac see ad pg. 57
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Weather and News without the **BLUES**



No blue tint or edging—all hair detail intact!

These same results are possible in your newscasts and other live broadcast situations. Operating on a new principle, detail from the foreground camera comes through perfectly in the composite—including each strand of hair, smoke, liquid, shadows, transparent objects—the works! No blue tint, blue edging or edge crawl—no "cut-out" look; no soft edges on hard objects—no hard edges on soft objects.

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Shallco see ad pg. 216

RABAL ASSOC.
Huntingdon Valley
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Allen Avionics see ad pg. 168

RPC ELECTRONICS
Pittsburgh
412 782-3770
Conrac see ad pg. 57
3M PRO A/V see ad pgs. 95, 169

ALAN SARFATY & ASSOC.
Great Neck, NY
516 466-6770
Calzone Case Co. see ad pg. 14

SOUND SYSTEMS, INC.
Flourtown
215 242-3500
3M PRO A/V see ad pgs. 95, 169

SPHERE ASSOC.
Reston, VA
703 471-1230
Cetec Vega see ad pg. 191

VAL-TRONICS
Pittston
717 655-5937
Moseley Assoc. see ad pg. 131

**VISION-SOUND
PROFESSIONAL AUDIO, INC.**
Englewood, NJ
201 871-4101
Harrison Systems see ad pg. 7

VISUAL SOUND COMPANY
Broomall
215 544-8700
Panasonic see ad pg. 107

WILTRONIX, INC.
Washington Grove, MD
301 258-7676
TFT, Inc. see ad pg. 198

WKM ASSOCIATES, INC.
Pittsburgh
412 892-2953
Philips T & M see ad pg. 171

PENNSYLVANIA

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1890 E. Mariton Pike, Cherry Hill, NJ 08003—(609) 424-4660
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Rhode Island

CRAMER
Needham Heights, MA
617 449-2100
CMX/Orrrox see ad pg. 36

HIGH-TECH SALES INC.
Wayland, MA
617 653-3838
Allen Avionics see ad pg. 168

HOLZBERG ASSOC.
Totawo, NJ
201 256-0455
NEC America see ad pgs. 40, 143
TFT, Inc. see ad pg. 198

MARTIN AUDIO VIDEO CORP.
New York, NY
212 541-5900
Harrison Systems see ad pg. 7

R.G. ASSOCIATES, INC.
Millis, MA
617 376-2044
Beyer Dynamic see ad pg. 213

ALAN SARFATY & ASSOC.
Great Neck, NY
516 466-6770
Calzone Case Co. see ad pg. 14

SPHERE ASSOC.
Reston, VA
703 471-1230
Cetec Vega see ad pg. 191

South Carolina

**AUDIO TECHNICAL SERVICES,
LTD.**
Vienna, VA
703 938-5115
Harrison Systems see ad pg. 7

CRESCENDO ASSOC.
Atlanta, GA
404 223-0108
Calzone Case Co. see ad pg. 14

EME I, INC.
High Point, NC
919 869-3335
NEC America see ad pgs. 40, 143
TFT, Inc. see ad pg. 198

THE PROMAR GROUP
Raleigh, NC
919 467-5466
Maxell see ad pg. 65

**REYNOLDS & ASSOCIATES,
INC.**
Cocoa Beach, FL
305 784-4700
Allen Avionics see ad pg. 168

WILSON AUDIO SALES
Franklin, TN
615 794-0155
Beyer Dynamic see ad pg. 213

South Dakota

AVC SYSTEMS, INC.
Minneapolis, MN
612 729-8305
Harrison Systems see ad pg. 7

EMMONS ASSOC. INC.
Burnsville, MN
612 890-8920
NEC America see ad pgs. 40, 143
TFT, Inc. see ad pg. 198

CLARK R. GIBB CO.
Minnetonka, MN
612 938-5434
Cetec Vega see ad pg. 191

KEN HAUGEN & ASSOC.
Anoka, MN
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Allen Avionics see ad pg. 168

KODO ASSOC.
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Maxell see ad pg. 65

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All sizes mobile production vehicles. Large selection of video hardware and accessories. Studio camera systems, earth stations, and distribution equipment. Complete systems design, sales, and service.

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Beyer Dynamic see ad pg. 213

Tennessee

**BROADCAST EQUIPMENT AND
SUPPLY**
Bristol
615 878-2531
Bluff City
615 878-2531
800 251-0487
See ad this page
ATI see ad pg. 224
Shallco see ad pg. 216

CENTEL SYSTEMS, INC.
Memphis
901 346-1043
Hitachi see ad pg. 156
3M PRO A/V see ad pgs. 95, 169

**CONSOLIDATED MEDIA
SYSTEMS, INC.**
Nashville
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Panasonic see ad pg. 107

CRESCENDO ASSOC.
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Calzone Case Co. see ad pg. 14

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TFT, Inc. see ad pg. 198

RADFORD ASSOC.
Nashville
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Datatek see ad pg. 51

ALLIED BROADCAST EQUIPMENT
Plano
214 423-8667
ATI see ad pg. 224
Auditronics see ad pgs. 70-71, 172

GRAY COMMUNICATIONS CONSULTANTS, INC.
Nashville
615 883-9175
See ad pg. 184
3M PRO A/V see ad pgs. 95, 169

ERIC JOHNSON
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615 834-1184
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REYNOLDS & ASSOCIATES, INC.
Cocoa Beach, FL
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Allen Avionics see ad pg. 168

ALPHATECH, INC.
Allen
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Philips T & M see ad pg. 171

GRAY COMMUNICATIONS CONSULTANTS, INC.
Knoxville
615 523-3107
See ad this pg.

PHASE AUDIO, INC.
Memphis
901 726-1900
Auditronics, Inc. see ad pgs. 70-71, 172

TEQSPEC II
Morristown
615 587-0980
Philips T & M see ad pg. 171

DUSTY ARNOLD
Richardson
214 644-7607
Hipotronics see ad pg. 200

WILSON AUDIO SALES
Franklin
615 794-0155
Beyer Dynamic see ad pg. 213
Cetec Vega see ad pg. 191

BRADENCO CORP.
Dallas
214 243-7261
Allen Avionics see ad pg. 168

TENNESSEE

Gray Communications Consultants, Inc.

**901 East Vine Ave., Knoxville, TN 37915
(615) 523-3107**

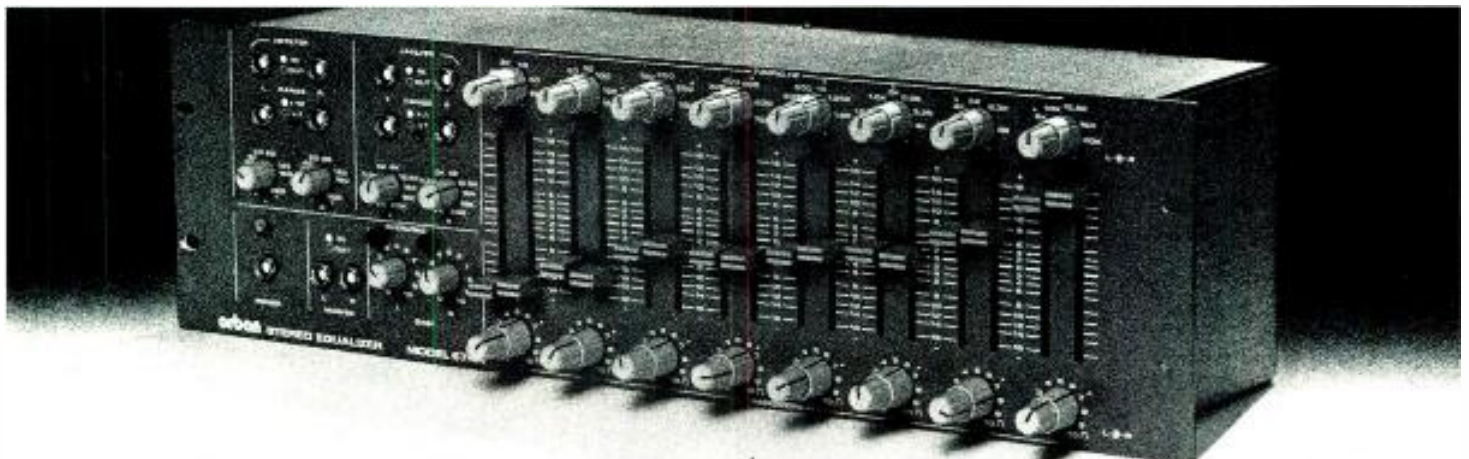
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Conrac see ad pg. 57
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ACCENT AUDIO-VIDEO
Dallas
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Panasonic see ad pg. 107

NEIL CONLEY
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James B. Lansing see ad pg. 203



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orban

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Telex: 17-1480, Cable: ORBANAUDIO

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 See ad pg. 144
 Auditorics, Inc. see ad pgs. 70-71, 172

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 Dallas
 214 348-9657
 713 772-0961 (Houston)
 Cetec Vega see ad pg. 191

DYMA ENGINEERING
 Taos, NM
 505 758-8686
 NEC America see ad pgs. 40, 143

J.F. HURLBUT CO.
 Golden, CO
 303 279-7796
 Allen Avionics see ad pg. 168

CROCKETT SALES COMPANY
 Dallas
 214 350-3377
 Maxell see ad pg. 65

DOBBS STANFORD OF TEXAS
 Dallas
 214 358-0800
 James B. Lansing see ad pg. 203
 UREI see ad pg. 181

GIESLER BROADCAST SUPPLY
 Houston
 713 774-3314
 See ad this pg.
 Moseley Assoc. see ad pg. 131

INDUSTRIAL AUDIO/VIDEO
 Houston
 713 524-1956
 CMX/Orox see ad pg. 36
 Conrac see ad pg. 57
 3M PRO A/V see ad pgs. 95, 169
 Panasonic see ad pg. 107

CROUSE-KIMZEY CO.
 Ft. Worth
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 800 433-2105
 ATI see ad pg. 224

VICTOR DUNCAN, INC.
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 214 369-1165
 CMX/Orox see ad pg. 36
 Listec see ad pg. 182
 MCI/Quantel see ad pg. 63

G.P. ENTERPRISES
 Arlington
 817 745-3373
 Asaca/Shibasoku see ad pg. 82

HOWELL ELECTRONICS, INC.
 El Paso
 915 566-3968
 Agfa see ad pg. 204

L.D. SYSTEMS, INC.
 Houston
 713 695-9400
 Agfa see ad pg. 204

TEXAS

TEXAS

GIESLER BROADCASTING SUPPLY, INC.

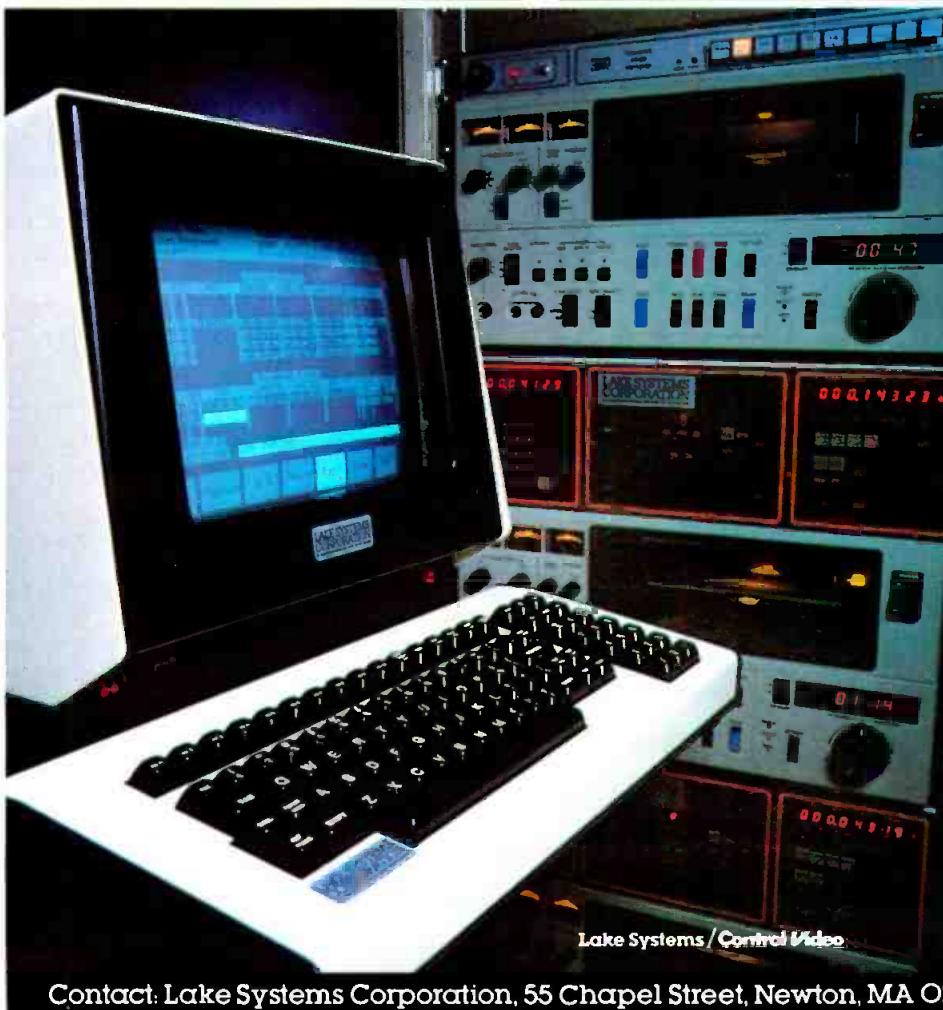
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ATI see ad pg. 224

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Austin
512 451-0138
Dallos
214 931-0404
See ad this pg.
3M PRO A/V see ad pgs. 95, 169
Panasonic see ad pg. 107

DUKE McLANE

Dallos
214 247-5999
Ward Beck see ad Cover 4

MID COM, INC.

Arlington
817 461-2211
Clear-Com see ad pg. 111

MZB & ASSOC.

Austin
512 454-4371
Dallos
214 233-5535

TEXAS

Houston
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713 448-0881

See ad pg. 55
Conrac see ad pg. 57
Listec see ad pg. 182
NEC America see ad pgs. 40, 143

PARCOM

Sauthloke
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See ad pg. 187
Ramko Research see ad pg. 5
TFT, Inc. see ad pg. 198

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Eventide see ad pgs. 28, 161

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Arlington
817 467-2990
ADM Technology see ad Cover 2

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See ad this pg.

RECORDING SUPPLY

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Agfa see ad pg. 204

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800 527-9482
Tiffen see ad pg. 33

REP TECH, INC.

Terrell
214 222-2131
Beyer Dynamic see ad pg. 213

SAVCO

Richardson
214 234-1841
ATI see ad pg. 224

SIBONEY COMMUNICATIONS, INC.

Irving
214 258-8470
Panasonic see ad pg. 107

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MCI/Sony see ad pg. 83

GENE SUDDUTH CO.

Paris
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Datatek see ad pg. 51
Hedco see ad pg. 190
QSI see ad pg. 164

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Laredo
512 722-3233
Varian Eimac see ad pg. 89

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Emcee see ad pg. 142
3M PRO A/V see ad pgs. 95, 169

UNITED FILMS 16, INC.

Houston
713 521-1343
Panasonic see ad pg. 107

VIDEO SYSTEMS, INC.

Dallos
214 361-9053
3M PRO A/V see ad pgs. 95, 169

VIDEO SYSTEMS, INC.

Houston
713 686-9651
Listec see ad pg. 182
3M PRO A/V see ad pgs. 95, 169

BOB WALTON

Aronsos Pass
512 758-8098
Moseley Assoc. see ad pg. 131

WESTBROOK AUDIO, INC.

Dallas
214 699-1203
Agfa see ad pg. 204

GARY YOUNG

Arlington
817 261-0007
MCI/Quantel see ad pg. 63

Utah

JOHN AXTELL & ASSOC.

Englewood, CO
303 779-1731
Maxell see ad pg. 65

BALLARD SUPPLY CORPORATION

Salt Lake City
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Varian Eimac see ad pg. 89

CLEVELAND ENT. OF COLORADO, INC.

Salt Lake City
801 355-8424
Philips T & M see ad pg. 171

DIDIER/DENVER

Evergreen, CO
303 674-6000
See ad pgs. 157, 196
TFT, Inc. see ad pg. 198

DYMA ENGINEERING

Toos, NM
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NEC America see ad pgs. 40, 143

HALL ELECTRONICS

Boise, ID
208 376-1663
TFT, Inc. see ad pg. 198

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Golden, CO
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Allen Avionics see ad pg. 168

INNOVATIVE CONCEPTS, INTL.

Redondo Beach, CA
213 540-5684
Elector see ad pg. 37

RIA CORPORATION

Salt Lake City
801 486-8822
Asaca/Shibasoku see ad pg. 82
Broadcast Microwave see ad pgs. 15, 140
Emcee see ad pg. 142
Moseley Assoc. see ad pg. 131

SKAGGS VIDEO SALES

Salt Lake City
801 539-1427
Conrac see ad pg. 57
3M PRO A/V see ad pgs. 95, 169
MCI/Quantel see ad pg. 63

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Broadcast Video Systems for Professional users.
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Allen Avionics see ad pg. 168

H.M. HOLZBERG ASSOC.

Totowa, NJ
201 256-0455
NEC America see ad pgs. 40, 143
TFT, Inc. see ad pg. 198

PRS, INC.

Boston, MA
617 254-2110
800 343-3001
Harrison Systems see ad pg. 7

R.G. ASSOCIATES, INC.

Millis, MA
617 376-2044
Beyer Dynamic see ad pg. 213

ALAN SARFATY & ASSOC.

Great Neck, NY
516 466-6770
Calzone Case Co. see ad pg. 14

SPHERE ASSOCIATES

Reston, VA
703 471-1230
Cetec Vega see ad pg. 191

F.M. VALENTI, INC.

Lexington, MA
617 861-0089
Maxell see ad pg. 65

Virginia

ALPHA AUDIO

Richmond
804 358-3852
See ad pg. 29
ATI see ad pg. 224

AUDIO TECHNICAL SERVICES, LTD.

Vienna
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Harrison Systems see ad pg. 7

AVEC ELECTRONICS

Norfolk
804 627-3502
3M PRO A/V see ad pgs. 95, 169

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Leesburg
703 777-6500
Moseley Assoc. see ad pg. 131

BOB DIX, INC.

Marion
703 783-2001
Moseley Assoc. see ad pg. 131

EASTERN SCIENTIFIC MARKETING

Alexandria
703 573-3900
Philips T & M see ad pg. 171

EME

Williamsburg
804 253-0171
NEC America see ad pgs. 40, 143
TFT, Inc. see ad pg. 198

DAVID GREEN BROADCAST CONSULTANT

Leesburg
703 777-8660
Aristocart see ad pg. 12
ATI see ad pg. 224
ESE see ad pgs. 134-135

RICHARD LEWIS SALES

Glenside, PA
215 886-1555
Beyer Dynamic see ad pg. 213

MEDIA ASSOCIATES

Fairfax
703 978-3550
Agfa see ad pg. 204

MIDWEST TELECOMM

Virginia Beach
804 464-6256
3M PRO A/V see ad pgs. 95, 169

PEIRCE-PHELPS, INC.

Rockville, MD
301 984-7979
CMX/Orox see ad pg. 36

PROFESSIONAL PRODUCTS

Richmond
804 794-2585
Hitachi see ad pg. 156

THE PROMAR GROUP

Raleigh, NC
919 467-5466
Maxell see ad pg. 65

ALAN SARFATY & ASSOC.

Great Neck, NY
516 466-6700
Calzone Case Co. see ad pg. 14

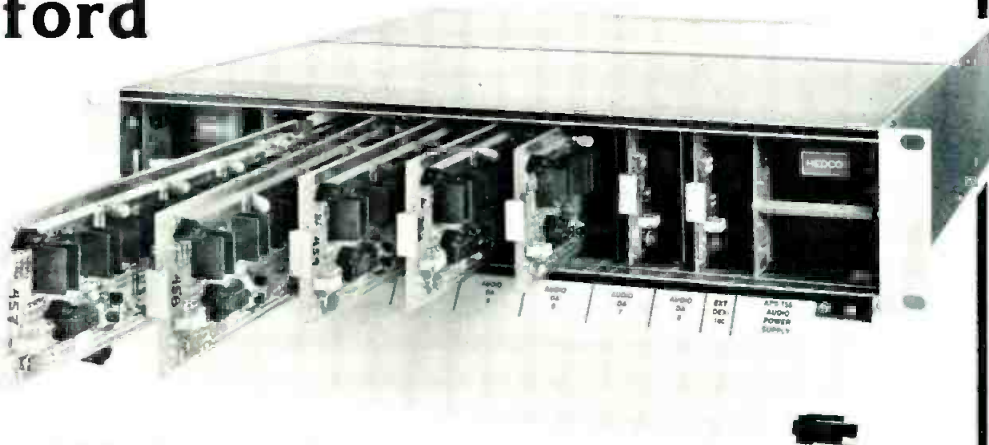
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Auditronics see ad pgs. 70-71, 172
Conrac see ad pg. 57

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Brilliant performer.

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WIRELESS**

Model 82 Wireless Condenser Hand-Held

The Model 82 condenser wireless microphone has been added to Cetec Vega's professional hand-held line. The Model 82 incorporates the popular Shure SM85 condenser element and attractive black windscreen to provide:

- Minimal handling noise, reduced mechanical vibration, and virtually no "boominess" (by means of controlled low-frequency rolloff).
- Clean reproduction of close-up vocals with moderate proximity effect.
- "Crispness" and presence with high-definition midrange.
- Clear, scintillating highs with crisp upper register.
- Cardioid pickup pattern for effective rejection of off-axis sounds.

All Cetec Vega hand-held wireless microphones (including the Model 80 with the Electro-Voice EV-671 dynamic element and the Model 81

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Used with Cetec Vega professional wireless receivers, the FM systems operate on any crystal-controlled frequency between 150 to 216 MHz, at a range up to 1000 feet or more. Transmit-to-receive frequency response is almost perfectly flat from 100 Hz to 12 kHz with gentle rolloffs to 40 Hz and 15 kHz. Total harmonic distortion is typically 1/2 percent. System dynamic range is 90 dB when "Dynex" (transmit compression and receive expansion) is incorporated, with a resulting low noise floor.

Cetec Vega hand-held wireless microphones are newly redesigned for 20 to 30 percent additional battery life, using a commonly available 9-volt alkaline battery (Duracell recommended). Microphone sensitivity is easily adjustable with an audio

gain control on the bottom, with an adjacent LED indicator to verify optimum setup. Power and audio on/off switches are also conveniently located on the bottom.

Write or call for further information and location of your nearest dealer: Cetec Vega, P.O. Box 5348, El Monte, CA 91731. (213) 442-0782
TWX: 910-587-3539

In Canada: A.C. Simmonds & Sons Ltd.

 **Cetec Vega**
Division of Cetec Corporation



Circle 225 on Reader Service Card

SPHERE ASSOCIATES
Reston
703 471-1230
Cetec Vega see ad pg. 191

SYMCO, INC.
Virginia Beach
804 463-4598
FOR-A see ad pg. 175

VANGUARD ENGINEERING SALES, INC.
Alexandria
703 768-1660
Allen Avionics see ad pg. 168

WILTRONIX, INC.
Washington Grove, MD
301 258-7676
NEC America see ad pgs. 40, 143

Washington

ALLIED BROADCAST EQUIPMENT
Federal Way
206 927-4337
ATI see ad pg. 224
Auditronics see ad pgs. 70-71, 172

BENNETT ENGR. ASSOC. INC.
Mercer Island
206 232-3550
Datatek see ad pg. 51
MCI/Quantel see ad pg. 63

BROADCAST SUPPLY WEST
Tacoma
206 565-2301
Aristocart see ad pg. 12
ATI see ad pg. 224
ESE see ad pgs. 134-135
Moseley Assoc. see ad pg. 131

COMPONENTS WEST, INC.
Renton
206 271-5252
Allen Avionics see ad pg. 168

CUSTOM VIDEO SYSTEMS
Seattle
206 365-5400
3M PRO A/V see ad pgs. 95, 169

INNOVATIVE CONCEPTS, INTL.
Redondo Beach, CA
213 540-5684
Elector see ad pg. 37

MARCOM
Seattle
206 621-9633
Shively Labs see ad pg. 149
TFT, Inc. see ad pg. 198

MATRIX MARKETING
Seattle
206 789-5990
Cetec Vega see ad pg. 191

TOM MCGOWAN
Edmonds
206 546-6264
MCI/Quantel see ad pg. 63

NORTHMAR, INC.
Seattle
206 524-5170
Beyer Dynamic see ad pg. 213

NORTH SHORE MARKETING, INC.
Seattle
206 524-8672
James B. Lansing see ad pg. 203
UREI see ad pg. 181

NORTHWEST BROADCAST SYS.
Seattle
206 525-6974
Moseley Assoc. see ad pg. 131

NORTH-WEST INDUSTRIES
Seattle
206 722-7400
Conrac see ad pg. 57

NU-COM ASSOC.
Seattle
206 364-9911
Hedco see ad pg. 190
NEC America see ad pgs. 40, 143

ROBERT E. PRIEBE COMPANY
Seattle
206 682-8242
Varian Eimac see ad pg. 89

PRO AUDIO SYSTEMS
Seattle
206 367-6800
MCI/Sony see ad pg. 83

PROFESSIONAL REPRESENTATIVES CORP.
Foster City, CA
415 570-5055
Maxell see ad pg. 65

TASCO, INC.
Bellevue
206 453-1414
Philips T & M see ad pg. 171

TOPP ENGINEERING SALES CORP.
Bellevue
206 747-5408
Hipotronics see ad pg. 200

West Virginia

ASHBY ASSOC.
Dayton, OH
513 252-5627
Allen Avionics see ad pg. 168



**A Brilliant, New Cartridge
Designed For Today's
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At last, a low impedance cartridge which exceeds moving coil performance with moving magnet reliability. The Stanton 981LZS provides the highest level of performance with very low tip mass, the widest frequency response and unsurpassed trackability. The moving magnet (Samarium Cobalt design) offers a truly new, exciting and different sound experience.
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The next generation in editing systems.

Mach One® Series II.

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And because it's software-based, we can make it more powerful with software changes.

That's exactly what we've done with the new Mach One Series II—the second-generation system.

Powerful new features.

Series II has all the features of the original Mach One. Plus six important new features that not only let you edit faster than ever, but give you unique capabilities and conveniences.

Dual-channel audio control. This exclusive feature gives you complete and independent control over two separate audio tracks in addition to the video channel.

Variable speed control. You can select any of 16 shuttle-jog speeds in either direction—all the way from freeze frame to maximum VTR speed.

Programmable slow motion.

Once you've selected a speed, it's displayed on the screen and you can program it in the edit list (for example, "half-speed at two minutes in, three-quarter-speed at three minutes in," and so forth). The programmed sequence is then completely repeatable.

Updated edit list formatting.

Mach One Series II gives you 6-digit alphanumeric reel numbers, audio channel 1 and 2 entry, additional events displayed on the screen, and other edit list features.

Cluster-event programming.

A Mach One exclusive. This powerful feature lets you program extremely complicated multiple events, known as "elements," in a "cluster" and treat them as a single event. For example, a complex series of switcher wipes, dissolves, or keys—together with digital video effects—can be quickly put together and previewed or recorded *in one pass* rather than event-at-a-time.

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on the eyes, easy on the nerves, and never lets you lose your place—even for a second.

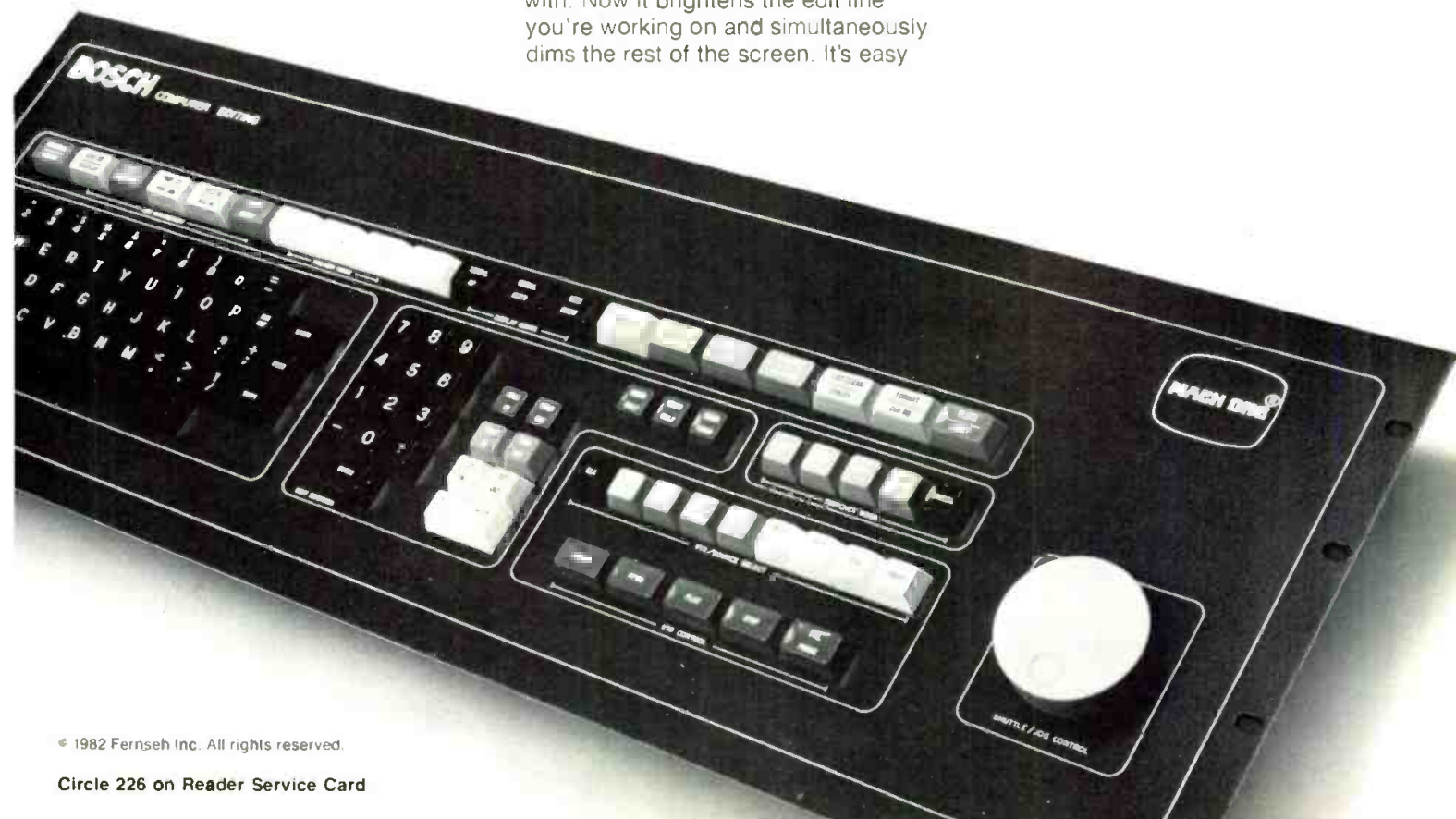
The editor's editor.

Mach One Series II in your editing room will give you speed and ease of operation that translates into creativity and profits.

You need the new generation in computer-assisted editing for your post production. And the new generation is exclusively Mach One Series II.

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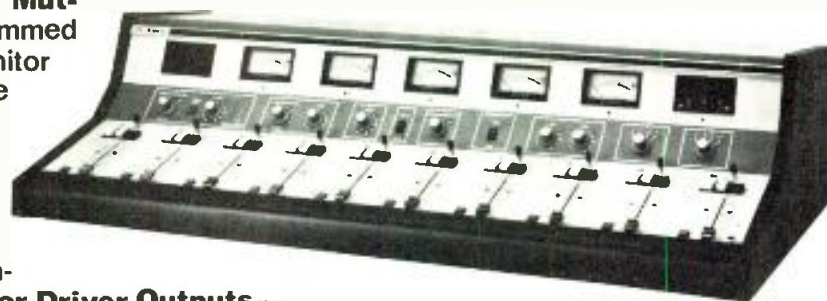
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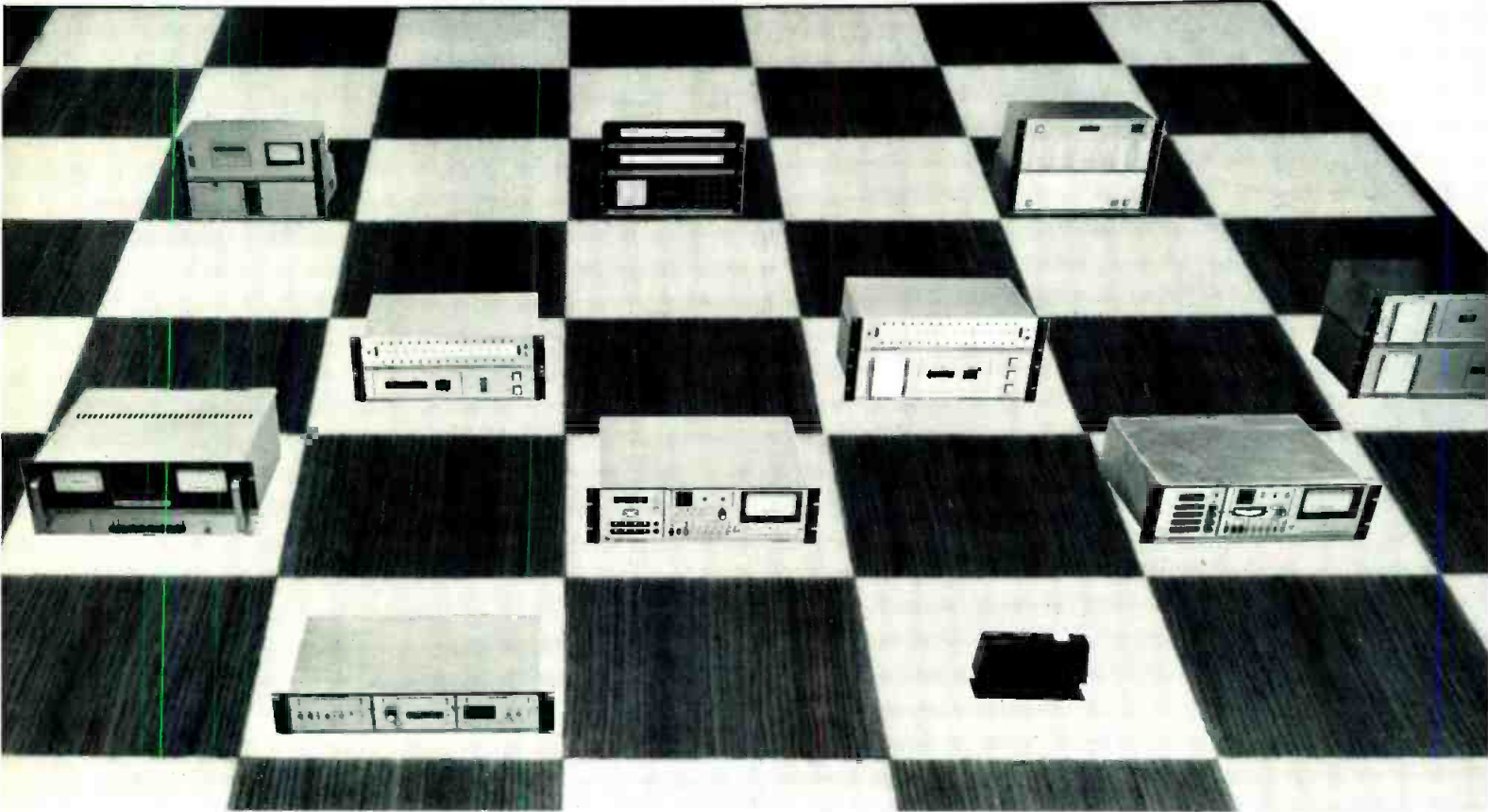
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interpreting the FCC rules & regulations

DBS and the Fowler Commission

By Harry Cole
FCC Counsel

THE BROADCAST INDUSTRY took one more giant step into the space age this past summer when the Federal Communications Commission released its Report and Order establishing, at least on an interim basis, the direct broadcast satellite service (DBS). While actual DBS service is still not expected to begin for several years, it is already being viewed as an integral part of the video explosion, joining cable television, low-power television, subscription television and multipoint distribution systems as they challenge the established VHF/UHF broadcast industry for audience and revenues.

From a regulatory standpoint, the rules and policies governing DBS offer insight not only into the general underlying philosophy of the Fowler Commission, but also into a couple of other areas where DBS is most likely to have a significant impact on the broadcast industry. For these reasons broadcasters—whom we must now refer to as “terrestrial broadcasters,” so as not to mistake them for their extraterrestrial, *i.e.* DBS, rivals—would do well to reflect upon the arrival of DBS.

As everyone is probably aware by now, DBS is a system in which a signal is beamed up to a geostationary satellite, which in turn retransmits the signal back down to earth for reception by dish antennas. In that respect it is identical to satellite operation as it has always existed. The difference is that the dish antennas on the receiving end are not large ones connected to local broadcast stations or cable systems, which would then retransmit the incoming signal to their audiences. Rather, the DBS dishes are small and installed at individual homes, thus permitting the consumer to take programming directly from the satellite without the need for an intermediate broadcaster or cable operator. The simplicity of the receiving equipment is made possible by the design of the satellite's transmitting equipment, which is substantially more powerful than equipment aboard satellites now in use. The result, of course, is that DBS can provide to an extremely broad area—for example, an entire time zone—a signal strong enough to be picked up by relatively small and uncomplicated receiving dishes.

Of the various broadcast or quasi-broadcast services currently in development, DBS is the one linked most closely to the Fowler Commission. Originally proposed as an abstract concept in the waning days of the Ferris Commission in November 1980, DBS was given its focus and definition in June 1981, when the Commission, under Chairman Fowler, adopted a Notice of Proposed Policy Statement and Rulemaking setting out the regulatory approach initially to be taken vis-a-vis DBS. In adopting its DBS Report and Order last July, the Commission decided that that initial approach was indeed well advised and should continue on as the governing DBS policy, unless and until the Commission's growing experience in the area might dictate that some changes are in order. Since DBS is an entirely new service, with virtually no pre-established rules or policies, it provided the Fowler Commission with an opportunity to set up a model service, a service subject only to those limitations thought appropriate by the current Commission. In this respect DBS is different from, say, low-power TV, which developed in the traditional confines of TV broadcasting and translator rules, and which was thus bound from the start to acquire more the trappings of a broadcast hybrid than of an entirely new service. DBS, on the other hand, is entirely new, and presented the Commission with an empty canvas on which to paint its own idea of an ideal regulatory structure.

Not surprisingly, the regulatory structure adopted by the Commission is extremely limited. Chairman Fowler's desire to cut back as much as possible on Commission involvement in the private sector is well known, and DBS provided an opportunity to showcase that desire. Interestingly, the outlines of DBS reflect concepts which either have been or may be applied to broadcasting. The following is a brief summary of some of those areas:

- **Overall regulation.** As indicated, the primary thrust of the DBS rules is that there should be an absolute minimum of regulation, in order to let the nascent DBS industry develop pursuant to marketplace forces rather than artificial governmental restraints.
- **Ownership restrictions.** No restrictions on the ownership of DBS systems were imposed. The rationale for this was twofold. First, according to the Commission, there is

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already evidence of real competition within the DBS market. Second, there will probably be a great deal of competition among various video services (e.g., low-power TV, regular broadcast TV, cable TV, etc.) by the time DBS gets off the ground. In view of all this competition, the Commission reasoned, it is unlikely that any one or two entities will obtain undesirable control over the DBS market and, therefore, the Commission need not set up regulatory restraints on ownership. In addition, the Commission suggested that ownership restrictions might discourage potential DBS applicants, including some of the "most experienced and capable suppliers," and thus might deprive the public of potential sources of high-quality service.

This willingness to trust marketplace forces has also been advanced as a basis for Chairman Fowler's desire to eliminate most, if not all, of the ownership restrictions applicable to regular broadcasters. However, it is much easier not to impose such rules on a new service like DBS than it is to eliminate rules which have for so long been on the books and, as a result, ingrained into the collective consciousness of the Commission, the industry, and the public.

● **Financial showing.** DBS applicants will be expected to make only limited showing of their ability to pay for the costs of construction and operation. Instead, the Commission has imposed a one-year time limit within which successful applicants will have to have commenced construction or, at least, completed contracting for construc-

tion. They will also have six years within which to become operational.

This approach, which de-emphasizes pre-grant funding commitments and looks, instead, to post-grant performance, resembles the trend over the last year or so with respect to the financial requirements imposed on regular broadcast applicants. It takes that trend, however, several steps farther down the line. Even now, most applicants seeking to enter the broadcast field must still certify that they have sufficient funds available at the time of application. In view of the fact that even the cost of the most elaborate broadcast application seldom approaches anything like the multimillion-dollar cost of a DBS system, the Commission's decision not to require any substantial financial showing of DBS applicants demonstrates its nonregulatory commitment.

● **Technical regulation.** Again, the watchword here is "minimal." There are two primary reasons for this. First, the area of satellite communications is governed, as is all radio spectrum usage, by international agreement. A Regional Administrative Radio Conference scheduled for next year will consider, among other things, technical standards to be applied to broadcast satellite service in the 12 GHz band, *i.e.*, the band allocated to DBS. Thus, the Commission is biding its time to see what standards it may, be international agreement, have to impose. The second reason is simply that the Commission recognizes that DBS technology is in its early stages and that without governmental restraints technology may develop even

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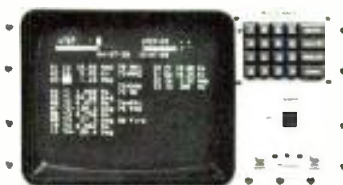
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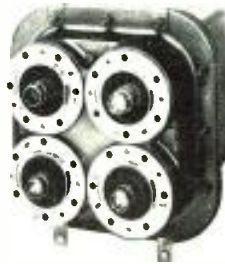
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faster, particularly in light of competitive incentives to provide superior technical service.

● **Equal employment opportunity.** To the extent that DBS operators serve as broadcasters, they will be subject to EEO requirements equivalent to those applicable to terrestrial broadcasters. It is worth noting, however, that this requirement was added to the DBS rules almost as an afterthought, apparently at the insistence of Commissioner Rivera. The relatively low level of attention given to EEO here certainly suggests that that area is not now among the Commission's highest priorities.

In view of these factors, it is clear that the regulatory, or rather "unregulatory," philosophy frequently articulated by the Fowler Commission is to be taken seriously, and can be expected to be extended to terrestrial broadcasters in due course. For now, terrestrial television broadcasters may wish to ponder three particular effects of the advent of DBS.

First is the reality of increased competition. The Commission is currently considering not one, but *nine* different proposed DBS systems. Even the Commission acknowledged that multiple systems "could be expected . . . to have a greater effect on existing broadcasters than a single system." As a result, terrestrial broadcasters should probably start to brace themselves.

Second, on a more immediate level, the Commission's DBS decision represents a clear setback for the initiation of high-definition television (HDTV). A major proponent of HDTV had argued to the Commission that DBS's use

of the 12 GHz band should be restricted to systems using HDTV technology to assure a "transition" from conventional TV to HDTV. The Commission disagreed, stating that while it did indeed wish to encourage HDTV, it did not want to discourage conventional television service.

Finally, the DBS decision must be viewed as a marked departure from the "localism" approach which has governed broadcast regulation since its inception in the 1920s and 1930s. Under the laws, rules, and policies which have historically governed broadcasters, each licensee has a specific community to serve. Indeed, even the Communications Act speaks of distributing frequencies among "the several States and communities." However, DBS systems, by their very nature, will serve not communities, or even states, but broad areas comprising as much as one-fourth to one-third of the country. This type of service is precisely the opposite of the localism which the Commission has struggled to assure for some 50 years.

It is not likely that DBS service will actually begin for three years or more. Further, since the DBS decision itself is subject to reconsideration and has been appealed, and also since the technical specifications of the service will not be determined until the 1983 Regional Administrative Radio Conference, it is at least conceivable, if not likely, that it could take longer than that. In any event, the policy ramifications of the decision may have immediate effects on regular broadcasters, if only because those policies may be applied in terrestrial as well as extraterrestrial contexts.

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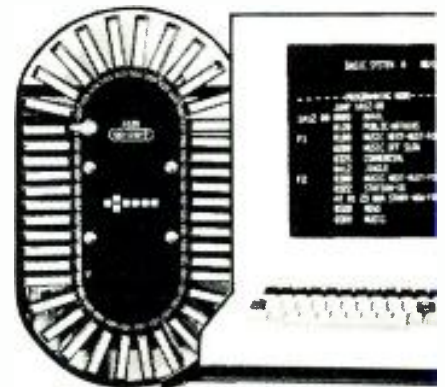
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Before you invest in new studio monitors, consider all the angles.

No one has to tell you how important flat frequency response is in a studio monitor. But if you judge a monitor's performance by its on-axis response curve, you're only getting part of the story.

Most conventional monitors tend to narrow their dispersion as frequency increases. So while their on-axis response may be flat, their off-axis response can roll off dramatically, literally locking you into the on-axis "sweet spot." Even worse, drastic changes in the horn's directivity contribute significantly to horn colorations.

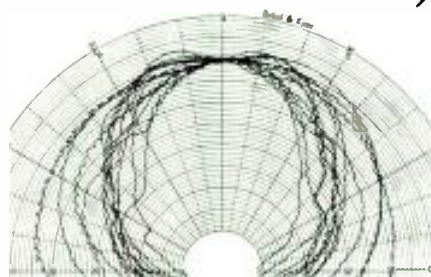
Introducing the JBL Bi-Radial Studio Monitors.

At JBL, we've been investigating the relationship between on and off axis frequency response for several years. The result is a new generation of studio monitors that provide flat response over an exceptionally wide range of horizontal and vertical angles. The sweet spot and its traditional restrictions are essentially eliminated.

The key to this improved performance lies in the unique geometry of the monitors' Bi-Radial horn.¹ Developed with the aid of the latest computer design and analysis techniques, the horn provides constant coverage from its crossover point of 1000 Hz to beyond 16 kHz. The Bi-Radial compound flare configuration maintains precise control of the horn's wide 100° x 100° coverage angle.

1. Patent applied for.

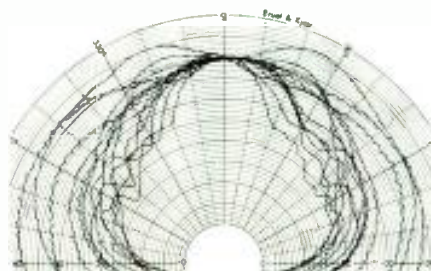
JBL Professional Products Division



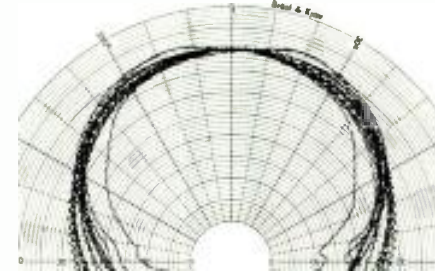
Typical horizontal



JBL 4430 horizontal



Typical vertical



JBL 4430 vertical

And the Bi-Radial horn's performance advantages aren't limited to just beamwidth control. The horn's rapid flare rate, for instance, dramatically reduces second harmonic distortion and its shallow depth allows for optimal acoustic alignment of the drivers. This alignment lets the monitors fall well below the Blauert and Laws criteria for minimum audible time delay discrepancies.

But while the Bi-Radial horn offers outstanding performance, it's only part of the total package. The new monitors also incorporate JBL's most advanced high and low frequency transducers and dividing networks. Working together, these

components provide exceptionally smooth response, high power capacity, extended bandwidth, and extremely low distortion.

Judge For Yourself

Of course, the only way to really judge a studio monitor is to listen for yourself. So before you invest in new monitors, ask your local JBL professional products dealer for a Bi-Radial monitor demonstration. And consider all the angles.

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An Overlooked Tax Credit

By Mark E. Battersby
Financial Consultant

THE LATEST WORD out of Washington indicates that the Targeted Jobs Tax Credit will be extended beyond the end of this year. But is your broadcasting facility taking full advantage of this program that has created an estimated 900,000 jobs while saving employers over \$200 million?

Tax credits now go to employers hiring Vietnam vets and ex-convicts, as well as the young, the poor, and the handicapped. Apparently, however, well over one-half of the people certified for the Targeted Jobs Tax Credit represented retroactive certifications. They had already been on the job for at least three weeks (many of them for several months) before the employer realized that they fit one of the categories of eligibility and applied.

The Economic Recovery Tax Act of 1981—in addition to liberalizing the Targeted Jobs Tax Credit and extending its life—has revised the requirements for certification of target-group employees. Now, certification must generally be received or requested in writing *before* employment begins. Failure to comply with the certification requirements automatically disqualifies the employee—and results in the loss of the credit.

Unfortunately, many broadcasters that have potentially qualified employees have (1) no procedures for identifying them before they are hired and (2) no familiarity with the certification process.

The Targeted Jobs Tax Credit (TJTC) is 50 percent of the first-year wages and 25 percent of the second-year wages paid to qualifying employees with a maximum credit of \$3000 for the first year and \$1500 for the second year. The total credit can directly offset up to 90 percent of the station's federal tax liability. Any excess credit can be carried back three years and carried forward 15 years.

In order to qualify for the program, individuals must be certified by the local Employment Security Division of the U.S. Department of Labor as being a member of one of the following targeted groups:

1) Handicapped individuals undergoing vocational rehabilitation.

2) Persons receiving Supplemental Security Income (SSI) at the time of employment.

3) Persons between the ages of 18 and 24 who are members of so-called "economically disadvantaged" families, as determined by household income for the six months prior to employment.

EMPLOYER SCREENING QUESTIONNAIRE

Our company may benefit from a tax credit for hiring certain employees. In order to determine if we can get this credit, the following questions need to be answered. This information will be used ONLY FOR DETERMINING WHETHER THE COMPANY IS ELIGIBLE FOR THE CREDIT AND WILL BE KEPT CONFIDENTIAL. Responses to these questions will not affect your employment with this company.
Date of application _____

NAME _____
SS# _____ Date of birth _____

1. VOCATIONAL REHABILITATION

Have you completed or are you receiving rehabilitative services for a physical or mental disability? _____ (Yes/No)

2. SUPPLEMENTAL SECURITY INCOME RECIPIENT

Have you received supplemental security income (SSI) benefits for any month ending within the last 60 days? _____ (Yes/No)

If yes, what was the most recent date on which you received benefits?

3. ECONOMICALLY DISADVANTAGED YOUTH

Are you at least 18 years of age but not yet age 25? _____ (Yes/No). If "Yes" complete the attached "Family Income Information" form.

4. ECONOMICALLY DISADVANTAGED VIETNAM-ERA VETERAN

Did you serve on active duty (other than for training) in the Armed Forces of the United States for more than 180 days, any part of which occurred in the Vietnam era (after August 4, 1964 and before May 8, 1975)? _____ (Yes/No)

If "Yes" complete the attached "Family Income Information" form.

5. ECONOMICALLY DISADVANTAGED EX-FELON

Have you been convicted of a felony or released from prison within the past five years? _____ (Yes/No)

If "Yes" complete the attached "Family Income Information" form.

6. CO-OP EDUCATION STUDENTS

a) Are you applying for this job as part of a formal co-op education program through your high school or vocational school? _____ (Yes/No)

b) Are you at least 16 years old but not yet 20 years old? _____ (Yes/No)

If "Yes" to both questions, complete the attached "Family Income Information" form.

7. GENERAL ASSISTANCE RECIPIENTS

Have you received aid under a general assistance program for at least the past 30 days? _____ (Yes/No)

8. "WIN" EMPLOYEES

Were you employed in a work incentive (WIN) program or eligible for financial assistance for at least the last 90 days under a WIN program? _____ (Yes/No)

9. CETA EMPLOYEES

Were you involuntarily terminated from a CETA job after December 31, 1980?
_____ (Yes/No)

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TAX TIPS

FAMILY INCOME QUESTIONNAIRE

There is a possibility that by having you on our payroll our company can get a tax credit. In order to determine if we can get this credit, we need from you information about all income earned or received by all members of your household before you applied for employment with this company. Please complete this form and answer the questions to the best of your knowledge.

PART A

Applicant's Name _____

Address _____

City _____ State _____ ZIP _____

County of Residence _____ Date of Birth _____

PART B

Handicapped ___ YES ___ NO

CO-OP Education

Student ___ YES ___ NO

SSI Recipient ___ YES ___ NO

Vietnam-era
Veteran ___ YES ___ NO

General Assistance
Recipient ___ YES ___ NO

Ex-Convict ___ YES ___ NO

"WIN" Employee ___ YES ___ NO

Ages 18-24 and "Economically
Disadvantaged" ___ YES ___ NO

CETA Employee ___ YES ___ NO

PART C

Please complete this section to the best of your knowledge. If you do not know your household income for the past six months, show an estimate of weekly wages, etc. Number in your household _____

FULL NAME	RELATIONSHIP	SS#	SOURCES OF INCOME	TOTAL INCOME PRIOR 6 MOS.
1. _____	_____	_____	_____	_____
2. _____	_____	_____	_____	_____
3. _____	_____	_____	_____	_____

1. _____

2. _____

3. _____

I certify that the information supplied in completing this form is true and correct to the best of my knowledge.

DATE _____ Signature _____

4) Vietnam-era veterans who are members of "economically disadvantaged" families.

5) "Economically disadvantaged" persons who have been convicted of a felony and are hired within five years after conviction or release from prison, rehabilitation facility, or similar institution.

6) High school or vocational school students between the ages of 16 and 20 who are members of "economically disadvantaged" families and who are actively enrolled in a cooperative education program.

7) Persons receiving assistance under a "qualified general assistance program" throughout the 30 days prior to starting employment.

8) Eligible work incentive (WIN) employees.

9) Persons involuntarily terminated from the CETA program after December 31, 1980.

The term "economically disadvantaged" means an annualized household income for the past six months of less than 70 percent of the Bureau of Labor statistics' lower standard of living for the area.

The easiest way to identify target-group members is to attach a short questionnaire to employment applications. Job applicants may not be forced to complete the questionnaire, however, and they should be informed that the questionnaire will not have any bearing on whether they are hired. The Equal Employment Opportunity Commission has ruled that it is legal to ask for the TJTC informa-



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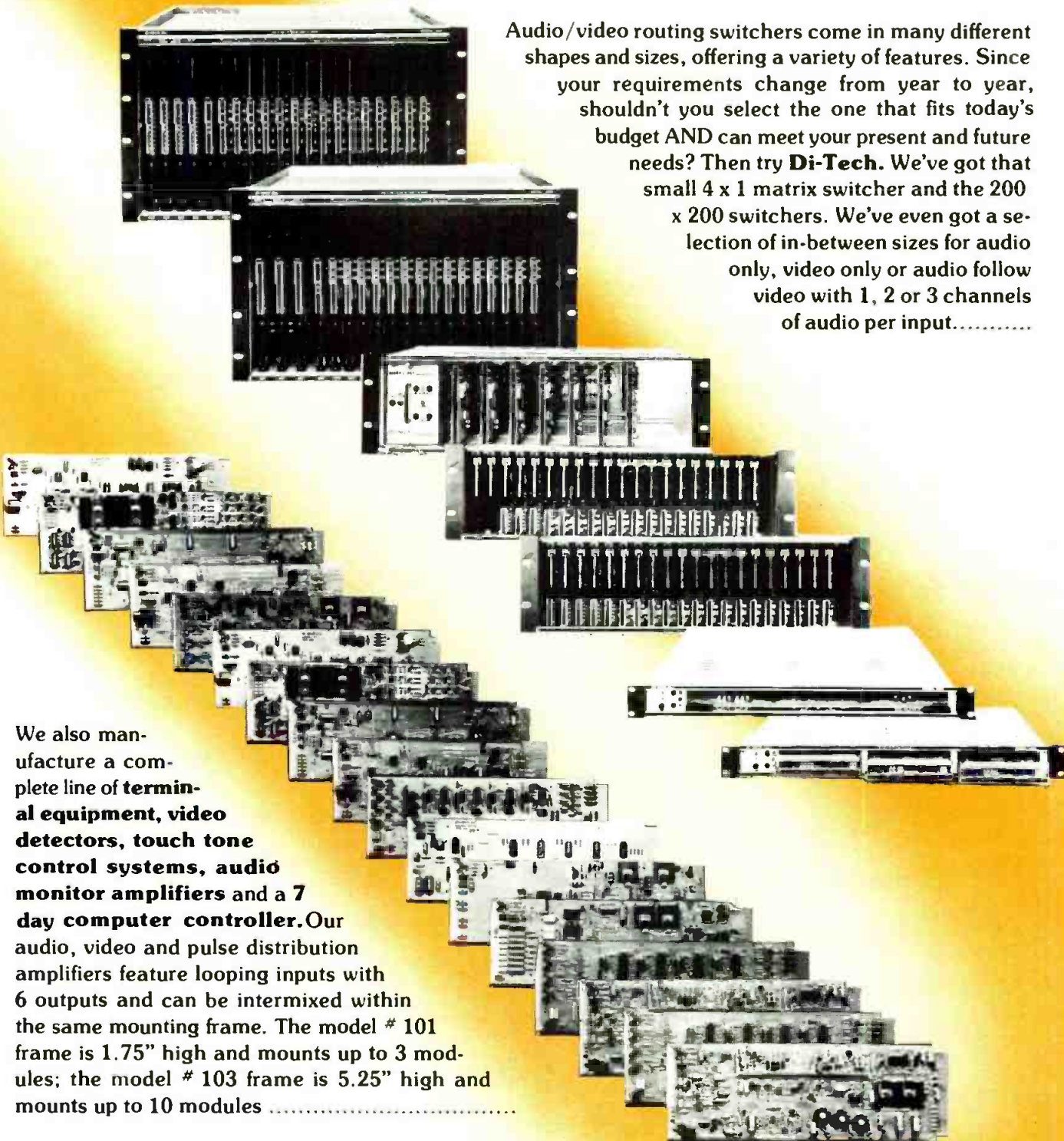
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TAX TIPS

REQUESTING CERTIFICATION

TJTC Certification Officer
[State] Employment Commission
P.O. Box [Number]
[City, State, ZIP]

Attention:

Gentlemen:

We are presently considering hiring the person(s) named below who may be eligible participant(s) in the Targeted Jobs Tax Credit. In accordance with state and federal tax laws, we submit this request that you formally establish the eligibility or ineligibility of this (these) person(s) as of the date(s) indicated:

	Name	Anticipated Date of Employment
1.	_____	_____
2.	_____	_____
3.	_____	_____
4.	_____	_____

It is our understanding that this letter fulfills our responsibility to file a timely request for employee certification. We look forward to hearing from you to arrange a convenient time for you to interview the prospective participants.

Sincerely,

tion so long as this information is not used, at any time, to discriminate.

A properly completed questionnaire (see illustration) may be reviewed by a prospective employer to determine if an applicant fits within one of the nine eligible groups. If so, a certification request (see illustration) should be submitted to the TJTC Certification Officer of the employer's local Employment Security Division.

To illustrate, Mike Smith, who lives in Chicago, applied for work with Jones Broadcasting and filled out a family income form showing wages of \$3000 for Mike, \$500 for his wife and \$500 for his brother. In addition, Mike received \$2400 of unemployment compensation and the family received \$500 in food stamps. Since the unemployment compensation and the food stamps are not considered income for TJTC purposes, this leaves \$4000 of income for the six-month period, which is \$8000 annualized.

The chart of economic guidelines, obtained from the local Employment Security Division, shows that a family of four in Chicago with less than \$9460 of income is "economically disadvantaged." Since Mike's family income is only \$8000, Mike will qualify for the Targeted Jobs Tax Credit.

After receiving the certification request, the certifying official will contact the employer to arrange a time to come to the work location and spend 10 to 15 minutes with the employee to verify the information on the questionnaire. Ordinarily, no attempt is made to verify the information by phone calls to third parties, such as past employers.

However, since in most areas there is a long time lag for this procedure, it is best to start the process as early as possible so that the employer can protect its rights to the credit. And, best of all, there is no charge to the employer or to the employee, nor is there any penalty if the employee does not qualify. Finally, when the certifications are approved, the employer files Form 5884 with his annual income tax return in order to claim the Targeted Jobs Tax Credit.

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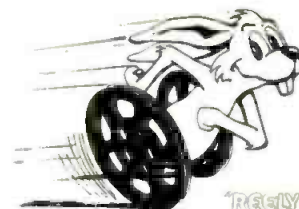


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Circle 244 on Reader Service Card

GREAT IDEA CONTEST

Here's a chance to share your own personal solutions to some of broadcasting's most vexing engineering needs . . .

Each month, *BM/E* presents two engineering problems and invites you to submit solutions complete with diagrams. *BM/E*'s editors will read the entries and select the best for publication—giving readers an opportunity to vote for the idea they consider best by using the ballot area on the Reader Service Card.

We will pay \$10 for each entry printed. In addition, the solution in each month's competition receiving the most votes on our Reader Service Card will win \$50.00. So put on your thinking cap and submit an answer to either of the problems outlined below . . . and be sure to watch this section for the solutions.

**NEW, BIGGER PRIZE:
\$50.00 FOR
EACH CONTEST WINNER!**

Problem 11: Cart Automation

The station has three cart machines, bought at various times, so they are not equipped with automatic sequencing circuitry. Design an inexpensive relay and pushbutton system to: (1) Start the second cart when the first finishes; (2) Stop the first and start the second at the push of a button; and (3) Proceed similarly from second to third, and from third back to first, if a switch is set for that. Use the simplest cue tone or other end-of-tape system that will do the job.

**Solutions to Problem 11
must be received by
October 18, 1982, and will be
printed in the December 1982 issue**

Problem 12: Microphone Switching

In our typical combination control/interview room, the operator/interviewer needs fast control of four mics placed around the table and plugged into connectors on the front of the console. In some situations, the operator may want to open only one mic at a time. Design a simple pushbutton or other system for fast, easy switching of the mics without introducing switching noise into the on-air signal.

**Solutions to Problem 12
must be received by
November 16, 1982, and will be
printed in the January, 1983 issue**

CONTEST RULES

- 1. How to Enter:** Submit your ideas on how to solve the problems, together with any schematic diagrams, photographs, or other supporting material. Entries should be roughly 500 words long. Mail the entries to *BM/E*'s Great Ideas Contest, 295 Madison Avenue, New York, NY 10017. Use the official entry form or a separate piece of paper with your name, station or facility, address, and telephone number.
- 2. Voting and Prizes:** *BM/E*'s editors will read all entries and select some for publication; the decision of the editors is final. Those selected for publication will receive a \$10 honorarium. Each month, readers will have an opportunity to vote for the solution they consider the best by using the Reader Service Card. *BM/E* will announce the solution receiving the most votes and will award the winner of each month's competition a \$50.00 check.
- 3. Eligibility:** All station and production facility personnel are eligible to enter solutions based on equipment already built or on ideas of how the problem should be solved. Consultants are welcome to submit ideas if they indicate at which facility the idea is in use. Manufacturers of equipment are not eligible to enter. Those submitting solutions are urged to think through their ideas carefully to be certain ideas conform to FCC specs and are in line with manufacturers' warranty guidelines.

Mail Official Entry Form to:

BM/E's Great Ideas Contest

295 Madison Avenue, New York, NY 10017

Solution to Problem # _____

Your Name: _____

Title: _____

Station or Facility: _____

Address: _____

Telephone: (_____) _____

I assert that, to the best of my knowledge, the idea submitted is original with this station or facility, and I hereby give *BM/E* permission to publish the material.

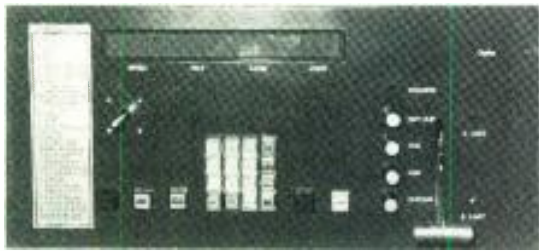
Signed _____

Date _____

SOLUTIONS to problem 8: Talk-show Call-in Indicator

For a call-in talk show, it is desirable to have a system that will put callers on hold until the call can be taken, and also indicate to the operator or host which call came in first. Here are two solutions to the problem.

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CAUTION

A reader, John C. Mans of KYIN-TV, Osage, IA, has expressed concern that solutions to this month's Great Ideas problem may violate FCC rules requiring all user-furnished equipment hooked into phone company lines to be FCC type-accepted and registered, with connections made through a standard telephone company jack. Mans writes:

"For all practical purposes, this makes it impossible for any sort of homemade device to be used in conjunction with the regular telephone system. The technical requirements of Part 68 and the paperwork required to obtain FCC registration are quite extensive. I believe this will preclude a legal solution to problem 8 unless the phone company in the specific locality can provide a proper interface to isolate the call-in indicator from its lines."

Cooperation from the telco is not an impossibility, as Solution A points out. *BM/E* urges its readers to steer clear of FCC rule violations in implementing these or other Great Ideas.

SOLUTION A

William Howe, Chief Engineer
WEIV, Ithaca, NY

This system has been operating in our studios at WEIV for over a year and takes advantage of our telephone system, which is equipped with a built-in intercom and touch-tone dialing. The calls are answered by the receptionist, who keeps track of the order in which they were received. The signal device shown in the schematic is connected into the intercom speaker circuit of the telephone and decodes the touch-tones for 1, 2, 3, and *. As soon as the host takes a call, the receptionist signals the next call to be taken. To do this she first rings the intercom of the telephone to which the system is connected and then pushes either 1, 2, or 3 to indicate on which line the next call is to be taken. The intercom does not have to be answered as the signal operates from the paging speaker of the telephone. Ringing a new number automatically clears the previous number. The * is used to clear numbers without signalling a new number; any individual signal may be cleared with a manual button located next to the signal light. This system has the advantage of being able to operate from any location in the building where there is a telephone. This is a great help when someone other than the receptionist has to take over the calls. The greatest disadvantage is that it requires connection to the telephone. For this reason, I strongly recommend that you

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You may not find the Beyer MCE 5 on our announcer, but you'll find it at your local Beyer dealer, today.



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Television Production: Backgrounds for news programs, special effects, data display, program previewing.

Call or write: General Electric Company, Video Display Equipment Operation, Electronics Park 6-206, Syracuse, NY 13221. Phone: (315) 456-2152.



NEWS BACKGROUND at WTMJ-TV, Milwaukee, is displayed rear screen by General Electric projector.



SELL-OUT CROWDS at Fiske Planetarium, Boulder, watched live NASA transmission presented by General Electric projector.

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Model	Light Output in Lumens			Resolution* in TV Lines per Picture Height		Input Power Req.		Scan Standards***	Video Input**
	Open Gate, Min.	Modulated TV, Min.	Modulated TV, Typ.	Min. Horiz.	Min. Vert.	Watts	Volt-Amps.		
PJ 5000	550	220	280	750	300	1200	1600	525 li./60 fps; 625 li./50 fps	(1)
PJ 5050	1250	500	650	750	300	1600	2150	525 li./60 fps; 625 li./50 fps	(1)
PJ 5800	550	200	280	750	600	1200	1600	875 lines, 60 fps	(2)
PJ 5850	1250	500	650	750	600	1600	2150	875 lines, 60 fps	(2)
PJ 5100	550	200	280	750	650	1200	1600	1023 lines, 60 fps	(2)
PJ 5150	1250	500	650	750	650	1600	2150	1023 lines, 60 fps	(2)
MONOCHROME PROJECTORS									
PJ 7000	1000	600	750	800	400	1000	1350	525 li./60 fps; 625 li./50 fps	(3)
PJ 7050	1700	1000	1250	800	400	1000	1350	525 li./60 fps; 625 li./50 fps	(3)
PJ 7055	3300	2000	2400	800	400	1500	2000	525 li./60 fps; 625 li./50 fps	(3)
PJ 7800	1000	600	750	800	650	1000	1350	875 lines, 60 fps	(3)
PJ 7850	1700	1000	1250	800	650	1000	1350	875 lines, 60 fps	(3)
PJ 7855	3300	2000	2400	800	650	1500	2000	875 lines, 60 fps	(3)
PJ 7100	1000	600	750	800	750	1000	1350	1023 lines, 60 fps	(3)
PJ 7150	1700	1000	1250	800	750	1000	1350	1023 lines, 60 fps	(3)
PJ 7155	3300	2000	2400	800	750	1500	2000	1023 lines, 60 fps	(3)

Line Power. All Projectors: 117 or 240 v., ± 10%, 50/60 Hz

*Resolution measurements made with wide-band video input.

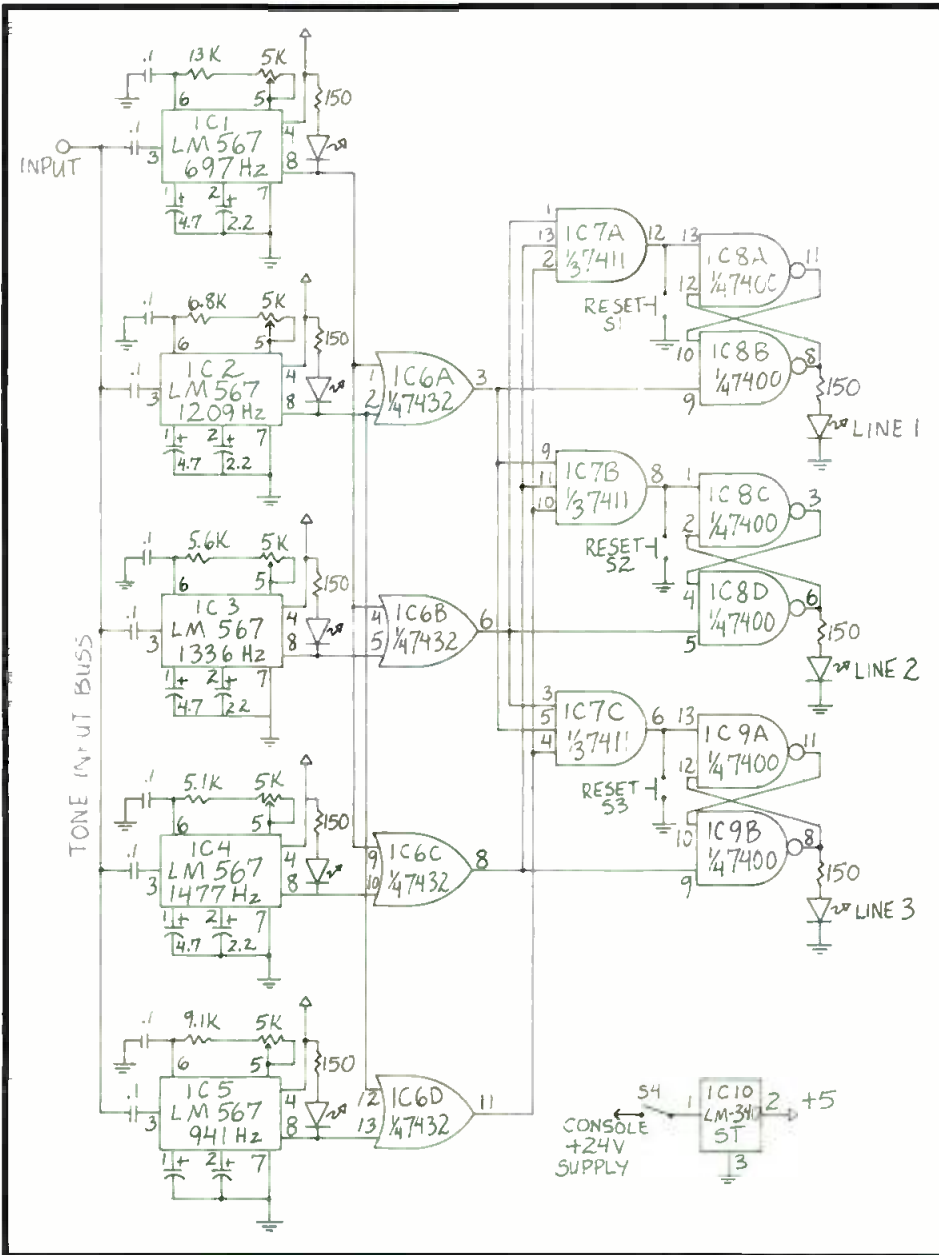
**Video Input Key: (1) NTSC or RGB. (2) PGB. (3) Wide-Band.

***For use at other scanning rates, contact General Electric (VDEO) for special application/model information.

GENERAL  ELECTRIC

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GREAT IDEAS



try to get approval from the phone company that serves you if the equipment is supplied by them before attempting this system. It goes a long way with getting along with Ma Bell, and in our case it wasn't as hard to get permission as I had expected.

IC1 through IC5 are the decoders for the five tones encountered in the numbers we use. This can easily be expanded to cover more numbers if necessary by adding more decoders and combiner gates. The 5K trim pot on each decoder is adjusted to give a low at pin 8 when a tone of the frequency is present on the input bus. The LED at pin 8 is optional to the operation of the circuit but is very handy in setting up the decoders. Frequency can also be adjusted by connecting a counter to pin 5 and adjusting the trim pot for a count of the desired frequency—just be careful that the counter does not load down the circuit. I usually use a 10K resistor in series

with the counter to reduce loading. IC6 combines two decoders to give a low when the proper two tones are present on the input bus. IC6A goes low for 1, IC6B for 2, IC6C for 3, and IC6D for *. IC8 and IC9 are flip-flops that turn on the indicator LEDs for line 1, 2, or 3. IC7 turns off the previous LED when a new call is signaled or clears all call signals when the * is used. Reset buttons turn off only the LED of that line signal. Since this circuit was housed in our studio console, it was run off its 24 V power supply. This was connected to the input of IC10, a 5 V voltage regulator, through an off-on switch.

If your telephone system does not have both intercom and touch-tones or it is not desirable to use the telephone

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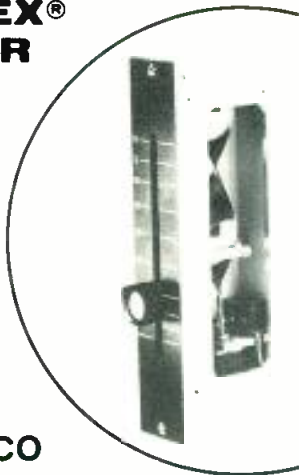


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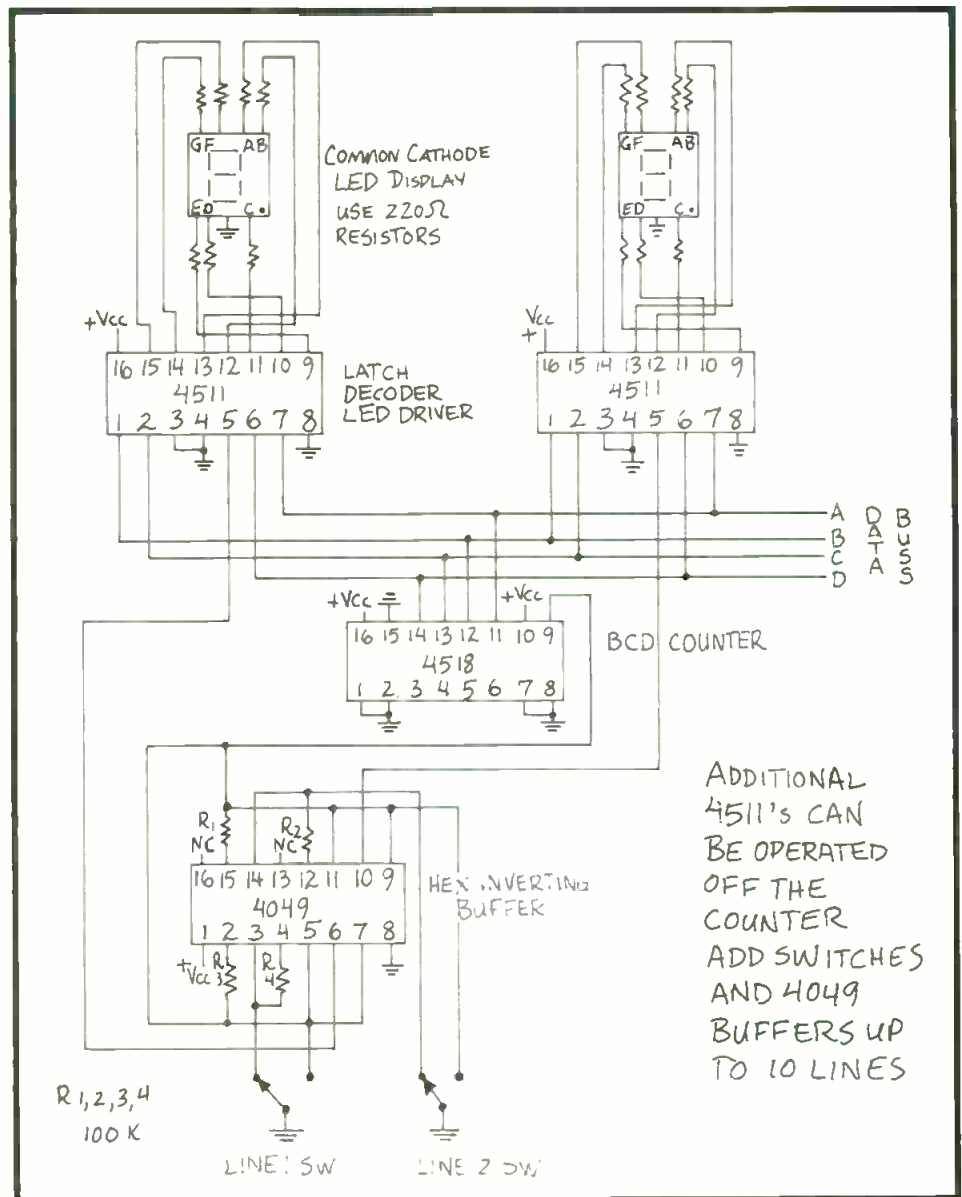
GREAT IDEAS

system, touch-tone generators can be built easily with chips that perform that function. The ones that I am aware of are the MC-14410, MK 5058, and MM53125. They require the addition of keypad, crystal, power supply, and a few resistors or capacitors according to their spec sheets. Your local Radio Shack should have a module complete with switch pad and MM53125 chip (RS 277-1010). This unit requires only the addition of a 3.579545 MHz TV color crystal and power supply to make it operational. It will not give you the mobility of the telephone system, but it only needs one line from the receptionist to the studio.

SOLUTION B

Jan A. Lipski, Chief Engineer
KIQO, Atascadero, CA

Line switches correspond to each incoming line and should be remotely located at the receptionist area. IC 4049 acts as a bounceless switch with two outputs. One goes to the counter, advancing the count by one. The second output goes to the decoder latch for the corresponding line, taking the count from the data bus and displaying the number. The counter automatically recycles to 0 from 9, allowing up to 10 lines to be identified. Power supply should provide between +5 to 15 V.



CONTEST WINNER

problem 3: Elapsed Time Indicator

Congratulations to Mike Wilson, Videotape Maintenance Engineer, NBC-TV, Burbank, CA for his winning solution A (see pages 125 and 126 of the April 1982 issue), which has won Wilson \$50.

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THE MOST AUTHORITATIVE, COMPREHENSIVE GUIDE TO THE TECHNOLOGY AND TECHNIQUES OF THE 80'S.

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CONTENTS

Part I — Overview

- Chapter 1. What's Happening in TV Communication
- Chapter 2. Communication System Organization
- Chapter 3. Trends in Communication Systems

Part II — Electronic Field Production

- Chapter 4. Cameras, Lenses and Lighting
- Chapter 5. Video and Audio Recorders
- Chapter 6. Field System Accessories
- Chapter 7. Planning & Acquiring ENG/EFP Systems

Part III — Electronic Post-Production

- Chapter 8. Editing Systems and Controllers
- Chapter 9. Video Signal Processing — Switchers
- Chapter 10. Video Signal Processing — TBC's/Quantels
- Chapter 11. Audio Signal Processing — Studio Audio/PCM/etc.
- Chapter 12. EPP System Accessories
- Chapter 13. Planning & Acquiring EPP Products

Appendices

- A. Public Policy & Technological Developments
- B. TV Standards
- C. Bibliography & Reference Section

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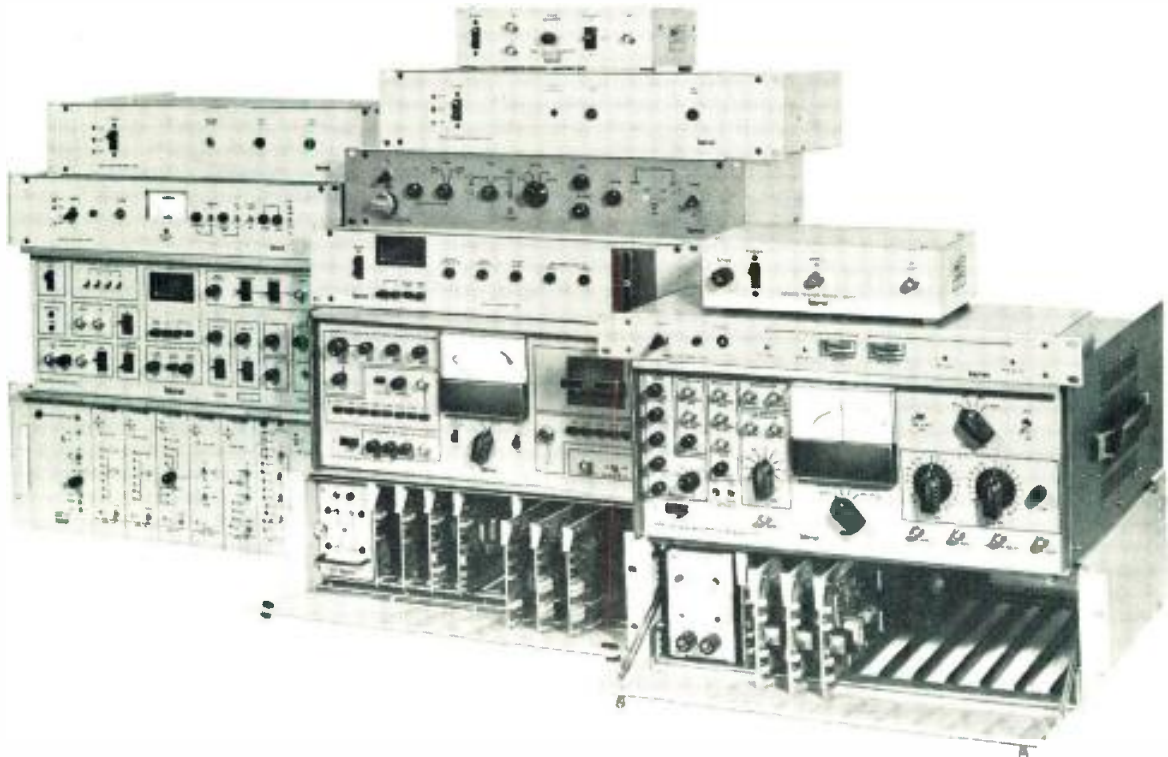
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broadcast EQUIPMENT

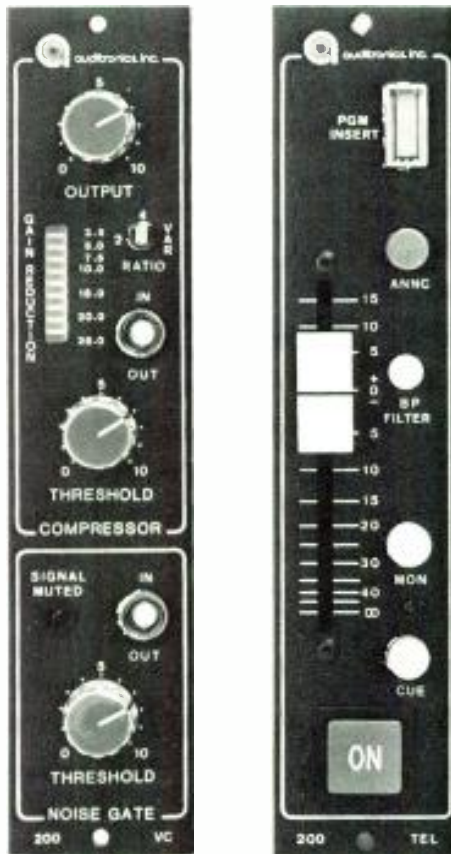
New console modules from Auditrionics

275

Two new accessories are now available for the Auditrionics 200 Series on-air broadcast consoles. The 200-VC is a voice controller, and the 200 TEL is a telephone interface module.

The 200-VC voice controller provides independently controlled noise gate and compressor/limiter functions. It is capable of being used with either a mono mic or a stereo line source. This unit also provides user-accessible compression ratio, threshold, and output level controls as well as a built-in gain reduction indicator. Internal adjustments are provided for independent pre-sets of attack and release times for both the noise gate and compressor/limiter sections.

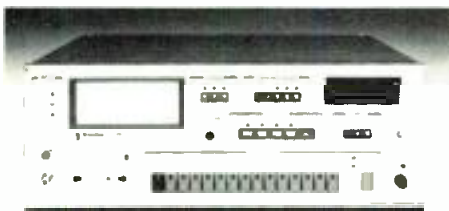
The 200-TEL telephone interface module allows telco line interface via any commercially available hybrid without affecting other functions. In addition to providing incoming band-pass filtering and level control, local announcer mic switching, mix-minus capability, and cue and monitor feeds, the 200-TEL includes a stereo line level output for tape recorder feed. The 200-VC is \$450.00, and the 200-TEL is \$500.00.



Automatic Distortion Analyzer from Asaca 276

The new Asaca/Shibasoku 725 automatic distortion analyzer comes with built-in microprocessor allowing the user to perform harmonic analysis of audio signals. Individual harmonics are separated by digital methods and are measurable down to .0001 percent over a frequency range of 5 Hz to 500 kHz and down to 30 microvolts.

An analysis circuit measures THD covering the second to the tenth harmonics and provides for individual analysis through the fifth harmonics. Additional new circuits have been designed for impedance conversion and noise reduction. Automatic operation is possible by use of the microprocessor and the unit can be remote controlled.



Minolta Offers TV Color Analyzer 277

This new color analyzer enables engineers to execute objective white balance adjustment. The new compu-



terized unit can take quick measurements off any standard monitor regardless of phosphor characteristics.

In addition to the primary analyzer mode for red, green, and blue beam in-

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tensities, the Color Analyzer II features a chroma mode that shows x-y coordinates and luminance in either candelas or foot lamberts. In this chroma mode, white standard or reference colors can be put into memory by adjusting the monitor until desired coordinates are displayed. The new unit has four white standard/reference color memory channels and four matrix characteristic memory channels.

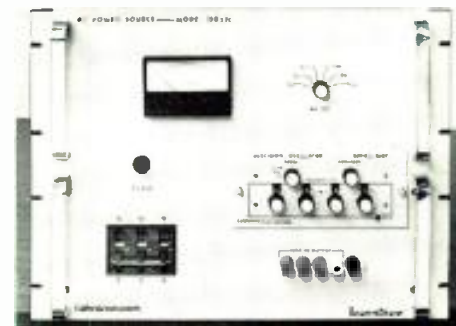
Mini-TP from Western Group 278

Western Group/Optical Division has introduced its new Mini-TP, a portable optical alignment instrument for on-location registration and camera adjustment. The instrument attaches to most ENG/EFP lenses via adapters and presents an infinity target in a six-inch long device. It can set over 14 lenses to camera parameters. It also detects lens abnormalities.



Test Calibration from California Instruments 279

The line of Invertron ac power sources for studio applications offers pure sine wave output with variable voltage and



BROADCAST EQUIPMENT

frequency. Output power ratings range from 100 VA single phase to 36 kVA polyphase. The units can also be manual or programmable.

The power source is a high power linear amplifier driven by an oscillator. The precision power amp consists of an ac to dc power supply and a multistate amplifier with a multisection output transformer. The output frequency is determined by a plug-in oscillator.

Fluid head and tripod from Bogen 280

The Bogen Mini Fluid Head and 3040 Tripod combination is suitable for cameras weighing up to nine lbs. The head pans over a full 360 degrees with a camera platform measuring 2¾ x 3 inches, and a handle that can be separated into two individual nine-inch segments. Vertical drag is continuously adjustable. The tripod is double braced aluminum with a two-section design extending to a full 73 inches with a 19-inch geared center post.

Fluke offers new multimeter 281

Fluke's latest entry into the digital multimeter market is the 8060A. It is a hand-held, 4½-digit unit that uses a four-bit microcomputer coupled with a Fluke CMOS LSI. It features true rms



measurements for ac signals to 100 Hz, frequency to 200 kHz, and resistance measurements to 300 megohms. It also has the ability to store any measurement as a positive or negative relative reference value. Voltage is displayed in dBm, referenced to 600 ohms or in relative dB. Continuity testing, conductance, and constant current source diode testing functions are also included.

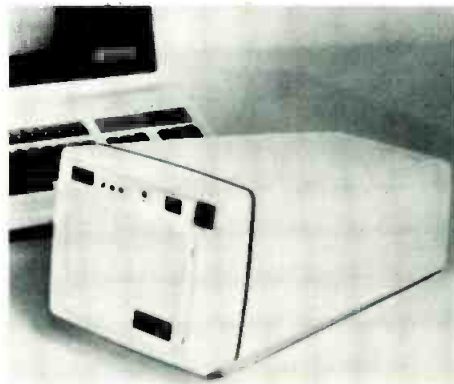
VAC Intercom Coupler 282

The Model PLC-1 from Video Aids of Colorado is a universal intercom coupler circuit. Used as an active hybrid bridge arrangement, the PLC-1 allows built-in camera/CCU intercom systems to be extended by up to 10 additional stations.

The new unit is an intercom station itself and is wired as another remote, taking its power from the existing PL system. The circuitry is transformer coupled to isolate the PL system from the outside intercom, avoiding ground loop problems. The new unit sells for \$100.00.

Computer Graphics Device from Celtic Technology 283

This new photo system, the VFR-2000, is designed to capture CRT color graph-



ics on film. It is a 35mm slide producing system which provides computer graphics users with the ability to quickly and automatically produce either a 35mm slide or an instant photographic print. It connects in the same loop as the CRT monitor by cables with standard BNC connectors.

Features of the unit are automatic film advance, film rewind, and remote operation. The unit sells for approximately \$2000.00 and is compatible with over 20 major graphics systems.

New cartridge from Singer 284

The new Astatic MF cartridge offers a transducing system that combines features of the moving magnet, variable reluctance, and moving coil cartridges.

The moving flux cartridges use a tiny magnet at the end of a stylus/cantilever tube, positioned in the cartridge body adjacent to a divided coil assembly. Only the component magnet, where its flux intersects the coils, is allowed to be detected as output voltage. Four Astatic MF cartridges are available with a frequency response of 10 to 40,000 Hz, inductance of 90 mH, and a tracking force of 1 to 2 grams.

JVC's Portable Parts 285

Electronic replacement parts for the KY-2700 camera are being offered by JVC in three different kits. There is a



master set of printed circuit boards, a set of integrated circuits, and a set of semiconductors. The circuit boards kit requires no tools to install, making it convenient for field replacement. The ICs and semiconductors require soldering. The kits come in an attache case designed especially for storage and transport of the parts.

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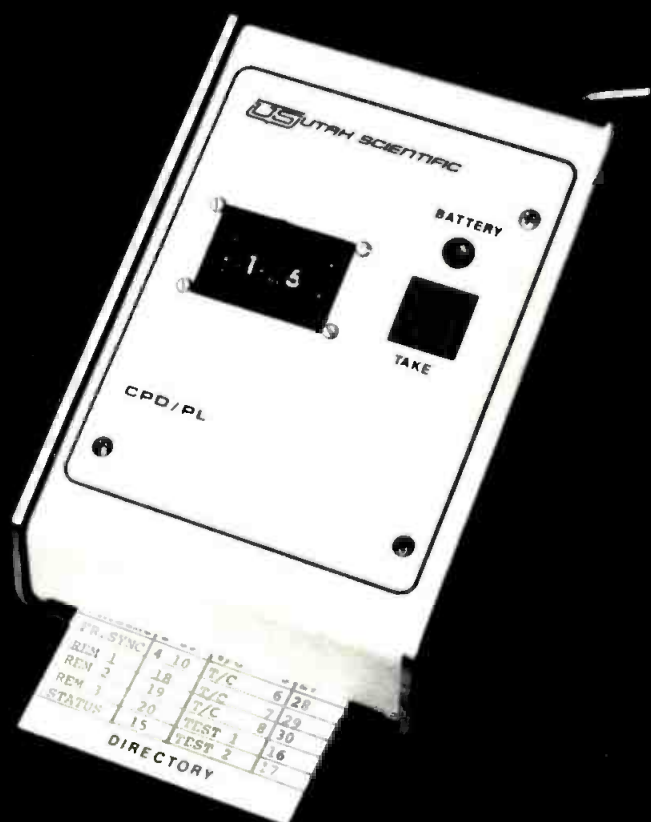
Global Specialties Scope Multiplexer 286

The new 8001 oscilloscope multiplexer is an add-on unit that will extend a standard one or two channel oscilloscope to eight channels, permitting direct comparison of events. Input is via eight BNC connectors and it will accept signals of ±5 volts with a frequency response flat to 12 MHz, -3 dB at 20 MHz. Input impedance is one Megohm.

All eight channels can be viewed at once, or one of two four-channel combinations is possible. The operator can

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- Additionally, will be responsible for planning, budgetary control of projects and performance of completed facilities.

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Responsibilities include the design and drafting of consoles, equipment panels and layouts used in broadcast facilities. Specifically, the selected candidate will:

- Design PC board layouts for broadcast equipment.
- Transform electronic and mechanical sketches into finished drawings.
- Draft architectural layouts for broadcast facilities.

Along with extensive experience in electronic, mechanical or architectural drafting, the ideal candidate will have a related college degree or equivalent training.

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view a single channel by switching to manual mode and choosing the desired display. In operation the signal which is to serve as the trigger is connected to channel one. Trigger level is variable.

Adapted Alexander charger 287

Alexander Manufacturing has adapted its Smart Charger to accept E.F. Johnson Series 577, 588, and 590 battery packs. With the addition of special plastic holders, the microprocessor circuitry has the ability to charge six batteries at the same time. Each battery is charged at 400 milli-amps. The holders can be changed at any time, and holders for other makes are available.



Edcor's new wireless microphones 288

Two new lines of wireless mics are available from Edcor, the E Com high band systems, and the PM low band systems. The E Com operates in the 150 to 210 MHz range with switches

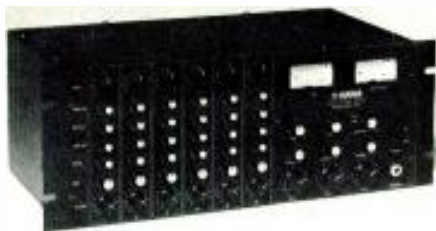


for minimizing RF pop. Also offered are phantom power, battery life indicators, and new antennas. High power multiple input transmitters and new diversity circuits have also been added.

The PM low band systems operate on 30 to 50 MHz and have new distortion correcting circuitry, signal strength indicators, and diversity reception.

Rack Mount Mixer from Yamaha 289

Yamaha's new rack-mounted sound mixer, the M406, is a six input, two output (stereo) unit which can also be used as a submixer in a larger, more



complex sound system. The unit has 600 ohm balanced outputs, a three band equalizer, six position input level control, and phantom power for condenser microphones. The stereo program output with left and right master controls can also be used for dual mono.

Extra features are echo/effects send bus with master send control, two effects inputs, and dual VU meters with LED peak indication.

■ FOR MORE INFORMATION ■

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Audio Recorder from Micro-Trak 290

The Tele-File is a portable recording console with built-in capacity for a cassette recorder. Three audio mixing channels feed into the tape machine and two microphone inputs are supplied. There is also a plug-in battery pack.



This field unit plugs into a telephone to feed back to a station with the reporter providing commentary over the recording. When equipped with earphone along with a microphone, full talkback capability is possible. A 16-button keypad can be ordered and, when used in conjunction with a dual tone generator, the Tele-File can supply remote control of station equipment.

Cue and monitor amplifier from Conex 291

The new Omni-Q is a compact rack-mounted unit suitable for various uses in TV and radio stations. It operates as a remote/network line monitor and buffer amplifier, transmitter input selector and monitor, and automation cue amplifier. Also offered in this device are tape recorder input selector, telephone line source selector, and earphone amplifier.



Compact mixer from Biamp 292

The new 683 is a six-channel rack-mounted mixer that uses, instead of conventional integrated circuits, dis-



crete transistors. All components are mounted on high-grade epoxy-coated PC boards for easy access. Other features include floating and balanced outputs, metering on all outputs, separate reverb control in the monitor, three-band equalization, and ten segment LED output display.

Simpson unveils new VOM 293

The Model 165 is a new pocket-sized VOM with 3½-inch meter and two-color scale. Full measurement is achieved on 22 ranges for ac/dc voltage, dc current, resistance, and on four ranges of dB measurement. Full scale accuracy is ± 3 percent dc and ± 4 percent ac. Accessories include high-voltage probes, replacement test leads, and carrying cases.

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ADVERTISER'S INDEX

ADDA Corp	1	IGM	202	Television Equipment Assoc	178
ADM Technology, Inc	Cover 2	Ikegami Electronics USA, Inc	32, 90-91	Television Technology	172
A.F. Associates, Inc	125	Industrial Sciences, Inc	160	Telex Communications, Inc	170
Agfa-Gevaert	204	Inovonics, Inc	110	Thomson-CSF Broadcast	30-31
Alpha Audio	29	International Tapetronics Corp	77	Thomson-CSF/DTE	147
Allen Avionics, Inc	168			Tiffen Filters	33
Amperex Electronics Corp	109	Japan Electronics Show	141	Time & Frequency Technology	198
Ampex-AVSD	137	US JVC Corp	85	TV Graphics	212
Ampex-MTD	19				
Angenieux Corp of America	167	Lake Systems Corp.	187	Ultimate Corp	183
Anton/Bauer, Inc	92	James B. Lansing Sound, Inc	203	UMC Electronics Co	98
Aristocart	12	Leader Broadcast	176	UREI	181
Asaca Corp of America	82	Leader Instruments	101	Utah Scientific, Inc	221
Audio Technologies, Inc	224	Lasametric	148		
Auditronics, Inc	70-71, 172, 223	Listec Television Equip Corp	182	Varian, Elmac Div	89
Aurora Imaging Systems	103	Lowell Light, Inc	99	Videotek, Inc	42
		LPB, Inc	197	Viscount Industries Ltd	110
Belair Electronics Lab., Inc	212				
Beyer Dynamics, Inc	213	3M/Magnetic Tape Div	22-23	Ward Beck Systems Ltd	Cover 4
Bosch (Fernseh)	193	3M/Mincom-Video Products	95, 169	Winsted Corp	208
BPI	143	Marconi Electronics, Inc	60		
Broadcast Microwave Services	15, 140	Marti Electronics	202	Yamaha	67
BSM Systems	206	Maxell Corp of America	65		
		Mayor's Office	208		
Calvert Electronics	152	MCI/Sony	83		
Calzone Case	14	MCI/Quantel	63		
Camera Mart, Inc	104-105	McMichael, Ltd	114-115		
Canon USA, Inc	21, 155	Merlin Engineering	16		
Capitol Magnetic Products	26	Microtime, Inc	73		
Ceco Communications	210	Microwave Filter Co.	34		
Cetec Vega	191	Midwest Supply Corp	75		
Cine 80, Inc	98	Moseley Assoc. Inc	131		
Clear-Com Intercom Systems	111	Multidyne Electronics	179		
CMX/Orox	36	MZB & Assoc.	55		
Comex Systems	136				
Comprehensive Video Supply Corp	86	NBC Employment	222		
Comrex	145	NEC Corp. of America	40, 143		
Conrac Corp	57				
Continental Electronics Mfg Co	144	Oki Electronics	188		
Continental Microwave	159	Orban Associates, Inc	35, 186		
Convergence Corp	97, 216	Otari Corp	13		
Crosspoint Latch Corp	129				
Countryman Assoc	194				
		Panasonic	107		
Data Communications Corp	177	Panasonic (Ramsa)	8-9		
Datatek Corp	51	Phelps Dodge Communications Co	163		
Delta Electronics	201	Philadelphia Resins Corp	25		
Digital Services Corp	212	Philips Test & Measuring Instruments	171		
Di-Tech	207	Potomac Instruments	20		
Dolby Laboratories, Inc	113				
Dubner Computer Systems	17	Quanta Corp	195		
		QSI Systems, Inc	164		
Eastman Kodak	49				
EEV, Inc	133	Ramko Research	5		
EG & G	120	RCA Broadcast Systems	78-79		
Elector	37	ROH Corp	222		
Electro Impulse	194	Rohde & Schwarz	117		
Electro-Voice	18	RTS Systems	45		
Emcee Broadcast Products	142				
ESE	134-135	Sachtler Corp	46		
Eventide Clockworks, Inc	28, 161	Sennheiser	86		
		Shalico, Inc	216		
FOR-A Corp	175	Sharp Electronics Corp	58-59		
Fortel Inc.	123	Shively Labs	149		
Frezzolini Electronics, Inc	111	Shure Bros., Inc	27		
Fujinon Optical, Inc	119	Sigma Electronics	20		
Fuji Photo Film USA, Inc	173	Solid State Logic (Musicworks)	Cover 3		
		Sony Broadcast	2-3, 38-39, 126-127, 150-151		
GCC Communication	223	Spencer Broadcast	146		
General Electric Video	214	Stainless, Inc	93		
Geratensieger	121	Stanton Magnetics, Inc	192		
Alan Gordon Enterprises, Inc	192	Storeel Corp	209		
Graham-Patten Systems	206	Strand Century	185		
Gray Engineering Labs	200	Studer Revox America, Inc	24		
Grumman Aerospace	81	Surcor Assoc.	215		
		Swiderski Electronics	215		
Harris Corp	53, 139				
Harrison Systems	7	Tektronix, Inc	11		
Harris Video	69	Telecine, Inc	87		
Hippotronics	200	Telemet	218		
Hitachi Denshi American Ltd	156				
Hughes Electronic Devices Corp/HEDCO	190				

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100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119
120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139
140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179
180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199
200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219
220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259
260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279
280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299
300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319
320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339
340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359
360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379
380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399

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100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119
120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139
140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179
180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199
200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219
220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259
260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279
280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299
300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319
320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339
340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359
360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379
380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399

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